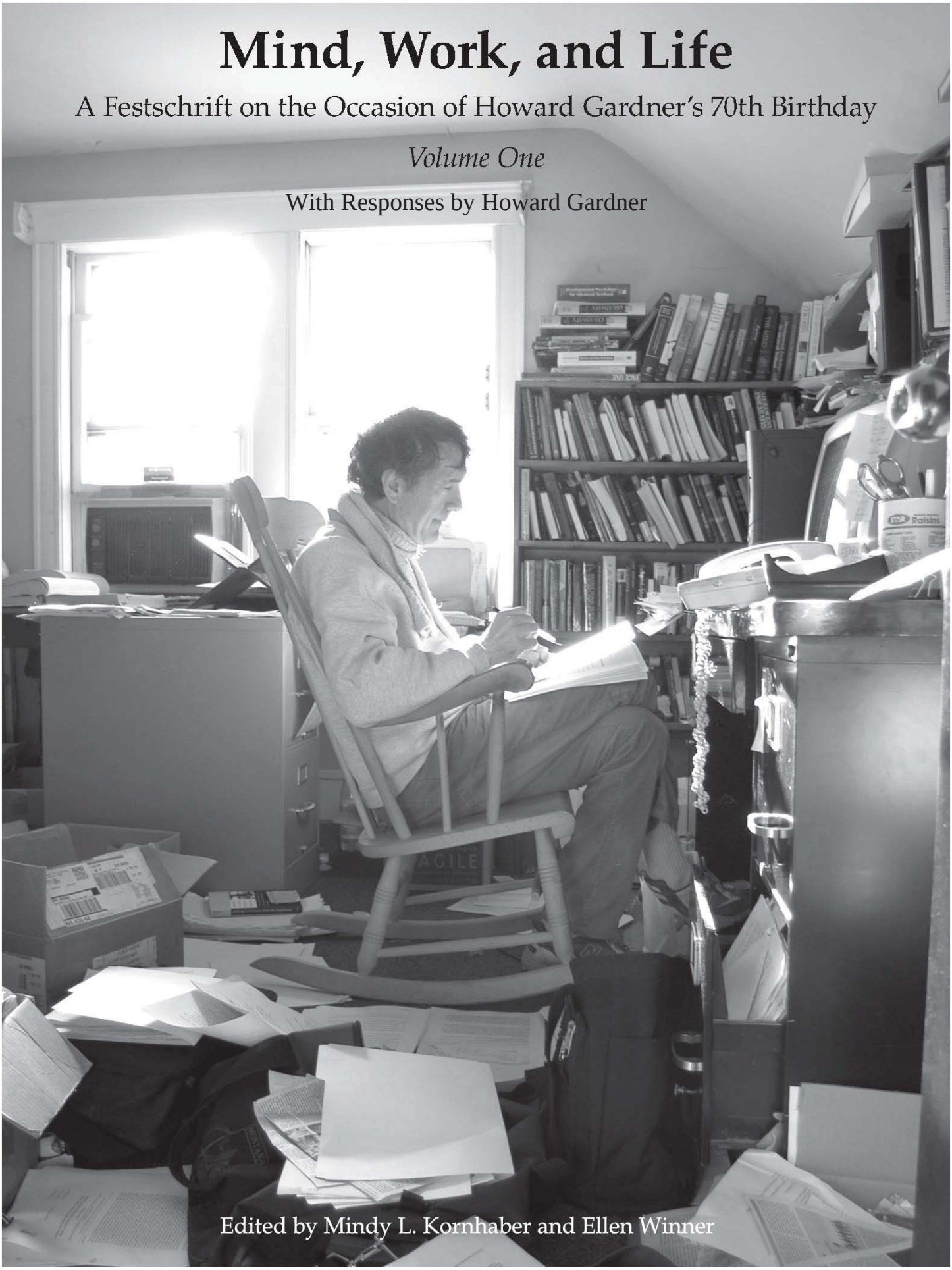
Mind, Work, and Life

A Festschrift on the Occasion of Howard Gardner's 70th Birthday

Volume One

With Responses by Howard Gardner



Edited by Mindy L. Kornhaber and Ellen Winner

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Editors

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Foreword

Ellen Winner

Mindy Kornhaber and I joined forces to create this Festschrift for Howard. We began in earnest in the spring of 2010, two and a half years ago, assembling names, inviting contributions, editing contributions. It was a lot of work, but it was a labor of love for both of us. Along the way I learned that nothing slips by Mindy. Not an extra period or a missing comma, not a paragraph out of place, not an extra word. And certainly not a fuzzy thought or unclear sentence. Mindy is the finest editor I have ever encountered. I could never have done this without her. Thousands of emails passed between us as we developed this project. Denise Simon and Michael Ring helped immensely to design and format these volumes.

Mindy and I were moved by the contributions we received. To see the powerful effect Howard has had on the lives of his students, his assistants, his colleagues, and on the field was truly overwhelming. Night after night I have listened to Howard pounding away—first at his electric typewriter, and now, somewhat more quietly, at his computer. He was busy writing books, articles, chapters, and lengthy comments to his colleagues, students, research assistants, and research associates on their work, often work in progress. Today, in this book of essays, letters, and greetings, he can read how much his thinking and his words have meant to people. While he knew that we were assembling this book, he will not have read any of it until we present this to him on September 28, 2013.

Howard's lengthy comments came to me, too. Sometimes they were hard to take, because Howard always says what he thinks. I remember the first one, just a few months after I had met Howard. It was the summer of 1973 when I answered an ad for a research assistant in psychology of the arts at Project Zero. I had no idea what the psychology of the arts was, but I did know that art was my passion and psychology was a field I wanted to get into. Of course, I had no idea what Project Zero was. I biked over to Longfellow Hall and went up to the third floor, first door on the left at the top of the stairs, looking for Professor Gardner. I saw someone riffling through the contents of a file drawer.

Howard asked me to make a two-year commitment. I had grave misgivings about agreeing to this, because I had my mind set on applying to graduate school in clinical psychology right away. But he insisted that the job was for two years, and I relented. That was, of course, one of the best decisions I ever made.

The first task Howard gave me was to make sense of a large box of interview data on the question of how children understand the arts. I worked hard coding those interviews and writing a paper reporting my findings. I was pleased with the paper, and I was confident that Howard would be, too. When he asked me to meet him at the office on a Sunday morning to go over my paper for an hour before he proceeded to the airport en route to a meeting, I had little trepidation. But I was shocked by what he said. He handed me a long memo and a very marked-up paper and told me that this was not how a scientific paper was to be written. Go back and start all over was the blunt message.

And so I did. Like many of the contributors to this volume, Howard taught me a great deal about how to be a researcher, how to write, how to guide students in their research, how not to cut corners, and how to work within even the smallest moments of free time. These are some of his talents that can be taught. Others are not so easily transmitted. One of these is Howard's ability to listen to a research presentation and ask a question that gets right to the heart of the matter. I remember being at a conference with him in England in the 1980s where he asked a probing and original question after each presentation. That earned him a prize at the end of the conference: a little children's book called "Mr. Clever." Another hard-to-transmit gift is his ability to synthesize a vast array of information. And then there is his prolific generation of new questions and new research directions. Howard's style is not to focus more and more deeply on one research question, exploring it in ever increasing detail. Instead, he always explores an area and then moves on to another. And so over the years his work has ranged broadly—from symbolic development in childhood, cognition after brain damage, arts education, assessment of learning, intelligence, creativity, leadership, and a many-faceted exploration of professional ethics and good work. He certainly would not have predicted at the outset of his career all of the topics he has studied. He has let his work go where his curious mind leads him. And in each explored area, he has been a prescient pioneer.

Howard lives a life of the mind and he lives a mindful life.

While I am not a disinterested party, I think I am right in saying that there are very few minds like Howard's.

Cambridge, MA
September 2013

Introduction

Howard Gardner

The genesis of this publication. As Ellen Winner explains in her foreword, she and Mindy Kornhaber conceived of the Festschrift in 2010, three years before my 70th birthday. While I knew of their plans in general, I was kept completely in the dark about specifics. In fact, so far as I know, the only "outside" person to see the Festschrift before my birthday was my mother, who devoured large sections of it.

On September 28, 2013, two and a half months after I turned 70, Ellen and Mindy hosted the evening party that introduced and celebrated the Festschrift. Most of the contributors were present at the party and some of them spoke to the gathered crowd. The first speakers were my four children—Kerith, Jay, Andrew, and Benjamin—each of whom made good-natured fun of their dad, while also moving me deeply. My grandson Oscar said a few words as well and gave me a t-shirt with the word "Festschrift" adorning the front. My mother was in attendance and was happy to meet many friends, and I was pleased that my sister Marion and her husband Len (a contributor) could be there as well. All in all, it was a night to remember.

As soon as I began to leaf through the two volumes, with their 116 contributions covering over 900 pages, I had two reactions: 1) I wanted to respond to each of the essays; and 2) the contributions and my responses should ultimately be made available to whomever was interested. This has now been done!

Responding and posting took a bit longer than I had anticipated. In October 2013, we celebrated the wedding of Benjamin Gardner and Genie Kim; in November, my beloved mother died, at the age of 102; and then in January, I had long-scheduled cardiac surgery. One dividend of the surgery was that, during the lengthy convalescence, I was able to draft a response to each of the contributors. In March 2014, each of the contributors received my draft response, as well as their original contribution, and was given the opportunity to make corrections. Final editing was done in April and May, and then Das Ding an Sich—"the thing itself"—could finally go to press.

Background: A leaf from my own education as a budding scholar. Any novice trying to learn the ropes is well advised to listen and watch carefully when journeymen and masters are at work. As a beginning doctoral student in social and developmental psychology at Harvard University, in the middle 1960s, I was a dutiful novice. I attended the required courses, read the most widely cited books, went regularly to lectures and colloquia, and listened carefully to how questions were raised and how they were responded to… or evaded! Not surprisingly, it was words, the pauses, and even the grimaces and smiles on the part of the most admired teachers and students that got the most attention—and, indeed, proved the most memorable.

But much as I learned from these formal forums, two other factors proved even more instructive for me personally. Every once in a while, our professors would throw a party, typically after a colloquium, occasionally at their own homes or sometimes at a public setting like a faculty club. On these occasions, we not only met the spouses and children (and other close associates) of the faculty. We also had the chance to eavesdrop and occasionally to participate in ongoing discussions, be they in reference to the topic of the colloquium, an issue currently being debated in the social sciences, or the juicy politics of appointments, promotions, and recruitment of star faculty and researchers from other campuses. Sometimes such informative interactions occurred at parties thrown by the students themselves, typically with less elegance but with more illicit substances on hand. These parties were particularly instructive when they were populated by students of different cohorts, different ages, different disciplines, and, as the sixties became increasingly heated, often widely disparate political and social views.

The other factor is one that had particular impact on me, probably far more so than on most of my fellow graduate students. In the post-World War II era, American and European foundations had sufficient funds, and there was sufficient interest, to bring together noted scholars with overlapping interests for a few days of conversation on topics of mutual concern. The discussions, quite informal, were reported, typed up, circulated, published and, perhaps in a few cases, audio- or video-recorded as well. Nowadays, most well-known scholars are sufficiently busy that it proves a non-trivial task simply to assemble the world's experts on, say, paleontology, climate change, or psychoanalysis.

And thus it was that I found myself poring over the four volumes of Discussions in Child Development (my chosen field) and eavesdropping, so to speak, on discussions back and forth among John Bowlby, Erik Erikson, Baerbel Inhelder, Konrad Lorenz, Margaret Mead, Jean Piaget, J. T. Tanner, and a dozen equal luminaries. (I realize that these are no longer household names, but they were to students and faculty circa 1960.) So often did I read and reread these books that I could actually quote significant passages. (When some years later, I decided to write a history of the cognitive sciences, I was able to avail myself of similar exchanges among the founders of the set of relevant fields: Karl Lashley, Jerry Lettvin, Claude Shannon, Roger Sperry, and John von Neumann.) And by that time, I had come to realize that there was no better education for a young student bent on taking the temperature of a field than to have the opportunity to read exchanges—sometimes heated ones—among individuals who are trying to create, define, build up, promulgate, or corral a field of knowledge.

How to approach this Festschrift. As the etymology of the word implies, a Festschrift is originally a collection of writings (Schriften) in the German language to celebrate (Fest) the career of a scholar whose career is at or near an end. (Nowadays in the U.S., the term often extends as well to a celebratory dinner to honor the senior scholar, as happened in this case on September 28, 2013.) Typically, these collections contain 12-24 serious scholarly pieces. Often the honored scholar responds, and the resulting texts are then preserved or published in one form or another. Very occasionally, the subjects of the Festschrift, or the contributors, are of such excellence or prominence that the Festschrift itself becomes a collector's item. I can think of a few examples that come close to that honorific. But for the most part, the volume fails to cohere, and the Festschrift is honored more in the breach than in the observance (or reading or referencing).

Ellen and Mindy never had in mind the classic "20 articles by one's closest peers" model of the Festschrift. Rather, in what may well have been an original, if not unique, ploy, they instead approached over 100 of my closest colleagues, collaborators, students, and mentors, as well as a smattering of friends with whom I happened to share common scholarly or artistic interests and who have known me for a long time (sometimes stretching back five decades).

Other than adhering to deadlines—which extended over a three year period—writers were given free reign. By my very rough count,

about 20 contributions were primarily personal; fifteen more were largely personal but attempted as well to scan a large proportion of my life. Most of the rest could be roughly classified in terms of the themes which constitute the preoccupations of my own lengthy and quite scattered scholarly life: Creativity, Arts and Music, the Brain, Cognitive Development, Leadership, Multiple Intelligences, Good Work, and—the largest if most amorphous category—Education. Finally, there were about a dozen essays which did not fall, even roughly, into one or more of these categories. Sometimes the most interesting, and involving the greatest stretch on my and the reader's part, I have (in my mind) categorized these outliers as "Other."

One big surprise: I was not prepared for the number of essays in which my personal relation to the writer, and vice versa, took up so much space. This is quite different from most Festschrifts, where, Teutonic style, the personal is deliberately underplayed; it is a bit more like the aforementioned published accounts of the post-World War II groups, where personal ties and allusions were often significant. Indeed, this may be one of the first Festschrifts on record where the impact of the subject occurred as frequently through his persona and his modeling as through his words, ideas, discoveries. Indeed, nearly every essay has a few personal comments, just as nearly all of them also touch on one or more aspects of my scholarly work.

The focus of most Festschrifts is not difficult to identify. That's in part because of the editor, who might ask the contributors to focus on, say, "Gardner on Education" or "Gardner on Intelligence." It may also be because the author himself is so well known for a certain theme that disparate individuals readily converge on that topic. I have in mind one colleague who has studied metaphoric and analogic thinking for forty years, another who has spent an equivalent time focused on how young people think about their own intellectual processes.

I can be properly accused of many things, but having a single "hedgehog" mind is *not* one of them. I love to move on to new topics, and, to be frank, I get bored when I am covering ground that is already familiar to me. (In this, I resemble my own teacher Jerome Bruner and my close friend Georg Klein, both represented in this volume.) Also, more than being either a humanist or a scientist, I think of myself primarily as a *synthesizer*: one who desires to learn about a new topic or field, surveys it broadly, and then tries to put it together in a way that makes sense to himself and, he hopes, to others as well. If one looks over the

shelf of books that I've authored, several of the works are best described as syntheses: a developmental psychology textbook, a study of structuralism, a history of the cognitive sciences. Even when the work purports to be original or to put forth a new angle, I typically spend much of my time and space synthesizing what has already been thought and written—say, on intelligence, creativity, leadership, or the human virtues of truth, beauty, and goodness.

This breadth of interests has been fun for me, and I would not for a moment want to exchange my loose "fox" cloak for the armor of a "hedgehog." But it can cause confusion for others. I remember early in my career being approached by a friend who said, "Howard, do you know that someone with your name has just written a book about what it is like to suffer damage to the brain?"

I smiled for a moment and said, "Larry, I'm afraid that's me."

For the same reasons, I often seem somewhat out of place when I am in the company of individuals, all of whom have spent their scholarly lives on a single topic (like intelligence), or within a single discipline (like cognitive psychology), or doing a specific kind of research (experiments or surveys or philosophical analysis). At such times, in an effort to comfort myself and perhaps amuse others, I quip, borrowing a phrase from experimental design, "Oh, I am just a member of the control group." So here we are, with well over one hundred quite disparate entries, ready for you and others to sample. How best to organize these pieces?

Ways of Organizing. Being a systematizer, I devoted a great deal of thought to how best to order these 116 contributions, each *sui generis*. I could have done it by noting the moment when I first knew the person (though memories of "first encounters" differ, sometimes even substantially), the nature of our relationship, the substantive theme of the essay, or what or how much I felt I could say in response. I could even use an app that counts words and phrases and organize the volumes around the most dominant clouds on the horizon—e.g. Howard, Intelligences, Mentor, Project Zero.

But I then realized that, for perhaps the first time in history, there is no need to make a single unequivocal classificatory decision. Because of programs that can classify and reclassify entries, one can read and access the 116 exchanges here along as many lines as possible—for example, by age, gender, relation to me, major topic of the essay, how scholarly it is, or whether it addresses my work directly or is, so to

speak, standing on its own feet. One can, if one chooses, read all the entries by individuals whom I have mentored, all the entries on creativity, or even, if you want to be diabolical, all the essays by women with a primary interest in the visual arts. Just give the Fest roulette wheel the proper spin.

Put differently, let one thousand classificatory schemes bloom—and you can be the classifier… or the gardener!

Being freed of the editorial burden of imposing a single, super-classificatory system, I've decided to revert to the first one that I'd learned in school: the alphabet. And in keeping with the spirit of those conversational volumes from which I learned so much as a student, I am expressing my responses directly to the authors in the second person. I hope we can continue a set of conversations with the contributors to the Festschrift, in one way or another, for many years to come, and, given the genius of digital media, the conversation can even be continued by others, as was sometimes the case with the collections on conferences that took place in the middle of the last century.

A Personal Motive. Let me confess one motive for making public these contributions and my responses. It can be seen as a selfish one, though I hope the motivation is not *only* selfish. I believe that the kinds of exchanges that I've had over the decades with students and colleagues have become an increasingly rare if not endangered species. In making available these exchanges—extending well over 1000 pages—I want to give a feeling for what it was like to live and interact in a scholarly community, which is also a community of human beings, during the last decades of the 20th century and the first decades of the new millennia.

Rest in Peace. Since contributing to this Festschrift, four individuals—Elliot Eisner, Richard Heffner, Jonathan Levy, and Bennett Reimer—have died. We mourn their passing. Because I believe that dialogue can continue in some fashion, even after the participants have died, I respond directly to these contributors in what follows.

Last, but also First. Ellen, we have worked together for over 40 years and have been married for over 30 years. Inviting you into my life—first as keen researcher, then as beloved wife—are the two smartest decisions that I've ever made. They are decisions about which I've never had second thoughts, a remarkable realization in itself.

One of the things about such wondrous relationships is that one continuously learns new things. Even though we have designed and

discussed scores of studies and pored over hundreds of manuscripts over the years, I continue to be educated and by edified by what you think and how you put it into words… and realize it in the design and interpretation of ingenious experiments.

You have been and continue to be an inspired mother to our son Benjamin (now married to Genie), and a wonderful step-mother to Jay (and Jeanne), to Andrew (and Vanessa), and to Kerith (and Michael). And whether they call you "Grandma," "Oma," or "Ellen," no grandchildren are more loved, and more loving, than Oscar and Aggie.

And no husband is more fortunate than I am. When you and Mindy broached the possibility of a Festschrift, I was pleased and flattered. I did not have the faintest idea that you would work tirelessly for close to three years to bring to fruition the most remarkable set of scholarly tributes I've ever seen… and then, with Kirsten Adam's and Danny Mucinskas's help, choreograph an unforgettable evening, with delicious food, toasts that were witty and moving, and a set of artful posters documenting my personal and professional lives. Those posters and some photographs of the evening can be seen on my website (howardgardner.com).

"In sickness and in health." When one utters the marriage vow, most of us do not think much about what it means to be sick or to care for the sick. Early in 2014, I had two surgeries—one planned, one emergency. Though I had excellent medical care, my recovery periods were bumpy and lasted a long time. You were the best doctor, the best caretaker, and the best support that I could ever have envisioned. As I have said or written to dozens of people, "I don't know how anyone survives cardiac surgery without Dr. Winner on the case." You cared for me for months, 24 hours a day, seven days a week, tirelessly and lovingly. Should the situation ever be reversed—and I pray it will never be—I hope that I have learned lessons from you and that I can provide at least a fraction of the love and support that you gave unstintingly.

An introduction to a Festschrift should end on a celebratory note. Ellen, we have spent decades together in an amazingly wondrous relationship, more than I deserved and more than I can ever convey in words. And so, lifting the fullest of glasses imaginable, I toast you with profound gratitude and infinite love.

Cambridge, MA
May 2014

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The Busiest People...

Kirsten Adam

I'll never forget a comment made by a former Project Zero colleague when I was transitioning from a summer intern to a faculty assistant in Howard Gardner's office. She was describing the fast pace and heavy workload that Howard often juggles and quipped, "To be honest, I'm not even completely sure he sleeps—we think he might actually run on batteries!"

After the first week of working in Howard's office, I knew what she meant. At any given time, Howard is working on a new book—or two—and probably a dozen or so articles. Each week, he's managing his many research initiatives and reviewing their findings and reports—checking in on tasks big and small while offering advice and support along the way. He does this between more meetings in a day than most people have in a month, endless speaking engagements, and traveling more weeks than not.

Howard is a strong proponent of citizenship and certainly "walks the walk." He rarely misses a senior faculty meeting, always makes it a point to attend community events when he's on campus, and actively serves on a number of boards and research networks including, but not limited to: Amherst College; The American Philosophical Society; Youth, New Media, and Citizenship at The Institute for Advanced Study; Youth & Participatory Politics Network at Mills College, and The Museum of Modern Art. Almost every month he sets aside time to travel to at least one of these meetings. Even when there is a last minute paper or report to read, Howard is always entirely prepared and eager to contribute.

Many people seek Howard's advice, wisdom, and involvement. You might think that someone who is so busy would decline many of these requests, but that's where you would be wrong. Even with all of the demands on his time, Howard always gives his best effort to help those who reach out. On average, Howard sends and receives about 2,500–3,000 emails each month from students, researchers, parents, school officials, members of the press, and many others. He thoughtfully reads

and responds to each invitation and question. Typically, a response is sent out within the hour.

Every one of his advisees has remarked at how quickly and carefully he reviews their work—be it three pages or 300 pages. He is always the first person to send feedback, and it's always the most thorough. When master's students drop off their final papers for his GoodWork course, they are often compelled to tell me how much more went into that work compared to any other course they have taken, and more importantly, how much they learned from the process.

I've learned many lessons over the years from working with Howard. His energy and commitment to excellence, engagement, and ethics is contagious. He is a true professional and the embodiment of GoodWork. I know that no matter where life leads, I will always remember where the bar has been set and be thankful for the mentor who set it.

Howard's Response to Kirsten Adam

In many ways it is appropriate to begin this conversation with you, Kirsten, quite likely the youngest contributor to this volume. I first became aware of you in the mid-2000s, when, as an undergraduate studying psychology at the University of Massachusetts, Amherst, you served as an intern at the Harvard Project Zero Summer Institute. As I recall you were pleasant and helpful, but it did not occur to me that you might soon be applying for a job as my office assistant. Recommendations were positive, especially from people who knew you from your volunteer stints at Project Zero, but also from a New York City law firm where you had performed paralegal work for a year, and I happily hired you.

Fast forward almost five years, October 2011: I am in Spain, with my family, feeling incredibly frustrated. Work at home of all sorts keeps piling up and I feel less and less able to handle it. I am desperate! At almost the same moment, my daughter Kerith (a seasoned university administrator) and I come up with the same solution: "Kirsten should become my Chief of Staff!"

Harvard bureaucracy being as slothful as one can possibly imagine, this change in title and status was more difficult to achieve than to conceive. Suffice it to say that for the last two years, you, Kirsten have not only been in charge of our small office, but have also become a major member of our principal research endeavor focusing on the topic of "liberal arts and sciences in the 21st century."

Kirsten, I appreciate your statement that you have learned things sitting and standing by my side and at sitting alongside more senior colleagues. But only someone close to the situation could appreciate two other things: l) the incredible speed and skill with which you have picked up the dozens of roles and skills needed by a high level academic and administrator in the current fast changing university environment; 2) the many lessons about human understanding and human interaction that I've learned from you.

Call it interpersonal intelligence, call it empathy, call it 'saechel,' or intuition, or Fingerspitzgefuhl; indeed, I was going to call it "Adam intelligence" but somehow that has the wrong connotations! You have an incredible capacity to know how to maneuver in a complex open-ended

situation to bring about the best possible effect. (I refer here to human situations but, as a bonus, you are also a technical whiz, who can face nearly every computer challenge as an equal). And even in cases where I might know, notionally, what needs to be done, it is you, Kirsten, who is able to bring it off, almost always successfully. I truly don't know where you have acquired that finesse (perhaps we should write a book about it!), but if you were inclined to bottle and sell it, you could finance your wildest dreams.

Big C, Little C, Howard, and Me: Approaches to Understanding Creativity

Teresa M. Amabile

About 20 years ago, I had the pleasure of attending a small conference on creativity convened by Howard Gardner and David Perkins at the Harvard Graduate School of Education. It was an intense weekend, with many deep, wide-ranging discussions on the nature of creativity, approaches to studying creativity, and the possibility of stimulating or facilitating creativity. I no longer recall all of the topics, or even all of the conference attendees, but one conversation stands out in my mind. It had started with the group considering progress in creativity research over the previous decade, trying to look into a future for the field that we would—we hoped—be instrumental in fashioning. Howard made an eloquent and impassioned statement about the importance of focusing on truly eminent creative individuals, like Freud and Picasso. I spoke just as passionately (though, I'm sure, less eloquently) about how crucial it was to understand more ordinary levels of creativity, like the work that produced the new theories, paintings, songs, and medicines making their appearance each year.

Although we weren't using these terms, Howard was talking "Big C" creativity, and I was talking "Little c." In the realm of scholars thinking about what makes people more or less creative, he was focusing on the "more"—the forces operating on people who are more highly creative, over time, than anyone else. I was focusing on the "more or less"—the forces that can make any individual more or less creative in a given moment.

The question that nagged me that day, and nags me still, is whether we were talking apples and oranges. Does it make sense to call both "creativity"? Is there a single underlying process? What sort of understanding could each approach provide, and could they ultimately yield similar—or at least complementary—answers? My aim in this essay is to explore these questions and, I hope, offer some new insights. In the process, I aim to highlight some of the astonishing contributions that Howard has made to our understanding of this most astonishing form of human performance.

Howard Gardner's "Big C" View of Creativity

In his 1993 masterpiece on creativity, *Creating Minds*, Howard defines creative works as "the small subset" of works in a domain that are ever deemed to be "highly novel, yet appropriate for the domain" (p. 38); these works "actually cause a refashioning of the domain." Howard's massive study, reported in that book, focused squarely on the creative individual as the primary unit of analysis, with "creative individual" defined as "a person who regularly solves problems, fashions products, or defines new questions in a domain in a way that is initially considered novel but that ultimately becomes accepted practice in a particular cultural setting" (p. 35).

Howard did a deep, nuanced exploration of the life and creative work of each of seven individuals who, unquestionably, refashioned their domains (that is, their disciplines or arenas of practice): Sigmund Freud, Albert Einstein, Pablo Picasso, Igor Stravinsky, T. S. Eliot, Martha Graham, and Mahatma Gandhi. Howard began with "focused biography," reviewing multiple sources for the basic storyline of the individual's entire life, but intensively examining periods during which the individual was conceptualizing, fashioning, and experiencing reactions to his or her most important works. Applying his primary lens of cognitive developmental psychology, but informed by historical, sociological, biological, epistemological, and other psychological perspectives, Howard created rich tapestries of creative lives. Woven throughout these tapestries, we see Howard's analyses of the psychological, social, and cultural forces that appear repeatedly in these lives—and, occasionally, distinguish these lives from each other. His analyses are dynamic and complex, informed by and contributing to a grand organizing framework.

Clearly, Howard's view is a Big C view of creativity, and his approach is a Big C approach. He writes, "There is a sense—for which I do not apologize—in which this study of creativity reflects the 'great man/great woman' view of creativity," (p. 37). Like most scholars working in the field, he uses novelty and appropriateness as the hallmarks of creative work. That is, when viewed by the domain experts who constitute a particular field, a creative work is seen as both novel and valuable. Where Howard stands out—though he does not stand alone—is in his focus on the very highest levels of pioneering achievement within a given domain. Howard writes admiringly of Howard Gruber's deep studies of how eminent individuals, such as Charles Darwin, developed

path-breaking ideas over long periods of time. Gruber's approach is the model on which Howard builds his study.

This approach bears an enormous methodological advantage: In terms of creativity assessment, it is the firmest ground upon which a creativity scholar can stand. There is no *need* to be concerned with assessing creativity if you focus on what Howard calls "*unambiguous* instances of creative processes, as embodied in the behavior and thinking of productive artists, scientists, and other workers" (p. 22). His ambition, one that I believe he largely achieves, is to produce not only fascinating individual cases but also "generalizations that can elucidate creativity within and across domains" (p. 27). Howard proposes that the deep study of *widely-recognized* creative individuals, whether by his method or by historiometric studies of the socio-cultural forces operating on large numbers of such individuals across history, are the approaches most likely to yield deep insights into creativity.

My "Little c" Approach to Creativity

In contrast to Howard, I am *very* concerned about assessing creativity. That's because I try to understand the social-environmental forces that, in a relatively short period of time, can dampen or enhance creativity. This necessitates a "Little c" approach to creativity—or at least it rules out a true "Big C" approach—because my research team and I are extremely unlikely to be there to observe the day-to-day or moment-to-moment fluctuations in the creative output of the world's great men and women.

Like Howard, I define creativity as appropriate novelty that is recognized as such by people knowledgeable in a domain. As in Howard's view, the task or problem must be open-ended, such that no path to the end point is readily apparent, and there must be an observable idea expressed or product generated. Unlike Howard, I explicitly assume an underlying continuum of creativity for work in any domain of human activity, from quite modest through globally-acclaimed "genius" levels.

I assume that, at the highest levels of creativity (that is, the pioneering levels of novelty that turn out to have value for a domain), novelty is much more readily identified than appropriateness. It's seldom difficult for experts to see that something is radically different from what's been done in a given domain. However, getting domain experts to agree that a radically new contribution is truly valuable is much more

difficult, often requiring the test of time. In my research, I circumvent this problem by asking experts to assess the relative creativity levels of less radically new works, produced by non-eminent people. This consensual assessment technique (CAT) for the operationalization of creativity has been used by many creativity researchers since it was first published in 1982.

Interestingly, my own journey to understand creativity, which started in the mid-1970s, began with immersion in the lives and works of great men and women. As a graduate student in psychology at Stanford, I spent days in the library stacks pulling out books that might help me understand the everyday psychological experience of doing creative work, from the perspective of those who had actually done such work. I realized that if I didn't see a force operating on the creativity of these individuals, I would be hard-pressed to claim that it illuminated anything important about creativity more generally. Reading the autobiographies, letters, journals, biographies, and other material on people like Albert Einstein, Pablo Picasso, Anne Sexton, Sylvia Plath, and Pablo Casals seemed like the obvious place to start.

Given my training as a social psychologist and my interest in motivation, I was fascinated when I discerned a phenomenon in these materials that, as far as I could tell, had not been treated systematically in the psychological literature. The immediate social environment appeared to influence the quality and novelty of output—as well as the sheer volume of output—of even widely-recognized creative individuals, across relatively brief periods of days, weeks, or months.

For example, as Howard notes in *Creating Minds,* Albert Einstein had a "vexed relation to formal education," exhibiting a "strong dislike of the regimentation that characterized most German schools at the time" (p. 91). In 1975, when I first read Einstein's own writing about his life and work, I was struck by certain incidents he described at a particularly militaristic school in Germany. There, the pressures to regurgitate material learned by rote, for final examinations *in science*—the domain he had loved since pre-school years—had a profoundly negative effect on him. As I quote Einstein in my 1983 book (p. 7), "This coercion had such a deterring effect upon me that, after I had passed the final examination, I found the consideration of any scientific problems distasteful to me for an entire year." I found numerous examples that seemed similar, across the writings of and about eminent creative people across domains.

Motivation appeared to be especially affected, in a negative direction, by the types of external pressures that Einstein described. In particular, intrinsic motivation—the drive to engage in an activity of one's own volition, one's passion for the subject, appeared to erode under strong external inducements or constraints. This observation led me to formulate a hypothesis about one previously-unrecognized force that could, potentially, affect the ability of *any* individual to produce novel, appropriate work. I called it the *intrinsic motivation hypothesis of creativity*: People will be most creative when they are motivated primarily by the interest, enjoyment, satisfaction, and challenge of the work itself—and not by external pressures or inducements.

My desire to understand whether, and under what circumstances, the intrinsic motivation hypothesis might describe reality—and a desire to nail down the *causality* it implied—led me to experimental methods and, necessarily, to a Little c approach to studying creativity. For example, in one experiment I published with Beth Hennessey and Barbara Grossman in 1986, we examined the effect of rewards and choice on the artistic creativity of undergraduates. A simple 2 x 2 factorial design was used, in which participants were either offered or not offered a monetary reward for making a paper collage, and they were either given choice or no choice about doing the collage activity.

Notice that the crossing of reward and choice altered the meaning of the reward. In the reward-choice condition, where participants were essentially asked to enter into a contract with the experimenter in order to obtain the money ("Are you willing to make a collage for this monetary payment?"), we expected the external inducement to undermine creativity. In the reward-no choice condition, by contrast, there was no such inducement. The reward was simply a bonus that participants were given in return for the collage activity and, thus, we expected no creativity decrement below the no reward-no choice condition. This pattern is, in fact, what we found. Moreover, across all conditions, expressed enjoyment of the collage activity (a key aspect of intrinsic motivation) correlated significantly with creativity.

As in all of the experiments I conducted with my students and colleagues, the CAT was used; creativity was assessed by judges knowledgeable in the domain (in this case, artists). Because their independent ratings showed acceptable inter-rater reliability, the consensus (mean) creativity ratings were used as the dependent variable.

This, and several other experiments we conducted in those early years, supported the intrinsic motivation hypothesis—which, eventually, re-dubbed the "intrinsic motivation principle of creativity."

Although I recognized that the primary shortcoming of this research lay in its external validity, I gained confidence from its strong internal validity in identifying causal effects of the social environment on creativity, and from its reliance on the expert assessment of actual products.

Still, as I carried out this research over the 1970s and 1980s, I read, admired, and learned from Big C approaches like that of Gruber, used examples from Big C creators in my writing, and believed that Big C researchers and I were studying the same phenomenon at very different levels. In reading these Big C studies, I saw, repeatedly, the importance of passion—strong, abiding intrinsic motivation. I also found hints about the social-environmental factors that might undermine creativity, which I conceptualized as ways to "kill creativity." These gave me ideas for independent variables to study in my quest to investigate the intrinsic motivation hypothesis of creativity, variables in addition to contracted-for reward—such as expected evaluation, surveillance, competition with close peers, and constrained choice in how to do an activity.

In my empirical research during those years, I focused my investigations on the act of creating something and the social-environmental forces operating in the immediate situation. I didn't even try to examine the larger social/historical context, as Howard ended up doing. My interest lay in deeply probing one aspect of creativity: the effects of the immediate environment on individuals engaged in work that allows for creativity—particularly, the effects of extrinsic motivators and constraints.

More recently, leaving behind—or, at least, going beyond—experimentation, I've tried to delve deeper into the impact of the immediate environment by looking at day-by-day influences on the psychological state and the work of people explicitly *aiming* to be creative in a profession. Inspired by the Experience Sampling Methodology (ESM) developed by Howard's collaborator, Mihaly Csikszentmihalyi, I realized that new discoveries could be made by "eavesdropping" on people's psychological states in the real world (in contrast to manipulating psychological states in artificial laboratory settings). With my research

team, I developed a method for assessing daily psychological states, and unobtrusively "trapping creativity in the wild."

The method involves sending daily electronic diary forms to study participants, each work day, during the course of a creative project they are doing within their organization. (A "creative project" is defined as one for which a successful outcome requires novel, appropriate ideas.) The form contains scale-rated items assessing that day's emotions, intrinsic and extrinsic motivation, and perceptions of the work environment. It also contains an open-ended item asking participants to briefly describe one event from the work day that stands out in their minds. Importantly, participants were not told that the study focused on creativity or that we were interested in hearing about their creative ideas. This method yielded nearly 12,000 days of diary reports from 238 professionals (such as R&D scientists, marketing specialists, and product designers) working on 26 creative projects in seven companies in three industries.

Additional data include various performance measures. Creativity was assessed consensually, through ratings of each participant's work by colleagues and supervisors. We also obtained a quasi-behavioral measure of creativity by coding as "creative thinking" any participant's mention of having solved a complex problem or come up with a promising new idea on a given day.

This research program has yielded new insights about creativity and about the psychology of everyday work life. We still define creativity as novel, useful ideas in a domain, but now we understand more about how creativity happens—and how it gets impeded—day by day. Specifically, we determined that creativity is enhanced not only when people experience stronger intrinsic motivation, but also when they experience more positive perceptions and emotions. For example, in one set of analyses, we discovered that people are not only more likely to produce creative ideas on a day when they are experiencing more positive affect (relative to their own baseline affect), but they are also more likely to produce creative ideas the next day—even taking into account the next day's affect. Moreover, by coding all specific events described in the diary narratives, we discovered *the progress principle*: Of all the events that distinguish the days of most positive psychological experience (most positive affect and work environment perceptions, and strongest intrinsic motivation), the single most prominent is simply making progress in

meaningful work. This progress principle applies even for incremental steps forward—"small wins," in the terminology of Karl Weick.

This recent work does move out of the realm of true Little c creativity. But, still, the creativity my colleagues and I "trapped" is not likely to make any of its creators eminent. Of the few hundred instances of creative thinking that we identified in the 12,000 diaries, only one could be considered a breakthrough—something that revolutionized its industry. So, it's not Big C creativity. I guess it would be "Middle C," or what James Kaufman and Ron Beghetto call "Pro c"—professional creativity that is above the level of "garden variety" Little c, but below the level of truly eminent Big C.

In all of the work I've done, my fundamental assumption has been that I'm illuminating something essential about creativity, from the most modest levels of creativity I studied in the lab, to the higher levels of creativity I studied in R&D scientists and other professionals, to the Big C creativity dissected by Howard. I have always believed that, by triangulating from different empirical approaches to questions of creativity, across all levels, we would better approach a deep understanding of this fascinating human act in all its complexity.

Why the Different Approaches?

I don't know why other creativity researchers have taken the Big, Little or Middle C approaches, but I believe I have some insight into why Howard and I have taken our different paths. Drawing on what Howard says about his own journey in his Preface to *Creating Minds*, my conversations with him over the years, and … well… my rather close knowledge of my own history, I will sketch a quick portrait of the forces influencing each of us.

Howard loved to read about history, culture, and art as a kid. I loved reading about science and doing experiments on things like plant nutrition in the basement of my childhood home. He is trained as, and spent years working as, a cognitive developmental psychologist; the "symbol systems" (to use his term) of that discipline invoke continuity and change in cognitive processes across long periods of time. My discipline is social psychology, the central focus of which is understanding the influence of the social environment on individual psychological states and behavior.

Howard thinks big. His ambition, it appears, is nothing less than illuminating the complexity of the human mind. By my rough count, something like 75 percent of the 20 or so books that he has solo-authored include the word "mind" in the title. (Let us pause for a moment to reflect on that remarkable accomplishment—20 substantive solo-authored books, in addition to several co-authored books.) The framework that Howard presents in his 1993 creativity book is big, too. It includes the cognitive-developmental view, with an overlay of what Howard and his colleagues call an "interactionist perspective"—a perspective articulated in a 1988 chapter by Mihaly Csikszentmihalyi. This perspective uses an interdisciplinary lens, with its proponents insisting that creativity can only be understood as an interaction between individuals, the domains in which they are working, and the field that consists of experts in the domain. This is truly a complex-systems approach to creativity.

In contrast, I have written many more articles than books, and many of those articles have a phrase like "The effect of _____ on _____" in the title. I enjoy looking at something that I can hold in my empirical hand and put under my metaphorical microscope. Howard enjoys opening his arms wide, trying to grasp a phenomenon at its most complex, even while acknowledging that it's not something to be completely grasped.

I love elegant simplicity, believing that we can build toward complexity when we understand key mechanisms. Howard loves confronting complexity head on, holistically, in all its messy glory. He described the trade-off beautifully when he said, in a 1988 chapter, "By adopting a holistic approach, one encompasses creative phenomena at their full level of complexity—yet at the cost of spurning methods that are more rigorous but less encompassing."

Summarizing the Contrasts (and the Similarities)

So far, I have been focusing on the contrasts between Howard's approach and mine. Table 1 summarizes them. I think of these contrasts as falling into four overlapping categories: overall focus (on the macroscopic versus the microscopic); level of creativity examined (highest versus low-to-moderate); view on the distribution of creativity in the general population; and methodological approach.

But there are fundamental similarities in our approaches, as well. For both of us, creative work is defined as novel and appropriate. We both aim to discover generalizable principles. We both insist that creativity judgment is culturally and historically bound, with the object of judgment being a work or body of works, and we both require that there be consensual agreement on creativity by individuals knowledgeable about the domain in which the work was produced. For this reason, we both eschew paper-and-pencil creativity tests. Both Howard and I maintain that creativity is domain-specific, depending on special talents, skills, training, and experiences that individuals may or may not have in a given domain of endeavor. Nonetheless, I believe that, increasingly, the highest levels of creativity are being demonstrated by individuals who integrate expertise across seemingly disparate domains. I think Howard would agree.

Table 1: Contrasts between Howard Gardner's and Teresa Amabile's Approaches to Studying Creativity

Howard Gardner's "Big C" Approach	Teresa Amabile's "Little c" Approach
Pathbreaking creativity, at the frontiers of a domain, recognized by knowledgeable people as outstanding—surpassing (in novelty and appropriateness) all or most others in the domain	"Garden variety" creativity, where one non-eminent individual's work product is viewed by knowledgeable people as more or less creative (novel and appropriate) than others', on a given task in a given domain
Focus on person as the unit of analysis	Focus on product as the unit of analysis
Macroscopic panoramas: the entire phenomenon and all its influences, across the lifespan	Microscopic close-ups: social-environmental influences across brief periods of time
"Holistic" approach	"Normal science" approach
Categorical view; implicitly assumes that only some (a very few) are creative in any domain	Continuum view; assumes all humans with normal capacities are capable of some degree of creativity in some domain
Social environment conceived as particularly important people playing a role in the development of a creative person's life and work	Social environment conceived as any people influencing the individual in the immediate situation
Broad insights into a few outstanding individuals, and the most remarkable new, appropriate ideas in the world	Narrower insights into many individuals, and most new, appropriate ideas in the world
No need for a creativity assessment method	Need for a consensual assessment method for identifying degrees of creativity in products
Frequently uses the term "creative person," applying it only to those who regularly produce work widely recognized as creative	Agrees with Gardner's definition of "creative person." But seldom uses the term "creative person," because many take it to mean that a person produces novel, appropriate ideas in all activities, all domains. Moreover, many use the term colloquially to describe eccentrics.

Other creativity scholars with whom Howard and I have worked, and/or who have influenced us in notable ways, vary considerably in their approaches. Not surprisingly, the colleagues with whom Howard has had most of his creativity discussions, Mihaly Csikszentmihalyi and David Feldman, tend toward the Big C viewpoint. The 1994 creativity book that the three coauthored, after a decade of discussions, is entitled *Changing the World*. In it, they define their focus on creativity "as the achievement of something remarkable and new, something which transforms and changes a field of endeavor in a significant way" (p. 1). I should note, however, that, in that same paragraph, the three admit the validity of other views on creativity. Moreover, the writings of Csikszentmihalyi, Feldman, and Howard's other close colleague, David Perkins, suggest a view that encompasses other levels of creativity, as well.

My closest creativity-research colleague, Beth Hennessey, has made notable contributions studying the Little c creativity of children. Others with whom I have published creativity papers, including Karl Hill, Regina Conti, and Colin Fisher, have also focused on non-eminent levels of creativity. Dean Keith Simonton and Robert Sternberg, who have influenced both Howard and me, differ in their perspectives. Simonton uses data on Big C creative individuals for his historiometries, while Sternberg's creativity studies have used ordinary people as subjects. I think it's safe to say that the vast majority of empirical scholarly papers (and books) on creativity take the Little c or Middle c approach.

I contend that the Big C and Little c approaches really illuminate different aspects of the same thing. But is this a reasonable view, when there are such obviously yawning gaps between the creativity of the collages that Beth and I have had our subjects make and even the least celebrated of Pablo Picasso's artworks? I think it is. A horse on a treadmill will help make the case.

A Reconciliation: The Horse on the Treadmill

I have always believed that Howard and I were studying the same phenomenon. I'm not sure he would agree. But I think that, if pressed, he might. There are hints, in his own writings, of a fundamental belief in an underlying continuum of creativity. Consider a statement from a chapter he wrote in 1988 which, on the face of it, denies the utility of studying anything but Big C creativity. He said that scholars should first

"develop a framework by which one can adequately conceptualize lifetime achievements of the magnitude of Freud's. We can then determine if it is possible to lower our sights […] still retaining what is integral to the processes of creativity […]" (p. 299). This statement at least holds out the possibility that, to Howard, the same processes may describe both lower and higher levels of creative work. In other words, I am hopeful that a reconciliation of our Big C—Little c views is possible.

How might a continuous underlying process give rise to qualitatively different outcomes? Research on dynamical systems shows how this is possible; I think the analogy to creativity is apt. The specific system in this analogy is that of a horse on a treadmill. The observable gait of the horse is analogous to the observable level of creativity in a product; the treadmill, which increases its speed in a continuous manner, is analogous to the underlying continuum of creativity. When the treadmill begins moving slowly, the horse walks. At some point, the speed of the treadmill becomes fast enough that the horse's movements become qualitatively different; the horse is now trotting. At some later point, the horse breaks into a canter and, finally, a gallop. A continuous, quantitative change in the speed of the treadmill has produced qualitatively different gait patterns in the horse.

If the system is complex enough, and the creative process is undoubtedly very complex, it is possible for the distribution of actual products in a domain to be highly skewed. In this distribution, nearly all products in a domain would exhibit no or low levels of creativity and, as levels of creativity rise, dramatically fewer products appear. Even between high levels and the very highest levels, there would be large apparent gaps in the quality of the products. Big C creativity might look like a different thing from Middle c or Little c creativity—just as a gallop is quite a different motion from a canter or a trot—but both arise from quantitative changes in the same underlying process.

This conceptual reconciliation of the Big C, Middle c, and Little c approaches can be complemented by observations that the different approaches have, indeed triangulated on some of the same insights into creativity. I'll describe two.

First, all of these approaches have revealed the central importance of intrinsic motivation for creativity—with moderate (or higher) levels of interest being necessary for Little c creativity, and driving passion (even

obsession) necessary for Big C creativity. I have already reviewed the evidence for the intrinsic motivation principle of creativity, which arises from both experimental research in laboratories and non-experimental research in organizations. Howard's 1993 book documents the central role of intrinsic motivation for the work in the lives of his seven creators. Using a construct described in Csikszentmihalyi's 1990 book *Flow*, he invokes the importance of the highly desirable "flow state." He says, "In such intrinsically motivating experiences, which can occur in any domain of activity, people report themselves as fully engaged with and absorbed by the object of their attention. [...] Such an analysis helps explain why creative individuals continue to engage in the area of their expertise despite its frustrations [...]" (pp. 25-26). In describing the domain interests of the creative individuals who are his objects of study, Howard uses terms such as "consuming" and "intoxication." He even finds evidence of slow periods in creative individuals' work lives, when their creative productivity slowed down from a gallop—possibly due to social-environmental influences on their intrinsic motivation.

A second discovery common to all of these levels of analysis is the importance of a supportive environment. My research on the work environments conducive to creativity within organizations suggests that key elements include supportive supervisors (who, for example, allow autonomy in deciding which problem-solving avenues to pursue and provide both the resources and the time necessary to seek out new solutions) as well as supportive colleagues (who, for example, are open to new ideas at the same time that they engage in vigorous debate of those ideas). One of Howard's discoveries in his study of creative individuals concerns the affective and cognitive support needed around the times of their major breakthroughs. Along the affective dimension, "the creator is buoyed by unconditional support" and, along the cognitive dimension, "the supporter seeks to understand, and to provide useful feedback on, the nature of the breakthrough" (p. 385). For Freud, for example, this role was played by Wilhelm Fliess. For Picasso, it was played by Georges Braque.

I believe that, if we—as a field of creativity researchers—can continue to approach the phenomenon from multiple levels of analysis, we will move closer to capturing it both comprehensively and rigorously.

Howard's Contributions

It is difficult to overestimate Howard Gardner's contributions to intellectual discourse around the world over the past 40 years. His research and writings have had a significant impact on multiple fields, including cognitive-developmental psychology, education, ethics, and creativity. Surely, his name will be among any list of the most influential thinkers of the late 20th and early 21st centuries.

His contributions to the field of creativity alone are immense. At a deep level, he has furthered our understanding of the special (and perhaps unique) combinations of talent (intelligences), acquired expertise, passion, work ethic, personality traits, and personal circumstances that have yielded some of the most universally acclaimed creative works of the modern era. His insights span domains and cultures.

Howard has influenced my own creativity research and writing in a number of ways. *Creating Minds,* his 1993 masterpiece, convinced me that the undermining of intrinsic motivation by the social environment is less likely for Big C than for lower levels of creative productivity. I infer that this may be due to a simple depletion effect; Big-C creatives start out at a higher level of passion for their work, making it less likely that ordinary extrinsic motivators and constraints will seriously damage their intrinsic motivation and creativity. This insight, combined with my own continuing research on the intrinsic motivation principle, led me to refine that principle in my 1996 book, *Creativity in Context*. Specifically, in a paper published the same year as Howard's book, I identified a "motivational synergy" process whereby increases in certain extrinsic motivators, such as tangible rewards, could add to (rather than detract from) intrinsic motivation. An empirical discovery that my students and I made around the same time, that intrinsic motivation has a stable, trait-like aspect as well as a state-like aspect, dovetailed with Howard's observations on high-level creators and led me to refine the intrinsic motivation principle further.

Howard's work has led me to think more broadly about the environment for creativity. Because of him, I have developed a richer view of creators interacting with their social environments, both *immediate* (parents, siblings, friends, teachers, colleagues, patrons, and competitors) and *distant* (audiences and gatekeepers in the field). Howard

has spurred me to think hard about the nature of creativity, struggling with the issues I've discussed in this essay: Can I reconcile his work on creative genius with mine on garden-variety creativity? What *is* creativity? How does it work? And *who* is creative? When, under what circumstances? And his more recent work, captured in *Good Work* (his 2001 book with Cskiszentmihalyi and Damon) has led me to confront and write about myths of creativity—especially the myth that creativity is necessarily morally good.

I will end on a personal note. Through his *Good Work* writings and speeches, and through our private conversations over the years, Howard has inspired me to take my work into the world. He has convinced me of the responsibility that we have, as scholars, to bring our insights and guidance to other scholars and to practitioners who might use it. Only by rendering our findings comprehensible, and by trying to ensure that they are used appropriately, can we aim to truly make a positive difference in the world.

I believe that Howard Gardner has already accomplished this goal. For that, we should all be grateful.

Acknowledgment

I wish to thank Beth Hennessey for her perceptive and helpful comments on an earlier draft of this essay.

References

Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology, 43*, 997-1013.

Amabile, T. M. (1983). *The social psychology of creativity*. New York: Springer-Verlag.

Amabile, T. M. (1993). Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. *Human Resource Management Review, 3*, 185-201.

Amabile, T. M. (1996). *Creativity in context*. Boulder, CO: Westview Press.

Amabile, T. M., Hennessey, B. A., & Grossman, B. (1986). Social influences on creativity: The effects of contracted-for reward. *Journal of Personality and Social Psychology*, *50*, 14-23.

Amabile, T. M. & Kramer, S. J. (2011). *The progress principle*. Boston: Harvard Business Review Press.

Csikszentmihalyi, M. (1988a). Society, culture and person: A systems view of creativity. In R. Sternberg (Ed.), The nature of creativity (pp. 325-339). New York: Cambridge University Press

Csikszentmihalyi, M. (1988b). Motivation and creativity: Toward a synthesis of structural and energistic approaches to cognition. *New Ideas in Psychology*, *6*, 159-176.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York: HarperCollins.

Feldman, D. H., Csikszentmihalyi, M., & Gardner, H. (1994). *Changing the world: A* framework for the study of creativity. Westport, CT: Praeger.

Gardner, H. (1993). *Creating minds*. New York: BasicBooks.

Gardner, H. (1988a). Creative lives and creative works: A synthetic scientific approach. In R. J. Sternberg (Ed.), *The nature of creativity*. New York: Cambridge University Press.

Gardner, H. (1988b). Creativity: An interdisciplinary perspective. *Creativity Research Journal*, *1*, 8-26.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: Where excellence and ethics meet.* New York: BasicBooks.

Hennessey, B. A. & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology*, 61, 569-598.

Hennessey B. 2004. *Developing Creativity in Gifted Children: The Central Importance of Motivation and Classroom Climate*. Storrs, CT: National Research Center on the Gifted and Talented.

Kaufman, J. C. & Beghetto, R. A. (2009). Beyond big and little: The four c model of creativity. *Review of General Psychology*, *13*, 1-12.

Perkins, D. N. (1981). *The mind's best work*. Cambridge, MA: Harvard University Press.

Simonton, D. K. (1997). Creative productivity: A predictive and explanatory model of career trajectories and landmarks. *Psychological Review*, *104*, 66-89.

Simonton, D. K. (1999). *Origins of genius.* New York: Oxford University Press.

Sternberg, R. J. (1988). A three-facet model of creativity. In R. J. Sternberg (Ed.), *The nature of creativity*. New York: Cambridge University Press.

Howard's Response to Teresa Amabile

The record speaks for itself. We have been friends and colleagues for four decades. Actually we both have degrees in social psychology, but yours is much more legitimate (mine would have been bestowed in 'developmental psychology' had that category of advanced doctoral study been recognized at Harvard as legitimate in 1971); and you have kept the faith as a "social psychologist" carrying out careful cumulative research on what facilitates or impedes what we would both call 'small c creativity' - the creativity of everyday life. More recently, you and Steve Kramer have expanded your data base by a quantum leap, actually collecting data from 12,000 different work incidents and determining which factors are likely to make individuals more happy and intrinsically motivated in the their work. And you have also performed yeoman service, as a Director for Research at the Harvard Business School, your academic home for the last twenty years.

Your essay raises fascinating questions: What are the similarities, the connections, between two modes of investigation: l) The kind of careful empirical work that you do with small (and sometimes, not so small!) groups of ordinary subjects, where you are able to control the most important variables and (2) my large scale, chiefly historical-biographical studies of Flagship Achievers whose creativity would not be denied by anyone except a complete skeptic. I can't help quoting an exchange between two distinguished philosophers who wrote about the arts: Said Nelson Goodman to Stanley Cavell: "You write brilliantly about movies and visual arts, but is it philosophy?" Replied Cavell: "Nelson, you write brilliantly about the philosophy of symbol systems, but does that have to do with the arts?"

Your gritty essay helps us to see the genuine connections that help us span the undeniable gap between ordinary, everyday, little c creativity, on the one hand, and the kind of big C creativity on which I, and a few of my colleagues, have focused.

The key, in my view, is scale. It may be the case that we can nudge ordinary youngsters toward somewhat more creative works if we remove time or monetary constraints. The question is whether, if such manipulations of milieu and motivation are maintained over a long period of time, consistently, and in varying contexts, one ends up with an

individual who is significantly more creative, in the view of knowledgeable judges.

Turning the process upside down, my 'creators' were individuals who were accustomed to fail. They may have been annoyed at failure, but typically they sought to learn from failure and, in the words of the French statesman Jean Monnet to 'regard every defeat as an opportunity.' It would be interesting to see whether manipulations which help individuals deal with predictable failures end up strengthening their creative muscle. Your book, *The Progress Principle* (http://progressprinciple.com/books/single/the_progress_principle), provides some suggestive evidence that this may be the case.

The work that you have recently carried out with Steve Kramer is key. No longer are you examining a single neat intervention and its possible immediate effect(s). Rather, you are looking over time at the experiences in a work environment that include some individuals toward the more creative end of the continuum, and others much less so. I suspect that you may have here a microcosm of what happens in what we'd both agree were unusually creative environments: the high school in Budapest that yielded several Nobel Prize winners; the 'skunk works' around Xerox PARC that yielded so many software and hardware innovations; the milieus at a few academic environments—Cambridge University and Rockefeller University come to mind—where the quality and quantity of science at the middle of the 20th century was unexpectedly high. It's reasonable to assume that these environments, and the masterminds who created and led them, pushed ordinary and talented individuals into a higher C range.

My hunch: in seeking to make the transition from 'little c' to 'BIG C;' the biggest obstacle is talent. Without making a huge deal of it, I have assumed that the rare Einsteins, Mozarts, and Keats draw on a talent basis, a genetic makeup, if you will, that is simply not available for the rest of us. This position, of course, completely contradicts the well-known Anders Ericsson claim (inspired by Herbert Simon) that expertise is simply a question of 10,000 hours of practice.

Here's my view. Almost anyone can get to be an expert if he or she is willing to put in the hours and the sweat. Of course, it remains an open question what percentage of the population would be willing to devote those hours, particularly if others turn out to improve much more

rapidly, because, in my terms, the members of the latter group have more talent. Put baldly, would you want to keep practicing the cello if Yo-Yo Ma were in your class, or chess, if Bobby Fischer were in your club? I would add, however, that talent itself is an amalgam of features, some having to do with practice/tenacity, some with inspiration, some with an usual set of intelligences, some with unusual motivation or cultural setting or moment in history. Would we have heard of Steve Jobs or Bill Gates if they had been born two decades earlier or two decades later?

To understand talent, and what makes some creative people stand out, will likely require case studies of the Gardner-Gruber sort, plus statistical-historiometric methods favored by Dean Keith Simonton. But equally, important, Teresa, is how you conceptualize the concept of talent, and how it figures in the equation of little, middle, and big C creativity. Or to put it in your terms, which of the many horses on a treadmill is mostly likely to break into a trot and maintain it over a long run?

What Gets Better is the Precision with which We Vex One Another

Jeanne Bamberger

Naturally all mental processes such as perception and memorizing, gnosis and praxis, speech and thinking, writing, reading and arithmetic, cannot be regarded as isolated or even indivisible 'faculties,' which can be presumed to be the direct 'function' of limited cell groups or to be 'localized' in particular areas of the brain.

A. Luria, 1973, p. 38.

...progress is marked less by a perfection of consensus than as a refinement of debate. What gets better is the precision with which we vex one another.

C. Geertz, 1973, p. 29

Looking Back

I first met Howard in 1969. Howard was a graduate student at Harvard, and I had just arrived in the area from the University of Chicago. That was also the beginning of Project Zero's life where Howard was working as Nelson Goodman's Research Assistant. One is often asked, why "Zero?" Goodman believed that arts learning should be studied as a serious cognitive activity. However, he also believed that 'zero' was known about what "arts learning" might mean; hence, the project's name. Howard subsequently served as Project Zero's co-director along with David Perkins (1972-2000). During that time and since, both David and Howard have contributed much to making that particular "Zero" obsolete.

For me those early days of Project Zero were an exciting time. With Howard's help, I was introduced to ways of thinking that continue to inform my intellectual wanderings around the world of development and the making of coherence in music.

A seminal event in my participation at Project Zero took place sometime in 1970, I think: On one Saturday morning, Howard and David Perkins invited me to go along with them to an all-day seminar at MIT.

Called *Teaching Children Thinking*, it was organized and presented by Seymour Papert and Marvin Minsky. The day was spent in a lively discussion of children working with the newly developed computer language, Logo. Papert told dramatic stories and showed exhibits of how Logo was serving as a new approach to learning that could and would include multiple subject-matter domains. It was an environment that was, in fact, 'teaching children thinking.' Part of the day was taken by Minsky who described his design of the first 'digital music box.' Users could make music by creating computer programs (written at that time in *machine language);* the code sent to the old PDP10 computer would, in turn, send back the computed information to Minsky's 'music box'. The music box 'translated' the computer procedures into sound. That memorable day, mixed with what I was learning at Project Zero, turned out to change the direction of my work forever. But more of that later.

For now, in preparation for the celebration of Howard's 70th birthday, I went back to read two books that he wrote exactly 10 years apart: The *Arts and Human Development* (1973) and then on to *Frames of Mind* (1983). I was particularly curious to see how my current reflections on each of them would agree with what I remember of my reactions on my first readings.

Naturally I turned to Howard's views and speculations on music—particularly musical abilities and development. As I recall, on the first reading of each (30 and 20 years ago, respectively), I was a bit uncomfortable with some claims—most specifically, the distinct separation he made (even in the early book) between the "practice" of musical intelligence, on one hand, and the "practice" of scientific intelligence, on the other. But on that first time around it was more just a feeling than anything more specific.

Looking at the early and later books now, I find that while the later book is more vigorous in its claims in this regard, the underlying beliefs and theories have carried through.[1] For example, he says by way of summing up in *Frames of Mind*:

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[1] In *The Arts and Human Development*, Howard posits and develops a theory which, at the time, I found quite intriguing—what he terms the *model/vector* aspect of artistic development. As far as I can see, this has wholly disappeared in *Frames of Mind*. Indeed, in my view these aspects might well be an underlying bond bringing together

Yet according to my analysis, the core operations in music do not bear intimate connections to the core operations in other areas; *and therefore, music deserves to be considered as an autonomous intellectual realm. In fact this autonomy should be underscored as we look at... those forms of intelligence whose connection to music has most often been alleged—logical and mathematical forms of thought... The mathematician is interested in forms for their own sake, in their own implications, apart from any realization in a particular medium... (p.126).*

But it was a second comment in *Frames of Mind*, strongly reinforcing the first, that particularly grabbed my attention: "*It seems evident that mathematical talent requires the ability to discover a promising idea and then to draw out its* ***implications***." (p.143).

And here is where I hope I can be somewhat precise in my "vexing." Howard's attribution of the mathematician's "*ability to discover a promising idea and then to draw out its* ***implications***" seemed beautifully to characterize not only mathematics but, in my view, also music-making—especially in the works of the greatest composers. Rereading his statement I was reminded of Leonard Meyer's book, *Explaining Music,* in which he develops the notion of *musical implication* in the unfolding of musical compositions. As Meyer construes what he calls "implicative relationships," he says:

An implicative relationship is one in which an event—be it a motive, a phrase, and so on—is patterned in such a way that reasonable inferences can be made both about its connections with preceding events and about how an event itself might be continued and perhaps reach closure and stability. (Meyer, 1973, p. 110)

And, going on:

Though we do it with amazing facility, and considerable accuracy, understanding implicative relationships is a complex and subtle cognitive activity. And it is an activity of our whole being, not just that artificial abstraction, the mind. The many facets of the human system, physiological changes and adjustments, motor behavior and the like, are all involved. For this reason, implicative relationships may be

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the physical and feelingful workings of the "intelligences" that Howard later argues are distinct. This could be a line of argument to pursue but at some other time.

experienced as kinetic tension and resolution—that is, as feeling and affect. (Meyer, 1973, p.113)

Implicative relationships in music, as Meyer defines them, are clearly different from Howard's description of implication in science; in particular their involvement as embodied experience. However, I believe that implicative relationships play as critical a role in music as in science. While the medium and with it the means as well as the affect are specific to music, they perform similar functions in their respective roles of creating the coherence we so demand and cherish. Despite the critical importance Meyer gives to implicative relations in music, their generative power is often left unrecognized, including their importance with respect to both feeling and form.

Artur Schnabel is quoted as saying:

The thematic material used by Haydn, Mozart and Beethoven is very often no different than that used by lesser composers of the time, but as the material is developed…, it acquires its individual shape. As Schnabel said in jest, "The genius of a composer begins with the fifth bar." (Wolff, 1971, p. 60)

Implication

Despite Meyer's argument that implicative relationships are experienced as feeling and affect, musical implication as an idea seems to remain abstract and somewhat inaccessible. I tried to bring it alive in an earlier paper titled, "Developing Musical Structures: Going Beyond the Simples."[2] I presented the idea through conversations between myself and two students, Met and Mot, whom I modeled after students in my classes at MIT: Met is a Computer Science major and Mot is a Social Science major. Neither student has any formal music background.

Over a period of an hour or so, Met and Mot, with my help, develop their "hearings" of a minuet by Beethoven. Initially they hear the minuet as simply "banal," but by the end of our conversation they agree that it has become a remarkably complex work. I "note" here just the first part:

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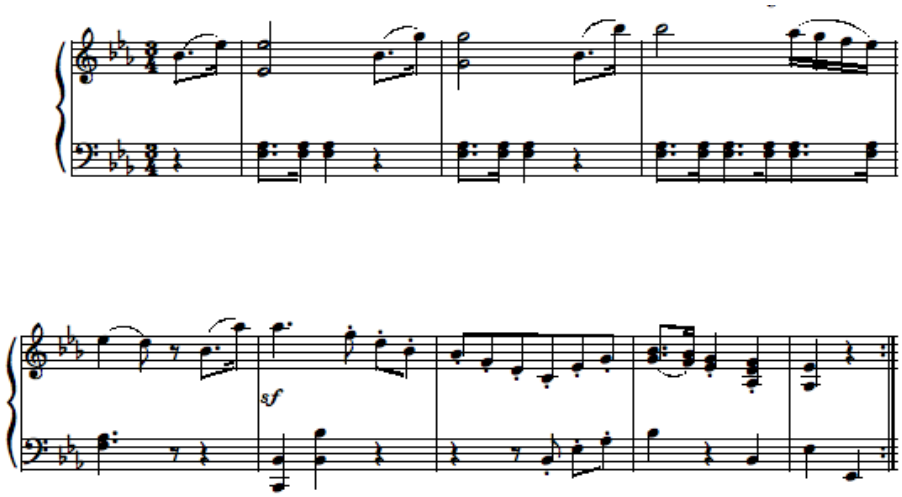
[2] In R. Atlas and M. Cherlin (eds.), 1994.



I pick up our conversation at the point where the two students are just discovering Beethoven's subtle transformations of the "germinal motive" with which the piece begins:

Mot: Now I begin to understand what seemed like a contradiction in terms before—the idea that Beethoven sets up relationships that are unique while at the same time making them serve as norms within this piece. These normative structures, such as the middle-accented rhythm of the germinal motive, function as piece-specific **prototypes**. Their inner relations are the source of links and also the source for new invention, continuing variation. And these prototypes also set up **implications** for continuation. For instance, the normative time-span of the germinal motive sets up the implication that that time-span will continue to be realized or, as in this passage, proportionally extended.

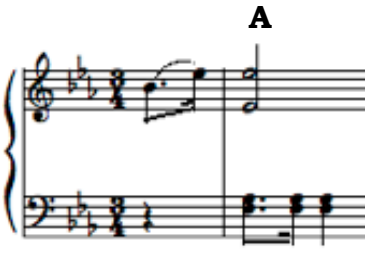
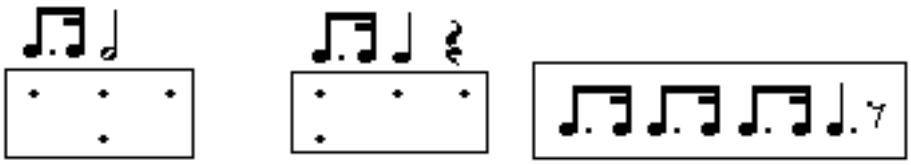


Figure 1: Germinal Motive in its two forms



A B C

Figure 1: Two initial forms: middle accented (A); beginning accented (B); C[3] is the proportional extension

Met: These transformations remind me of transformations in geometry, or specifically, topology. Given a particular geometric figure, and keeping its fundamental relations invariant, we consider the group of possible transformations on that figure within the constraints of certain rules. It's called 'group theory.' But just which transformations Beethoven chooses and when he chooses to make them, helps us hear the **implications** of his germinal motive. I suppose that's what you meant, Jeanne, when you said that we learn about the germinal motive by what Beethoven does with it.

Jeanne: That's it, exactly.

Some years after our Project Zero days, Howard and I were both members of a Social Science Research Council study on "giftedness." It was then, I believe, that Howard was brewing the idea of multiple intelligences. At the time I remember probing these early ideas and being troubled particularly by my sense that Howard was too much compartmentalizing the constraints on our intelligent organizers. Specifically, it seemed to me that musical intelligence functioned best (perhaps only) as a continuing interaction among all of the intelligences: certainly spatial, kinesthetic, the personal, "feelingful" intelligences, and in a deep sense, mathematical and logical intelligence, as well. As I have

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[3] This invented notation shows the relationship between the germinal motive and the metric hierarchy. In (A) the germinal motive is seen to be **middle-accented.** That is, the upper line of three dots representing the regular beat coincides with the single dot below that represents the metric accent in the middle of the motive. In (B) the germinal motive that occurs in the bass is **beginning-accented**. That is, the upper line of 3 dots representing the regular beat coincides with the single dot that represents the metric accent at the beginning of the motive. Thus, In A, the opening motive, is "middle accented," while B, which occurs in the bass, is "beginning accented." Example C shows the extension of the normative time span of the germinal motive.

suggested with the idea of implicative relationships, all of these are embedded and realized in sound and the characterizing or shaping of time; not as extracted or abstracted in isolation but together as in co-habitation. Indeed, I will argue that they are all necessary in order to deal with the essence of organized sound and time, even though both sound and time exist only in the passing present.[4]

Piaget

In our discussions, it was helpful that Howard and I were both taking issue with Piaget's theories on development, even though from quite different, perhaps almost opposite standpoints. For example in *The Arts and Human Development,* Howard writes:

Piaget's interests, however, lie in the child's progress toward the practice of science. In this realm additional reorganizations are necessary so that various operations essential to an understanding of the physical world can be performed. This reorganization can and in most cases will affect the developing artist too. My feeling, however, is that the development of operational thought is not a vital part of artistic development; indeed it may sometimes be inimical to it.... Thus, I have reserved the term, cognition, for the kinds of psychological processes involved in Piagetian operations.

Howard's disagreements with Piaget intersect with mine but again rather obliquely. Howard (at least in this quote) takes issue specifically with Piaget's view of "operational thought" and its implicit "progress toward the practice of science" which Howard finds "... not a vital part of artistic development." As suggested above, I tend not to follow Howard in this view. However, I do disagree with an assumption of Piaget's that travels together with Howard's concerns. As I will show in what follows, I specifically disagree with Piaget's assumption that later stages of development involve *giving up or overcoming* thinking that characterizes earlier stages of development.

[4] Of course the most interesting aspect is that each of these intelligences takes on a form and function that is particular to the medium and matter in which it is operating.

Rethinking the Developmental Typology

My disagreements with Piaget have evolved over the last 30-plus years beginning with my first attempts to make sense of children's invented notations for simple rhythms. In describing this evolution I turn to Vygotsky who well describes my own approach to experimental research:

To serve as an effective means of studying 'the course of development', the experiment must provide maximum opportunity for the subject to engage in a variety of activities that can be observed, not just rigidly controlled.... With all of these procedures the critical data furnished by the experiment is not performance level as such but the methods by which the performance is achieved. (Lev Vygotsky, 1978, p. 13)[5]

Following Vygotsky, I interrupt these more theoretical remarks to tell the story of how the first spontaneously invented notations came to be.

The First Invented Notations

It was an ordinary day in a public school in suburban Wayland, Massachusetts. The children in this 4th grade music class had begun their work by listening closely to the fourth movement of Hindemith's wind quintet from his *Kleine Kammermusik*, Op. 24 No.6. After they had listened carefully, their task was to design their own composition modeled after the Hindemith movement but using just classroom percussion instruments—drums, sticks, clapping.

Over a period of several days the children listened attentively to the work and discussed it at length. They had noticed that the most important contrasts were the alternations between the solos played by each of the wind instruments in turn, and the part played by all the instruments together which the children called the 'chorus.' The contrast between the solos and the chorus created boundaries or 'edges' that outlined the large structural elements of the piece.

To help the children in designing their own piece, I asked them to make drawings of the Hindemith showing the contrast between the two

[5] While we have never talked about it specifically, I suspect that Howard would tend to agree with Vygotsky and me on this one.

kinds of structural elements. To help the children, I derived a kind of graphic template showing the alternation of solos and 'chorus.' Once made, the drawings were to function as a 'score' for the basic design of their new piece. Figure 1 shows an example of one of the children's drawings: the circles are for the chorus and the rectangles the more improvisatory solos.[6]

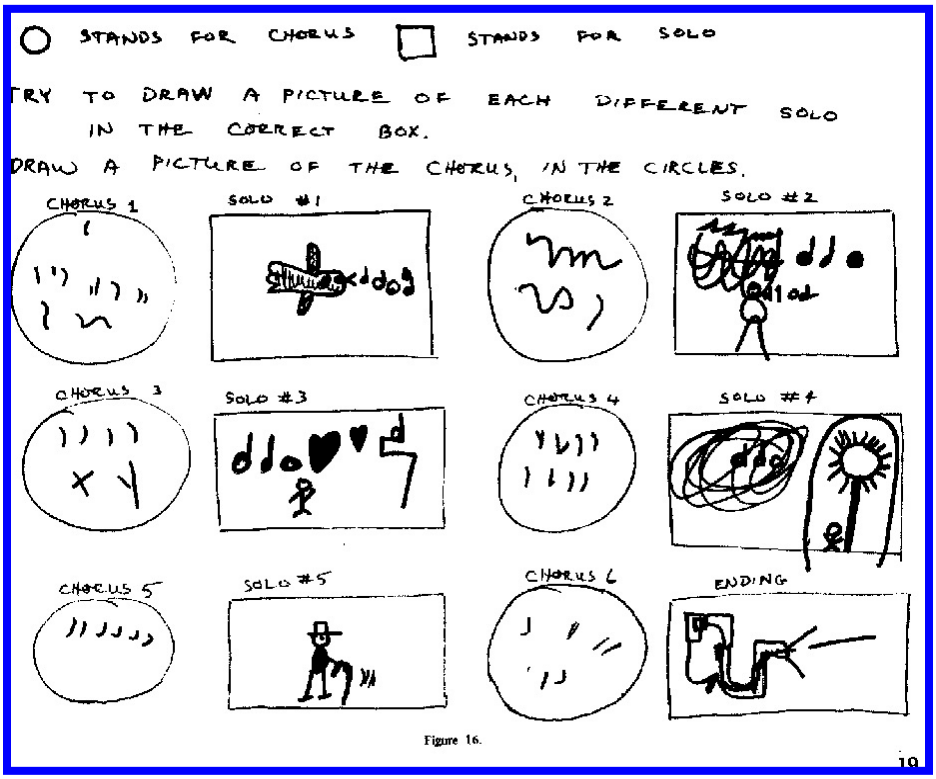

Figure 2: A "score" for the new piece

On the fourth day of the project the children were ready to begin designing the new piece. Everyone agreed that they had to start by making the chorus that everyone would play together. One child, I'll call him Henry, played a rhythm on his drum that he proposed should function as the 'chorus,' but the group felt it was 'too short.' It was finally agreed that the same pattern would work but it should be 'played twice."[7]

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[6] For more on these drawings, see Bamberger and Watt, 1979.

[7] Taking notice of the repetition as a specific event in developing the class piece becomes important in studying the invented notations.

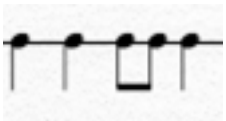

Figure 2: Henry's rhythm

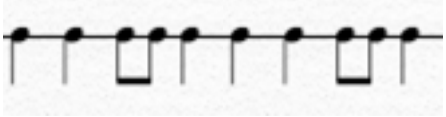

Figure 3: The 'class piece'—Henry's rhythm played twice

Soon after all the children had learned to play the class piece together, a fortuitous situation occurred: with much work still to be done on the project, someone noticed that the music period was nearly over. One of the children quite wisely said, 'But how will we be able to go on if we've forgotten the class piece by tomorrow?' Someone else suggested a creative solution: 'We could write it down and then we'd have something to remember it by' (perhaps inspired by the group's earlier work with drawing the Hindemith).

With only a few minutes left and following the lead of the spontaneous and practical idea, the children were encouraged to 'put down on paper whatever you think will help you remember the class piece tomorrow or help someone else play it who isn't here today.' In the ten minutes or so before the bell rang, each of the children invented a way to translate their actions—their experience in playing the rhythm—into graphic descriptions of it. The next day the group did complete the design and performance of a whole composition. They all played the class piece in unison, alternating with solos that individual children improvised on their respective percussion instruments. The result was a new composition that did indeed 'work like the Hindemith.'

The drawings of the class piece not only served the functional need that had inspired them, but there was an unexpected spin-off. After looking closely at all the drawings, I was able to glimpse that they fell generally into two types. After much time and thought, I came to call them 'figural' and 'formal,' respectively.[8]

[8] See below for more on these labels.

Figure 3a: Figural drawing Figure 3b: Formal drawing

I subsequently went on to test the robustness of the types by gathering invented rhythm notations from children between the ages of 3 and 12. Analysis of these 186 drawings confirmed the initial figural-formal distinction but included transitional stages from which I designed what I believed to be a developmental typology (Bamberger, 1991).

The Typology

In 1978 when I was first developing the typology, I defined a critical aspect of musical developmental to be a conceptual re-organization in which the child becomes able to hold properties of music (pitch and duration) invariant—or as Piaget puts it, "in spite of the route traveled." Thus, as in the stage of concrete operations, properties of events remained invariant regardless of the context in which an event occurred and of its function within that context—i.e., *conservation*. Moreover, I also implicitly accepted Piaget's argument that a prerequisite for development into concrete operations and conservation was *giving up* the characteristics of the earlier sensori-motor stage—in particular, it was the earlier response to shifting meanings of properties which *must be overcome.*

After many years of experience as a musician and teacher, I have found it necessary to re-think this original typology and its implicit view of musical development. I now propose that the typology provides an overview of dynamic and generative "possibles," all of which we need in order actively to shape musical coherence. On this view, I no longer see the characteristics of developmental stages as marking "progress" but rather as reflecting potential constructions that gather, accumulate, and evolve throughout musical life. The typology can thus be seen as a *palette of continuing useful and provocative sensory organizers.*

In contrast to the traditional developmental approach, I argue that mature musical development involves a musician's growing potential for multiple foci of attention leading to multiple ways of sense-making. And this includes, most importantly, learning selectively and appropriately to

choose among possible sensory organizers depending on when, where, and what the particular (often unique) situation demands.

But, as I shall show, the scope of possible sensory organizers also predicts the emergence of an *essential tension*—one that begins early on in musical studies, and continues to pervade and also enliven musical life. In its most potent form, it is the tension that we continue to experience as we move between *action and symbol*. The typology comes to reflect the working efforts of the performing musician to travel a dialectical path: initially spontaneous, often elusive actions of performance; close consideration of discrete, referentially invariant notational symbols; re-organizing actions appropriately shaping more insightful and feelingful performance.

It is the importance of this continuing and generative dialectic tension that I think differentiates Howard's views of musical development from mine. As Howard suggests, the musician does not exclusively embrace "operational" thinking that privileges context-free, invariant, measureable properties. But I argue that the musician benefits from the persistent tension that arises between the invariant properties to which the symbols of music notation refer, on one hand, and, on the other, the shifting meanings and functions of properties in response to unique musical context in the passing present.[9]

For example, given the pitch C living in a C-world (key of C), the C sounds stable, useable for an ending; but when moving on to making an F- world, we can only marvel at the changed meaning and feeling of the same pitch, C, which now leaves us hanging, waiting for resolution. Yet, we couldn't marvel if we weren't also able to recognize and to say that it was still "the same pitch, C."

Perhaps this tension suggests, in practical form, philosophers' sometime quandaries as they contemplate time. For example, here is Aristotle:

Time: First, does it belong to the class of things that exist or to that of things that do not exist? Then secondly, what is its nature? One part of it has been and is not, while the other is going to be and is not yet.

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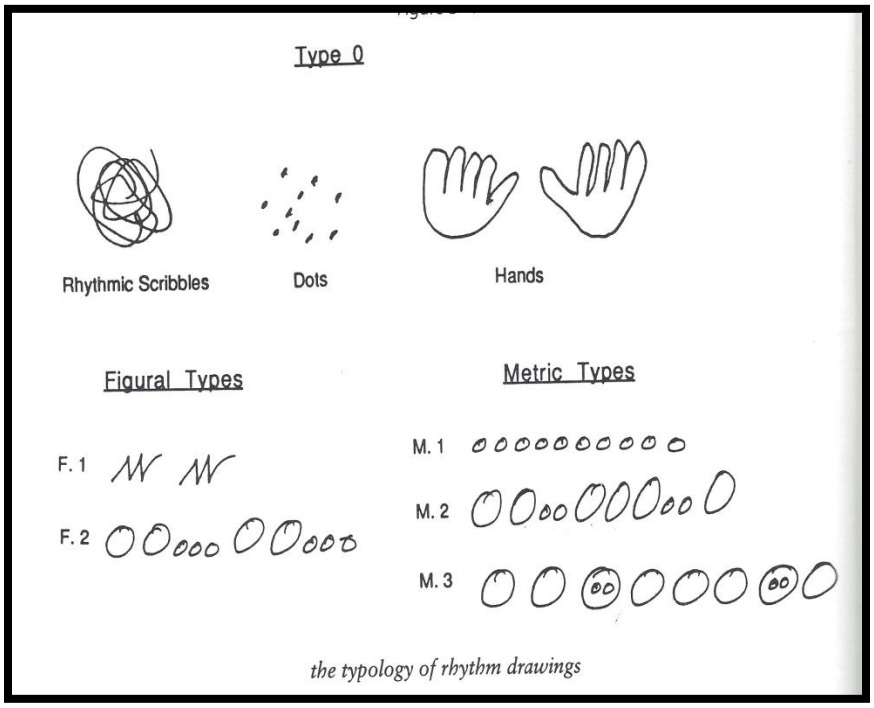
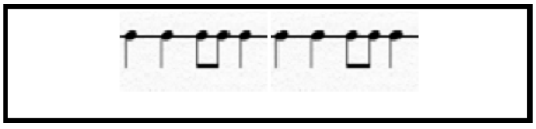
[9] The following quote from Eric Schmidt, the current executive chairman of Google, is germane to what I am proposing: "If content is king, context is its crown."



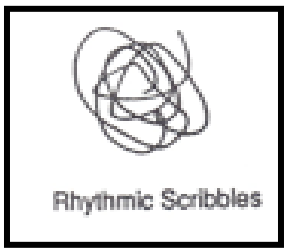


The Given Rhythm
Figure 4: The Typology

The typology shown in Figure 4 was constructed from the 186 invented notations made by the children in the Wayland school. We asked the children to clap back five different rhythms that had been clapped to them. Learning from the first group of 4th grade children, we asked our new subjects to: "Put something on paper that will help someone else who isn't here today, clap the rhythm that you just clapped."

I have chosen a small selection of notations of one of the rhythms (actually, the "class piece") to illustrate how children's inventions typically change as they grow older. The typology has two global dimensions reflected in the labels I have assigned to them: the more general distinction I have labeled figural-metric. Within each of these,

characteristic features are elaborated as the children grow older (F.1-F.2; M.1- M.2-M.3). I originally characterized metric drawings as exhibiting development that went beyond figural notations—in general, moving out of the sensori-motor stage into concrete operations. However, in revisiting the typology, I no longer see metric strategies as necessarily involving giving up earlier (figural) strategies, but rather as gradually accumulating multiple possible views. This rethinking was strongly influenced by the recognition that versions of all the organizing strategies are used and integrated into the practice of the mature practicing musician. I will discuss each of the types in turn in order to trace my reasoning in re-thinking typology.[10]



Type 0 Drawings

I initially saw these Type 0 drawings, made by children aged 3-5 and labeled "scribbles," as just that—simply meaningless scribbles. But by making the assumption that there might be more to find in what the children were doing—i.e., "giving the children reason," I saw that the drawings revealed an aspect of rhythm that is lost in its conventional description. The children were *re-playing their clapping on the paper* and the scribbles were a trace of their *continuous clapping motions.* In moving from action to traditional symbols, we do not attend to the swinging, *continuous actions* of arms and hands, but only to the momentary stop in the motion as the two hands collide. And it is only these discrete sounds—the external, public, acoustic results of these motions—that become the sole focus of our accepted notational conventions.

Moreover, we put into notational space only the temporal relations among the discrete stops in the continuous motion of clapping. And since we cannot, or do not "note" spontaneous, continuing motion disappearing in time, the *actions* of performing a rhythm also become

[10] The children actually used many different kinds of shapes in their inventions. However, I have chosen drawings that were similar with respect to graphic objects in order to make comparisons more clear.

transparent to our glance. The children's drawings, by making their actions visible, "liberate" from notation-space the continuousness of living performance. Think, for instance, of the violinist's bow moving continuously across the strings so as to make the discrete pitches of his fingers continuous, as well. To escape into notation is to escape notice.

The aspects of things that are most important for us are hidden because of their simplicity and familiarity. (One is unable to notice something—because it is always before one's eyes.) And this means: we most often fail to be struck by, once it is seen, that which is most striking and most powerful. (Wittgenstein, 1958, p. 50)

Figural Inventions[11]

F.1 Drawings

Looking through the typology to the older children's inventions, we see that the notations gradually become more discrete. The "figural" F.1 notation was made typically by children aged 5-7.[12] These children, like the youngest, were still playing the rhythm on the paper with their pencils, but the process was quite different. The children moved their pencils first slowly (/\), then proportionately faster (/\/), a pause, the pencil suspended in the air, followed by an exact repetition of their previous actions. The trace left behind almost magically reflects back the more articulated figural structure of the rhythm: One sees two alike figures, the arrival of their goals of motion creating boundaries marked by the pause which is transformed into a space, an 'in between.'[13]

Unlike the Type 0 drawings, the five performed claps are distinct and clearly seen in the up and down, undulating lines; but there is still

[11] See below for a more complete description of "figural."
[12] However, in a recent class of adult students, this F.1 drawing appeared again.
[13] It is interesting that these notations so clearly show the children's suggestion that Henry's initial rhythm needed to be played twice.

no trace of the changes in pace, no differentiation among them save succession.

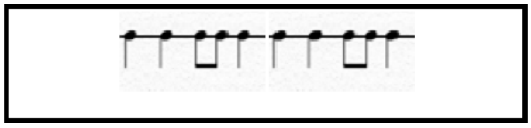
F.2 Drawings

The more fully elaborated figural drawings, F.2, were made by children beginning at about 8 years of age and continuing to appear even among musically untutored adults. (This was the figural drawing of Henry's repeated rhythm that showed up originally in the 4th grade class.) In contrast to the children's F.1 up and down lines, F.2 children design distinct and differentiated big and small shapes. The shapes, in turn, show both *changes in pace and also inner groupings*.

F.2 Drawings

Most important, in drawing these shapes, the children are no longer simply transporting their actions directly onto paper (playing/drawing). The continuous lines of F.1 drawings have become discrete, differentiated graphic shapes that *stand for, refer to* actions rather than being the *direct result of the actions*, themselves. These are *thought actions*. In this sense, F.2 notations move away from action towards symbol.

The essential grouping structures that are represented so clearly in these F.2 inventions, are not shown at all in conventional rhythm notation (CRN):



And yet, the realization and projection of these grouping structures are the aspect that we associate with artistic, musical performance—e.g., phrasing as projected, for instance, through the finesse of string players' bowing, the wind players' breathing, and the keyboard players' careful illusions. What is given in the score in contrast to what is actually performed is exactly what is involved in the tension between the subtly responsive actions of performance and the referentially invariant symbols of CRN.

I pause for a moment here to clarify the term, "figural." I borrowed the term 'figure' from music terminology, where 'figure' refers to a brief sequence of musical events ("notes")[14] that forms and functions as a *meaningful structural entity*. Figures are bounded musical structures that are perceived as organizing a continuously unfolding rhythm or melody as it goes on through time. The term figural was thus meant to characterize drawings in which one can see in the invention, the child's effort to *parse* her continuous clapping. It is of special importance that *the boundaries of these groupings are also the momentary goals of motion.*

Since coining the term 'figural,' I have learned that the term has quite different meanings for those in different fields (perhaps especially in its contrast with "formal"). With visual artists, for instance, 'figural' often becomes 'figurative,' meaning representational in contrast to 'abstract'; and for those in literary fields, "figural" is taken to mean the use of imagistic language such as metaphor, analogy, metonymy, etc. or even just 'imaginative.' My intention in using the term "figural" was to refer quite specifically to a particular kind of musical entity. To help clarify the meaning of "figural" I have changed the term "formal," originally meant to refer to the contrasting type of organizing strategy, to "metric" in an effort to make the differences more explicit.

Returning now to the figural, F.2 drawings, the drawings also present an intriguing and revealing puzzle: the relation between size of shape and actually performed duration is not consistent. As seen in Figure 5, clap 5 is *performed* as an event of longer duration, like Events 1 and 2 or 6 and 7, but it is *drawn* with a small shape like the faster Events 3 and 4 that immediately precede it.[15] This inconsistency (from the view of the *property,* duration) is a poignant reminder of the tension that continues to musically follow us—the tension between *action and symbol* and between *properties and functions.*

Events: 1 2 3 4 5 6 7 8 9 10

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[14] I put "notes" in quotes because a note is actually the name of a *symbol* that stands for both the pitch and duration of a sounding entity—i.e., an event.

[15] The term "duration" should more accurately be called "attack time." That is, the since the duration of the clap itself is always much the same, it is the "gap" between the onset of one clap and the onset of the next that actually determines what we loosely call the "duration" of the event.

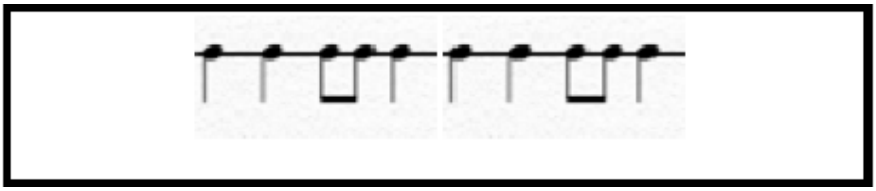

Figure 5a: Standard notation

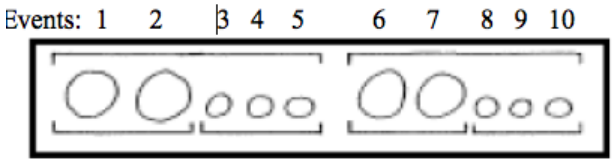

Figure 5b: Figural functions

The F.2 drawer is still, in effect, inside the performance, moving with it to the boundaries of structural goals as he or she re-enacts the experience. This graphic reconstruction of experienced actions is a description of what I have called a player's *felt path.* Much as with an experienced performer*, the child's tactile feel of the progressing actions, next, next, next,* follow one another through time even as they move towards goals to form figures. Performers, like these F.2 children, are both making and following their felt path (one thinks of a spider spinning her web). As a result, the child (or adult), in performing a rhythm or even a large, complex piece, is continuously responding to the *unique present situation* of events as they are occurring, along with their particular *function* within the figures of which they are members.

With all this in mind and once again giving the children reason, we can now account for why event 5 is drawn as a small circle, as if it were a faster event: Even though clap 5 is 'longer' like clap 6 along the player's felt path, clap 5 functions as the *ending* of the figure, 3→4→5, whereas Clap 6 functions as the *beginning* of the figure, 6→7.[16] In contrast, CRN, always notating consistent *properties*, naturally represents clap 5 the same as claps 1 and 2 or 6 and 7 despite the difference in function.

[16] Following the classical gestalt principle in visual perception: When a string of adjacent elements placed close together are followed by a larger space, those closer together tend to be perceived as a group. In music, space becomes space-of-time. Thus, all things being equal, when faster events (closer together in time) are followed by a longer event, the longer event forms a boundary "containing" the previous events as a group or structural entity. This musical phenomenon has been called a 'temporal gestalt' (Tenney, et al., 1980).

Again we confront the essential tension between action and symbol and also between *property and function*.

Heinz Werner describes this "fluctuation" with respect to *property* as a more "primitive" stage in development:

Since the meaning of objects in primitive spheres largely depends on the context, primitive man ('the man-of-action'), is conscious of a continuous fluctuation in the properties of objects according to the change of situation.... The things of the world exhibit this or that property, depending on the changing frame of activity in which they are bound fast. (Werner, 1948/1973; p. 141)

While in the light of developmental theory the children's F.2 inventions are taken to be inadequate and to be overcome, these inventions actually make visible a living, even cherished aspect of an artist's performance. For example, two events that are represented symbolically as sharing an invariant property (pitch, or here, duration) may be performed differently in response to their changing function within the contexts in which they occur. This is not something that disappears with growing maturity; rather, it is a sign of growing musical sophistication. In its most general form, learning to differentiate between *properties* and *functions* is exactly an example of a vital and generative tension that persists throughout our musical lives.[17]

Vygotsky, disagreeing with Piaget on this aspect of his developmental theory, chides him on this point, perhaps a bit too harshly:

For Piaget the child's mental development consists of the gradual **replacement** of the unique qualities and characteristics of the child's thought by the more powerful thought of the adult.... With age the characteristics of the child's thought are replaced in one domain after another and ultimately disappear entirely**.** One must be done away with so that the other can take its place. (Vygotsky, 1962, p. 56)

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[17] This is made particularly evident in the interaction between string players and pianists: string players prefer not to play with pianists since the pianist, stuck with this machine, cannot join the string player in "bending" a pitch in response to its changing function.

David Soyer, the cellist in the Guaneri Quartet, gives a powerful example of the use of both invariant property and changing function in this description of his performance of a brief passage in the Beethoven Quartet, Op. 59 No.2:

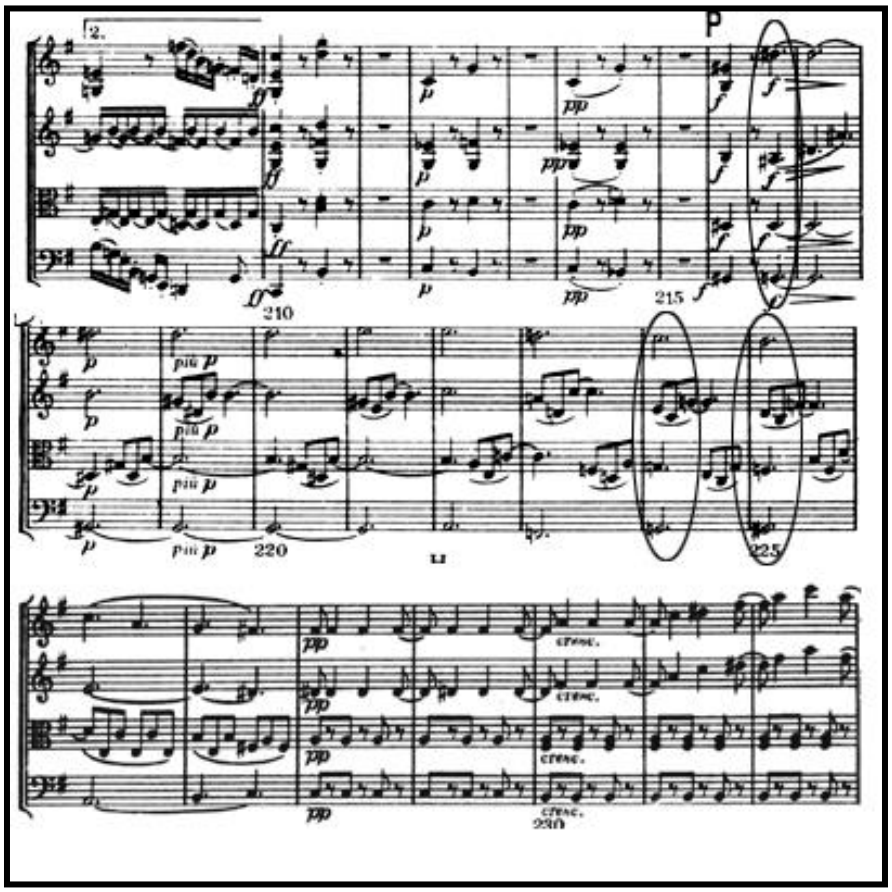


Figure 3: Beethoven, Op. 59 #2, first movement, coda

Soyer: The passage begins in the key of G-sharp minor; the G natural in bar 215 is clearly a simplified way of writing F double-sharp, which, as the leading note, has an upwards attraction towards the tonic G sharp. For this reason I'd avoid using the open G-string and would play the passage on the C string. When G natural comes again [bar 223], its harmonic function is altered; it's now the fifth degree of C major and thus not sharpened. The subsequent G sharp [bar 224] is no longer the tonic but acts as the leading note in A minor and should be sharpened. This is the explanation from the harmonic standpoint, but your hearing once sensitized to such things, will often be able to put you there quite of itself without your needing to think it out . (Blum, 1986, p.33)

Soyer's comments are remarkable in that he is making quite explicit the recurring tension between *properties* as notated in the score and their changing *functions* in response to context. Indeed, he is describing this tension as he points to how in playing, he physically *makes* the notated properties respond to their changing harmonic function. It is, then, a beautiful example of how the children's apparent "mistake" in their F.2 notations can later take on musical elegance in the hands of an artist musician. And it also exemplifies my argument that rather than seeing the typology as a developmental progression, it can be seen as a *palette of useful and provocative sensory organizers.* As Werner (1973, p. 239) also says: "The lower level is not lost; it develops as an integral part of a more complex organization."

Metric Inventions

Comparing the metric drawings, M.1, M.2, and M.3, with the figural drawings, it is clear that the focus is distinctly different. We could look at the metric drawings as "progressing" closer and closer to the symbols of CRN. And in this respect, the metric inventions might also be seen as "moving towards" a strategy commensurate with operational thought. Indeed the action<-->symbol tension is embodied by the contrasts between the figural and metric drawings as we move among and between them.

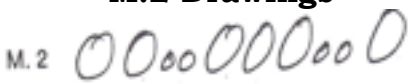
M.1 Drawings
1 2 3 4 5 6 7 8 9 10

The M.1 drawings were made by children of about the same age as those who made F.1 drawings. However, the M.1 drawings involve reflection on, and distancing from, immediate experience. In order to make these drawings, the children had quite literally to look *at* themselves clapping—they focused first on counting up each of their clapped sounds. Having found a total of 10 claps, the children simply made a line-up of 10 all-alike shapes going left to right across the page. I have called children who made M.1 drawings at least nascently metric in contrast to those who made F.1 drawings, since counting is the relevant action and it produces *discrete, undifferentiated events* as the relevant entities. This is in contrast to *figures* where action is continuous towards structural goals, and the figural shape is clearly repeated. Finally, the

M.1 shapes, unlike the F.1 continuous lines, *stand for* claps rather than being the *direct result* of playing them.

However, while the children's interest is in counting each event, neither the counts nor the circles represent a unit as in a true 'metric unit'—i.e., an entity that remains constant in its value so that it can be used to measure, as in counting inches along a ruler. As we move on to the M.3 drawing, it is exactly the sense of what constitutes a 'unit' that will distinguish M.3 drawings from all the others.

M.2 Drawings



The children who made M.2 drawings were about the same age as those who made F.2 drawings. However, in contrast to the F.2 drawings, events in the M.2 drawings are consistently *classified* with respect to duration, irrespective of where they fall in the course of the rhythm pattern, and irrespective of their figural membership or function. Rather than going along the path of the rhythm, next-next-next, these children must remove themselves from this path so as to compare events that may be distanced from one another in time and in their order of occurrence. And most important, they must compare events that belong to different figural groups and have different structural functions. As in all metric drawings, the figural groups that are so clear in both F.1 and F.2 *have disappeared entirely* in M.2 drawings.

In comparing F.2 and M.2 types, the contrast can be best understood in terms of the different meanings of 'group' or 'go together.' An F.2 group shows events that go together as *a sequence of unique, necessarily contiguous and bounded events;* an M.2 group is a *class*—its members are single events that go together because they *share the property, same relative duration*. It is this attention to *classifying* events in contrast to situation and function of actions within figures that most particularly distinguishes F.2 from M.2 drawings. Consistency and greater objectivity sometimes blur important and more intuitive distinctions! In the words of William James (1896/1956, p. 67):

When, for example, we think that we have rationally explained the connection of the facts A and B by classing both under their common attribute x, it is obvious that we have really explained only so much of these items as <u>IS</u> x.…

We are thus led to the conclusion that the simple classification of things is, on the one hand, the best possible theoretic philosophy, but is, on the other, a most miserable and inadequate substitute for the fullness of the truth. It is a monstrous abridgment of life, which, like all abridgments is got by the absolute loss and casting out of real matter.

Before going on, I would like to sympathize with readers who may feel by this time a little like they are in Alice's Wonderland—where the most ordinary things seem to come to life in confusing ways. And this is even more so when we are naming things. What do we give names to and what do the names mean? Or as Humpty Dumpty and Alice put it in *Through the Looking Glass*:

"Don't stand there chattering to yourself like that" Humpty Dumpty said, looking at her for the first time, "but tell me your name and business."

"My name is Alice, but..."

"It's a stupid name enough!" Humpty Dumpty interrupted impatiently. "What does it mean?"

"Must a name mean something?" Alice asked doubtfully.

"Of course it must," Humpty Dumpty said with a short laugh: "my name means the shape I am—and a good handsome shape it is, too. With a name like yours, you might be any shape, almost." (Lewis Carroll, 1960, p. 263)

M.3 Drawings

The shift in focus found in M.2 drawings is further elaborated in M.3 drawings. While M.2 drawings classify events with respect to the relative duration of one event as compared to another, M.3 drawings show how much longer or shorter. The underlying beat is the invariant unit of measure; it is represented by the large circles in the M.3 notation—eight beats in all. Indeed, the M.3 drawing comes very close to CRN. In CRN the notated rhythm,  is equivalent to the child's  . As the child who made the M.3 drawings said of Events 3 and 4, 'You can see there's two for one, there.' However, the child's invention has the

advantage over CRN of showing both the underlying unit  and also the relation of performed events to it  . Indeed, M.3 children have invented what might be called the beginnings of a formal symbol system.

But notice that just as M.1 children, in their singular focus on counting, lose the marking of the large figural boundary found in F.1, so M.2 and M.3 children, in their more "objective" focus on measuring, obscure figural boundaries as well as the changing function of events in response to context. Thus metric graphics, like standard notation, leave the performer with the problem of 'putting in the interpretation'—that is, finding the figures, the *phrasing* now hidden in the carefully denoted metric units.

But, as I have argued, neither conventional notation nor the invention of figural descriptions adequately capture a fully apprehended rhythm. For practicing musicians, such multiple views create a generative tension, which informs and influences performers' developing "hearing" and the complexity of its projection in sound and time.

PART II

Varieties of "Fastness"

The tension in the typology was seen starkly in the children's metric M.2 and M.3 inventions in contrast to their figural F.2 inventions. On one hand, the metric drawings show notational availability and certitude of invariant properties (as in the notes specified in the score). On the other hand, the figural inventions show the unique *situation* of properties as they occur, and in particular, the *function* of those properties as events within the figures of which they are members. I argue, then, that the typology reveals a musical tension experienced by performer and composer as they, too, learn to move creatively between the stable invariance of properties represented in formal notation and the passing presence of figural functions which are and must be created for the shaping of time.

The brief example that follows is meant to illustrate moments that are potentially generative if one appreciates the *palette of sensory organizers*. The example also illustrates that if, in observing children, we can assume a stance something like the anthropologist entering a new culture, we may surprisingly encounter aspects of our own internalized

assumptions along with our experiences of time and music that had previously remained tacit.

The linguist Benjamin Lee Whorf sets an example when he confronts the meanings implicit in our ways of speaking of time and the meanings given to time implicit in the language of the Hopi. He says:

Instead of our linguistically promoted objectification of that datum of consciousness we call "time," the Hopi language has not laid down any pattern that would cloak the subjective "becoming later" that is the essence of time.' (Whorf, 1956, p. 140)

An 8-year-old child put it this way in response to a question about the 'sameness' of a repeated musical event. She said: "But it will never be the same because it's *later,*" as if echoing the Hopi.

The issue here is this: Will a familiar experience, here "going faster," change if we are able to move between sensory organizers—specifically, figural in contrast to metric. It was again by listening to my students—young and a bit older, that my attention was alerted to this question.

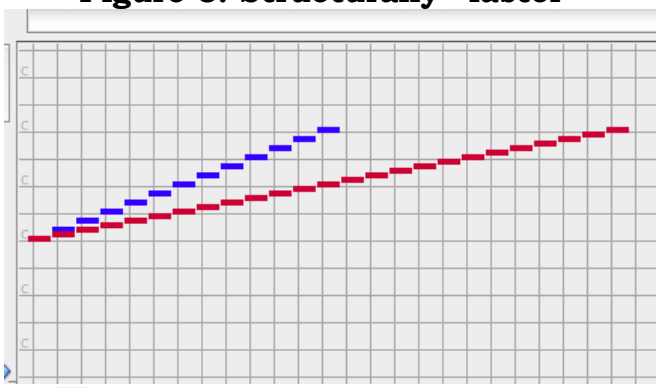
The triggering situation was simply this: Working with a group of 8-9 year olds, I played a two-octave chromatic scale starting on middle C; after a brief pause, I played *at the same tempo* (the same rate of events), a whole-tone scale also over two octaves starting on middle C. I asked the children what the difference was. I was, of course, expecting something like, 'the second one had bigger steps.' But to my surprise, the children all agreed that the second example, the whole-tone scale, was fa*ster*! I was puzzled; how could this be since I had kept the beat, the *tempo,* the same?

Later in the day I played the same examples to a group of adult music students and reported the children's view. The students immediately responded that the children were simply wrong. But again taking the advice of the anthropologist, Geertz, I urged the group to let the children's view "vex" them: Let's assume that there is reason in the children's view and go in search of it.

To help, I translated the scales as I had played into static, graphic space. Looking at the graphics, the children's "hearing" suddenly made perfect sense; it was a simple instance of the classical definition of

"faster:" the whole-tone progression goes the same "distance" as the chromatic progression but in *half the time!*.

Figure 6: Structurally "faster"



Chromatic **Whole-tone**

But we all agreed that it was unlikely that this more "calculated" description reflected what the children were hearing. I proposed, instead, that the children were hearing something like two "figures." That is, they heard two sweeping motions with the boundaries of one arriving at its goal much quicker than the other. Like the figural notations the children made, the boundaries of the figures are also the momentary goals of motion.

In contrast, my college students heard both whole tone and chromatic scales as the same in "fastness" because their focus was on the discrete temporal unit generated by the sequence of temporally alike events in both scales. Theirs was a metric hearing. Like the college students, the children who made the M.3 notations also focused on abstracting the underlying temporal unit from the varied durations of the rhythm. It was represented by the repeated circles in their invented notation.

A focus on the invariant unit beat

And just as the M.3 children, in their focus on measuring time, obscured the repeated figures and the motion toward goals, so the college students, in their focus only on the unchanging temporal unit, obscured the broader sweep of the two scales and the difference in their respective times of arrival.

And thus Clifford Geertz helps to confirm my proposal that there is a generative aspect to the tension between figural and metric strategies and to that between function and properties.... *The precision with which we vex one another* does lead to progress. The children's focus on distance and time gives one source for evaluating "going faster"; the students' focus on invariant rate of events gives another source for evaluating "going faster." And if one has access to both—to at least this much of a palette of sensory organizers, one can resolve the tension and/or choose between them depending on when and what for.

Coda

The comments of David Soyer, the cellist, clearly illustrated the simultaneous and generative use of both figural and metric strategies. Soyer recognized the invariance of pitch events (properties) as represented in CRN and also in relation to their production on the cello strings (M.3). And in the light or sight of that invariance, Soyer responds to the variance in the event's meaning and function as a result of the changing situation in its passing presence (F.2).

Coming full circle, I have tried to provide evidence for my proposal that the revisited typology illustrates a *palette of useful and provocative sensory organizers.* In turn, rather than assuming that progress means giving up characteristics associated with earlier stages of development, progress means learning selectively and appropriately to choose among possible sensory organizers depending on when, where, and what the particular (often unique) situation demands.

Confronting our own deeply internalized assumptions, our sensory organizers, we not only come to understand the sense-making of the other, but we liberate intuitions and know-how that we use and believe in but rarely if ever make quite so explicit. Hopefully, these stories have also brought some precision to the ways in which Howard and I can productively continue to vex one another. In any case, the challenge becomes mutual and reciprocal: *...progress is marked less by a perfection of consensus than as a refinement of debate.* I look forward to more of that.... Happy birthday, Howard, and many happy returns of lo, these many years....

References

Aristotle (c. 340). Physics: Book IV, Chapter 10, in *The Works of Aristotle, Volume* I, (W.D. Ross, Trans.). Chicago: Encyclopedia Britannica, Inc. 1952.

Atlas. R. & Cherlin, M. (Eds.), (1994.) *Musical transformation and musical intuition*: *Essays in honor of David Lewin*. Dedham, MA: Ovenbird Press.

Bamberger, J. & Watt, D. (1979). *Making music count: A teacher's guide with commentary.* Newton, MA: Education Development Center.

Blum, D. (1986). *The art of quartet playing: The Guarneri quartet in conversation with David Blum*. New York: Alfred A. Knopf.

Carol, Lewis (1960). *The annotated Alice.* Martin Gardner (Ed.). New York: Clarkson. N. Potter.

Geertz, C. (1973). *The interpretation of cultures.* New York : BasicBooks.

James, W. (1896/1956). The sentiment of rationality. In *The will to believe*. Dover Publications, Inc.

Luria, A. R. (1973). *The working brain.* (Basil Haigh, Trans.). New York: BasicBooks.

Tenney, J. & Polansky, L. (1980). Temporal gestalt perception. *Journal of Music Theory*, Vol. 24, No. 2 (Autumn, 1980), pp. 205-241.

Vygotsky, L. (1962). *Thought and language.* Cambridge, MA: MIT Press.

Vygotsky, L. (1978). *Mind and society. (*M. Cole et al., Eds.), Cambridge, MA: Harvard University Press.

Werner, H. (1948/1973) *Comparative psychology of mental development*. New York: International Universities Press.

Whorf, B.L. (1956). Language, thought, and reality. In J. B. Carroll (Ed.), *Selected writings of Benjamin Lee Whorf.* Cambridge, MA: MIT Press.

Wittgenstein, L. (1958). *Philosophical investigations*. New York: The Macmillan Co.

Wolff, K. (1972). *The teaching of Artur Schnabel*. New York: Praeger Publishers.

Howard's Response to Jeanne Bamberger

Clearly, in a manner reminiscent of lovers, we both have vivid memories of our first extended time together. Shortly after you moved to Boston around 1969, you were introduced to the ragtag group of scholars interested in the arts and, working under the benign dictatorship of Nelson Goodman—the original Harvard Project Zero. On an impulse, we decided to take a trip to MIT and to listen to two then young mathematical scholars with an interest in computers: Seymour Papert and Marvin Minsky. As it happens, Minsky is a serious amateur musician (we probably did not know that at the time) and Papert, trained personally by the great child psychologist Jean Piaget, was interested in a broad, creative education for children. I should add that except among experts, (and MIT was chock full of experts), computers were quite a new thing at the time (except for Project Zero founding member David Perkins, who worked closely with Papert).

Without a doubt, this trip was epochal for you. Trained earlier as a pianist, and with considerable background in philosophy, on the one hand, and in the teaching of children (including your own two then preadolescent sons) on the other, you were poised to assimilate the lessons at MIT that day. And indeed, for the succeeding decades, it has been your life's scholarly work to try to understand how children, of all ages!, grasp musical meaning and form and how those forms of cognition relate or fail to relate to other cognitive achievements. I am certainly pleased that we ventured to MIT that day. But for me the bigger influence was not Professors Papert and Minsky, impressive though they be, but rather the chance to begin to get to you know, as a colleague, and soon thereafter as a family friend (we have gone through much together).

At the time of our meeting, I was already a convinced Piagetian and this was a trait that I shared at least with you and Seymour Papert, if not with Marvin Minsky. Queried then, I would have said that Piaget had figured out the general stages of development but that his methods and concepts would need to be tweaked somewhat if he were to pen a volume called "The Child's Conception/Understanding of Music." (He had written a dozen books with analogous names.) And my approach, in which indeed I indulged as an aspiring empirical investigator, was to set up engaging tasks a la Piaget and note in which ways young persons engaged them. For example, I probed how children of different ages or

sophistication dealt with the recognition of rhythmic patterns despite changes in speed or the detection of the same melody as it is presented by a different family of instruments. The resulting scholarly articles fit easily into developmental or musical journals and that is where they belonged (meant as a descriptive statement, not an evaluative one).

But almost from the start, Jeanne, you took a very different, and, I would say, a much deeper tack. You did not simply take a Piaget-style task (e.g. recognizing a rhythm) and 'musicalize' it. Rather, you thought deeply about the nature of musical thought, musical intelligence, musical cognition, and how best to probe these forms of understanding in individuals of all ages, because many 20-year-olds are less musically sophisticated, (indeed less musical!) than some five-year-olds (and I am not just talking about Mozart or Yo-Yo Ma). Your genius was to come up with deceptively simple tasks; for example, ask young people to create a notation so that someone else would be able to recreate the same musical or rhythmic pattern if they had never heard it before or to construct a familiar melody using only a small number of Montessori Bells (thereby recognizing that the same sound/same bell can occur at various points in a melody) or to maintain a rhythm or a harmony in the face of interfering patterns.

Many people, including, I confess, me, would have done a neat set of experiments, using these or other manipulations, drawn some novel conclusions, put them in a box with a bow, submitted them to an appropriate journal and publisher and then moved on to a different topic—say, the child's understanding of literary style, or the relation between musical and geometric thinking, or how harmonies are created and processed across contrasting cultures. (And indeed, your work has touched on such wide ranging topics.)

But what has struck me, and others, is the incredible tenacity with which you have focused on the same focal set of topics, and insisted on probing deeper and deeper, from an ever great variety of angles; challenging your subjects, challenging your critics, and most important challenging yourself. It is no accident that your scholarly heroes include the philosopher Ludwig Wittgenstein. He was a thinker who would never accept a facile answer to a seemingly obviously question but would instead continue to dig ever deeper, not ever reaching THE answer (such does probably not exist) but giving us all a much fuller, more rounded and deeper picture of the entire problem space, which could extend very

far. (Or as you aptly quote "progress is marked less by a perfection of consensus than as a refinement of debate"). And indeed, I am so pleased that you have been able to put together your current best thinking, your most refined debate, in your just published collection "Discovering the Musical Mind" a worthy successor to your classic "The Mind behind the Musical Ear."

It would not be appropriate, even if it were possible, to respond to each of the many excellent points and demonstrations in your essay. Perhaps my most useful contribution is an effort to characterize what I see as the differences in your approach to 'music' at large and mine. You are trying to understand the various cognitive (and affective) processes that occur when an individual is becoming familiar with a fragment of music. And you rightly point out that a plethora of capacities can and should be brought to bear. And so, as an example, you ponder how we apprehend the implications of a musical segment and anyone knowledgeable about music would agree that passages have implications (think of the first notes of Beethoven's Fifth Symphony and the multiple ways in which they get transformed in the succeeding half hour, hour, etc.). And then you draw analogies to implications from other areas, particularly from mathematics and science, where statements or demonstrations have definite, sometimes algorithmic implications.

The best analogy that I can come up with is 'pattern recognition.' In any domain in which you work, from music to cooking to gardening to psychology, there is the skill of pattern recognition, which we find in our most gifted workers and which we try to develop in our novices and apprentices. But we cannot afford to beg the bigger question: What are the similarities, and what are the differences between recognizing patterns in cooking, as opposed to patterns in a fugue or in a mathematical set?

My work on 'multiple intelligences' is based on the premise that the content matters, and that forms of pattern recognition in one sector may not be analogous to forms of pattern recognition in another sector. To be perhaps excessively concrete, the fact that I can recognize patterns well in algebra does not have any predictive value for my pattern recognition skills in geography, cooking, manners, or the law. And even if there were a slight positive correlation between pattern recognition across two domains, it would have little explanatory power for what nurtures the

pattern recognition skill of a surgeon as compared to the pattern recognition skill of an editor or a master of table tennis.

Once one goes deeply into various kinds of musical tasks—as you have done, Jeanne—we would doubtless discover that some of them call on skills quite close to those used in, say, language or mathematics, while other musical tasks might call on skills that are closer to those valued in geometry or geography. That's the 'fine structure', or, as Mies van der Rohe might have said, 'the devil that is in the detail.' And perhaps, at some time in the future that is where our two rather different approaches to 'musical knowing' might meet.

Humility and GoodWork: Leading by Example

Lynn Barendsen

I think we grope our way, and if we don't grope our way with humility we are crazy.

John W. Gardner, GoodWork Interview

One of the great American leaders of the 20th century, John W. Gardner was a mentor of Howard Gardner. No relation, he has impressed and inspired Howard with his work and with his mind. Over the years I have come to realize that when John Gardner's name is invoked, there is going to be one of those "sage" moments, a sharing of wisdom. It was only logical that in thinking about Howard for this essay, I turn to one of his mentors. Not knowing (John) Gardner's writings well, I had no idea whether humility was something he had thought about at all—but as it turns out, it's not only a topic he considered, it's a value for which he had the highest regard. Even in the brief quotation at the start of this essay, he at once asserted the importance of humility while being humble (in reading about his brilliant work, I don't know how often others would describe him as lost or "groping" his way along).

Humility is one of the values I hold most dear: I work hard to instill humility in my children and do my best to model this behavior. I also value and do my best to act with humility in my work life. But I have wondered, at times, about the relationship of humility to achievement. In particular, I have been curious about the relationship between humility and GoodWork.

Over the years that I have worked with Howard, I have been both impressed and, at times, frustrated by his humility. I have been impressed because, in spite of a remarkable number of accomplishments and contributions both to his field and to the wider world, he remains unpretentious and unassuming. I have been frustrated because sometimes I wonder whether the good and important work that Howard does might be heard by more of those who need to hear it if he were less modest and more, well, loud.

All this said, I very much admire Howard's humility, and having seen it in action over the years, my respect and admiration for this

quality are much stronger than any momentary frustration I might feel. But let me be more specific. Howard is certainly aware of his fame and the far-reaching impact of his ideas. He is also no shrinking violet. However—at the risk of using one too many metaphors—he is also not one to blow his own horn. Howard's is not a false modesty: he lets his work, his ideas, and his accomplishments speak for themselves. They do so eloquently.

I have had probably hundreds of people ask me what it's like to work with Howard, or ask me, with stars in their eyes, "What's he like?" When we interview potential research assistants, we do our best to give them an accurate picture of what it's like to work with "Dr. Gardner." He's incredibly fair, thoughtful, and a wonderful mentor. He's straightforward and he doesn't mince words—that said, he's kind and appreciative of hard work. But he also works faster and produces more than anyone else I've ever met. And you need to be able to keep up. He doesn't expect more of others than he does of himself; in fact, he probably holds himself MORE accountable than others—hence that sense of fairness. But we do joke together about "Howard time" and a regular sense of time; "it should only take you 20 minutes." No, Howard, it takes YOU 20 minutes—the rest of us humans need an hour or so.

This is all connected to humility because I think that there are moments, on a regular basis, when Howard genuinely doesn't realize how brilliant he is. We see it in our weekly meetings, when we're all struggling to make sense of data, or working to formulate a good question, or trying to outline a course of action, and he summarizes it all in a sentence—he reduces and polishes beautifully. He sees connections between concepts, and the rest of us do our best to keep up. (And I don't think I'm just being humble here, either—although this is something I hope I've learned from him.)

What is it that makes some individuals consistently call attention to themselves while others act with modesty? Do those of us who believe in the value of humility value it for the same reasons? Are "good workers" necessarily humble? I had a hunch that humility is more complex than any one definition explains, and to understand it more completely, I decided to do what we often do: I turned to our data.

Just to be clear, this was not an in-depth analysis. I read through a handful of interviews with some of our more famous subjects in a

variety of domains—genetics, theater, philanthropy, business, and music. I deliberately sought out well-known, high achieving professionals because I wanted to understand the relationship between pride, success, and humility. I hoped to use this quick inquiry to gain understanding about humility. But I also hoped to gain some insight into my own highly valued mentor.

Here's what I learned.

1. Humility involves encouraging others; seeking out other creative, intelligent individuals (as opposed to being threatened by or jealous of them).

When asked about the challenge of managing creative and ambitious people, a well-known geneticist responded "[Be] on their side. [Don't be] jealous of them." (S043, GW Interview)

There is an interesting tension here: humility involves *confidence*, enough confidence to encourage others, appreciate them, and give them ownership over the work. Although this is similar to courage (which I will write about, below), this aspect of humility means finding the value in multiple perspectives. According to John Gardner:

I think you can go far in assuming that talent is out there, judgment is out there, and that you can gather it around you and learn from it … the ability is out there, the judgment is out there, if you're willing to tap it. And a lot of ailments come from people thinking they don't need to consult, they don't need to check. It's all up here (subject points to his head). And it's interesting how your IQ seems to rise with status. You think you're brighter because you've got a bigger title. (GW Interview)

Howard does have a bigger title than I do (as he should!). He's also clearly brighter than I am. But he couldn't be more egalitarian in his style of work and his style of mentoring. He pushes us to keep up while at the same time working just as hard alongside. He gives us the space to say what's on our minds, the freedom to try out new ideas without embarrassment, and holds us accountable, modeling the behavior and the work ethic he expects from us.

Beyond our small research team, Howard regularly seeks out others with whom he might collaborate, with whom we might all collaborate, and learn from in the process. Clearly collaboration is a

process and a topic that interests him, and we have begun to study it in earnest.

2. Humility means that recognition, or fame, is not necessarily about the individual, but about the work, or about something shared.

Even before I approached our data for this essay, I would have described Howard as someone who lets his work speak for itself. He is not wedded to his ideas, and they do not define him. Some of his ideas (multiple intelligences, for example) have very much taken on a life of their own, and indeed, many have claimed these ideas for their own purposes and some have run with them in directions quite different than Howard would have imagined or hoped. In many ways, Howard's interest in ethics is the result of what happened with his theory of multiple intelligences.

Interestingly, in the case of some geneticists interviewed, this was parallel to a GoodWork finding about responsibility. Some geneticists absolved themselves of any responsibility with respect to their discoveries—they left regulation and thinking through the consequences of their work to government. This same idea—"it's not about me"—seems much more benign when connected to the idea of humility. As he talks about the attention he's receiving with respect to the innovations going on in his lab, one groundbreaking geneticist explains:

I actually feel very vulnerable and even quasi-violated by the press coverage right now. Because I think in absence of the science being done, I'm becoming the object of it, instead of the view to the science. In my view this is not about me, this is about what we're doing. (S046, GW Interview)

Again, these assertions are benign when considered through the lens of credit for work done; less so when seen as an unwillingness to take responsibility for the work.

Our GoodWork study also looked at the domain of theatre, and actors spoke extensively about the process of collaboration. When a product is so clearly, *visibly*, the result of shared effort, the importance of the individual becomes secondary. John Lithgow spoke in glowing terms about his colleagues on *3rd Rock from the Sun* in this regard:

There is a certain workmanlike, ego-free atmosphere on the set. My favorite way of working is that the work is here and all of us are concentrating—like surgeons gathering around a body. This is the work. We are not important, the work is important. (GW Interview)

3. Humility means keeping it real, or, the "Mom" check.

For some highly successful professionals, humility comes down to a simple reality check. Business and social entrepreneur Anita Roddick, founder of The Body Shop, put it this way:

I don't think anything, any one thing I have done is remarkable. And I always feel fortunate, that I'm fortunate when I hear people say—like there will be an introduction to me at the speech today, and I think, oh, if my mum could see me now, she'd probably say "what have you done with your hair!" There's a reality check in life that I have … And it's not forced modesty. It's just not important. (GW Interview)

No matter how successful we become, there are those who will always remember us as we once were, or help to remind us about the parts of us that may have come from more humble beginnings. What does this have to do with GoodWork? Interestingly, when asking subjects about ethical dilemmas (was there ever a time in your work when you weren't sure about the right course of action?) we actually used something called the "mom test." Sometimes, subjects struggled to come up with standards by which they could discern whether or not they were making the right ethical choices, or standards by which they might judge their own work. One measure, almost universally accepted, was the idea of whether someone would be proud to have his mother read about his work on the front page of a newspaper. One way we judge our work is by the standards of those who know us best.

Over the years, I have gained a reputation for being (sometimes) the optimist on the GoodWork project. I see potential opportunity or positive outcome and (usually) Howard and Wendy (Fischman) are much more pessimistic. Howard is often my reality check, but I think he is also his own. I have heard him downplay success after success of his, and I think it has something to do with #4.

4. Humility is about understanding oneself within a larger arc of history, understanding current contributions as part of something much bigger, looking years back and thinking years forward.

Howard is forever placing our work within larger contexts, helping us to understand where our own impact might be, what has gone before, what things might look like in the future. Our work, although important, is small in the greater scheme of things. For example, one of the scientists we interviewed pointed to the number of inventions necessary to get something right:

… eighty-five thousand inventions, for example, [to break] the sound barrier. That cost many lives of test pilots because nobody knew the rules, that the wings had to be flat, not rounded, not curved … in biology we may be at one of these long curves … you don't know it until afterwards. (S050, GW Interview)

Once again, there are parallel understandings across professions, which points to the fact that humility is not necessarily dependent upon or more prominent within a particular world of work. Actor John Lithgow is clearly proud of his work and not without ego:

I get tremendous ego gratification from acting. I love being regarded as a star and a big shot. Like anybody, I'm not immune to that. But at least I have an ethic.… I don't always follow it—that theatre, the very heart of acting is performing for an audience and giving them a gift. Doing something generous for other people, not doing it for yourself. (GW Interview)

In addition to feeling some sense of purpose in his work, what keeps this man humble? He realizes his fame is fleeting because he is very much aware of the place of actors in history:

I know things are very cyclical. It's never far from my mind that what I'm doing right now will be completely forgotten thirty years from now … name the greatest actor of the 19th century. You can't! It's all very forgettable, what we do.… (GW Interview)

5. Humility is courageous.

As explained above, in the world of research and indeed in many innovative or creative ventures, it can take years to determine if you're on the right track (and some may never find out, conclusively, within their

lifetimes). Whenever we consider hiring someone on the project, we ask how s/he is with chasing moving targets. Because this is what we do—and things change rapidly.

In this sense, humility involves the courage to face impossibility. During our GoodWork research, Howard interviewed cellist (and friend) Yo-Yo Ma. Ma spoke about idealism and pushing oneself to achieve goals that may be out of reach:

People believe in something that is desirable but may not happen. Believe in something that's impossible. So rather than having certain types of goals that are achievable, we actually believe in … goals that are much larger than we can … achieve…. (GW Interview)

Because they are friends, this was not a typical interview, and Howard shared more of his thoughts than he usually does. As a result, we have access to his own take on this subject. The conversation evolved to consider a willingness to push oneself beyond what's easy, to be willing to fail or to humble oneself. As Howard explains it, constant success means he isn't trying hard enough:

I don't perform, but I [give] talks, and I know perfectly well the one of five times when it's really terrific, and the other times when it's okay. But the audience who only hears me that one time doesn't know that. And I always say… if it was always terrific I probably wouldn't have been stretching enough. You know, I have to try new things out, and they're not always … going to work out as well. (GW Interview)

Another example, with an added layer of complexity, comes from the world of theatre. Trying something untested, putting oneself "out there" without assurance of success, involves accepting potential failure. This is humbling. An actor has to take a leap of faith in order to make his portrayal convincing:

The curious thing about acting is that you sort of have to persuade yourself of its importance while you're doing it, or you can't do it … And there's a lot of self-delusion involved … every actor has the experience of thinking what he's doing is so great and then being absolutely astonished to find that people don't like it or that it fails. (Lithgow GW Interview)

In the end, my brief foray into the GoodWork data tells me that humility falls somewhere between faith and wisdom. According to Bill Damon:

…the other side of humility too is the feeling of faith, that somehow even though everything is a little out of control or you're not in control of it, that things will come out all right on the other side. (J. Gardner GW interview)

This feeling that "everything" is "out of control" is similar to what Ma describes as believing in something "impossible," or Howard's willingness to push himself beyond his comfort zone. What sees each of them through these various challenges? I would argue courage, with humility, and perhaps some element of faith as well.

During his interview with Ma, Ma turned the tables on Howard and asked him quite a few questions. One of these had to do with Howard's understanding of wisdom. Howard responded:

I think that the thing that is underestimated in wisdom is the role of humility. And you talk about impossibility. That's both Promethean but it's also ironic, because if it's impossible you couldn't do it. And I think the underestimated aspect of wisdom is a sense of humility towards things which one can't control … One of the things you get if you live for a long time is you get a sense of the sweep of possibilities. And the sweep of impossibilities … that's something that you can't have when you're … younger. (GW Interview)

I began this short investigation with a hunch about the importance of humility, and with very little knowledge about what Howard or any of our GoodWork subjects might have to say on the topic. Although, on the project, we have discussed it fleetingly, it's not a topic on which we have spent any real time. In the above lines, Howard includes humility as part of his definition of wisdom; it is clearly central to his understanding, as is a willingness to embrace that which is beyond control.

As I mentioned at the outset, when people find out I work with Howard Gardner, I typically face an onslaught of questions. Lately, a new set of questions involve his plans for the future: Is he slowing down? Is he going to retire?

Honestly, I think he's speeding up. Maybe it's because of the "sweep of possibilities" and "impossibilities" he describes above. Although Howard acknowledges there is a great deal beyond his control, he is nonetheless doing his utmost to pursue as many unanswered questions as possible. I, for one, am grateful to be along for the ride.

Howard's Response to Lynn Barendsen

On November 7, 2013, a group of a dozen scholars, drawn equally from the contrasting sides of middle age, gathered on the first floor of a building at Stanford University to discuss the current situation of 'good work.' Coming from several fields, each attendee was actively involved in a project featuring social entrepreneurial methods, with the hope of improving the lot of children, education, older persons, veterans, or some other group that could be better served.

In attendance was Mihaly Csikszentmihalyi, one of the founders of the Good Work project, on which (and with whom!) you have been working for almost 20 years. Mihaly had somehow noticed that the building in which we worked had a plaque dedicated to John Gardner, who had attended Stanford in the late 1920s, and who spent the last years of his life as a professor of business and education. At a lull at the end of the first day, Mihaly quietly suggested that each of us say a word about our relation to John Gardner and how our current work could be seen as a continuation of his efforts.

What ensued was, to my mind, astounding. Whether or not the individuals present had had close personal ties to John Gardner, all were able to speak eloquently about John Gardner's mission, what it had meant to them, how they sought to carry it further, and whichever ideas and practices and values they most cherished, whether or not they had gotten them directly from John Gardner or from his talks or writings or via an interim mentor. The half hour was inspiring!

For those readers who did not know John Gardner, and have not yet activated your favorite search engine, he was an amazing American Public Servant during the second half of the 20th century. John launched as many worthwhile organizations as any American alive: the White House Fellowship, Common Cause, the Independent Sector, just to mention a few. Though we share the same last name, our backgrounds are quite different, with John coming from a long line of California Protestant Republicans, and I, the son of German Jewish immigrants, reared in a home where the name of Franklin D. Roosevelt was hallowed. John and I were both trained as psychologists. And while neither of us kept the faith in a literal sense, I do believe that we were guided in both

interests and approach by our training as psychologists, at a time when psychology was not quite so balkanized as it has become today.

I came to know John during the last two decades of his life and it is no exaggeration to say that he was my major mentor and role model in the years before his death. In fact, it is not an exaggeration to say that, without John's recommendations and support, the project we now term "The Good Project" would not have existed.

Lynn, you are one of the pioneers of the Good Project, indeed having joined it when it was called "Humane Creativity" and spent many years when we operating under the aegis of "The GoodWork Project." I don't think that you ever knew or met John Gardner; he was several generations older than most of us on the project. But I know that you spent time trying to understand his ideas and his example, and attempting to infuse a Gardnerian spirit into our work.

You very kindly draw some comparisons between the two namesakes. Initially I have to say that I am struck more by the differences; John was an activist, a world figure, someone not afraid of controversy. He once told me that his biggest regret was not running for senator from California.

I am much more of a solitary scholar, working on a far more constricted stage, and cannot conceive of running for any office, even 'proctor of my dorm.'

I would like to think that I had a little of John's genius in anticipating which issues/events/problems would emerge in the future years and trying to create conditions to meet them. But again, I do this largely through writing and scholarship, and not through the creation of organizations. (It would have been fascinating to observe John Gardner trying to mobilize the digital media in service of his latest brainchild).

John Gardner was a humble man; humble in the sense that he did not brag about his achievements, was happy to have others bask in his glory, and saw no need to see his name or picture bandied about. He was also a person who was secure in his values and judgments, which included the capacity to admit when he was wrong and to begin again anew.

Compared to some of our more attention-grabbing colleagues (and there is no question that we live in a celebrity-crazed culture), I will accept a characterization of humility. Like John Gardner, I don't really care whether people know my name or my face. I'd much rather that they be influenced by my ideas and the practices I value and attempt to encourage. I do acknowledge a fact pointed out to me by cellist Yo-Yo Ma: you may appear to be genuinely humble on the outside, but you have to be secure on the inside if you want to achieve something, and that pride includes the ability to admit error and correct course. (This is where Charles Dickens' Uriah Heep falls short!) I would also add a feature of which I am not proud but which you, Lynn, know well—I can be extremely critical of other persons and that hyper-critical streak should not be part of the persona of the truly humble person. (Or at least, my personal role models for humility keep the hyper-criticism to themselves). Still, I thank you for calling attention to a feature that has struck others as well as you, and for linking it to a wonderful mentor, who modeled such invaluable behaviors, including humility, for generations.

Many Happy Returns, Howard!

Britt-Mari Barth

When I defended my doctoral thesis in education at the Sorbonne, in 1985, one jury member asked me: «How do you consider individuals to be different in their learning ?» It wasn't that I had not considered that question, but, given my experience in education at that time (including with my own three children), I had not found any relevant theory among many then being offered, so I avoided the subject. I did not know then that a professor at Harvard had published an important book in 1983: *Frames of mind: The theory of multiple intelligences.* The following year, being better informed, I had the opportunity to pay a visit to Harvard. Could I dare to stop in at the Graduate School of Education and possibly talk to Professor Howard Gardner ? I was lucky; he was there in his office. Yes, he was sitting in his rocking chair! Although I had no recommendation or introduction whatsoever, he received me graciously, and brought me into the conversation. "The courtesy of conversation may be the major ingredient in the courtesy of teaching."[1]

Needless to say, I entered this «*frame of mind,*» finding it especially useful in France, where education (still!) is very teacher centered and favours logical-mathematical intelligence to a large extent. As a Swede living and working in France but with a different cultural background, I was looking for a renewed theoretical perspective. I sought one which would provide evidence for the need to be more attentive to individual children's learning, and to offer purposeful resources to engage all children in in-depth learning activities. These activities should be of interest to them and allow them to demonstrate what they had learned. This fit into a broader cultural approach to cognitive psychology where Jerome Bruner, our common "hero," was introducing pioneering work.

The next encounter occurred on the occasion of the 200th celebration of the French Revolution, at OECD—in Paris, of course, where the Bastille had been stormed in 1789. The event was called "Learning to think, thinking to learn." Howard, who was the keynote speaker, remembered me and came to my own presentation; he listened

[1] Jerome Bruner, *The Relevance of Education*, Norton, New York, 1971, p. 107.

carefully to my work on “understanding.” He managed, as always, to give one the feeling of having done “*good work”* and of being “un interlocuteur valable.”

A few years later, when the surprising invitation from Howard arrived to join “Project Zero” at the Harvard Graduate School of Education as a « visiting scholar,» it seemed like a gift from heaven—and it was. In spite of world interest in “*multiple intelligences,”* Howard had already started moving on from the *“mind”* to embark on “*truth, beauty, and goodness.”* We around him didn’t know that then, but we noticed—in our regular meetings to asssess the work of “Project Zero”—his push to combine “*excellence and ethics.”* I was lucky, then, to be part of a group of researchers, be it only as a visitor, who could take advantage of an inspirational leadership focused on recognizing and encouraging the diversity of human strengths. For the educator I still am, this has an enormous impact on how you shape pedagogy, how you try to reach all students in order to involve them in creative, deep learning, combining the *“five minds for the future.*”

When you get to know Howard as a friend, it is easy to confirm his theory that everybody has a combination of the eight or nine intelligences—but the blend is not the same, nor the intensity! When listening to Howard playing Gershwin’s *Rhapsody in Blue* in our home, one could regret he didn’t become a musician! And when he gives a talk to a class or any audience, public or private, one enjoys his quiet humour and “connectedness.” He might have become a politician, an actor, or a priest!

Even the proverbial nine lives would not be enough for you to exercise your many talents, Howard! Be assured of our continuing admiration, and of our enduring friendship!

Howard's Response to Britt-Mari Barth

Many, if not most, of the people whom one encounters in life are more or less predictable: fellow students, fellow professionals, neighbors, friends of friends. While you and I are roughly of the same age (or, as they say, in the same cohort), Britt-Mari, I don't think it was probable that you, a Swedish-born French citizen, marred to an IBM executive, the mother of several lovely children, and a teacher in the Catholic school system in Paris and abroad, would ever cross paths with an American academic, of rather limited reach and restricted for the most part to the English language. (I always think of you, Britt-Mari, as linguistically talented, culturally diverse, and charismatic as Ingrid Bergman—even though your hair is blonder!).

With respect to our initial encounter: I have a somewhat different vignette. You wanted to meet the great American psychologist Jerome Bruner, because like so many of us, you were influenced by his powerful ideas, as expressed, for example, in his influential *The Process of Education*. You found your way to Oxford, where Jerry Bruner was then teaching, only to find that in fact you had gone to the wrong office, one inhabited by a natural scientist (was he a paleontologist?) with a similar sounding name. As a person whose middle name could be Perseverance, you eventually did meet Jerry Bruner. You and your husband Gustav became friends of Jerry and his wife and it was through that circuitous route that we finally became professional and personal friends.

Of course, once the improbable occurs, no matter how it is remembered decades later, then the connections can be effected. It turns out that you and Gustave had been students living in Cambridge at the time that I was an undergraduate. While we did not meet directly at that time, we can now enumerate several persons and couples who have become part of the lives of both of our families. Our scholarly interests also drew closer together. You learned about our work on individual differences and on artistic thinking; Ellen and I were impressed by your ingenious methods of developing categorical and classificatory skills in children, and especially those children for whom these tasks pose challenges. And given the many affinities in our family configurations, we have the opportunity to spend time together in the U.S., Sweden, France, Italy, and no doubt other sites as well.

You very kindly talk about learning from the early work that I had done in education, and then taking note of the shifting themes in my 'lab.' Let me return the compliment by saying that it's been a pleasure to watch the development of your own thinking about how best to educate and motivate young learners and I have been overwhelmed by your energy and passion in working with educators from literally all over the world. And then you take the time to send us post cards; one of those wonderful forms of civility from earlier times which, alas, has essentially disappeared.

In writing to Lynn Barendsen, who precedes you alphabetically, I touched on the importance of mentors, in all areas of education. Indeed, the loss, in effect, of mentors in many fields; for example, law, journalism, even politics—has been a grievous injury to American society. Fortunately the academy, and particularly the sciences, is among the last arenas of human endeavor where one can still speak comfortably about mentoring. Like some of the other contributors to this Festschrift, you and I are fortunate in having been personally mentored by

Jerry Bruner. It's part of our sacred task, going forward, to pass on those values and behaviors and aspirations to those whom we are privileged to mentor ourselves.

The Art of Fencing and Painting with a Half Brain

Antonio M. Battro

To Howard Gardner, who inspired so much my work with Nico

When Nico was three years and seven months old, he was submitted to a right functional hemispherectomy to stop a devastating and intractable epilepsy. This successful intervention permitted him to grow up as a charming and intelligent child in a healthy and supporting family, and he is now a young man full of projects. I met with Nico when he was five years old and started to give him support during his early schooling with the help of computer and communication technologies and with the remarkable collaboration of Lucía Maldonado (Battro, 2000). Since then, I continue in contact with him and his wonderful family. Nico finished elementary school in Buenos Aires and entered high school in Madrid where he now lives. He discontinued his studies when he was 18, but he expects to finish them later. Meanwhile, he got a special certificate on informatics for secretarial work as a disabled person. And most importantly, he is thriving in his family life and in an increasing extended social environment. In particular, he has discovered two fascinating fields in which to display his talents: the arts of fencing and painting. He became an amateur fencer (foil, epée, and sabre) and a member of the national team for fencing in a wheel chair. He is very conscious of this social recognition and showed me with pride the card that credits this exceptional condition. This young man now has a dream: to become a professor of wheel chair fencing. And, most remarkable, he is also becoming a sensitive painter! How could Nico, who is hemiplegic and hemianopic, and who had a profound loss of gray and white matter as a result of his right hemispherectomy, succeed in the arts of fencing and painting?

Science is friendship: Nico´s network

I will try to reflect on this exceptional case and recognize my friends, fellow scientists, and educators who supported and continue to help Nico in Argentina, United States, Spain, France, and Singapore.... I am convinced that "science is friendship," even our very modest

"microdiscoveries" are the result of an enormous network of people and circumstances (Battro, 2006).

I started to write about Nico at Harvard as a visiting scholar at the Graduate School of Education in 1997 and gave a first talk there in 1998 on the "education of a half-brained child." I received comments on my written work on Nico from Howard when I was visiting Singapore in 1998. His suggestions helped me to focus on the important issues of my endeavour. In Singapore I also received the generous collaboration of Ralf Kockro and Yeo Tseng Tysai of the Kent Ridge Digital Lab, KRIM, who simulated Nico's functional right hemispherectomy on a Dextroscope used in Computer Aided Surgery. Out of this came a book *Half a Brain is Enough: The Story of Nico* in 2000 (Battro, 2000) which contains the virtual brain images from this collaboration. I also had the generous support of Kurt Fischer, who gave me the wonderful opportunity to discuss this book with him at an Askwith Education Forum at Harvard in 2001. During my stay at Harvard as Visiting Professor (2002-2003) I had many more opportunities to work with Nico, who visited Harvard with his parents in 2002. In particular, I worked with Russ Poldrack, Jane Bernstein, and Mary Helen Immordino-Yang, who wrote a most remarkable doctoral dissertation on the comparison between two "mirror" hemispherectomies, right (Nico) and left (Brooke) in the realm of language, syntax, semantics, and prosody, and emotions (Immordino-Yang, 2005, 2007, 2008). A new extended study by Stanislas Dehaene and his team at the Neurospin Lab in Saclay, France, will help us to better understand Nico´s astonishing motor, perception, and cognitive development as revealed today in fencing and painting.

Lesion and Compensatory Analysis

Standard neurological "lesion analysis" (Damasio & Damasio, 1989) is important to describe the behavioral and cognitive troubles associated with Nico's loss of the right hemisphere with an intact cerebellum (Fig. 1). His hemiplegia inhibits him from accurately performing with his left arm and hand. He limps but manages to walk very well and even to run and swim. His left hemianopia does not impair his good reading or writing skills, or his fencing and painting talents. A "compensatory analysis" is now needed to complement the whole picture of such a remarkable feat of neuroplasticity. This is our next challenge.

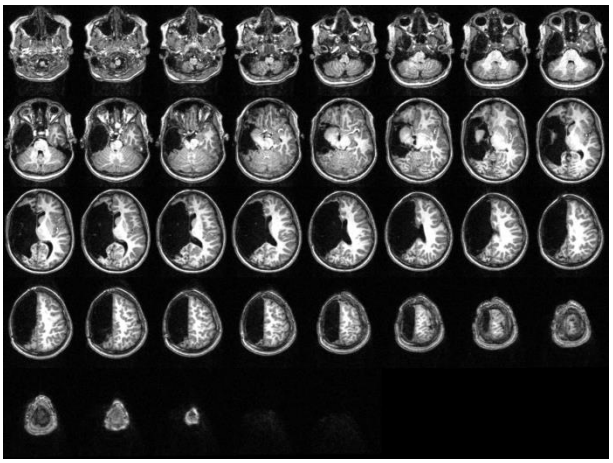


Fig 1. Images of Nico's functional right hemispherectomy (courtesy of Russ Poldrack)

Vision with the left hemisphere

In order to move skillfully in the difficult game of defense and attack in fencing, a thorough three-dimensional vision—good stereopsis—is required. Stereopsis is considered a right-hemisphere dominant process, but surprisingly Nico has stereoscopic vision without a right visual cortex. He passes the tests of random-dots stereograms of Bela Julesz (1971) with ease. It is impossible to cheat on this test, where several colored anaglyphs of random-dots are viewed with red and green filters. Julesz notes that humans, even babies, have a "cyclopean vision" that fuses the images of the two retinas in the cortex. In the case of Nico only the left visual cortex is functional. It is clear that his left hemisphere is competent enough to process all the 3D cues in the difficult art of fencing.

Another aspect concerns the higher-level visual and cognitive integration and differentiation of local details and global forms that are essential in the visual arts. A classic neuropsychological test is to present a target stimulus made out of small parts, a large letter M, composed by small letters z, for instance. Patients with a right-brain lesion detect the small components (the z) but lose the global form (the M), while patients with left- brain lesions do the opposite. What is really amazing is that in spite of his right hemispheroctomy Nico performs as a normal person correctly reproducing both local details and global forms. He is perfectly "glocal." This ability is certainly key for an artist in drawing and painting. But we still do not know much about how this amazing compensation is taking place in his left brain. In other words, in order to advance in the practice of "neuroeducation" we have to

understand the complex dynamics of human neuroplasticity (Battro, Dehaene, & Singer, 2010; Battro, Fischer, & Léna, 2008).

Arts and sports

Having followed Nico's development for more than 15 years, I can testify to how much he has improved in his motor skills. He belongs to a family with strong professional involvement with sports, who gave him the needed support. He learned to swim, play tennis, ride a bicycle, play soccer. And in the last years, he became more and more involved in fencing. This was a very clever choice, fencing being mostly an exercise for one side of the body. In the case of Nico he uses his able right arm and leg. He started several years ago in a regular class of fencing, and he practiced in an upright position with companions of all ages. The first years he practiced only with foil, but now he is also fencing with epée and sabre, which require a completely different set of motor skills.

Recently he was offered the opportunity to practice with motor disabled persons who were competing in wheel chairs. He was forced to sit in a wheel chair to be at the same competitive level with their team of disabled sportsmen and change accordingly the body schema for fencing, a difficult motor shift indeed. He did so well that he was invited to participate in national and international fencing competitions for the disabled in wheel chair. In this difficult sport both wheel chairs are fixed at a given distance and the game is centered in the quick movements of the upper part of the body and of the arm and hand. Nico has now discovered a new sport he loves so much that he would like to become a professor in the specialty of fencing in wheel chair. Moreover, he is still practicing regular fencing with non-disabled companions. This allows him to take part in many social events. He is certainly very proud of it. It would be important to analyze in an experimental setting, with some wearable brain imaging equipment, the role of his left brain and his intact cerebellum to process the remarkable shifts of his body image passing from the upright to the seated position of fencing. Recently, he spent a long time with me to explain the tricks and skills needed for fencing in a wheel chair. It was an amazing description, very accurate, and sensible. His "intrapersonal intelligence" in this case was to the point.

The art of painting and drawing

Nico's drawings in his early childhood were still poor when using his right and able hand. I could never imagine the unfolding of an artist from his limited "analog" of artful scribbles (Gardner, 1980). I tried to help him to draw and paint using the "digital cognitive" skills embedded in the "turtle art" developed by Seymour Papert with the LOGO computer language. He made some interesting work in this field in elementary school when he was eight years old (Fig. 2). Later, during some trips abroad we started to enjoy making drawings together and at some point Nico made a leap forward.

Fig. 2. Turtle LOGO art (Nico at age 8)

The important issue is that now as a young man Nico loves painting very much and attends art lessons in an atelier near his home. In a visit to Paris, he spent a lot of time in the museums trying to recognize those classic paintings he was copying in the atelier. A beautiful copy he did of Claude Monet's "Impression Soleil Levant" hangs on a wall at his house. He showed me also paintings of fencing inspired by photos (Fig. 3). A series of these paintings in small format became his first exhibit in the atelier. He was proud because he sold them (at a modest price) and gave one to me as a gift, when I told him that I was willing to offer it as an award to the best presentation by a young neurocognitive scientist at our annual international workshop on Mind,

Brain and Education at the Ettore Majorana Foundation and Centre of Scientific Culture at Erice, in Sicily. He wrote me a very sensitive email as a donor. This year, I bought another painting by him for another prize at Erice—a large still life. The fact that these paintings were done by a talented hemispherectomized artist was particularly appreciated by the winners and the participants, many of them engaged in diverse activities of neuroeducation around the world.

Fig. 3. The art of fencing: A painting inspired by a photo

Nico now paints interesting landscapes and still lifes and also remarkable portraits from photos (Fig.4). But for me a most amazing achievement was a self-portrait he made using a mirror. He explained to me in detail how he had proceeded in this difficult task. A half-brained-self-portrait (Fig. 5)! This complete portrait is in clear contrast with cases of left-side neglect in the self-portrait of adult artists with a right brain lesion. Compensation analysis should find an explanation for this fact. How could it be that the total removal of one hemisphere in infancy may have lesser cognitive consequences than a local adult lesion?

Fig. 4. Portraits

To sum up, Nico is thriving in the art of fencing and in the art of painting, two independent high-level cognitive, perceptual and motor skills. Most interesting, he is spontaneously working to build a bridge among both activities using any opportunity to represent the art of fencing on canvas. This original kind of synthesis is a sign of Nico's search for inner unity. A good example for all of us.

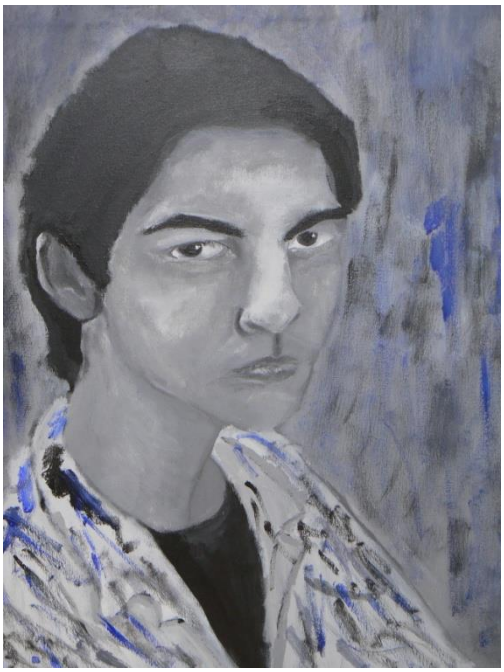


Fig. 5. Self-portrait

References

Battro, A. M. (2000*). Half a brain is enough: The story of Nico.* Cambridge: Cambridge University Press.

Battro, A. M. (2006). Microdiscoveries: A fractal story. Case study of creative paths and networks in science. *Paths of discovery*. Pontifical Academy of Sciences: The Vatican.

Battro, A. M., Fischer, K. W., & Léna, P. J (Eds). (2008). *The educated brain. Essays in neuroeducation*. Cambridge University Press.

Battro, A. M., Dehaene, S., & Singer, W. J. (Eds). (2010). *Human neuroplasticity and education.* Pontifical Academy of Sciences: The Vatican.

Damasio, A., & Damasio, H. (1989). *Lesion analysis in neuropsychology.* New York: Oxford University Press.

Gardner, H. (1998). *Artful scribbles: The significance of children´s drawings*. New York; BasicBooks.

Immordino-Yang, M. H. (2005). *A tale of two cases: Emotion and affective prosody after left and right hemispherectomy.* Unpublished doctoral dissertation. Harvard University Graduate School of Education.

Immordino-Yang, M. H. (2007). A tale of two cases. Lessons for education from the study of two boys living with half their brains. *Mind, Brain and Education*, 1, 66-83.

Immordino-Yang, M. H. (2008). The stories of Nico and Brooke revisited: Towards a cross-disciplinary dialogue about teaching and learning. *Mind, Brain, and Education*, 2, 49-51.

Julesz, B. (1971). *Foundations of cyclopean vision*. Chicago: University of Chicago Press.

Howard's Response to Antonio Battro

(Or "Tokyo" Battro, as our toddler Benjamin nicknamed you almost 30 years ago)

From time to time, I think of you as a scholarly Zelig, a character created by Woody Allen, who always manages to show up when something important is happening. You, too, Antonio, are always there as well. The difference is that there is always a good reason for you to be there and you add significantly to the proceedings.

Your background and reach have become legendary. Born in Argentina, trained throughout Europe in medicine, neurology, mathematics, psychology (and no doubt other fields of which I am unaware); ten years commuting to Brazil from Argentina to create and support new research teams on cognition; and then, in the last two decades, with much greater freedom, travelling throughout the world, as a scholar, a scientist, an educational missionary, and, importantly, a high-level representative of the Catholic Church, an active member of the Pontifical Academy of Sciences which is central to your life.

In addressing Lynn Barendsen and Britt Mari-Barth (your alphabetical predecessors), I've been emphasizing the importance of mentors in our own development. No one in this Festschrift has the range and depth of mentors that you do: Piaget and Fraisse in psychology, Marvin Minsky and Seymour Papert in computing, Nicholas Negroponte in media studies, and a wide range of figures from across the academic landscape in the Vatican Academies of Sciences and Social Sciences.

The risk of being a fantastic mentee is that you will in some sense simply carry on the work of your mentors uncritically. This has not been your fate! Thirty years ago, you were among the very first persons in the world to realize that computers, and what you have come to call 'digital intelligence,' would be a tremendous boon to individuals, particularly young persons, with physical or mental disabilities. At first alone, then with Percy Denham, and now with colleagues around the world, you have been the pioneer of digital prosthetics for learning.

As Claude Bernard famously reminded us, "Chance favors the prepared mind." In earlier times, there were patients whose cerebral

hemisphere had been separated in an effort to control intractable seizures. They were described in the literature by major scholars like Roger Sperry, Michael Gazzaniga, and Norman Geschwind. But before you began to work, on virtually a day to day basis, with Nico, no scientist in the world could legitimately declare: "Half a brain is enough." Not only has your title removed a dangerous misconception from the neurological literature; but it has given hope to all kinds of children and their families and their physicians all over the world. As we say on Passover, "That alone would have been enough."

But not content just to 'put it in the record,' you have formed a wonderful friendship with Nico and his family, arguably the most important relationship in his life. (I feel fortunate to have met Nico a number of times during his youth and also to have had correspondence, largely through your good offices). In your essay, you portray beautifully how this remarkable young man, devoid since early childhood of his entire right cerebral hemisphere, has been able to overcome deficits, and mobilize strengths, in the fantastic (a word that you would use!) realms of fencing and painting (including, as you put it, a half-brained self-portrait). Nico has already taken his place among the handful of human beings whose own cerebral pathology has helped all of us to understand the nature of human cognition, motivation, and personality.

From the individual to society: With close colleagues like Kurt Fischer and Marc Schwartz, you have given impetus to the creation of an important new society and journal dedicated to the International Study of Mind Brain and Education. I have no doubt that this organization, or its descendants, will eventually have historical importance.

Ellen and I are proud to call you, Marta, and your children our friends as well.

Good Work

Ron Berger

Two years ago I was charged with lining up the keynote speaker for the Expeditionary Learning (EL) National Conference, a gathering of about 800 teachers, principals, and educational leaders, held that year in Kansas City, Missouri. I was worried.

The theme for the conference, which I was proud to have suggested, was *Good Work*, based on Howard Gardner, Mihaly Csikszentmihalyi, and William Damon's conception and writing. The EL staff agreed that Howard's notion of Good Work described the mission of our organization as well as anything we had encountered. We gave our staff members and teacher presenters copies of the book *Good Work*, and all workshops and presentations at the conference focused on this theme. We ordered hundreds of red t-shirts with Good Work written in white lettering. But we didn't have a keynote.

Past keynote speakers, educators such as a Linda Darling-Hammond and Roland Barth, had created excitement just by having their names on the program. Howard would have been perfect, but of course there was no chance he was free, as we hadn't planned far ahead with themes and dates. He graciously recorded a video message of welcome for the audience. Big names were proposed—Oprah Winfrey, Michelle Obama, Arne Duncan—and there was even some hope for lining up one of those candidates: President Obama had been effusive in his praise during visits to two EL schools, and the Obamas had considered an EL school in D.C. as a possible placement for their daughters; Arne Duncan had a similar reaction to visiting an EL school in Maine. Despite these connections, I struck out entirely. I was unable to line up any big name keynote speaker who could make the concept of Good Work come alive for our network.

So we took an entirely different approach: We invited five speakers who were unknown to the world: Five teenagers from Rochester, NY.

On a cold Saturday morning in February, 2010, Khari, Kennethea, Emma, Ryan, and Eric—two African American students, one Asian American student, and two white students, took the stage in Kansas City and looked out on a crowded ballroom with crystal chandeliers. This is

what was most amazing: they were confident. And I was confident. Their school principal and teachers were confident. I had been worried for months, but I was not worried now.

The students were nervous, of course, dressed up in suits and fancy dresses, wiping their faces with linen napkins before being introduced, but they knew they would not fail. They explained this to me during the rehearsal the evening before their presentation. *This was not about them*, they said. This was not about giving a flawless presentation, being charming and clever. *This was about the work*. They were messengers for their classmates, sharing Good Work. It was work of which they and their classmates were deeply proud. They mounted the stage with sweaty hands and beaming eyes.

I first met Howard Gardner in 1989 when I was a student at the Harvard Graduate School of Education. He agreed to a brief meeting in his office—he had just a few minutes free that day—to look at my work. My "work" was actually student work—15 years of collected exemplars from my students in a rural public school. The fact that I had no credentials or reputation in higher education was not material to Howard: he was interested in only in the power of my ideas and the work. After five minutes we were done. Those five minutes changed the trajectory of my career. Howard scheduled a follow-up meeting; he included Ellen Winner; he invited to me to join the important work of Project Zero.

A few years later, I was a part of the collaborative team that joined HGSE with Outward Bound to establish the Expeditionary Learning school network, beginning with 10 public schools. Almost 20 years later, EL now has 165 schools nationwide and a strong record of student achievement, including many high schools in low-income communities that send 100 percent of graduates to college. My archive of student work has expanded to include hundreds of exemplars from K-12 schools in 30 states, and I have been working with Steve Seidel at HGSE for the past two decades to use this collection to support teaching and learning. One particular project in this collection—an urban revitalization report—was the topic of the student keynote address in Kansas City.

This is the story of Good Work those five students from Rochester shared with the audience that Saturday morning. Their 6th grade class was involved in a capstone service project related to the Erie Canal,

which they had studied throughout that year. They learned that the canal had originally run directly through the heart of the city, but that section had long ago been closed off, and the old channels had become derelict scars in the downtown, empty alleys, and channels filled with trash and graffiti and homeless individuals. A bond issue to rebuild and re-water these portions of the canal in an urban revitalization project—creating a business and art-friendly waterway—had been defeated.

The students could not accept this. They studied the engineering and political aspects of the issue and led a campaign to reopen the project. There was not an easy victory, but after a series of student-written reports, city surveys and presentations over the course of two years, the urban renewal project began to catch fire; three years later, it became real. As of that Saturday morning, these students stood as high school juniors and announced that the city of Rochester had committed tens of millions of dollars to begin the process of re-opening sections of the canal, revitalizing the downtown heart of the city. They showed slides and video of their work, and a video of Rochester's mayor explaining that none of this would have been possible without their campaign.

This, they explained, was their effort to contribute Good Work to the world.

I hope it can be included in the long list of accomplishments that comprise Howard's legacy.

A short video clip of the student keynote presentation can be viewed at this site: http://vimeo.com/35156168

Howard's Response to Ron Berger

Every once in a while, even at a selective institution like Harvard, a new student stands out. That was certainly the case with you, though you characteristically and modestly underplay that fact in your essay. Ron, when you came to study at the Harvard Graduate School of Education in the early 1990s, you were already a legendary figure in Shutesbury, the small western Massachusetts town where you had taught 5th and 6th graders for a generation. Within a short period of time, maybe not days, but certainly months, many of the students on Appian Way had come to know of you, a kind, modest teacher of young persons, who had over time fashioned quite specific methods for helping students to achieve work of high quality, to want to achieve that work, to expect to achieve that work. And, Ron, holding them and others to those high standards and not just in art or penmanship class! This confidence and competence was achieved, not primarily with blood, sweat, and tears (though there were probably some of those!); rather, these preciously achieved states reflect the quiet pride that arises when one finds that one is able to do, and do well, what one previously thought only others could accomplish or what one did not think about at all! Needless to say, the effects of such high quality classes transcend the individual students and the individuals' classes; they constitute a wake-up call to those strains in the wider polity with open eyes and ears. "Kids can do it, and they want to do it, and look here, look here, this is their work."

Though I think that you have always been more ambitious than you let on (consider my discussion of humility in my response to Lynn Barendsen), I believe that even you were surprised by the cavalcade of events over the next two decades. You have become a teacher of teachers, indeed a flagship master teacher. You have expanded well beyond middle childhood; you have joined and now occupy a major leadership role in the major (I am tempted to say 'the only') impressive instance of comprehensive school reform in the U.S. - 'Expeditionary Learning.' You, a mild mannered man, who look much younger than your years, have engaged in difficult political struggles with those who would undo the mission of Expeditionary Learning. In fact, I think it would not be an exaggeration to declare that if one wanted a single educator to communicate what is possible with ordinary (not privileged) American Kids and how best to achieve it, you, Ron, would be at the head of the list.

Part of your humility is that you prefer that the spotlight be cast on someone else. And so when you were charged with directing a conference on education, rather than nominating yourself or casting about for Oprah Winfrey or Arne Duncan or Michelle Rhee, you instead asked five students from Rochester to describe their tireless efforts to refurbish the Erie Canal, including the raising of millions of dollars. I'm especially pleased that the student project had a 'good work' accent; one ought always to be thinking about ways in which one should use one's skills and sensibility for the broader welfare. As the Romans might have quipped, "the thing speaks for itself!" and Ron, you speak for children everywhere.

Sailing with Howard

Jean Berko Gleason

When I retired from Boston University in 2005, Howard spoke at the event my department held at the Hyatt Regency Hotel in Cambridge. He noted that he and I are about ten years apart in age and in training, and that we share a long and complex history. This includes being students of Roger Brown at Harvard, working for many years with Harold Goodglass at the Aphasia Research Center at the Boston VA Medical Center, and spending much of our academic and intellectual lives conducting research on various aspects of language and cognition. Howard and Ellen and I are even neighbors, living on the same impossible to find street in West Cambridge. Over the years he and I have had many conversations, not always about academics. In one such conversation early in our careers we discussed the nature of life, our lives, and we talked about Katherine Anne Porter's novel, *The Ship of Fools*, which had been a great success in the 1960s. Porter's novel is about passengers on a ship going from Mexico to Germany in 1931, but the ship of fools as an allegory has a long history in Western literature, and Howard and I compared notes as fellow passengers on our own ship of fools. We weren't being dramatic or particularly pessimistic, but I think we had both come to the developmental point in our lives where we realized that this was it. The life choices we had made and the people we knew would be with us for the rest of our trip. The only way I was going to run away and join the Gypsies was as a developmental psycholinguist.

Since that conversation many years ago, Howard has become one of the most influential people in the world in the fields of cognitive science and education. Among his many contributions, no doubt the best known has been his theory of multiple intelligences, that we all have a number of different kinds of intelligence, and that we each have our own unique profile. Howard and I were calling on our existential intelligence (one of the intelligences Howard has considered adding to his roster of eight) when we considered the nature of our lives. My own linguistic intelligence is on the high end, but thinking back on my hideous experiences at college mixers, I realize that my kinesthetic intelligence is such that I won't be dancing with the stars. In addition to providing such sobering personal insights, Howard's theory has informed and affected

my own thinking and research, especially while conducting cross cultural research with groups of Roma in Hungary.

Beginning in the 1980s I had the good fortune to be invited to the Hungarian Academy of Sciences in Budapest a number of times to conduct collaborative research with Zita Réger, a member of the Linguistics Institute of the Academy. Zita, who remained my good friend until she died in 2001, was a major force in Hungary in countering the prevailing racist view that Gypsies are an inferior people. (I am using the terms *Gypsy* and *Roma* interchangeably here; there are disagreements about terminology that are beyond the scope of this essay, both in the scholarly world and among the people who might be called by either name.) A powerful member of the Academy had claimed that Roma were lower on the evolutionary scale than Hungarians and that Gypsy parents didn't even talk to their children.

Zita and I set out to collect actual data on mother-child interaction and the acquisition of language by children acquiring Romāni. This involved driving around eastern Hungary and visiting villages with Gypsy populations, where we made observations in people's homes and collected questionnaire data. We combined this with data that Zita had from a project that had made hundreds of hours of tape recordings in everyday settings. Among our initial findings, which we published in the journal *Language in Society* in 1991 (Réger & Gleason, 1991), was a description of the special characteristics of child-directed speech in the Romāni language. Gypsy mothers do indeed speak to their children, and we were the first to document the baby talk lexicon in Romāni. Mothers not only spoke to their children, they used baby talk to infants, and with older children they recounted traditional fairy tales as well as projected scenes from the children's future lives. We also discovered a rich oral culture, a tradition of elaborate storytelling, and children's games that involve reenactment of complex social activities. For instance, we saw nine-year-olds conducting make believe weddings, complete with an eloquent father of the bride.

Our observations of life in these villages revealed something about the comparative value placed on different intelligences in our culture and that of the Roma we met. The first difference is in the realm of music, of musical intelligence, where performance is an essential part of Roma life. Music was a very important part of every community we visited. Unlike some of us, it appeared that everyone could sing and dance, and we were

amazed to see an 11-month-old infant singing in tune. The people we visited were very poor, but they made music by singing, clapping, stamping their feet, and producing remarkable instrumental-like sounds with their mouths, a technique known as oral bass. Musicians are held in high regard in this society, and the Roma have been noted for their musical abilities since the Middle Ages. I learned only recently that we owe Gypsy musicians a singular debt. They preserved the Jewish music of Transylvania after the Germans, during World War II, sent essentially all of the Jewish population of Transylvania to Auschwitz and other death camps. In recent times, the Hungarian folk group Muzsikás found Gypsy musicians who remembered music they had played at Jewish celebrations before the war and with their help were able to bring some of this lost music back to life.

Another intelligence that is emphasized in the Gypsy community is in the interpersonal arena. The Roma we visited took an intense interest in us, in their own children, and in other people's children. Everywhere we went, we were surrounded by friendly but very inquisitive people, who made note of everything about us. We found that people knew a great deal about their own children, and about their neighbors' children, including where the children were in various developmental domains. For instance, they might be able to tell you which baby talk words a neighbor's child used, and what they meant. Interpersonal intelligence is also an important component of some traditional Gypsy occupations. Fortune telling, for instance, requires keen interpersonal intelligence—the ability to size up a person one has just met and to say insightful things, based on tiny clues embedded in the person's physical appearance, manner, dress, and general self-presentation.

The Roma are a stigmatized group, not just in Hungary, but just about everywhere, including in our own country. They originated in India, and during medieval times appeared on the European continent. Despite immense pressures to assimilate (or to disappear), they have maintained their cultural identity over the centuries. We cannot say how they have done this, but I think their interpersonal intelligence has helped maintain their extraordinary group cohesiveness and their musical intelligence has helped sustain them, materially and spiritually.

I began these comments with some nautical allusions, so I had best stop taking this lap around the deck, and simply end by thanking Howard for his friendship, his creativity, and his successful efforts to

make the world a better place. Our ship is riding higher in the water these days, and some of our favorite passengers have left for an unknown shore. We're grateful that we're still on board. So, sail on, Howard. Here's to a very long voyage.

References

Réger, Z., & Gleason, J. Berko (1991). Romāni child directed speech and children's language among Gypsies in Hungary. *Language in Society, 20,* 601-617.

Howard's Response to Jean Berko Gleason

In our household at 70 Larchwood Drive, which is less than 100 yards from yours at 110 Larchwood Drive, you have been part of our lives for almost half a century. So much so, that you can be variously called "Jean" "Berko" or "Gleason" and everyone know who is intended. And if we are among the scholarly cognoscenti, we can also invoke the term 'wugs'—since that is your most famous (though not necessarily your most important) contribution to the study of child language, what we now call 'developmental psycholinguistics.'

We may differ in age by a decade but our career and personal lives are amazingly parallel. You from Ohio, I from Pennsylvania, were among the first to attend college from our European-origin families. I fell in love with Harvard, you became attached to Radcliffe, and we have remained in this region ever since. We married fellow Harvard types, your husband Andy being one of the giants—and a truly humble giant—of mathematics in the 20th century. When my three oldest children were young, they used to watch the three Gleason children make a daily trek to the Shady Hill School, and a few years later, Kerith, Jay, and Andrew were making essentially the same trek. And when it came time for Ellen and me to choose a home of our own, we found it easy and natural to move to your neighborhood. (Though, we paid a bit more for our house in 1989 than you and Andy did a half a century ago!).

By a remarkable coincidence, you, Ellen, and I all studied with the same doctoral adviser Roger Brown. Roger was an amazing scholar and a truly wonderful human being. We all loved and venerated him, and I think that the feeling was reciprocated. But he spent his life as a closeted gay person and in the end that proved to be too much for him to handle. He relates that sad history in his official (he would have said 'buttoned') entry in the History of Psychology in Autobiography, and in a more painful, unbuttoned, indeed naked form in his thinly veiled Emeritus (originally entitled Against My Better Judgment). Our common mentorship by Roger is an important part of our lives, as it is of all of his students

You put it well in your contribution to the Festschrift: you and I both realized early on that there was only one "ship of fools' and we both found ourselves on the same one for well over a half century. As vessels

go, our lives in the Cambridge-Harvard-Boston College-Boston University milieu were sturdy ones; indeed, you successfully built a nationally-recognized psychology department at Boston University. We saw it as our job to investigate what interested us, in ways that made sense given our broad background in the then well-known field of social relations, and our specific linguistic training at the hands of Roger Brown. I hope that our relationship with Roger Brown made his life a little happier, as it certainly made ours much richer.

As for our actual work, it is better described as parallel than as convergent. We both studied the development of child language, but while you focused on morphological constraints and on mother-child interaction, I was more interested in the poetic and metaphoric use of language. And while we both worked for decades at the Aphasia Research Center of the Boston Veterans Administration Medical Center, you again focused on the more 'normal aspects' of language—syntax, phonology, morphology, while I was more likely to be exploring exotic forms of language as in the appreciation of connotation, humor, or irony.

I have known something of your decades-long interest in the Roma population. But until reading your essay, I had never thought to connect "MI Theory" to understanding the development and the strengths of this much maligned population. Thank you for making the connection and so convincingly! An important assumption of MI theory is that all of us, barring frank pathology, have the potential to develop the range of intelligences. The extent to which, and the ways in which we develop these intelligences, heavily reflect cultural history and priorities. At many times in history, those in power decide to valorize certain intelligences and to belittle others. Not only is this short sighted, but it actually can become an enervating self-fulfilling prophecy. If we are going to sail on one ship of fools—be it restricted to the Boston area, or expanded around the globe—we may as well strive to help people, individuals and also groups, achieve their most impressive potentials.

Eric Blumenson and Eva Nilsen

It is a great pleasure for us to join so many distinguished colleagues, students, and friends in celebrating Howard Gardner's work.

The first obligation of scholars is to understand and reveal their biases, so we begin by declaring our own: like so many, we admire Howard greatly for his many talents and traits—as a psychologist, scholar, teacher, public intellectual, ethicist, and family man—but we know Howard best as a dear friend. Our friendship with Howard extends to his wife, Ellen, and his son, Ben. They have been loving supporters, generous friends, and wise counsel to us and our daughter, Claire, for nearly 30 years.

When we met Howard as a Cambridge neighbor, he was already celebrated for his theory of multiple intelligences. The impact of this work, as everyone here knows, has been immense. Howard's work on multiple intelligences, and on how children learn, suggested some better educational choices in the face of competing curricular demands, budgetary constraints, and multiple modes of learning. And Howard himself engaged the educational policy world as an effective reform advocate.

But these were only the beginning of many diverse chapters in Howard's intellectual life, including inquiries into cognitive science, creativity, persuasion, and leadership. His concern for an education informed by ethical and psychological considerations has spread to the professions generally, and culminated in the GoodWork Project (undertaken with collaborators Mihaly Csikszentmihalyi, William Damon, and Project Zero researchers). This ongoing project investigates what constitutes ethics and excellence in a variety of professions, and the conditions under which practitioners might act according to those ideals in a world where so many conventional incentives and rewards are market-based.[1] Howard was made for the GoodWork Project, both

[1] We've had the pleasure of discussing this project with him and contributing in a small way to its study of the legal profession, where ethical challenges are pervasive. Most fundamentally: if justice is supposed to constrain power, the question is how it may do so robustly when access to justice is often dependent on wealth. The GoodWork Project convincingly explored the legal profession from the inside (and indeed, as anyone who

because he is a polymath with boundless curiosity who easily engages people in their own fields, and because these talents are inextricably bound to a deeply moral sense and generous heart.

Most recently Howard has set his sights on the deepest values underlying his work—beauty, truth, and goodness. As he notes, his career has pursued each of the three in succession: first as a psychologist of the arts, then as he explored human cognition, and more recently as he commenced the GoodWork Project. Without formal training in philosophy, and perhaps because of this, Howard's most recent book—*Truth, Beauty, and Goodness Reframed*—is the assured work of someone who has discerned the nature of these ideals from the ground up.

From a philosophical perspective, the question this book tackles is an age-old one: amidst all the differing views in the world regarding what is true, beautiful and good, are any views privileged, and if so, how would we know? The cultural relativist/objectivist arguments on these issues never end, but Howard's answers are not the usual ones, and they certainly are not purely philosophical ones. Indeed, he implicitly denies that one can identify or explain these virtues on a purely conceptual, ahistorical basis, because his very project is to construct a modern-day understanding of these virtues. Instead, the book delivers a truly interdisciplinary inquiry which draws heavily on history, psychology, sociology and art, as well as philosophy, in formulating an account of the virtues that is well-suited to our times and wise in conveying how people of all generations and professions can further and exemplify them.

In Howard's account, globalization, the postmodern sensibility, and the digital age have rendered classical understandings of these virtues unpersuasive. On a postmodern account, disembodied ideals of truth, beauty, and goodness are naïve: one is deluded to think one can transcend one's nature and nurture so as to discern some unmediated ideal; one can only act as an embodied, socially constructed being who sees the world through lenses ground from one's culture and upbringing. Similarly, today's digital portals expose us to many worlds, allow us many identities, and render the borders between the true and false, the

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has met Howard knows, he is a skillful practitioner of what in law school is called "thinking like a lawyer").

authentic and fake, the beautiful and the kitsch far from obvious. The postmodern, digital age seemingly leaves little room for a "neutral," privileged truth, or morality, or aesthetic.

In *Truth, Beauty, and Goodness Reframed,* Howard accepts this brave new world and even finds much good in it, but he is no relativist. For Howard (as for us), the usefulness of the postmodern sensibility and instant digital access is in part that they help us to correct our misinformation, to expose ourselves to new and different ways of doing and living, and to better recognize and correct our biases. Rather than making us nihilists, in Howard's view this unprecedented era gives us the potential to get closer to the truth (or rather, as the book argues, the variety of truths that reside in distinct disciplines), and to develop a more informed, individual aesthetic sense. It also creates more complicated ethical responsibilities, in which we must live not only according to the morality of the Ten Commandments or the Golden Rule, but also according to the distinct ethical requirements that come with our increasingly differentiated roles in society.

In our own reading, Howard's book is about intergenerational teaching as much as it is about truth, beauty, and goodness. As he suggests, our postmodern, digital era "has ushered in a playing field that puts younger and older persons in an admirably complementary position." Each generation can assist the other in understanding and developing the virtues, and that is one of the great gifts of Howard's book: it is the work of a deeply thoughtful man who has much to offer successor generations, and who has learned from and appreciated their very different experiences and views. Like all of his other books, *Truth, Beauty, and Goodness Reframed* explores some of the most fundamental questions and, by making them understandable and relevant to lay readers around the globe, makes a worthy contribution towards a saner and more ethical world.

Howard's optimism and integrity are unyielding at a time when cynicism is the prevailing modus operandi, and his generosity to family, friends, colleagues, and students is well known to all who celebrate him today. Thinking of Howard, we anticipate he will continue to contribute remarkable and innovative work across many areas, and that scholars and professionals will develop his work and extend it to unchartered territories. Most of all, we look forward to what we know will be many more years of warm and lively companionship.

Howard's Response to Eric Blumenson and Eva Nilsen

Thanks to my late mother Hilde, the Gardners came to know the Blumenson-Nilsen family. Ellen and I had just moved to a condominium on 15 Lancaster Street with our infant son Benjamin. Hilde noticed a slightly older girl, Claire, playing by herself in the capacious garden next door at 13 Lancaster Street. Hilde suggested that we introduce Claire and Ben to one another (Pam, Claire's longtime baby sitter may have been the intermediary), and that marked the start of a wonderful childhood friendship which has endured, through thick and thin, through childhood, adolescence, college, and most recently Ben's marriage to Genie and Claire's marriage to Terrell. Happily we were all able to attend the weddings, and by a strange, perhaps Freudian coincidence, both Father Eric and Father Howard forgot to bring their belts to their off-springs' ceremonies! Fortunately, other belts came to the rescue…and there was no need for any couch analyses!

It's great when childhood friendships endure to the adult years; it is a bonus when the parents get along and continue to meet socially even after the kids have left home. In our case, our mutual friendship with Carola and Marcelo Suarez-Orozco has added immeasurably to this long relationship.

I am especially blessed because of an unanticipated overlap between Eric's scholarly interests and mine. I am trained as a psychologist-social scientist, Eric, you are trained as defense/criminal lawyer and have taught for decades at nearby Suffolk Law University. The secret that we share is that we are both, in a sense, philosophers' manqué: we read philosophy, we like to think that we think like philosophers, and on occasion, we are even able to gain the eye or the ear of real philosophers.

In 2008, I gave a set of three lectures at New York's Museum of Modern Art with the title "Truth Beauty and Goodness: Reconsiderations in a Post Modern Digital Age." A principal purpose of that exercise was to determine what happens, and what should happen to our classical notions of beauty, truth, and goodness, at a time when two powerful forces are in effect: l) the post-modern critique, which challenges the validity of any honorific term like 'truth,' and 2) the fast changing digital media, where any kind of image or statement can be easily altered, and

where messages can be evanescent on the surface and yet, paradoxically maintain some form of permanence … one can never prove that a digital trace has permanently vanished.

Any writer, and especially one who has embarked on unfamiliar territory, is fortunate indeed if he can find a reader who is interested, sympathetic, and yet critical. Eric, you fit all three of these desiderata magnificently. You were in sympathy with my project, you read my drafts carefully, you did not hesitate to point out problems or inconsistencies, and you helped me to straighten out some of the linguistic, conceptual, or illustrative messes into which I had gotten myself. More than anyone else, you helped me to steer the tricky shores between an unsustainable absolutism on the one hand, and a mindless relativism on the other. And you helped me to see that our era is one in which teaching and learning can genuinely proceed in both directions across traditional generational gaps.

I can't say that Truth, Beauty, and Goodness Reframed surmounted all the problems of its ambitious ambit. But even if it did not come up with the right answer, it raised many of the right questions. And for that singular achievement, I owe a great debt to you, Eric and to Eva, whose own comments also strengthened my thinking and my argument.

Taking the Pulse: Howard, Human Potential, and Our Changing Times

Veronica Boix Mansilla

The story is one I have only shared with friends, typically over a glass of wine and generous laughter. Today, it is only opportune that I share it with you, a reader perhaps intrigued by Howard Gardner's work, mind, and influences, disposed to celebrate him, or too tempted to anticipate his legacy to put this book down. Writing about Howard and approaching his production as an object of commentary while working so closely with him for two decades demands enormous reflectivity. A modicum of agility in moving between personal and academic spheres is required to paint a revealing intellectual portrait in broad strokes, while sidestepping the temptation of detail presented by too many delightful moments of cognitive excitement, unexpected discoveries, as well as shared disappointments. In what follows, I begin with the personal story about how I came to work with Howard. I then attempt a brief sketch of his intellectual character in broad strokes. Subsequently, I turn my attention to a moment in Howard's intellectual life I had the privilege to witness up close*:* as he reframed his examination of disciplinary knowledge production in "the ethical turn" to Good Work.

The Story: In Search of the Mind

Among individuals who have the fortune of calling two countries "home," stories of migration are not uncommon. Mine begins in the mid-1980s at the University of Buenos Aires, where I was completing my studies in Education Sciences with a special emphasis in cognition. It was a time of unparalleled intellectual fervor in Buenos Aires. The dictatorship had finally collapsed, too many in the generation above mine were no longer there, and it was up to us, or so we felt, to build a thriving democracy from the ruins.

It was a glorious time of possibility, of individual and collective self-discovery. The University of Buenos Aires stood ready to embrace anyone caring to reflect about how societies work and how knowledge is constructed. Year after year, we worked to ensure that thousands of new

incoming students, of all ages and walks of life encountered Durkheim, Hobbes, Weber, Locke, Rousseau, Descartes, Kant—a cognitive immunization of sorts, against epidemic residues of authoritarian thought. Under the exquisite tutelage of Edith Litwin, who later became UBA Provost, I was training to do social scientific research in learning and instruction. If we could only understand how people learn—the deep structures and processes of the mind—we thought, we would be able to devise instructional approaches that were effective in yielding meaningful learning, critical thinking, and other intellectual virtues foundational to a democracy.

The social sciences had been decimated by the dictatorship, and the intellectual elite, including those returning from exile, worked fast to reconstruct a basic infrastructure of readings, publications, and public dialog events. Still, access to new research production was limited to the books or papers travelers could bring back. We shared, photocopied, and discussed each publication with excitement even though, in hindsight, our exegesis of text probably far exceeded our authors' communicative intentions. I especially valued spending time with my friends in philosophy, talking about mental representations and the "mind-body problem" (a philosophical predecessor of cognitive neuroscience debates of today). John Searle, Jerry Fodor, and Marvin Minsky were entering our reading circles and sitting next to Descartes, Kant, and Rousseau on our bookshelves. Serendipitously, I came across a book on one of my friends' shelves by an author no one knew much about. Its title: *The Mind's New Science*. The book was, in my view, a masterful synthesis of developments in psychology, artificial intelligence, anthropology, philosophy and linguistics, delineating the contours of a new revolution—in this case an intellectual one—determined to open the black box of the human mind and reveal its majestic capacities.

I confess I fell in love with that book. It enriched my intellectual consciousness by helping me understand the broader historical context that gave meaning to our questions. We were not alone, inventing ways to understand whether visual advanced organizers would enhance comprehension of complex texts, or gauging the power of metaphors to represent scientific concepts. A social scientific revolution centered on the mind and expanding well beyond psychology was taking place and we were, unbeknownst to us thus far, very much part of it. I organized a group of my friends in education, and we studied *The Mind's New Science*

chapter by chapter on Wednesday evenings. My philosophy friends laughed at my strong preference for this unknown author, *Howard Gardner*, over the options on the shelf: Decartes, Kant, Rawls, Locke.

Yet through its cross disciplinary review, the book made a strong case for the centrality of mental representations as a desirable level of analysis to examine the longstanding philosophical problem of how human beings make sense of reality.

To my mind, the major accomplishment of cognitive science has been the clear demonstration of the validity of positing a level of mental representation: a set of constructs that can be invoked for the explanation of cognitive phenomena, ranging from visual perception to story comprehension…. Making the general case for representation is one thing, making it with precision and power quite another. (pp. 383)

If the book did not fully propose a theoretical mediation between aprioristic and empiricists views of human cognition (that would come later for Howard), at least it established a common construct—"mental representations"—on which to ground a dialog between computer scientists, philosophers, psychologists, linguists, neuroscientists, and anthropologists. Furthermore, it catalogued the multiplicity of empirical approaches that might enable us to stake some ground on this territory with "precision and power." At that time, few social scientific enterprises seemed more ambitious and exciting.

I had wanted to study abroad for a year, preferably in Paris, so I can't express my disappointment when I learned that the author of my favorite book was in the United States. Politically speaking, the United States—a country dangerously allied with the fallen dictatorship—felt like a problematic destination, to say the least. Facing disapproval from many of my colleagues, I insisted that Gardner was there and a country that had produced a Woody Allen had to have room for me for one year. To complete the argument, Chomsky, Geertz, Searle were all North American and the cognitive revolution seemed to be finding its epicenter in the US. My mind was made up: I was to try to study with Howard Gardner. What happened next has yielded many a smile and nostalgic comment among my friends. And yet, for me, it also echoes the stories of resourcefulness from numerous bright-eyed students I see arriving to Appian Way from the developing world each year.

I accepted a short summer job offer in Saint Tropez, in exchange for a trip that would allow me to visit Boston on the way. I arrived in Cambridge, MA armed with a translated *cv* and three letters of recommendation. Young and clearly lacking any sense of protocol, I walked into Project Zero to "see if Dr. Howard Gardner was there, as I was hoping to come and study with him." As asynchronies in life would have it, Howard was traveling. But his assistant, Karen Chalfen, kindly promised to pass my materials along. From Project Zero, then in Longfellow Hall, I crossed Appian Way to Gutman Library, where I spent the rest of my two days in Boston photocopying the latest articles to bring back home.

If you allow my digression, I deplored the summer in Saint Tropez. Worried about a fragile democracy at home and infinitely excited by the trove of articles I had photocopied, my patience was short for the vanity and extravagance that my European peers exhibited in that privileged corner of the world. To my immense surprise, Howard wrote back (he always does), asking for two pages describing my interests. Still in France, I had just finished reading *Frames of Mind*. The complications of measuring intelligence were not a concern of mine, but the question of the symbol systems with which the mind represented distinct kinds of content (works of art, literary products, scientific notations) proved profoundly intriguing. I puzzled over the languages of domain-specific metacognition: Did artists blend propositional and visual symbol systems when reflecting about the processes of art and what about scientists and musicians? If my thoughts were taking shape, communicating them in English was not without challenges. I was fluent in French and Portuguese and possessed basic German but had never produced a line in academic English. Clearly, a native speaking editor would be needed.

I attribute it to youth, determination, the resourcefulness that comes from growing up in the developing world, or perhaps a compulsive form or optimism that, upon completing a viable draft, and without much hesitation, I set off with my two pages for a long walk on the beach, determined to find someone who looked both British and cultivated. To my delight, an older man, reading alone under an umbrella accepted the request to correct my text. I still carry with me the look in his eyes when he reached the sentence about studying with Dr. Gardner at the Harvard Graduate School of Education. He put the letter down, seemingly for an eternity, and produced a smile that combined incredulity with generosity

in equal measure. About a year later, having completed my research on classroom discourse analysis and the role of metaphors in helping youth understand the concept of entropy, I was again walking through the doors of Project Zero. This time, I had a scheduled appointment with a human being whose mind and integrity would profoundly influence my path.

An Intellectual Sketch in Broad Strokes

Taken together, *The Mind's New Science* and Howard's own proposed theorization in *Frames of Mind* embody two essential dispositions in Howard's intellectual character. They were expressed in embryonic form then, but would shape his path in the decades to follow. First is his notable capacity to take the pulse of his time and frame his work accordingly; second is his uncompromising fascination with human potential-viewed in cultural context. In my view, failure to understand these traits amounts to failure to understand his *oeuvre*.

Taking the Pulse of His Time

If *The Mind's New Science declared* a timely "cognitive revolution," his response to the cognitivists' dilemmas about how the mind interprets reality, *Frames of Mind* was cast as a blow to dominant views of intelligence in American culture. It was perhaps not surprising that he sought to nurture such disposition among his students. I remember vividly, early in our doctoral training, I hosted a dinner for Howard and my cohort of friends to talk about the nature of academic life. How does one go about selecting the most powerful dissertation topics? What comes after the degree? How should we prepare? We talked about intellectual passion, about serious publications, about the priority of significance over endless methodological debates—the latter seeming a mandatory rite of passage in the construction of our academic identities. Howard listened attentively to our excited deliberations. When we posed the questions to him, he paused, and offered one piece of advice: *Dedicate 45 minutes of every day to reading the newspaper, preferably the New York Times, of course, and*—somewhat counter-intuitively for us at the time—*including the business section!* Case closed….

Taking the pulse of contemporary societies and framing his work as a response demands voracious curiosity. In an ironic turn, Howard, a man whose life spans a good part of the 20th century, has an intellectual bent more characteristic of the 19th century naturalist than the 20th

century specialist. He is interested in production stemming from multiple disciplines, reading neurobiology, sociology, psychology and economics, and current events with equal delight. Keenly aware of disciplinary distinctions and their epistemic games, he remains unencumbered by their borders or jurisdictions when it comes to understanding how the human mind develops, breaks down, is organized and changes.

At the same time, Howard's growing preference for efficient text, his intellectual agility, and multitasking capacity resemble the 21st century mind: in constant communication with many individuals at once (albeit via email, not Facebook), while listening to media (albeit National Public Radio not Pandora) in the background. Among the images I most cherish of Howard, having been in his office neighbor for almost a decade, are the peaceful concentrated hours by himself, in the long, cold, Northern evenings of Cambridge. There he is, typing as if playing Mozart on his keyboard; surrounded by dozens of idiosyncratically organized piles of papers on the floor, many of which are already placed in his bag for night reading; in the sole company of his old plastic radio—predictably tuned to NPR or, occasionally, the WBUR Classical. It is Howard's insistence on holding two fingers on the pulse of contemporary societies that has rendered him, at times to his own surprise, a recognized American public intellectual.

Fascination with Human Potential

The second disposition in Howard's outlook on the world is his uncompromising fascination with human potential, viewed in broad cultural context. *The Mind's New Science* suggests a preference for the study of complex 'molar' human accomplishments such as the development of natural language and aesthetic sensitivity (the topic of his PhD dissertation), over "molecular" ones such as perception or memory. *Frames*, in turn, makes the case in full form: Human potential is multifaceted and can only be understood in context with a keen eye for the kinds of capacities that are valued by a culture at a given time: navigation, the arts, social relationships, self-understanding. From my standpoint, the strength of his argument lies in his very contextualization of human potential—an area where Howard proves more Brunerian than Piagetian.

Howard's unwavering emphasis on human potential in cultural contexts has multiple points of departure. A primary influence was his

early work on the groundbreaking humanities curriculum led by Jerome Bruner. *Man: A Course of Study*, epitomized a comprehensive and disciplinarily informed exploration of three fundamental questions: What makes humans human? How did they come to be so? How could they be made more so? Howard's later examination of creative, leading, and disciplined minds as embodied in individuals of extraordinary capacity can be read as his own enlightened responses to these foundational questions.

Other influences can be found in his office, where carefully framed old letters stand as reminders of the dialogical nature of his thinking, his respect for the minds that inspired him, and his humble comfort with open critique. In one frame, we enjoy Erik Erikson's early gratitude: "My true thanks for what you call 'this little piece' in the Harvard Gazette: an account of a mature kind of undergraduate spirit." In a different frame, Claude Levi-Strauss reacts to very young Howard's sagacious critique: "…to be quite frank, the kind of criticism you level at me makes me shrug … I look at myself as a rustic explorer equipped with a woodman's axe to open a path in an unknown land and you reproach me for not having yet drawn a complete map, calculated accurately my bearings and for not having yet landscaped the country!" Further along, Jerry Bruner celebrates his young colleague's case for a developmental and culturally situated account of intelligence and concludes with characteristic optimism and wisdom: "You are responsible for your ideas, Howard, and three cheers for it."

Howard's fascination with human potential permeates academic and personal spheres. His world is populated by past and contemporary humans of enormous achievement, whether he is listening to Mozart on his radio, revisiting his work on Gandhi, quoting John Gardner, celebrating Jerome Bruner, laughing with Yo-Yo Ma, planning an imagined elevator meeting with Barack Obama, or enjoying a witty conversation with Marcelo Suarez-Orozco. Such figures are sources of deep satisfaction for him. At times, they also serve as models, or unconscious paragons, influencing small daily decisions such as how to address a conflict between colleagues, why to speak up in the face of misconduct, or how to be respectful of a foreign visitor and calibrate a statement for his non-American interlocutor.

Constructing a portrait, as I have attempted thus far, requires balance. Embryonic signs of Howard's intellectual character can be

delineated, but they must be brought to color the full arc of work. Legacies can be predicted but Howard, the person, with all his idiosyncrasies, humorous internal contradictions, uncombed commentary, endearing laughter cannot be lost from sight. For me, it is the long undistracted conversations I have with Howard about life, ideas, family, and time that are always most enjoyable. Typically at Casablanca, letting topics float freely over almonds and olives, these conversations are made of trust, sincere friendship, laughter, and unconditional respect. Whether they touch on the role of work in his identity, a book I want to write, or shifting values among the young; whether they are about his grandson Oscar's latest discovery or my children Nico and Valentina's schools, these conversations feel unequivocally like home—serene and easy. Most powerfully, they contain a *je ne sais quoi* that all too gently inspires me to become a better person, mother, scholar, citizen—with an eye on human potential and two fingers on our times. And then again, amidst the gratitude Howard inspires in me and in so many around him, his portrait cannot miss the essential brush line that renders him a noteworthy public intellectual, his search honest, and his story wise. In this spirit, allow me to shed a personal light on his most remarkable intellectual transformation: the turn to Good Work.

In Search of Meaning: The Ethical Turn

Sensitivity to ones' *Zeitgeist* and a quiet determination to engage emerging sociocultural forces upfront can prove demanding during accelerated times. Arguments must be revisited to meet emerging intellectual trends and discoveries. Questions must be reframed in light of novel forms of significance in changing landscapes. Nowhere is this demand more visible in Howard's work, than in the ethical turn that followed a year at the Center for Advanced Studies in Palo Alto.

Prior to his sabbatical, Howard and I had been working closely in the Teaching for Understanding Project, surrounded by fabulous colleagues at Project Zero.[1] We had come to view disciplines such as history, mathematics, the arts, biology, and the habits of mind they embodied, as the most valuable human intellectual accomplishments of the last century and therefore noble and necessary aims for education. If

[1] The TfU was a multi-year initiative co-directed by Howard, David Perkins, and Vito Perrone.

the empirical studies of misconceptions of the 1980s guaranteed the rigor to our claims, the stubbornness of the pre-disciplinary mind added urgency to our mission. Furthermore, scarce access to such culturally valued modes of thinking by low-income youth who needed it the most completed our disciplinary emphasis with a social justice overtone.

We puzzled: Was there a general progression model able to depict the transition from everyday language and thinking to disciplinary or academic forms? What kinds of capacities and epistemological stances did disciplinary understanding embody? How could we best depict disciplinary expertise in intellectually respectable *and* accessible ways? Howard' synthesis of the misconceptions literature in the *The Unschooled Mind* had set clear foundations for the argument. Reading European theorists such as Yves Chevallard, Paul Hirst, and Agnes Heller, and American ones in the Joseph Schwab-Lee Shulman-Sam Wineburg school enabled me to further distinguish common sense from disciplinary expertise. If our arguments were rapidly finding their way into the published page, our excitement encountered breath-halting skepticism in the ATLAS Seminar—a serious exercise in envisioning a millennial school reform, co-led by Howard, Ted Sizer, and Jim Comer around 1993. I soon came to think of ATLAS as the place where ideas met in fierce battle to return enriched and nuanced as a result.

Throughout the Seminar, Ted Sizer (whom we all miss enormously) sustained his distrust of disciplinary understanding as a central purpose for schooling, on grounds of lack of relevance to the lives of children in public schools. In his mind, meaningful relationships and open-ended inquiry stood as optimal incubators of desirable and long-lasting habits of mind. As Howard and I saw it at the time, questioning the significance of disciplinary theories, concepts, and methods amounted to putting into question the very Enlightenment project that had given us deliberative and representative democracies, extended life expectancy especially for the poor, and the possibility of a critical analysis of the world in which we lived.

Month after month Howard and I sharpened pencils and arguments to propose an increasingly precise case. While multiple forces shape one's mind, it is fair to say that ATLAS awakened our sensitivities—Ted's included—to a more nuanced conception of the disciplines and a moderated view of their role as a central purpose of education. There was more to being a person than our cognitive human

potential, even if construed in its full multiplicity. There was also more to disciplines as human enterprises than concepts, methods, and excellence. Envisioning the purpose of education in the fast-approaching 21st century would require going back to a—now more informed—drawing board.

I found my drawing board in Harlem, teaching a course on autobiography and history as a personal investigation into the role that disciplinary thinking might play among less economically advantaged youth. Beginning familiarity with the postmodern critique of the disciplines was helping me also construct a budding identity as a critical modernist in Habermas' sense: I recognized the critique of the disciplines as opportunities to reflect and deliberate about their purpose, impact, and blind spots. Howard, on his part, found his drawing board at the Center for Advanced Studies. There, he and two friends, Mihaly Csikszentmihalyi and Bill Damon, discovered that they could choose the sort of problem that they would want to work on in the following decade of their professional lives. Better still, they found that their concerns and choices overlapped: "Is it true that most creative scientists and artists are selfish and ambitious, unconcerned with the common good?" "Why is it that experts primarily teach techniques to young professionals, while ignoring the values that have sustained the quests of so many geniuses?"

"Refreshed" was, unquestionably, the term to describe Howard's mental and physical outlook at his return to Cambridge. On the surface, one could attribute his easy laughter and light commentaries to a curious newly acquired California-style relaxed mood. Yet further scrutiny revealed a profound excitement in the face of a new—incredibly meaningful—chapter in his life. His new focus of study—"Humane Creativity" later re-named "Good Work"—embodied Howard's core intellectual dispositions fully. It not only expanded his longstanding appreciation for human potential to include the ethical sphere. It also responded squarely to the pulse of our fast-accelerating, decisively market-driven, millennial times.

If Howard had been inclined to a molar view of the mind, understood in cultural context, Good Work represented an equally molar view of the *person*, understood in treacherous times. In Good Work, Howard engages cultural context with a critical eye. No longer does he frame societies as spaces where human biological predispositions are selectively nurtured enabling humans to develop, overcome obstacles,

and sometimes excel. Societies also present the individual with ill-directed incentives, whereby "success in life" is all too often cast in material and individualistic terms. The "person" in Howard's Good Work emerges as one equipped with remarkable bio-cultural potential, yet charged with navigating the dilemmas of our contemporary world. Perhaps most importantly, this "person" is not only shaped by his or her environment—but has an opportunity *and* a responsibility to shape such environment in turn.

If this new view of human potential in social and cultural context took center stage in Howard's Good Work, his capacity to take the pulse of societies reaches here a high note. Consider it carefully: The early sketch of the Good Work idea emerged half a decade after the fall of the Berlin Wall—the iconic experience that jolted the world order in favor of a single-poled victorious capitalism. Adam Smith was crowned in Berlin in 1989. Karl Marx would need to find new footing amidst the debris. Joseph Stiglitz was amassing his arguments. Howard Gardner was, undoubtedly, taking the pulse. His observations would prove of long-lasting significance. Almost two decades later, market forces shape our everyday lives ever more visibly, from health, to politics, to education. They inform the public discourse of leaders as well as the intimate aspirations of youth imagining what to do when they grow up and how they will lead their lives.

Responsibility becomes not only a focal object of study, but also a value Howard seeks to live by. Responsibility underlies the extra step he takes to correct an error in an earlier communication, to clarify a statement that could be misconceived, to explain how he stopped making jokes that breed disrespect. Responsibility too underlies his recent efforts to take a proactive stance voicing alternatives to a hegemonic market-inspired education. What kinds of persons do we need to nurture? What kinds of societies do we want? he asks, stepping often reluctantly, into the role of public intellectual to him ascribed. For me, these questions bring the story home in full circle, to those early years in my life, when our educational efforts had an unequivocal democratizing purpose. Taking the pulse of today's society suggests that we live in equally pressing times—now cast in global and environmental terms and much in need of serious reflection about the purpose of education. A reflection that requires both that we maintain two steady fingers on the pulse of society and that we harness the human potential and strength of our

youth. Once again, few enterprises feel more ambitious and exciting… and few individuals more uniquely poised to continue to inspire us in the decades to come! With gratitude, joy, and anticipation for what is to come, a warm “Happy Birthday” to Howard, the mentor, the person and, above all, the friend!

Howard's Response to Veronica Boix-Mansilla

In your essay, you have done a magnificent job of outlining your most unusual life story—the path that took you from Buenos Aires, via various Latin American and European stopping points, to the East Coast of the United States (nearly two decades in the Boston area, more recently, with your lovely family in Washington, D.C., though with happily frequent jaunts to Harvard Square). While you did not say it explicitly, you are a true intellectual. You combine the deepest strands of Latin, Northern European, and American thought, with a powerful social conscience.

My own memory of those years is necessarily dimmer, of course. I would add that, in my view, when you came to our shores, you were inclined to be more of a lumper; to consider all intelligence of one piece, all cognition of one piece, the disciplines as similar to one another, the connections that obtain among disparate entities and ideas, etc. This is a natural way of thinking, certainly one that is reinforced by our textbooks and lectures. I believe that I was able to nudge you a more pluralistic, differentiated view of human cognition and learning—different forms, each worthy of exploration in its own right—different minds, different disciplinary configurations, and different varieties of excellence.

For my part, as you point out, I was strictly adhering to a disinterested view of all of learning; a hesitancy to put my own cards and beliefs on the table. It was clear to me that you had very strong social goals and a clear moral compass. I was impressed by this deep commitment; I think it was one of the factors that eventually pushed me toward explorations of 'the good' in life. As you nicely put it, I was shifting from a focus on the mind (with its pristine neutrality) to a shift to the person, where one cannot overlook issues of personality, motivation, and values.

I'm grateful for your gracious and graceful twin biography. It will help all readers get a sense of your amazing intellectual and cultural journey over the last twenty years. And it will give many readers a keen sense of how my own development occurred over that period of time, seen at the beginning through the eyes of young and gifted student, and over time, through the eyes of a valued peer … and with a keen attention

to other important catalysts, like a multi-year seminar with Ted Sizer and other colleagues.

Indeed, over the last twenty years, we have worked on so many projects, and papers, and platforms together that it is very difficult for me to delineate where your efforts end and mine begin, and vice versa. In our times, credit has become very (probably too) important; you have been extremely generous in giving credit to me, even when it's clear that much if not most of the heavy lifting has been on your part.

I would add: There are any number of topics in which I may have had an initial 'intimation' or 'itch;' for example, the importance of interdisciplinary study, the properties of a truly global education, the forms that learning should take place in the future, but where you have clearly made the topic your own. And now, increasingly, individuals and institutions all over the world look to you for guidance, which is appropriate. I am impressed by the care and attention that you direct to the often disparate and rather ill-formed requests for advice and help. With time, I think, you will be better placed to separate the wheat from the chaff. Still, it is admirable to err on the side of generosity, which you always do both as a scholar and as a human being.

On Good Work and How to Help Students Find It

Derek Bok

During the academic year 1994-95, Howard and two friends and colleagues, Mihaly Csikszentmihalyi and Bill Damon, conceived the idea of launching their GoodWork Project—an inquiry into what makes a career in the professions truly satisfying. The project was surely welcome and not just because work and career make up such a large part of life and whatever fulfillment and frustration it brings. A number of trends in recent decades have helped to make the study especially timely and important.

To begin with, the nature of professional work has been changing in ways that have significantly affected the quality of life for members of many professions. On the one hand, new settings have emerged in which to work, such as charter schools, start-up businesses in exciting fields, specialized publishing houses, health maintenance organizations, online magazines, and nonprofit groups of all kinds. On the other hand, many professions have gradually become less of a calling and more like a business. In public schools, teachers have lost some of their autonomy in the classroom as districts struggle to raise standardized test scores and meet stricter standards of accountability. In journalism, corporate owners of newspapers and television networks have tended to become more bottom-line oriented, cutting news staff and pressuring reporters to feature more human interest and sensational stories that will appeal to wider audiences. In medicine, health maintenance organizations have pressed their doctors to see more patients, do more paperwork, and accept closer supervision to control costs. Publishing houses have been taken over by large companies that often seem more concerned with the bottom line than with high literary standards. In almost every profession one hears stories of increased stress, longer hours, and greater difficulty keeping a healthy balance between work and family.

Law practice offers a good example of the sweeping changes that have altered the nature of many professions and the satisfactions they afford. New opportunities to practice have emerged with the establishment of legal staffs in universities and other large nonprofits,

bigger in-house law offices in major corporations offering their members a wider variety of problems, and public interest firms that fight for the environment, human rights, and many other worthy causes. At the same time, the more traditional law firms are hiring larger numbers of young lawyers, intensifying the competition for partner status. Every attorney in these firms is now held accountable by having to record the hours each day for which clients can be charged. Associates are judged in part by the number of hours they bill, creating strong incentives to work longer. Instead of enjoying virtual tenure, as they once did, partners are now evaluated increasingly on the amount of new business they bring in and may be asked to leave the firm if they are not "adding sufficient value." In return for greater stress and longer hours, these changes have led to starting salaries that often reach six figures for especially outstanding recent graduates along with annual incomes in the millions of dollars for senior partners in leading firms.

Along with changes in the professions, the priorities of young people have also shifted. Beginning in the 1970s, more and more freshmen entering college indicated that their chief ambition in seeking further education was to make a lot of money. Meanwhile, their interest in developing a meaningful philosophy of life and improving society and the environment gradually declined.

The desire to make money has clearly carried over into professional life. Successful practitioners in a number of fields have become more and more intent on earning larger and larger incomes. Compensation for top corporate executives, leading medical specialists, and senior partners in large law firms have risen to unprecedented levels. Doctors, lawyers, top corporate executives and financiers are all well-represented in the highest one percent of American earners. To many of these highly paid professionals, earnings seem to matter not merely as a means to a better lifestyle but as a way of measuring success and personal achievement. For such individuals, no amount of compensation is ever enough.

A very different development that bears on the process of choosing a career is the growing empirical inquiry into the determinants of happiness. Over the past three decades, hundreds of studies have been published based on self-reports from individuals indicating which conditions and experiences of life are associated with happiness and satisfaction and, conversely, which seem to produce distress and discontent. While some of the findings seem obvious and expected,

others are surprising, even counterintuitive. In such studies, perhaps, lie insights, such as the bearing of income on happiness, that could help young people in their search for good work and a good life.

In studying changing conditions in a variety of professions and their effect on the morale of practitioners, Howard and his colleagues concluded that several things mattered more than money to the quality of work. Three features seemed particularly important: work that is challenging enough to give successful practitioners a sense of mastery and craftsmanship in what they did; a belief that their work had a value to others sufficient to make it seem meaningful; and a work environment that made it possible to maintain appropriate ethical standards and still be successful in one's career.

What Howard and his colleagues also found was that professions varied greatly in their ability to combine these three elements successfully (Gardner, Csikszentmihalyi, & Damon, 2001). Some callings, like genetics, managed to keep all three in satisfactory alignment. Others, such as journalism, had become less capable of doing so. For these callings, the pressures of competition and other changes in their environment brought about shifts in goals and practices that eroded one or more of the conditions essential to "good work."

As an educator, I instinctively reacted to Howard's findings by wondering how they might bear upon the role of colleges and universities. Recent research has shown that young people today are having a harder time deciding what line of work they want to pursue. If that is so, could universities do a better job of helping their students think about their careers? This question is especially important for faculties to consider, since it is in college and professional school that young people are likely to make critical choices about the type of work they will perform in later life. Although their decisions are not irreversible, radical change becomes more difficult once one has completed a professional school and embarked on a career. Doors may not close completely on leaving the university, but the options narrow appreciably.

Young people can already find much in universities to help them make enlightened career decisions. Colleges permit students to sample a variety of courses and subjects that can make them aware of strengths and weaknesses, interests and aptitudes that are useful in choosing a

satisfying line of work. Bull sessions with fellow undergraduates can inform them of interesting possibilities and help them to appreciate more of the considerations that might bear on their decision. Placement offices offer another obvious source in which to learn about job opportunities and the programs of study one must complete to enter many professions. Some colleges even arrange discussions with alumni from different occupations who are willing to discuss their professional life with interested undergraduates or arrange summer jobs or internships that can give students a first-hand look at occupations they are considering.

Professional schools also do much to assist students in making more specific choices about the specialty or type of work within their chosen calling that will prove to be most rewarding. Once again, courses, informal conversation, placement offices, and summer jobs can all contribute to a more enlightened choice when the time comes to make a decision.

What more might colleges and professional schools do to help their students find their way?

Critics within the academy have periodically questioned whether colleges do enough to prepare students to think really deeply about what it means to lead what Alexander Meiklejohn described as "a life worth living." Allan Bloom had many critical things to say about this problem in his best-selling polemic in 1987, *The Closing of the American Mind*. More recently, Yale law professor and former dean Anthony Kronman has sounded the alarm again.

[T]he question of how to spend one's life, of what to care about and why, the question of which commitments, relations, projects, and pleasures are capable of giving a life purpose and value…, this question was taken more seriously by most of our colleges and universities in the middle years of the twentieth century than it is today. Increasingly few teachers of the humanities believe that they have either the competence or duty to offer their students an education in the meaning of life.

Professor Kronman's point is undoubtedly accurate for most colleges. While any student determined to explore the meaning of life can usually find courses with readings fit for the task, few colleges do much to encourage such study, let alone offer classes specially designed for the purpose. Most programs of general education do little more than require students to take two or three courses—many require just one or two—in

each of the major bodies of knowledge—the humanities, the sciences, and the social sciences. It is only by the merest chance that the courses chosen will help undergraduates think deeply about the purposes of their lives, since few of these offerings were ever intended for this purpose. Surely educators can do better than that. It would be fruitless to require undergraduates to study the history of philosophy or the Great Books if they are not inclined to do so. But the search for a meaningful life seems plainly important enough to warrant a serious effort by the faculty to devise an optional course of study designed to expose students to the best that has been written on the subject.

Although such courses can help students think about how to live a fulfilling life, it is much less clear how much they do help students achieve this goal. The Great Books are better at raising questions than supplying answers. They contain a wealth of views from powerful minds, but the opinions vary too widely to offer much guidance. Their chief contribution lies in helping students to see through superficial answers and to appreciate the complexity of the quest for meaning and fulfillment. For many students, as for Professor Kronman, that is precisely what makes them so valuable. Without disputing this view, however, one wonders whether there is more that colleges can do to help their students answer questions raised by Great Books courses and decide how they can lead a fuller, more satisfying life.

An obvious step in this direction would be to offer courses based on what researchers have discovered about well-being. A number of colleges are doing just that. Indeed, if interest in Great Books courses has declined, the opposite is true of offerings by behavioral scientists on happiness. Such courses can acquaint students with what is currently known about happiness—the methods by which it can be measured, the accuracy of the results, and the wealth of experimental findings about the sources of well-being and distress and the duration and intensity of their effects. The makeup of such courses is similar to that of most college classes in the behavioral sciences, but the relevance of the material to the lives of students often makes them very popular. At Harvard, for example, a recent course on happiness attracted over 800 undergraduates, making it capable of reaching half the entire student body over a four-year period.

Courses on happiness, like Great Books courses, cannot tell any given student how to lead a satisfying life. The research yields results

that, at best, simply express probabilities that certain activities and conditions will bring satisfaction, lead to unhappiness, or have no lasting effect one way or the other. The findings will not hold for everyone and may have little or nothing to say about many specific questions individual students are facing. Nevertheless, the conclusions—like many of the findings one reads concerning exercise or diet—are at least worth knowing in deciding how to live one's life.

In addition to classes and placement office data that may bear on the choice of a career, students need opportunities to reflect upon their lives, discuss career choices with others, and identify the values that matter most to them in search of personal fulfillment and well-being. It is worth considering whether some sort of course could serve this purpose well. That is an educational challenge few colleges and professional schools have seriously considered, a challenge quite different from anything faculty members encounter in giving an ordinary class. There are few settled facts or established principles to convey. Most professors will not feel that they have any truths to pass on or special knowledge to impart. Even if they did, it would be wrong to suggest to students that there is only one way to live an exemplary life. Rather, the instructor's task must be to construct an environment in which students are stimulated to think more deeply about the issues and arrive at their own conclusions.

For students who take this inquiry seriously, enlightenment may come not only from acquiring more information about different careers but from reading biographies and memoirs or even novels and short stories and discussing them with classmates. Such materials may not only tell them more about the nature of work in a profession but give them insights about themselves and the kind of person they would like to be. Robert Coles tried to achieve this result by offering seminars in different professional schools using works of fiction that raised ethical issues and touched on other recurrent personal dilemmas common to the calling in question. Students who might be too shy to acknowledge personal doubts and fears to classmates found it easy to discuss them in commenting on the behavior of fictional characters.

Although courses that provide such opportunities have cropped up here and there, universities have little experience with education of this kind. Only a few faculty members may even be willing to undertake such an assignment. Given the difficulty of the task, one cannot assume that

they will succeed or condemn them if they fail. Yet it is not unreasonable to ask them to try. In the end, what greater contribution can a college or professional school give its students than to help them to arrive at more enlightened choices in their search to find a truly satisfying career?

Whatever academic leaders and their faculties may think about the specific proposals mentioned above, there is unquestionably much for them to ponder in considering whether more should be done to help students live fulfilling lives. If Howard and his colleagues encourage more discussion of this subject on the nation's campuses, they will have accomplished much of which they can be justly proud.

Howard's Response to Derek Bok

Derek Bok and Sissela Bok you are long-time and treasured friends, who have had a wonderful and entirely benign impact on my family and me. For so many individuals, both in Boston and around the world, you serve as role models for what it means to be good workers, good citizens, good persons, and, let it be said, a wonderful married couple. I hope that someday someone will write a powerful joint biography of both of you, and the unique role that you have played for so many persons over so long a period of time and in so many locations. But since you chose, generously, to make individual contributions to the Festschrift, I shall address you individually, in turn.

Derek Bok, I had not realized it until recently but you have essentially been my 'boss' for most of my lifetime. (Perhaps that's because 'bossiness' is not a word that anyone would associate with you). You became President of Harvard at the time that I received my doctoral degree, granted me tenure fifteen years later, and, in February 2006, when the University was in crisis, you generously agreed to return to Cambridge in a successful effort to restore tranquility to our beloved but troubled institution. (I'd like to think that a phone call that I made to you in Florida, a few weeks earlier, helped you to reach this decision but I have a broad enough perspective to know that "a second presidential term by Derek Bok" was the watchword on everyone's lips.) In the vernacular of our national sport, 'the ideal, indeed the only conceivable, relief pitcher.'

One word about your granting me tenure. Over the decades, this speech act ("I grant you tenure") is considered to be of singular importance, certainly for the candidate receiving tenure—and occurrences at the meeting of the *ad hoc* committee are the subject of much gossip. In my case, tenure was awarded in 1986. The distinguished outside examiners were Jerome Bruner (my unofficial teacher for many years) and Lee Shulman (a distinguished educational psychologist whom I hardly knew). Various Harvard faculty were called on to testify as to whether this young psychologist, widely known and published, but far from a typical empirical researcher, was worthy of tenure. At one point, according to legend, you, Derek, are said to have mused, "I understand that Howard does not suffer fools gladly." My teacher, sometime supporter, and frequent gadfly, Nelson Goodman,

allegedly responded, “Mr. President, I was not aware that is a job requirement for a Harvard professor.”

Once I began to work in the area of policy, and particularly with respect to work and the professions, I quickly realized that you had been there before, as has so often been the case with respect to topics that you once reflected on and wrote about and have since become subjects for wide discussion. It’s not only that you have an admirable prescience, a sense of issues that promise to become ever more important. You also display a respect for timeless values, on the one hand, and for relevant data, on the other. I suspect that your training as a lawyer, with a father as a judge, are important factors. But I attribute this prescience as well to your broad acquaintanceship across many sectors of society, your wide reading of nonfiction, fiction, and poetry, and the capacity—rare among senior leaders and managers in these hectic days—of finding the time to think quietly, about issues, by yourself, and then testing them out on trusted colleagues, Sissela at the head of the queue. It is scarcely an accident that you consulted so often and for so long with the likes of Elliot Richardson, Francis Burr, John Dunlop, Bill Bowen, Archibald Cox, and that, like Cox, you followed John Gardner as the head of Common Cause.

I want to raise an issue that is brought to the fore by your essay. You indicate that trends toward selecting a life of wealth and self-indulgence, as opposed to a life of a service, go back quite away to your own presidency, at the very least. And while you correctly cite the finding that happiness has little to do with wealth, beyond a certain reasonable comfort zone, this finding seems to have little impact on the career and life decisions that our contemporary students make. Like you, I believe it is important to expose students to the wide range of choices and life styles that merit consideration, to a variety of positive role models, to the rewards of a life lived in dedication and service, and not to shy away from casting a dark spotlight on those knaves who give higher education a bad name. And, as you may know, several of us at Harvard College have designed sessions focused on the big questions, “Reflecting on your life,” and our retrospective study shows that these brief courses can have surprisingly significant effects, even some years later.

But suppose, Derek, that is not enough: the message to “give” rather than to ‘take’ is being heard clearly by too few people. Should one raise the ante? Should ‘reflection courses’ be mandated for all students

across four years? Should there be clearer criteria for admission to school, for prescribed courses of study, for diverse career choices? Should one say, in effect, that if McKinsey or Goldman Sachs want to train a certain skill and mental set in their employees, they should up their own tertiary institutions? In my view: it is not the job of Amherst or Harvard to make rich people even richer, even if at the end of the day they return some of their largesse to a favored school or program. Is that going too far? Or, like John Gardner, do you sometimes wish that you had run for political office, certainly a possibility in Massachusetts? You'd certainly have had my vote.

Hail to the Boks: Those of us fortunate to be at Harvard should beware of crowing—there is more than enough to criticize. And yet we can take quite pride that we inhabit the campus of Thoreau and Emerson and Helen Keller—one whose value has been enhanced by the remarkable examples and contributions of Sissela Myrdal Bok and Derek Bok.

William James on "What Makes a Life Significant?"[1]

Sissela Bok

When Howard Gardner received the William James Award from the American Psychological Association, a little over twenty-five years ago, he suggested that James's concerns about the lack of coherence of psychology "have continued until this day ... [with] large parts of psychology being absorbed by the newly emerging fields of cognitive psychology and neuroscience" and with social psychology perhaps becoming part of a broader field of cultural studies. But what would remain central to scientific psychology was "a concern with those issues that were pivotal for William James—self, will, consciousness, and personality. This enduring 'core' of psychology may benefit from deeper and more extended interactions with literary and other artistic studies."[2]

A quarter century later, it is increasingly an open question whether focusing on such issues in the context of literary and other artistic studies should be as central to psychology or to philosophy as it had been for James. Already in his time, some argued that a scientific approach to, for example, consciousness or will, could dispense entirely with traditional psychology and philosophy, let alone literature and the arts. By contrast, James saw philosophy (in his broad sense of the word that included psychology) as essential not only for research and writing but also for all college teaching, in order to give students a "wider openness of mind and a more flexible way of thinking than specific technical teaching can generate."

One can never deny that philosophic study means the habit of always seeing an alternative, of not taking the usual for granted, of making conventionalities fluid again, of imagining foreign states of mind. In a word, it means the possession of mental perspective.... Is there space

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[1] Parts of this essay draw on my contribution to a panel discussion, April 26, 2010, at Harvard University, in memory of William James.

[2] Howard Gardner, "Scientific Psychology: Should We Bury It or Praise It?" *New Ideas in Psychology*, Vol. 10, No 2, 1992, 179-190.

and air in your mind, or must your companions gasp for breath whenever they talk with you?[3]

No one ever gasped for breath when they talked with William James or listened to him lecture, in part because he never hesitated to bring in questions regarding the core psychological issues to which Howard Gardner pointed in his address. The talk James gave to college audiences in 1898, "What Makes A Life Significant?" is a case in point.[4] Its very title conveys a sense of "space and air." Yet it is also disturbing, unsettling, meant to make us wonder: Is *my* life at all significant? In whose eyes? Mine or perhaps other people's? Perhaps his?

James has a way of aiming straight at his listeners' inner core of uncertainty about themselves, their convictions, their own lives. Immediately, he engages them in a dialogue, then draws them into one that he is having with himself. He begins his lecture, "What makes a Life Significant?" by bringing up a previous talk, "On a Certain Blindness in Human Beings."[5] It contrasts our consciousness of our own joys and sorrows and of the meaning we find in our own lives to our inability to perceive such joys and sorrows, such meaning in the lives of others. The purpose of his present talk, James explains, is to show how a "great cloud-bank of ancestral blindness weighing down upon us" lies at the root of most of the injustices and cruelties, persecutions, and evils that we humans manage to inflict on one another; and to point to ways of piercing that cloud-bank so as to discern the significance and the sources of meaning in the lives of other people.

Such efforts to perceive what matters most profoundly to others are possible, James insists, and individuals differ greatly in the degree to which they succeed. To be sure, he is thoroughly familiar with the epistemological arguments holding that we can never know anything for certain, least of all about the inner lives of other people—arguments

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[3] William James, "The Teaching of Philosophy in Our Colleges, "in Frederick Burckhart, ed., *Essays in Philosophy: The Works of William James* (Harvard University Press, 1978), 4.

[4] William James, "What Makes a Life Significant?," in Robert Richardson, ed. *The Heart of William James* (Harvard University Press, 2010), 165-82.

[5] "On a Certain Blindness in Human Beings," Ibid., 145-63. Richardson points out that "James wrote to one correspondent that the piece contained 'the perception on which my whole individual philosophy is based,'" 145.

concerning what has since come to be known as the "problem of other minds."[6] In this talk, however, meant to address practical and political questions, he posits as a given that other minds exist. The problem is how to understand enough about them to counter the cruelties and injustices that the cloud-bank of blindness obscures.

For an example of a time when he suddenly became aware of such blindness in himself, James tells of sitting on a train, some years before, after having given a speech at the Assembly Grounds on the borders of Chautauqua Lake. He had spent a happy week at Chautauqua, a community in which he felt "sobriety and industry, intelligence and goodness, orderliness and ideality, prosperity and cheerfulness, pervade the air." Now, on coming out into "the dark and wicked world again," he caught himself longing for "something primordial and savage, even though it were as bad as an Armenian massacre, to set the balance straight again."

Really? Was he longing for a massacre? There had in fact been horrendous massacres of Armenians in 1894-6, just a few years before James gave his lectures, killing hundreds of thousands of people. These massacres were the precursors to the even vaster 1915 massacre of Armenians of April 1915—one about which the question of whether it should count as *genocide* is still so bitterly disputed.

Here James exemplifies blindness on a monumental scale, not only to the inner lives of the individuals he had met in Chautauqua but also to the victims of the massacre for which he had felt a momentary longing. But then "the sight of a workman doing something on the dizzy edge of a sky-scaling construction brought me to my senses very suddenly. And now I perceived, by a flash of insight, that I had been steeping myself in pure ancestral blindness, and looking at life with the eyes of a remote spectator."

Throughout the essay, James challenges his own perceptions in this way, arguing with himself, and, in so doing, testing his own views about what makes a life significant. He brings in Tolstoy's novel *War and Peace* that he had recently read as it appeared in a French translation,

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[6] See Michael H. DeArmey, "William James and the Problem of Other Minds," *The Southern Journal of Philosophy*, Fall 1982, Vol. 20, No 3, 325-336.

and described, in a letter to his sister Alice James as "the greatest of human novels." Tolstoy gives the role of spiritual hero "to a poor little soldier named Karatieff, so helpful, so cheerful, and so devout that, in spite of his ignorance and filthiness, the sight of him opens the heavens, which have been closed, to the mind of the principal character of the book."

Literary works play a central role in James's two lectures, as in so many of his writings. Along with Tolstoy, he brings in at times lengthy quotes from Wordsworth, Robert Louis Stevenson, Walt Whitman, and a number of others as testimony to what it is that makes even the most inconspicuous and ordinary lives significant.

It turns out, however, that for James, all lives are significant but some are more significant than others. This is not as Orwellian as it sounds. Every life, he insists, deserves respect, and we have to make constant efforts to overcome our blindness to the inwardness of others and to the meaning they see in their own existence. At the same time, when he shifts from the subjective effort to understand that inwardness to a wider perspective, he does find special significance in the lives of some people—those who exhibit what he calls "manly" *virtues* such as fidelity, courage, and tenacity. These are the virtues that he had admired so achingly during America's civil war, among those who sacrificed so much in that war, and that he values, more generally, in all people who dedicate themselves to ideals that transcend their own personal lives.

Throughout his essay, by means of his questions, his stories, his thought-experiments, as with that massacre, or the virtues and ideals he holds forth, James keeps posing challenges to himself and to us about the perennial philosophical question of how we should lead our lives and treat one another. We can ask him, in turn: why does he single out only some virtues as contributing to rendering lives more significant? What about justice and wisdom and honesty, surely crucial in responding to the evils he sees as made possible by human blindness to the lives of others?

We might also voice caution about James's claim that people who dedicate themselves to ideals that go beyond their own lives are especially admirable. After all, persecutions, inquisitions, massacres, and any number of brutal crimes are carried out in the name of some higher cause or some noble ideal. As if in reply, James points to a larger view

that what can make a life more significant is the effort to strive to be someone who is active, not passive, someone who is productive, who adds to what is good in the world, rather than one who serves destructive goals or who lives as a parasite, as what we would now call a free rider.

During the late 1890s and early 1900s, James agonized over the increasingly aggressive role he saw his own country playing, in the Philippines and Cuba and elsewhere, and the war fever that he saw captivating so many at home and abroad. By comparison to this enthusiasm, he found the weakness and ineffectiveness of his fellow pacifists and anti-militarists dispiriting. He discerned no counterbalance among peace-lovers to the lofty talk of virtues and of ideals among those in the war party.

It was in his lecture on "The Moral Equivalent of War" that James addressed this disparity, proposing a practical way to enlist military virtues and ideals for peaceful purposes, not war.[7] He first gave the lecture to a large audience at Stanford University in 1906. Then, in 1910, just months before he died, when the great powers were gearing up for what would be a war with unprecedented destructive potential, he published the lecture as an article. It came to have far greater resonance, with people writing from all over the world asking for copies, and received much praise from many in the military as well as from members of peace and reconciliation groups.

War *could* be conquered, James argued, but only if people were to devote much more careful thinking to understanding its attractions, and to finding equivalents to the thrill of war by mobilizing the warlike virtues for peaceful purposes. What was needed was to rechannel for constructive rather than warlike needs the energies, the sense of honor, the bonding , the risk-taking, the courage, the heroism, the discipline and the loyalties of the most effective armies; and to enlist those virtues for an ideal—that of "war against war"—that would serve humanity far better than war itself.

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[7] William James, "The Moral Equivalent of War," in Richardson, ed., *Heart of William James*, 301-13; see also Sissela Bok, "The 'Moral Equivalent of War," in Maxwell Bruce and Tom Milne, eds., *Ending War: The Force of Reason* (St. Martin's Press, 1999), 125-31.

How might that best be done? James brought in a practical suggestion that he admitted could seem utopian at the time, but that he took to be perfectly feasible: that instead of military conscription, there could be a conscription of "the whole youthful population," sending them

to coal and iron mines, to freight trains, to fishing fleets in December, to dishwashing, clothes-washing, and window-washing, to road-building and tunnel-making, to foundries and stoke-holes, and to the frames of skyscrapers.... [This] would preserve in the midst of a pacific civilization the manly virtues which the military party is so afraid of seeing disappear in peace. We should get toughness without callousness, authority with as little criminal cruelty as possible, and painful work done cheerily because the duty is temporary, and threatens not, as now, to degrade the whole remainder of one' life.

What James proposed, as he saw nations arming and escalating their martial rhetoric was something akin to what we would now call a domestic peace corps. However utopian he thought his proposals could seem, he was sure that some day they could be implemented. And he was right. By now, not just a "youthful population" but people of every age, not just Americans but representing every nationality, are serving not just in the United States but on every continent. For recent examples, consider the response to the 2004 Tsunami, or to the devastating earthquake in Haiti, or individuals working to relieve suffering by civilians in war zones, famines, and epidemics such as that of HIV-AIDS.

True, we have not won what James called "the war against war"; but the fact is that wartime mortality has gone down dramatically since the end of the cold war. So has the number of wars being fought and of deaths from disease and malnutrition. And it is now recognized that these changes are partly due precisely to efforts by individuals and groups providing humanitarian assistance and working for peace.[8] If William James could return a century after his death, he would surely be encouraged to learn about the scope of these activities and hold that

[8] See Joshua S. Goldstein, *Winning the War on War: The Decline of Armed Conflict Worldwide* (Dutton, 2011); and Steven Pinker, *The Better Angels of Our Nature: Why Violence has Declined* (Viking, 2011).

taking part in them actually does offer part of the answer to the question in his lecture: "What makes a life significant?"

In concluding his address about William James, Howard Gardner suggested that there was much productive work left for those who wished to pursue the kinds of issues and questions traditionally considered psychological. "In so doing, I believe I have been faithful to the vision of William James, a man whose intellect was far too capacious ever to be corralled into a single discipline."[9] A quarter of a century later, Gardner's works, including his recent book, *Truth, Beauty, and Goodness Reframed: Educating for the Virtues in the Twenty-First Century*, confirm his belief. They show the ways in which he has pursued issues and questions traditionally considered psychological, while seeking the "deeper and more extended interactions with literary and other artistic studies" that he had rightly thought capable of benefiting the enduring 'core' of psychology.[10]

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[9] Gardner, "Scientific Psychology," 189.
[10] Howard Gardner, *Truth, Beauty, and Goodness Reframed: Educating for the Virtues in the Twenty-First Century* (BasicBooks, 2011).

Howard's Response to Sissela Bok

Derek Bok and Sissela Bok you are long-time and treasured friends, who have had a wonderful and entirely benign impact on my family and me. For so many individuals, both in Boston and around the world, you serve as role models for what it means to be good workers, good citizens, good persons, and, let it be said, a wonderful married couple. I hope that someday someone will write a powerful joint biography of both of you, and the unique role that you have played for so many persons over so long a period of time and in so many locations. But since you chose, generously, to make individual contributions to the Festschrift, I shall address you individually, in turn.

Sissela Bok Though you are not as frequently in the limelight, Sissela, you are an indispensable part of the Bok partnership and an awesome role model that has positively affected many hundreds of people across the age spectrum directly, and many thousands through your writings and your public example. First Judy Gardner and our family (Kerith, Jay, Andrew), and then Ellen Winner and our family (Benjamin) have had the privilege of knowing you personally; and in my case, I also had the chance to spend some time with your remarkable mother, Alva Myrdal, on the lovely terrace of 48 Prentiss Lane, Belmont, where, after all, you and Derek were our gracious and generous landlords for almost two decades.

Sissela, you have taken on some of the most challenging and controversial topics in human nature—secrets, lies, mayhem, and more recently happiness—and have written about them clearly, thoughtfully, and constructively. I don't want to put words into your mouth but I will venture the guess that deep down you have a Kantian gene; you would like to believe that there are certain universal principles that we should all follow and the world would be a better place for it. But as we know, it was also Kant who famously said, "Out of the crooked timber of humanity, no straight thing was ever made".

Perhaps these antinomies attract you, as they have so many others, to the writings and persons of William James. Certainly James was a man deeply steeped in values, ones so strong that they could drive him to depression and even paralysis. Yet he was also a person of incredible resilience. Not only could he get back on his feet; he found the

strength and the wit to spur intellectual currents both in the United States and in Europe and to span the divide (which you and I also aspire to span) between philosophy and psychology. And from his ever fertile mind come some of the most powerful ideas, such as the moral equivalent of war, a way of dealing with deep disagreement and conflicts, without shedding blood.

Like Williams James, you, Sissela, also seek to bring out the best in people, without pretending that their flaws can be permanently hidden. And like James, you have rare capacity to speak directly to the reader, so that he or she is invited and enticed to engage with the same issues that occupy the writer/thinker. What unites the three of us, I would dare to speculate, is that we recognize human frailties, all too clearly, and yet we actually believe our species can better itself and that should be a chief obligation during our time here.

Please allow me to make a few associations. William James was already an old man, near death, when, in 1909, Sigmund Freud came to Clark University in Worcester. James wanted to meet and hear Freud. Following the ride from Boston, James approached the then still young (and quite arrogant) Freud and said to him, "The future of psychology belongs in your hands." While James may not have been literally correct, it was the Freudian contributions to our understanding of personality which led me to pen my own William James lecture almost a century later. And on a much broader scale, it was Freud who unmasked our weaknesses, as much as any previous writer or philosopher, and yet held out hope that human rationality and understanding could be activated and strengthened in the long run.

During my student days I liked to attend Harvard commencement, then in early June. I was always pleased to spy Walter Lippmann, Class of 1910, who came regularly to the proceedings and typically walked alone across campus. When Lippmann was a student, writing for the Harvard Crimson, James was very impressed by the undergraduate's writings. (Lippmann went on to be America's leading political commentator for the next half century). And so, just as he had ventured to meet Freud, James made his way over to Lippmann's student dormitory in order to make his acquaintance. How remarkable to think that in the last year of his life, James was seeking to learn from Leo Tolstoy, Sigmund Freud, and Walter Lippmann.

Hail to the Boks: Those of us fortunate to be at Harvard should beware of crowing—there is more than enough to criticize. And yet we can take quite pride that we inhabit the campus of Thoreau and Emerson and Helen Keller—one whose value has been enhanced by the remarkable examples and contributions of Sissela Myrdal Bok and Derek Bok.

Folktale Completions as Projective Test

Stanley Brandes

At least since the turn of the last century, when Freud published *The Interpretation of Dreams*, scholars have analyzed oral narratives as a window into emotional life. As is well known, Freud considered *The Interpretation of Dreams* to be his greatest single intellectual achievement, and with good reason. In this volume, revolutionary for its time, he demonstrated what has now become commonplace: the unconscious exists, dreams are an avenue to the unconscious, and dreams provide evidence of psychic conflicts, aspirations, and concerns. Freud's genius in large part derived from his ability to convince readers that the analysis of his own mental processes might have universal applicability. It was no doubt this message that stimulated the now-widespread belief that stories of all kinds, not only dreams, can be used to study emotions. If dreams were psychologically revealing, then why not other types of stories, like myths, folktales, and—as Freud himself proved in *Jokes and Their Relation to the Unconscious*—humorous narratives with punch lines? In fact, from the Oedipus story on, Freud and his followers directly promoted research into the connection between tales and affect.

The scholarly literature on this topic is now immense and is represented to a greater or lesser degree in virtually all the humanities and social sciences. Psychological anthropologists have demonstrated an unusually keen interest in the relationships between stories and feelings. This intellectual trend was particularly salient during the 1960s and 1970s, the period in which Howard Gardner and I first met at an interdisciplinary conference on the topic of symbolism, held at Burg Wartenstein, Austria. Howard's long-term interest in projective artistic and literary forms, particularly in reference to child development, has over decades stimulated my own anthropological interest in folklore and popular ritual as symbolic representations of shared cultural themes. In this paper, I return to an unfinished and still embryonic project that I began in the 1970s, just at the time that Howard and I forged our friendship. In that period cultural anthropologists were perhaps more guided by psychological paradigms than they are today. Projective tests were then in vogue in anthropology. I set out to invent my own.

In anthropology, there exists a long history of using oral narratives not only to confirm or challenge the universality of emotions, like the Oedipus complex (e.g., Malinowski, 1927; Spiro 1982), but also to reveal group differences, such as those related to achievement orientation (e.g., Child, Storm, & Veroff 1958) and world view (e.g., Brandes, 1974; Foster, 1964, 1965). The variety of narrative genres that have been subject to analysis is staggering. These genres, nonetheless, may be said to fall within two major categories: first, traditional stories, like myths, legends, and jokes, which have anonymous authorship and are learned, shared, and transmitted within particular speech communities; and, second, individually-produced items, like dreams (DeVos & Boyer, 1989, Maccoby & Foster, 1970) and TAT responses, in which the author is known and the story is spontaneously generated.

It is by now commonplace to state that in storytelling, as in every other aspect of behavior, there exists an ongoing dialectical relationship between individual and culture, with each invariably influencing the other. Narrators, even when reciting a traditional tale, reveal their own anxieties and concerns. Likewise, the products of fantasy, like dreams and TAT responses, are often culturally patterned. It is, in fact, because of this cultural patterning that we assume that myths, legends, jokes, and other traditional narratives become transformed in accordance with changing circumstances. The narratives, we believe, respond to developments in the emotional needs of the storytellers. When the lives of the storytellers change, so too do their attitudes and feelings; and these, in turn, leave their impression on the narratives.

But how can we be certain that this process actually occurs? Ordinarily, folklorists are confronted with different versions of the same basic joke or tale as told in distinct cultural settings (e.g., Dundes, 1989). They examine divergent socio-cultural circumstances in each milieu to explain differences in versions of the same story. The actual transmission of stories from one setting to another is usually invisible. We simply assume that stories are altered to suit the cultural patterns and psychological needs of narrators in each society where the tale is found. This, in any event, is the message of Laura Bohannan's classic article, "Shakespeare in the Bush" (1966). The phenomenal success of Bohannan's field account may be attributed in large part to the fact that it accords with widespread anthropological and folkloristic assumptions. Bohannan observed and recorded among the Tiv a process that we

believe to occur, but rarely have the opportunity to chronicle. Should fieldworkers be confronted with contrary instances—for example, with tales that are transmitted intact despite a perceived incompatibility with the culture of the receiving society—anthropological assumptions might well be seriously challenged, as were Bohannan's.

One reasonable way to assess the validity of our assumptions about the transmission and transformation of stories is actually to tell some unfamiliar tales and observe whether and how they become transformed. In the 1970s, I conceived of a laboratory-type situation in which the anthropologist or folklorist selects narratives that appear to accord with at least some of the values, worldview, and overall socio-psychological contour of the study population. Ideally, these should be well-documented, traditional tales, chosen from a different but related cultural setting from the one under investigation, to ensure that the stories have indeed captured the imagination of at least some group of people. However, when telling each tale in the new setting, the investigator would truncate the narrative at a critical turning point. Narrators in the study population would then be asked to provide their own story completions.

In effect, this operation constituted what I thought might be a new type of projective test, providing insights into more than the inner emotional life of the storytellers. Administering this test in a small Mexican town showed me that Western scientific assumptions about test-taking conditions conflict with the social norms and expectations of people in societies different from our own. Sometimes we can learn more about a people from the administration of the test than from the test results themselves. In the remainder of this paper, I shall show, in a modest and tentative fashion, how and why.

I begin with a personal anecdote. As a small child at a New Hampshire summer camp in the 1950s, I was fortunate to have a highly creative arts counselor. During recess, instead of reading to us from a book of familiar stories or folktales, she would choose narratives that originated in Asia, Africa, and other foreign locales. She read to us verbatim throughout the first half of the story, until arriving at a turning point in which the protagonists were forced to make a key decision, or until some existential crisis arose. The counselor left it to us children to invent an unfolding of the tale. Collectively, we had to resolve some crisis presented within the tale, an exercise that required us to identity with

the main characters and thereby propose a decision for them to make, a road to take. Afterwards, the counselor read us the ending of the tale as it was published, so that we could compare our own ideas with those of the tale's originators. This cognitive project proved to be a combined educational and entertaining way to demonstrate how our own values, norms, and social relations—mostly derived from urban, Jewish New England and New York—differed from those of faraway peoples. In effect, our recess became a lesson in both projective psychology and comparative culture.

Many years later, at the end of the 1960s and beginning of the 1970s, I found myself carrying out fieldwork in Tzintzuntzan, a village of some 2500 potters and farmers on the shores of Lake Pátzcuaro in the state of Michoacán, México. Despite its having served as capital of the ancient Purépecha empire, fewer than 10 percent of the village inhabitants at the time spoke Púrepecha or considered themselves to be indigenous. They called themselves *gente de razón*, people of reason, thereby identifying with the majority Spanish-speaking, mestizo Mexican populace. In Tzintzuntzan then, unlike now (Cahn 2003), everyone was Roman Catholic. In religious belief and practice, Tzintzuntzan folk religion showed a predominant European influence, thereby underscoring this ancient city's early conquest and decline at the hands of Spanish missionaries and military leaders. Among the narrators that I cite below, only one woman identified herself as Purépecha, although she is married to a mestizo and speaks Spanish fluently.

During the 1960s and 1970s, our mission as psychological anthropologists was to compare the test results from one community, say a village in Mexico, with those from other communities, for example, in Japan or India. Methodologically it was essential, we learned, to maintain a consistent set of testing conditions. The subject, ideally, would be isolated from other villagers, so as to keep the responses uncontaminated by undue influence. We asked villagers to make up stories about those Rorschach ink blots and Thematic Apperception Test drawings of people situated in what was, to our subjects, foreign settings and ambiguous circumstances. In 1968, I started with the TAT. After administering the test to about half a dozen villagers, it became clear that every one of them hated the experience. Some of these poor Mexican peasants became so nervous, and suffered such a degree of anxiety, that it simply became too painful for me to continue testing. It was obvious

that they were complying with my request for assistance simply to avoid disappointing me. I quickly decided that the information gained from the tests, however valid they might prove, did not justify the grief I was causing these people.

In an attempt to maintain my comparative psychological and cultural goals, I fashioned a new test from what I remembered of my childhood camp experiences. I selected a series of ten folktales, mainly from the immense corpus collected by Marciano Curiel Merchán (1958), who carried out fieldwork among villages in Extremadura, Spain, the region from which many of the first conquerors of Mexico originated. From the published texts, I created summaries, which I truncated at what I considered a significant turning point in the stories. I then asked my Tzintzuntzan respondents to complete the stories by using their imagination.

In addition to designing this new test—if it could be termed as such—I made methodological adjustments, suited to the environmental conditions and social expectations found in Tzintzuntzan. Instead of isolating my village volunteers, I decided to tell the tales to informal groups, usually people who shared a household. My normal routine was to sit in the kitchen, the gathering place for all Tzintzuntzan families. There, as I read each story, villagers would enter and leave as their interests waxed and waned and their daily chores required. They participated in my sessions when they wanted, no more, no less. I taped everything. What emerged in these tapes provided perhaps much more information—or rather a different type of information—than either the TAT or Rorschach had done. It was the interaction among villagers in these sessions as much as the story endings that they provided which proved instructive. In addition, with the introduction of this new testing format, villagers seemed relaxed. On the whole, they liked this test, and experienced none of the anxiety that they had undergone while taking the TAT, when seated in a room isolated from all other villagers, searching for what they thought was the correct answer to my inquiries.

Simply to offer preliminary results of this exercise, and to demonstrate theoretical possibilities that story completions of this type might provide, I will confine myself here to the endings that a total of ten villagers gave to a single tale—the story that Marciano Curiel Merchán called "*El Ladrón*"—The Thief. The story can be summarized in English thus: "A cattle rancher had to go to a fair to sell his cows and, upon

leaving, ordered his three daughters not to let anyone in the house while he was gone. [A mother does not appear in the story.] The following evening a poor traveler arrived at their door, explaining that he was on a trip and got lost. He asked whether they would be generous enough to allow him to stay for the night." After telling this part of the story, I asked the volunteers to complete the tale.

What interested me was the moral dilemma that this story might present to these Mexican villagers. The story incorporates a conflict between two basic principles in rural Mexico: first, to obey one's parents and, second, to provide charity to a needy traveler. This moral conflict can be viewed in abstract terms as well as a struggle between blind acquiescence to authority, on the one hand, and obedience to the law, in this case sacred, godly law, on the other. This tale also embodies a host of social issues, including the protective role of the father, the sexual comportment of unmarried women, the inherent danger at the arrival of an unknown stranger. That is, among other things, this tale strives to clarify a variety of affective bonds between men and women. All of these themes are prominent in the everyday life of Tzintzuntzan residents, thereby making "*El Ladrón*" particularly relevant for research in this community.

In Tzintzuntzan in the 1970s, prevailing social norms conformed to what Susan Carol Rogers (1975) has called, in a different ethnographic context, "the myth of male dominance." According to her observations, in many peasant societies, although men lack the true power to order women around, they do not believe that women have authority over them either. Men occupy prestigious public governmental posts and receive deference from the majority of town inhabitants. In Tzintzuntzan, both men and women would say that men are the ones who have authority, even though everyone recognizes that women also hold power and influence, and that there exist infinite subtleties in gender relations within the community.

In terms of the protective role of Tzintzuntzan men, there is no doubt that fathers kept young daughters guarded within the home, and that these women enjoyed less liberty to go out than did their brothers. At the same time, everyone understood that unmarried girls had the option of marrying without the explicit permission of their parents. The so-called *robo*, or elopement, was the most common form of marriage at the time (Brandes, 1968). Although the official explanation of an

elopement was that it constituted a virtual rape of the girl by her boyfriend, it was well known that in the vast majority of instances, the girl colluded with her boyfriend in her own "rape." This is just one ethnographic item that confirms the occasional but efficacious power that Tzintzuntzan women of the day might exert despite a collective ideology that declared men as more powerful.

Hospitality has also been a long lasting value of enormous significance in Tzintzuntzan. Everyone states that, within one's economic possibilities, you should help any individual who is unable to satisfy his or her need for food and shelter. Hospitality as a cultural norm is incorporated in community rituals, specifically during the fiesta cycle (Brandes 1988), in which religious office-holders invite guests to dine at open-air breakfasts and banquets, where all passersby can observe their fulfillment of traditional obligations. Consider, for example, that every year, during the seven nights prior to Christmas, villagers enact the search of the Holy Family for lodging. Each night, the actors playing Mary, Joseph, and the baby Jesus are turned away from household after household in a public demonstration, and implicit condemnation, of miserly, selfish behavior. When at last they arrive at a poor manger, constructed of wood and straw, they are finally given the rest they need. The generosity of the poor is thereby represented and praised.

On one occasion, a friend in Tzintzuntzan invited me to a large mid-day lunch. His family was so poor that they never knew where money for the next meal would come from. While we were eating, a slight acquaintance from California knocked at the door. The man had traced me to the friend's home, and was accompanied by three European tourists, whom he had met only a few days before. I greeted them at the door but, given that I was not in my own home, spoke with them a few moments and sent them on their way. My hosts immediately criticized me for not inviting them to join us. Never, never, they said, should you turn away a person known to you, even if that individual is only a slight acquaintance. They interpreted my behavior as selfish and shameful.

With this background, we can return to the story completions. At the outset, we should analyze which of the two possibilities respondents selected: the one that affirms parental authority or that which sustains the norms of hospitality by allowing the passerby to spend the night at home with the three sisters. It is perhaps not surprising, given the overriding significance of these moral principles, that the results were

split. My results come from six groups of narrators, representing a total of twenty-two storytellers. Of the twenty-two subjects, ten were adamant that the sisters should provide shelter to the traveler, nine thought that they should not let him in the house, and three were undecided. In other words, there was more or less equal support for each of the alternatives.

There are at least three possible explanations for this split outcome. First, each of the six groups of commentators on this story came to a unanimous opinion, with several groups favoring the father's authority, others favoring providing hospitality, and one group undecided. True, each group had to discuss the case before reaching a conclusion. But the conclusion was always unanimous within the group. The unanimity of the group decision reflects the expectation of unanimity of the sisters in the story. Not one volunteer from any group mentioned the very distinct possibility that the sisters might have disagreed among themselves. A hypothetical story ending might have had sisters arguing, several in favor of offering shelter and one resisting, for example. In fact, in the Spanish tale, as recorded by Curiel Merchán, this is exactly what occurs: the two elder sisters favor letting the man inside, while the youngest resists and presses for obedience to their father. One unmarried female villager in Tzintzuntzan clearly affirmed the necessity for unanimity among the sisters: "...the three of them have to come to an agreement so that they can respond with one voice to their father...."

According to George Foster (1979), who spent over 50 years studying and publishing about Tzintzuntzan, unanimity is an important guiding principle in local politics, and specifically prevailed in the period in which I administered this test. When the community got together to plan for construction of a new school, or to carry out roadwork, it was very rare, he claimed, to encounter open disagreements of any kind. Family representatives would offer opinions openly but discreetly and gently until coming to a unanimous decision. This behavioral pattern is reflected not only in the content of the story endings, but also in the narrative negotiations. For the people of Tzintzuntzan, those individuals who occupy a similar status—in this case, the three sisters—must act with a single voice.

But the motive for sharing the same opinion does not derive solely from the blind need to conform to a cultural norm. It is evident that at times the unanimity stems from lines of authority operating within each

family group. Consider the following responses to my inquiries furnished by a married couple.

SB: So what did the daughters decide?

Victor: I would say that they didn't let him in.

SB: No?

Victor: No.

SB: Why?

Victor: Because they were told not to let anyone inside, and they had to obey the orders that they were given.

SB: Oh, the father.

Victor: The father.

SB: And what do you think, Marta?

Marta: Well, Stanley, the same thing, what my husband says … that they couldn't give him shelter until he [the father] arrives.

SB: Even though the man said that he was lost and everything?

Marta: Although he said that he was lost they couldn't give him permission [to enter]. Right?

Marta's final inquiry was directed to me. In this exchange, the wife allows the husband to speak first, and then affirms his response. She finalizes her interpretation of the story by looking to me for verification. This exchange is not necessarily representative. In the case of at least one couple, the wife responded almost exclusively. When I prompted the husband, he simply said, "Me, well, for these things…no, no," as if to emphasize his inability, for whatever reason, to invent a story ending.

Among all my interviewees, I encountered only two couples disagreeing with one another. In both cases, the husbands are brothers, and both expressed the opinion that the daughters should not offer shelter to the traveler. Insofar as story endings are concerned, there emerged a pattern in which narrators from the same family of origin tend to share the same idea about how the three sisters should act. Even when respondents participated in separate interview sessions, their

conclusions coincide. There is a possibility, then, that experiences during childhood affect attitudes towards rigid adherence to parental authority.

Some responses to this test in fact demonstrated a direct relationship between imagined story endings, on the one hand, and daily life, on the other. An unmarried adult woman, for example, stated that the sisters should "deny shelter to the traveler...." She continued, "I'm the same. If everyone is present or if I am alone, I never consent to let into the house a person whom I do not know, who is to me a stranger. Even if he asks for shelter. Because here we have the idea that, whether it be unknown man or woman, we are not obliged to offer the person shelter. Because in reality one remains distrustful of the majority of people, because one doesn't know with what intent they come to the house." In a separate interview, this respondent's mother stated, "In former times if someone asked a favor of me, I would do it, I would let the traveler in, but nowadays, no, no because of so many things that have happened. From two years ago onward we haven't let anyone in the house...." This mother, in whose home the anthropologists George and Mary LeCron Foster lived over the course of decades, continued by recounting a tale of two American strangers who arrived unexpectedly at her door one day. "They didn't speak at all, at all," she said, indicating in effect that they spoke no Spanish. "And they looked downward," she said, a gesture which to her indicated that she should be on her guard. The strangers said that they knew George Foster and needed a place to stay. This woman let them in. She continued the story by stating, "Afterwards I was so scared that I didn't sleep all night, and thought that perhaps they were kidnappers who wanted to do something bad to Dr. Foster. I was so frightened...my God, all night." With an experience like this, it is for good reason, then, that both this woman and her daughter complete "The Thief" by stating that the sisters should not admit the unknown traveler into their home.

By contrast, an elderly male narrator, father of eight children, four of them daughters, expressed the opposite opinion. He, too, based his response on personal circumstances. This man for many years earned his living as an itinerant merchant and thereby could identify with the traveler in the story who had lost his way. The respondent stated, "They should give him shelter. There, there, they would spend the night, there the daughters would give him a *taco*, they'd converse a little, as for example I did when I went away on a trip, just as this man [in the story]

was coming and going. He arrived to the spot where he was going to sell his animals, he sold the animals, and he returned again, and he slept that night, and he got up and left to travel homeward...." For this 65-year-old narrator, who had encountered circumstances similar to the one in which the stranger in the story found himself, "You should never refuse shelter to a traveler."

The solicited endings to this story do not correlate directly with the gender of the narrators. Of twenty-two total respondents, there were twelve women and ten men. Eight women and seven men were of the opinion that the sisters should offer shelter to the traveler. Three women and two men were of the opposite opinion. One woman and one man offered ambiguous responses in which their opinions were impossible to determine. Almost all responses demonstrate a struggle with the alternative actions presented in this folk tale. Respondents tended to articulate the dual imperatives of obeying one's father and displaying hospitality to strangers. To all of them, both principles had been instilled in them from childhood as positive and valid.

The struggle to select one alternative or another was expressed in various types of responses to my request that narrators provide an imaginary ending to the tale. We have already had an example of one kind of response: narrators accepted the validity of the two alternatives presented to them, but selected an alternative based on specific life circumstances. Hence, where in former times they would have offered the traveler shelter, under current conditions they would not. (Whether or not this view of the past represents a romanticized version of reality remains another issue.) A second type of response indicated that it would be proper to offer shelter, depending on whether or not the traveler is a known personage. It is always preferable to have first-hand knowledge of the person you let into your home, but if a third party comes to the house, referred by a friend or relative, then that person should be provided shelter as well. A third response, among those who suggested that the daughters should let the travelers into their home, was that the daughters could evaluate the character of the traveler. If he seemed like a good person, he should be admitted, if not, then refused entry. A young man stated that "the traveler should be offered shelter," but, similar to other story completions, projected the ending into the future, to the father's arrival back home. "If the traveler behaved well towards the sisters," he said, "they didn't have to reveal anything to their father; but

[if] he acted badly, well, the father had to punish them." An elderly man thought that the proper thing would be to offer shelter, with the exception of some circumstances: if he was drunk, if he looked like an outlaw ("*bandido*"), or if he looked like he was not a good person ("*gente buena*"). On the other hand, some villagers recognized the impossibility of accurately assessing the identity of the traveler. As one narrator stated, "They were young, unmarried women there in the house, right? Well, then, if they let the man in, they wouldn't know if he was a good or bad person."

A few narrators made great efforts to make a dual selection of both alternative story endings. They felt obviously uncomfortable at having to choose between them. For example, the narrator who claimed that it was necessary to evaluate the character of the traveler before letting him inside changed opinions several times before settling on a response. His solution to the dilemma was that the traveler should be allowed to enter the family *solar*, that is, the house plot and land, but not the rooms within the house. In other words, he could sleep outdoors or under the house eaves. This respondent's words express his struggle to arrive at what he considered a just resolution: "Well, you should give it to him, give him shelter because he was a man who wandered away from his house, he was looking for work, looking for work, looking, looking for daily bread for his family. Thus for these types of people, you should give them shelter at least for one night, in one corner of the house which is the least favored, right? But he should be in a secure part of the house, so as not to suffer danger on the street. He must be in danger, because they [foreigners] hit him, or didn't know him, or they took hold of him because they didn't know him and put him in jail, the penitentiary, because he was a stranger."

We should note that the personal identification of this narrator for the traveler in the story is greater than occurred with most of the volunteer storytellers. We might speculate that this narrator felt concerned for the welfare of the traveler because of his own experiences as an undocumented worker in the United States. When he repeats the word 'looking' four consecutive times, one can imagine something akin to the traveler's circumstances, in a strange locale, searching for the daily bread with which to feed his family. At the same time, the narrator felt the need to consider the security of the three sisters. He therefore decides that the traveler should remain in the outdoor porch or in the

patio of the house. This solution assures the personal safety of both the traveler and the sisters. Upon hearing this story, the narrator's wife, present at the session and initially against giving shelter to the traveler, changed her mind and declared that she agreed with her husband. "Yes, they should give him shelter," she said, "but he should stay outside, away from the indoor rooms of the house."

Finally, in an attempt to resolve the dilemma presented in "The Thief," a number of respondents tried to satisfy both of the alternative endings simultaneously. They accomplish this goal by stating that the sisters did let the stranger into their home, but that upon the father's return, he changed his mind about what his daughters should do in his absence. A very old female respondent offered a religious interpretation of the tale. For her, "To offer shelter is a work of generosity for which we will be repaid by Our Lord. Giving shelter to that person who found himself lost, without a home, without a roof [over his head]. I think that the father would have given shelter to that individual who did not have a place to stay." Another villager stated that the girls "had to obey the orders of their father," but that there remained a possibility that the father would return home before the traveler left, and that "all would work out well."

By way of conclusion, let us reflect on the possible uses of story completions as projective tests. What can we learn from this exercise? In the case of this particular story, narrator responses reveal neither values nor norms previously unknown to anthropologists working in Tzintzuntzan. On the other hand, the story endings provide a new ethnographic confirmation of the presence and importance of these values and norms. At the same time, story endings relate narrative fantasies to true life experiences. Various respondents describe in detail the reasons for the story endings they provide. And these reasons are derived from their fears, aspirations, and personal codes of conduct. What is certain is that the people who provided responses took the story seriously, and that their imagined endings to the tale are in some way, yet to be determined, valid as a window into their psychological and cultural states of being.

As we have also seen, the story endings differ, and therefore serve as a warning against anthropological stereotyping. The differing responses are a testimony to intra-cultural variation, a universal fact that is often missing in anthropological analyses. For some villagers, one

code of behavior takes significance over another. Other villagers give equal importance to both parental authority and hospitality, even when, as in this tale, they seem to collide as behavioral guides. What respondents share is a notable respect for prevailing cultural norms, however inconsistent these norms might seem. Based on these limited results, what we can assert with assurance is that the people of Tzintzuntzan are not authoritarian. They recognize and accept ambiguities. They do not portray their world in terms of black and white, and they tolerate the co-existence of rules and values that seem contradictory. These storytellers, too, search for ways to reconcile and overcome contradictions in their value systems—a dilemma that haunts humanity in general. In their attempt to find reconciliation, they occasionally demonstrate narrative creativity. For the people of Tzintzuntzan, this exercise proved entertaining and engaging. For the anthropologist, it provided enough information and insight to recommend that it be replicated elsewhere.

And what of the possible historical implications with which I launched this experiment in projective testing? The chosen story, as indicated earlier, comes from an area of Spain, Extremadura, native to the first generation of 16th-century Spanish conquerors. My assumption was that the values represented in Spanish tales would undergo modification over time in the Mexican context. The story as I related it to the Mexican villagers was not only a truncated version of the original. It was also a greatly simplified version of the published Spanish tale, which ends in dramatic, somewhat complicated fashion. Contrary to parental orders, the sisters invite the stranger inside their home. When they retire—the two oldest sisters to one bed, the youngest to another—the stranger asks to sit by the fireside until getting tired enough to sleep. When he is assured that all the sisters are asleep, he enters their room, and places candle wax on the bodies of each of the two eldest sisters, with the idea of lighting them and setting the girls on fire.

The youngest sister—the only one of the three who was wary—witnesses his evildoing. She overtakes him and cuts off one of his ears with a knife that she had brought to bed surreptitiously. She also manages to toss him off the second-story balcony of their bedroom onto the ground below. The tale continues with the father returning home and scolding his daughters for failing to listen to him, the stranger returning in disguise to the same house, managing to get access to the home, with

a whole series of surprising narrative twists ensuing. The tale concludes with the intruder caught and punished by being thrown into a huge fire.

The Spanish and Mexican versions therefore coincide in that a number of Mexican narrators in fact do allow the stranger entrance to their home. However, given the disparate story endings provided by Mexican village storytellers, it would be difficult to draw even tentative conclusions regarding the adaptation of Spanish tales to Mexican life circumstances. It is rather the interactions among narrators as they struggle together to provide story completions that provide the most significant validation of ethnographic evidence regarding prevailing moral codes and social norms in Tzintzuntzan.

References

Bohannan, L. (1966). Shakespeare in the bush: An American anthropologist sets out to study the Tiv of West Africa and was taught the true meaning of Hamlet. *Natural History* 75: 28-33.

Brandes, S. (1968). Tzintzuntzan wedding: A study in cultural complexity. *Papers of the Kroeber Anthropological Society* 39:30-53.

Brandes, S. (1974). Crianza infantile, comportamiento relativo a roles familiars y formación de la personalidad en México. *Ethnica* 8:35-47.

Brandes, S. (1988). *Power and Persuasion: Fiestas and Social Control in Rural Mexico.* Philadelphia: University of Pennsylvania Press.

Cahn, P. S. (2003). *All Religions are Good in Tzintzuntzan: Evangelicals in Catholic Mexico.* Austin: University of Texas Press.

Child, I. L., Storm, T., & Veroff, J. (1958). Achievement themes in folktales related to Socialization Practice. In Motives in Fantasy, Action, and Society (J.W. Atkinson, ed.), pp. 479-492. Princeton: Van Nostrand.

Curiel Merchán, M. (1958). *Cuentos Extremeños*. Madrid: Consejo Superior de Investigaciones Científicas.

DeVos, G. A., Boyer, L. B. (1989). *Symbolic Analysis Cross-Culturally: The Rorschach Test.* Berkeley: University of California Press.

Dundes, A., ed. (1989). *Little Red Riding Hood: A Casebook.* Madison: University of Wisconsin Press.

Foster, G. M. (1964). Treasure Tales and the Image of the Static Economy in a Mexican Peasant Community. *Journal of American Folklore* 77:39-44.

Foster, G. M. (1965). Peasant Society and the Image of Limited Good. *American Anthropologist* 67:293-315.

Foster, G. M. (1979). *Tzintzuntzan: Mexican Peasants in a Changing World.* Prospect Heights, IL: Waveland.

Maccoby, M., & Foster, G. M. (1970). Methods of Studying Mexican Peasant Personality: Rorschach, TAT and Dreams. *Anthropological Quarterly* 43: 225-242.

Malinowski, B. (1927). *Sex and Repression in Savage Society*. New York: Harcourt, Brace.

Rogers, S. C. (1975). Female forms of power and the myth of male dominance: a model of female/male interaction in peasant society." *American Ethnologist* 2, no. 4 : 727-56.

Spiro, M. (1982). *Oedipus in the Trobriands*. Chicago: University of Chicago Press.

Howard's Response to Stanley Brandes

Though we may have known each other by virtue of our then tiny but perhaps visible reputations, we really got to know one another in the summer of 1977, when you kindly invited me to attend a conference on 'symbolization' held at the Castle Burg Wartenstein in Austria. This may well have been my first invitational conference abroad; it was certainly the first time that my travel was reimbursed and I had the opportunity to rub elbows and exchange papers with luminaries from a range of disciplines, courtesy of an irrepressible host (and your dear friend) Mikki Foster.

As a maiden conference for me, in breathtaking alpine setting, I have many vivid memories of the conference. But one stands out. In attendance was a brilliant young French anthropologist, who was (to put it mildly) on the argumentative side. On the fourth day of the Conference, he actually got up quite rudely and strode out of the seminar room. Americans are not known for our courtesy but this was still a shocking act 'in the face' of scholarly colleagues.

That evening, overlooking the spacious valleys, I had a drink with Lita Osmundsen, who had convened seventy similar conferences in this series. I expressed my shock at the scholar's peremptory misbehavior. She looked at me sympathetically, smiled, and simply said "Oh, a Frenchman always walks out on the fourth day." So much for international scholarly conduct—not what I had come to expect from my reading and re-reading of Discussions in Child Development. (Referenced in my introduction to the Festschrift)

Back to the conference: As sometimes (but not frequently) happens, two attendees at a conference bond and bond deeply. Stanley, you and I have been the closest of friends for nearly forty years, sharing professional and personal triumphs and disappointments, providing support for one another whenever possible, trying to help others with both career and personal dilemmas. What better sign than the fact that you were a co-trustee of the trust funds set up for my children—or that I had the honor of being a 'best man' when you married Jane!

On to scholarship. In a sense you and I are both 'throwbacks' to an earlier era of social science (Not surprisingly, given your studies at Columbia, Chicago, and Berkeley). We are initially intrigued by puzzling

phenomena; we try to understand them from the inside, and to search for deep, qualitative explanations of what we have concluded. You are a natural anthropologist—working in the manner of the great anthropologists of the past century—including your own mentor, George Foster. You have the rare skill of entering a community where you are not known, striking up genuine meaningful relationships with the inhabitants, and then having them help you understand the phenomena that are of greatest interest to you.

In your essay, you actually reveal yourself to be as much of a psychologist as an anthropologist (perhaps one of many reasons why we have been lifelong friends). Building upon an exercise that you remember from summer camp in the 1950s (!), you ask what happens to a story well worked out in one culture when it is introduced to a quite different culture. Indeed, you give part of the story and then stop at the point where the protagonists are faced with a dilemma. What responses will emerge from different individuals, of different genders, drawn from different groups, when they have to decide whether to disobey the father's edict and allow a poor lost traveler into their home?

So far, this is just what psychologists, in the Piaget/Kohlberg/Project Zero mode, might do. But you reveal your deep anthropological colors by refusing to come down to a simple answer, bolstered by supporting comparative statistics. Indeed, you convincingly demonstrate that the story could be interpreted in many ways, in many cultural settings, depending on who is present and who speaks up and when and why. And that while in a particular case one may be able explain the respondent's 'solution' pretty well, it is more misleading than informative to give an answer that "Among the residents of Tzintuntzan, this is the response to the dilemma and here's why…."

Which touches on a much bigger question, one whose answer we are likely to determine from our seats on the sidelines, if we have the gift of additional years. We live in the era of 'big data' where the answers are supposed to come from patterns that emerge statistically from thousands or millions of decisions, contacts, purchases, referrals, most done with little if any conscious reflection. These answers seem to have the 'patina of real science' and there is no question that they attract many of our students, including most of our strongest students.

I am skeptical that this is the only way to enhance human understanding. As I like to put it, big data work when you know the questions to pose, and come up with the right ways to interpret the data. And I personally believe that we will continue to need to use simple person-centered methods, of the sort that you beautifully convey in your essay.

Laurene Krasny Brown

Director Project Zero. When Howard invited me to join Project Zero, it came with the job of co-directing with him one of the three programs of research newly funded by the John and Mary Markle Foundation. The area I chose to investigate was devoted to the effects on children's learning of television and other media. Along with participating graduate students, we designed a number of studies to pursue this question in as effective and elegant a way as possible. So began six years of research and publishing of results. I was more or less in charge of our weekly staff meetings, which Howard attended but rarely ran. Instead, he thrust me into a position of leading this group of researchers, nudging me forward with a confidence I wasn't sure I deserved. He would sit and listen, often jotting down a note to himself on a paper scrap and tucking it away in his pocket. I remember wishing I could see some of those musings. His comments during our discussions were not usually about the specific logistics of running a study or collating data, but about the substance and value of our inquiries. The important things. Always. And he performed this same role of keeping the intellectual focus strong for the other two projects, as well as keeping up with all the other jobs he juggled at PZ. No small task, this.

Professor. Harvard Graduate School of Education. Howard was on my doctoral dissertation committee, along with then professors Courtney Cazden and Gerald Lesser. I remember describing my research proposal, in which I intended to study how the specific form in which a story is presented affects children's apprehension and appreciation of its content. I think Howard was the first to speak when I had completed my remarks. There he was, defending my proposal and remarking about its virtues to the other committee members. He set such a positive tone for that meeting! I felt appreciative of his support, thrilled to be asking questions about learning that seemed so worth the effort, lucky to be exactly where I was as a research psychologist. A gift to me from Howard Gardner.

Philosopher King. When Howard was notified that he was to receive one of the coveted MacArthur Foundation Awards, everyone at PZ was excited for him. Someone at our staff meeting that week asked him how he felt about it and what it meant to him. "It gives me more confidence" is what I recall hearing him respond. It amazed me that this scholar and teacher whose mind seemed to operate at such a stunning level of

intellectual curiosity and who was already responsible for significant basic cognitive research and writing would ever not have more than enough confidence. It is this humility that maybe keeps his research from becoming self-serving. Instead, he has been using his considerable talents to paint questions with a bigger, broader brush, questions that insist we apply our knowledge in ethical, humane ways that enrich the human community. The MacArthur Foundation spent their money wisely when they selected Howard as a recipient.

Howard's Response to Laurene Krasny Brown

Laurie, you may not have known much about Piaget's theory of cognitive development or Marshall McLuhan's claims about the power of media when you came to the Harvard Graduate School of Education, now over 35 years ago. But I can say with at least some authority that you were already Laurie—you knew yourself, what you wanted to do, and how you wanted to do it.

A person of infinite care and sensitivity to others, with a magnificent artistic sense in so many spheres and a surprisingly sure hand at identifying students and colleagues with similar sentiments, you were anyone but the "naïf" who wanders into my office and in effect says "what should I do with my degree?"

No wonder I put you in charge of the research group from Day 1—and rest assured, I never regretted that decision!

But of course, there was one unexpected dividend of your research that ultimately changed everything: your interview of a then up-and-coming young children's book writer and illustrator Marc Brown. I suspect that Marc gave you the "research data" that you wanted—but in the end you gave each other so much more, a wonderfully rich life together, private in many ways, and yet sharing with the world.

I had never met someone like you, Laurie. We were certainly not carbon copies of one another, and yet I feel that there was from the start a basic 'simpatico relationship.' Whether one is writing scholarly articles or making art works out of paper, whether one is dealing with one's own children or with a stranger, one should strive to do so with seriousness and respect. One gives others the benefits of the doubt and tries to bring out the best of them—but in the end, there will be disappointments and one needs to be able to move on. In your essay you say very kind things about my personal qualities—let me simply say that I recognize those qualities of trust, candor, and humility in you.

Ellen and I are honored to have you and Marc as lifelong friends and, who knows, perhaps one day we will live in the same zip code!

The Right Mind:
A Case Study of *The Mind's New Science*

Hiram Brownell

People of a certain age often become interested in history. Because we have lived long enough to accumulate large amounts of personal and professional data, we can blend bits of episodic and semantic knowledge of a domain to tell a story that both sounds important and has personal relevance. In this spirit I offer my perspective on how cognitive neuroscience came into being. I use as an example the role of the right cerebral hemisphere in language and communication. This choice of topics is no accident: my career took root under the guidance of Howard Gardner while he was simultaneously introducing this topic to the research community and assisting in the birth of a new field. Examining the role of the right hemisphere as a case study also reminded me of some very true lessons I learned from Howard. It's more fun and more important to do the first work in a new field (and move on) than it is to add additional layers of detail to an established core of knowledge. You have to publish. Working with good colleagues makes a big difference.

The right hemisphere's role in communication has extra-personal relevance as an object of historical study. Today cognitive neuroscience dominates the hearts, minds, and funding agencies of psychology; however, not so long ago, cognitive neuroscience did not exist. While it is convenient that the main narrative takes place over a brief timespan, there is necessary background that I summarize briefly. The interested reader is referred to *The Mind's New Science* (Gardner, 1985) for detail, explanation, footnotes, bibliography, etc.

In the beginning, there was Broca (1861a,b,c, 1865, as cited in Dronkers, Plaisant, Iba-Zizen, & Cabanis, 2007). Then there was Geschwind (1965a,b). Geschwind, a neurologist, was an articulate, well-read intellectual who could captivate an audience on any topic. Among other accomplishments, Geschwind was responsible for establishing behavioral neurology as a respected division of neurology and, more generally, reminding the world how effects of lesions to neural structures could support understanding of brain-behavior associations (Geschwind, 1965a,b). He trained a corps of medical residents and fellows who went

on to extend the reach of this specialization within neurology. In addition, Geschwind was unusual in that he maintained strong ties with psychologists such as Harold Goodglass and Davis Howes.[1]

By 1970, the cognitive revolution was largely won in academic psychology. However, there was a great barrier between the fields of medicine and clinical neuropsychological on one side and mainstream academic psychology and linguistics on the other. Prestigious mainstream journals such the *Journal of Experimental Psychology* and the *Journal of Verbal Learning and Verbal Behavior* did not include patient-based studies or even citations of patient-based studies. While the computer metaphor was incorporated into most theoretical discussions of cognition, the brain itself, including the effects of focal lesions, was left to medicine and physiological psychology, which used non-human animal models to study topics such as hunger, thirst, sex, and fear.

Basic ingredients for cognitive neuroscience were present: neurology's commitment to the brain, psychology's commitment to behavior and, to varying degrees, abstract theoretical accounts for that behavior. There needed to be places where these ingredients could be easily combined.

One place was the Aphasia Research Center (ARC). The ARC was established by the Veterans Administration after the end of World War II with the goal of understanding aphasia and related disorders. The ARC began in Framingham and moved to the Boston VA Hospital when that facility was built in 1952. In the mid 1960s, Norman Geschwind obtained funding from NIH for the Boston University School of Medicine Aphasia Research Center, which remained physically at the Boston VA and which continued to receive indirect support from the VA. Geschwind soon moved to Harvard Medical School in 1969 but maintained his affiliation with the ARC. Harold Goodglass took over as Director and continued in that role until 1996.

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[1] Davis Howes was atypical in that he was a non-clinical psychologist who studied aphasia to understand human language from a scientific perspective. Howes was very much a part of the ARC in its early years, although his published work is not frequently cited today.

Like Geschwind, Goodglass possessed a remarkable mind and deep knowledge that spanned many domains. Although far less dynamic as a *raconteur*, Goodglass published extensively and played a major role advancing the scientific study of aphasia. In addition to his research, clinical, and training roles, Goodglass ran the ARC on a day-to-day basis, hiring a decidedly quirky secretarial staff, keeping extremely careful control over the budget, and maintaining an occasionally ambivalent relationship with the Boston University School of Medicine's Department of Neurology. In addition, Goodglass served as a father figure who both nurtured and exasperated younger researchers. Geschwind, in contrast to Goodglasss' role as the father figure, was the favorite uncle who would visit regularly and galvanize the family with his stories and science.

A major feature of the ARC was the independence granted to researchers. The ARC was not Goodglass' lab even though he was the director. Rather, it was a collection of ambitious and hardworking individuals who were allowed to develop their own research agendas as well as contribute to the Center. There was a pervasive atmosphere of informality, easy collaboration, and even irreverence. Goodglass and Geschwind enjoyed universal respect and also thrived on challenging and interesting ideas from whatever source.

The VA was a teaching hospital that, at the time, was not subject to the cost pressures that exist today. There were neurologists, psychologists, speech-language pathologists, psychiatrists, residents, graduate students, and research assistants all with a significant portion of their professional time devoted to learning, research, and mentoring rather than to billable hours or to formal classroom teaching. Many of the staff were supported by grants from NIH or from the Research Service of the Veterans Administration. Funding was substantially easier to obtain than it is today, especially from the Research Service of the Veterans Administration. Because the ARC was one of a very few highly successful interdisciplinary centers at that time, researchers and clinicians representing many disciplines and many continents would stay for months or even years learning and collaborating on studies. Patients similarly contributed and benefitted. Many came to the Boston VA from all over the country for evaluation and treatment. They often stayed at the VA as out-patients and even as in-patients for weeks or months, receiving both established and new speech therapies and undergoing extensive cognitive testing. One result was an impressive publication

record for the ARC. Another was that VA patients received world-class care from the leaders in the fields of neuropsychology, neurology, and speech-language pathology.

The stage is set. The story turns, at last, to Howard Gardner. As presented on his website, Howard was trained as a developmental psychologist and was interested in the arts. What is also clear is that he was, from the outset, an atypical academic psychologist. Howard was studying the arts at Harvard Project Zero, which was not a standard topic in psychology. Howard spent time with unusual people, such as Nelson Goodman, a philosopher working on different symbol systems.

It is easy to imagine how Geschwind, the champion of behavioral neurology, inspired Howard to take a less-traveled path and to consider the potential of brain injury as a means to exploring cognition, language, and symbol systems. Howard began working in aphasia at the VA while continuing at Harvard Project Zero.

At the VA, Howard shared a lab with another young researcher, Edgar Zurif. The success of that collaboration could be the subject of another essay. The remarkable longevity of the Gardner–Zurif lab (the order of mention is, of course, alphabetical) and their decades of shared NIH funding (NS R01 11408) reflected a winning set of differences in personality, research styles, and topics.

What follows is a brief digression. In the 1970s, cognitively-oriented psychologists, who were the first to adopt a lesion-based research paradigm, brought with them a reliance on cognitive and linguistic theory to guide research. They also brought with them procedures common in mainstream cognitive psychology. Edgar Zurif epitomized this tradition. More specifically, Zurif and a close colleague, Alfonso Caramazza, were innovators in using patients with particular aphasic syndromes and specific symptoms to test linguistic theory (e.g., Caramazza & Zurif, 1976) in ways not possible with non-clinical subject populations (i.e., university students). Zurif's work forged the connection between aphasiology and the on-going revolution in linguistics that focused on syntax (e.g., Chomsky, 1965) and in mainstream psycholinguistics (e.g., Fodor, Bever, & Garrett, 1974). Aphasiology was from that point forward an integral part of syntax research.

Howard's work took a different path. As a developmental psychologist, he was comfortable with observational techniques: the

careful interviewing and analysis of a patient's behavior was similar to what works well with children in studies of development from a Piagetian tradition. Anecdotes and examples gleaned from a patient's comments were valued as much as numeric results for corroborating hypotheses and guiding understanding.

Howard worked in aphasia and often published with Zurif and others but maintained a sense for what might be new and not yet defined as a research topic. Patients with right-hemisphere brain injury were often included as control groups in studies of disrupted spelling, naming, and sentence comprehension to show that aphasic symptoms were specific to lesions to left-sided structures. Howard's truly novel realization was that patients with right-hemisphere damage (RHD) did not produce and understand language in a normal fashion, despite their ability to perform standard language tasks much better than patients with aphasia due to left hemisphere damage. Others such as Edwin Weinstein (Weinstein & Kahn, 1953) and John Eisenson (1962) had noticed odd aspects of RHD patients' language and cognition, but the connection to non-literal language and discourse level communication was a breakthrough.

One study is representative. In a paper that includes "aphasia" but not "RHD" in its title, Gardner and Denes (1973) reported that patients with RHD were unable to appreciate the quasi-metaphoric meanings of graphic patterns, that is, an equivalence across symbol systems. A curvy line can connote friendliness while a jagged line (sawtooth marks) connotes anger or hostility. An up arrow suggests wealth or happiness while an arrow pointing down suggests sadness or unhappiness. While LHD, aphasic patients were reasonably good at this task, RHD patients were surprisingly bad. To my knowledge, Gardner and Denes (1973) was the first systematic neuropsychological examination of non-literal symbolic interpretation in the literature that included RHD patients. This study documented a selective deficit to illustrate how the right hemisphere might contribute to normal communication ability in ways distinct from syntax, phonology, and denotative meaning.

In psychology, a single publication is not enough to establish a reputation or the legitimacy of a domain of inquiry. Howard cemented his hold on the topic with a catalog of papers produced with several students and colleagues. In 1977, Ellen and Howard published what has become a classic in the field. RHD patients had greater difficulty matching a

phrasal metaphor such as “He has a heavy heart” with an appropriate picture. Rather than choosing a picture of a crying man, RHD patients would opt for a man staggering under the weight of carrying on oversized heart. LHD patients with aphasia performed better at selecting the correct, non-literal interpretation. The basic effect was extended, replicated, and refined in later studies in the same lab (Brownell, Potter, Michelow, & Gardner, 1984; Brownell, Simpson, Potter, & Gardner, 1990) and in many other labs (see Kempler, 2005, for a review.) The main finding was not, as some have claimed, that the right hemisphere is solely responsible for metaphor comprehension, but that the right hemisphere makes a substantial contribution to metaphor processing and is required for normal performance.

In addition to metaphor, Howard explored the RH’s contribution to humor comprehension (Gardner, Ling. Flam, & Silverman, 1975; Brownell, Michel, Powelson, & Gardner, 1983; Bihrle, Brownell, Powelson, & Gardner, 1986), story and paragraph comprehension (Brownell, Potter, Bihrle, & Gardner, 1986; Delis, Wapner, Moses, & Gardner, 1983; Wapner, Hamby, & Gardner, 1981; Rehak, Kaplan, Weylman, Kelly, Brownell, & Gardner, 1992), sarcasm (Kaplan, Brownell, Jacobs, and Gardner, 1990), and indirect requests (Weylman, Brownell, Roman, & Gardner, 1989). In sum, a body of evidence confirmed that fully normal communication requires involvement of structures within both hemispheres, structures that constitute an interactive system. Non-literal phrases and language described at the narrative or discourse level required competences beyond the level of syntax or phonology.

In recent years, cognitive neuroscience has incorporated RH language within its purview. Newer techniques such functional imaging and transcranial magnetic stimulation (TMS) have made patient studies less central to the field as a way to explore the neural underpinnings of language and communication (see Bottini et al., 1994, for an early example based on PET). However, at the outset and continuing today, findings from lesion studies provide the starting point for the precise localization of function possible with neurologically intact subjects. The role of regions and connections among regions within the brain has become an expected part of cognitive theory for all aspects of communication. This defining feature of cognitive neuroscience began with patient studies and was thus built on the studies conducted as places like the ARC during the 1970s and 1980s. The origins of cognitive

neuroscientific interest in the right hemisphere for language began with Howard.

Always looking for the new synthesis, Howard was working on a different program even while the RH language work was in its growth period. He was able to develop different research programs simultaneously by virtue of good institutional support and successful collaboration with Zurif and also, starting in 1980, with me. Specifically, while at the VA, Gardner laid out his theory of multiple intelligences (Gardner, 1983). By 1990, Howard had reduced his involvement at the VA with studies based on patients. By this time, the cognitive-neuroscientific perspective was establishment rather than fringe, and the cognitive neuroscience of RH language was actively pursued in many labs all over the world.

The take-home messages include the scientific advantages of blending paradigms and issues from disparate areas, the attraction of being the first to explore an area, and, more practically, the need to publish several papers on a topic to insure a place in the literature. Another lesson is the value of context defined by a propitious moment in history, institutional support, and individuals who can see opportunity.

References

Bihrle, A.M., Brownell, H.H., Powelson, J., & Gardner, H. (1986). Comprehension of humorous and non-humorous materials by left and right brain-damaged patients. *Brain and Cognition, 5,* 399–411.

Bottini, G., Corcoran, R., Sterzi, R., Paulesu, E., Schenone, P., Scarpa, P., Frackowiak, R. S. J., & Frith, C. D. (1994). The role of the right hemisphere in the interpretation of figurative aspects of language: A positron emission tomography activation study. *Brain*, *117*, 1241-1253.

Broca P. (1861a). Nouvelle observation d'aphémie produite par une lésion de la troisième circonvolution frontale. *Bulletins de la Société d'anatomie* (Paris), 2e serie, 6, 398–407.

Broca P. (1861b). Perte de la parole: Ramollissement chronique et destruction partielle du lobe anterieur gauche du cerveau. *Bulletins de la Societe d'anthropologie,* 1re serie, 2: 235–8.

Broca P. (1861c). Remarques sur le siège de la faculté du langage articulé, suivie d'un observation d'aphémie (perte de la parole). *Bulletins de la Societé d'anatomie (Paris)*, 2e serie, 6: 330–57.

Broca P. (1865). Sur le siège de la faculté du langage articulé. *Bulletin de la Societé d'anthropologie*, 6, 337–93.

Brownell, H., Michel, D., Powelson, J., & Gardner, H. (1983). Surprise and coherence: Sensitivity to verbal humor in right hemisphere patients. *Brain and Language, 18*, 20–27.

Brownell, H., Potter, H., Bihrle, A., & Gardner, H. (1986). Inference deficits in right brain-damaged patients. *Brain and Language, 27,* 310–332.

Brownell, H.H., Potter, H.H., Michelow, D., & Gardner, H. (1984). Sensitivity to lexical denotation and connotation in brain-damaged patients: A double dissociation? *Brain and Language, 22,* 253–265.

Brownell, H.H., Simpson, T.L., Bihrle, A.M., Potter, H., & Gardner, H. (1990). Appreciation of metaphoric alternative word meaning by left and right hemisphere brain damaged patients. *Neuropsychologia, 28*, 375–383.

Caramazza, A., & Zurif, E.B. (1976). Dissociation of algorithmic and heuristic processes in language comprehension: Evidence from aphasia. *Brain and Language*, *3*, 572-582.

Chomsky, N. (1965). *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.

Delis, D., Wapner, W., Moses, J., & Gardner, H. (1983). The contribution of the right hemisphere to the organization of paragraphs. *Cortex, 19,* 43–50.

Dronkers, N. F., Plaisant, O., Iba-Zizen, M. T., & Cabanis, E. A. (2007). Paul Broca's historic cases: High resolution MR imaging of the brains of Leborgne and Lelong. *Brain*, 130, 1432-1441.

Eisenson, J. (1962). Language modification associated with right cerebral damage. *Language and speech, 5*, 49-53.

Fodor, J. A., Bever, T. G., & Garrett, M. F. (1974). *The psychology of language: An introduction to psycholinguistics and generative grammar*. New York: McGraw Hill.

Gardner, H., & Denes, G. (1973). Connotative judgments by aphasic patients on a pictorial adaptation of the semantic differential. *Cortex, 9,* 183–196.

Gardner, H., Ling, K., Flamm, L., & Silverman, J. (1975). Comprehension and appreciation of humor in brain-damaged patients. *Brain, 98,* 399–412.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1985). *The mind's new science: A history of the cognitive revolution.* New York: BasicBooks.

Geschwind, N. (1965a). Disconnexion syndromes in animal and man. I. *Brain*, *88*(2), 237-294.

Geschwind, N. (1965b). Disconnexion syndromes in animal and man. II. *Brain*, *88*(3), 585-644.

Kaplan, J.A., Brownell, H.H., Jacobs, J.R., & Gardner, H. (1990). The effects of right hemisphere damage on the pragmatic interpretation of conversational remarks. *Brain and Language, 38*, 315–333.

Kempler, D. (2005). *Neurocognitive disorders in aging*. Thousand Oaks, CA: Sage.

Rehak, A., Kaplan, J. A., Weylman, S., Kelly, B., Brownell, H. H., & Gardner, H. (1992). Story processing in right hemisphere brain damaged patients. *Brain and Language, 42*, 320–336.

Wapner, W., Hamby, S., & Gardner, H. (1981). The role of the right hemisphere in the apprehension of complex linguistic materials. *Brain and Language, 14,* 15–33.

Weinstein, E. A., & Kahn, R. C. (1955). *Denial of illness: Symbolic and physiological aspects*. Springfield, IL: Charles C. Thomas.

Weylman, S.T., Brownell, H.H., Roman, M., & Gardner, H. (1989). Appreciation of indirect requests by left-and right-brain damaged patients: The effects of verbal context and conventionality of wording. *Brain and Language, 36*, 580–591.

Winner, E., & Gardner, H. (1977). The comprehension of metaphor in brain-damaged patients. *Brain, 100,* 719–727.

Howard's Response to Hiram Brownell

If someone had asked me, fifty years ago, whether I would spend twenty years working on a hospital ward, on a daily basis, with brain damaged patients, I would have simply furrowed my brow and wondered where the interlocutor was coming from. I suspect that if someone had posed the same question to you, Hiram, forty years ago, you would have been similarly befuddled.

But events in the world, and occurrences in the sciences, have their own strange ways, which we rarely anticipate and often do not understand at the time but which can ultimately change lives. Around 1970, I chanced to hear a life-changing talk by Norman Geschwind, a great neurologist with a special interest in the breakdown of higher cortical functions (to be specific: Someone of Geschwind's background and interests would ask, if you have a stroke or tumor, at a certain site in the cerebral cortex, what happens to your musical abilities, your language, your capacity to find your way around an unfamiliar territory, etc.?).

For reasons having to do with my own curiosity about artistic organization in the mind and the brain (emanating from my by-then-lengthy apprenticeship at Project Zero), Geschwind's lecture was like the 'call of the sirens' to Ulysses. (Not that I resemble the hero of The Odyssey in another way that I can think of!). And so, without a great deal with hesitation (and with the generous support of several funding agencies), I ended up spending two decades conducting neuropsychological research at the Aphasia Research Center of the Boston Veterans Administration Medical Center.

As you describe it, Hiram, my unchosen but fortunate "partner in crime" was Edgar Zurif, an age mate from Canada, who had a prior interest in the nature of brain lateralization and the representation of language in the cortex. By the luck of the draw, we ended up being office mates (in a Very Crammed Office) and, as happened with Stanley Brandes and several other contributors to this Festschrift, we also became lifelong friends. We wrote grants together and were fortunate enough to receive most of them; as you imply, those were the halcyon days of an expanding National Institute of Health budget. And after a few

years, we decided that we would benefit from the addition to our team of an outstanding young postdoctoral fellow.

Enter, you, Hiram. Neither of us knew you beforehand but you received such glowing recommendations from mentors at Stanford and at Johns Hopkins that you seemed a natural fit for 'our lab.' And we were very pleased when we had the chance to meet you in the flesh. You were bright, modest, kind, and—a special feature that Edgar and I both valued—possessed of a marvelous, puckish sense of humor. (Try to avoid getting on the speaker dais after Hiram has had his say). And before long the improbable three of us—a German Jewish immigrant from Scranton, an Eastern Europe Jewish scion from Montreal, and a dyed-in-the-wool Yankee from western Massachusetts—became an effective working team.

By the time you had come to work with us, Hiram, I was already beginning to realize that I was fundamentally a writer and a synthesizer, rather than a paradigmatic experimental psychologist (as you and Edgar both are). It was not that I disdained empirical psychology—I rather like it and even seem to have a knack for it. But I concluded that there were many dozens who could do what I did as well as or better than I did. Instead I had a 'competitive advantage' when it came to synthesizing disparate strands of thought, yoking diverse bodies of data, and writing about my conclusions—typically in book form.

In science you get some credit for identifying a phenomenon, but the lion's share of the credit goes to the person(s) who works out the phenomenon in detail, specifying its extent and its limitations. I have often said that there is only one scientific finding for which I (along with Ellen Winner) deserve credit and that is the first experimental demonstration that the right cerebral hemisphere plays a vital role in appreciating non-literal uses of language. Put concretely, it has been widely known for over a century that, in right handed persons, the left hemisphere cortical structures are important for understanding phonology, syntax, and literal semantic meanings. But in the middle 1970s, in a number of studies, Ellen and I showed that in the absence of an intact right hemisphere, patients were likely to <u>miss the point</u>—particularly when it came to the pragmatics of language, like the understanding of humor, irony, satire, connotation, the intent of a speech act, etc.

Point for Winner and Gardner, the first body of research. But for whatever reason, we each went on to study other things. And it was left to you, Hiram, to do the important, difficult follow up work and to demonstrate which aspects of our general claim (right hemisphere handles pragmatics) are valid and which are overblown. You had to give a much finer grained picture of the specifics of right hemisphere involved in various linguistic and quasi-linguistic cognitive feats; and then, the biggest challenge, to begin to delineate how left and right hemisphere structures work together to produce genuine competence in linguistic expression and understanding.

After twenty years, I left my work at the VA to devote myself full time to teaching and research at the Harvard Graduate School of Education. By a happy turn of fate, you became a Professor at Boston College, where you are a member of the department currently chaired by Ellen. And trooper that you are, you continue to do some research at the Veterans Hospital where we first met over three decades go. Thanks for carrying the torch so deftly!

Jerome Bruner

I've known Howard for many years, ever since his student days at Harvard. And we've chatted endlessly over those years, for we're both addicted to exploring links among the intellectual, the personal, and the ideological. And we've stayed in touch—sometime running up fearsome phone bills for long-distance chats, more often gossiping and arguing at my flat in Greenwich Village or (oddly) at the Harvard Faculty Club on my occasional "outside examiner" trips to Cambridge.

I want to comment on what I've long sensed to be the "deep structure" not only of Howard's present thinking and writing on the nature of mind as well as the conditions that shape it, but also about what I sense to be his view of the "human condition"—or better in French, la condition humaine.

From the start, from graduate school days onwards, he has been (and remains) deeply in doubt about over-simplification in psychology's (and the human sciences') characterization of human capacities, particularly about the nature of intelligence and how it expresses itself in our daily lives. I recall his passionate condemnation decades ago in my corner office in Emerson Hall in Harvard Yard in which he cursed the idea of IQ as a measure of human intelligence.

"People use their minds differently, for God's sake: how can a single measure like IQ provide any clue about that?" I don't think he'd yet thought explicitly about multiple intelligences, but he was surely on the way! I even recall his mentioning in that impassioned chat (those were the days when the New Look was upsetting fixed-feature views of perception) that people see the world differently depending on their needs, hopes, and fears, and doesn't that affect what they DO about it, THINK about it, FEEL about it?

I think some of those doubts and uncertainties may have stemmed from Howard's own rather split ways of looking at the world. He was as deeply interested in the arts back then as he remains today and was very awake to the difference between, say, looking at a Vermeer or a Picasso and scanning a busy street to see whether it was safe to cross over. They were different ways of experiencing the world.

I can't remember whether, in those early days, the Allport-Vernon "Study of Values" test had made any impression on Howard—that people "interpreted" the world differently, saw it in the perspective of economic, political, aesthetic, or religious values. But back in those days, Leo Postman and I were demonstrating that such values powerfully affected how one perceived the world and resolved its inevitable ambiguities. I'm sure Howard, who'd taken a reading course with Gordon Allport, must have been impressed not only with the substance of that work, but also with its typological perspective. For in some deep sense, the intellectual climate of those days—whether in old Emerson Hall in the Yard or later in the glassy modernity of Yamasaki's William James Hall—had become much more interested in the nature and range of human variability than in an insistence upon "human universals." Recall that these were the dominant days of French intellectuals like Jean Paul Sartre and, indeed, of our colleague David Riesman, each insisting in their different ways on the power and the privilege of human differentiation. So in that sense, perhaps, Howard was (in his own way) a Man of his Times.

Perhaps that's why he had lost interest in the search for human universals—a search, for example, that was crucial to the egalitarian spirit of our own American Civil War and in the battles provoked by Brown v. Board of Education. I think Howard, like many of us, quietly deplored the homogenizing view that "everybody's basically alike." Yes, everybody's "alike" from the perspective of human rights, but each has an equally deep right to their own mode of thought—and let us respect, let us honor the varied forms of intelligence that humans express.

Let me close with some comments on Howard's work made to me by Italian colleagues with whom I've worked each June in Reggio Emilia these last couple of decades. They are principally concerned with preschools, scuole del'infanzia, that prepare children to benefit from the education provided later in conventional schools. As one of them put it to me, "Gardner is among the few who recognize and honor the obvious fact that we human beings use our intelligences differently and that one of the principal aims of education, including preschool education, is to help us find our own way of being intelligent." Or as another Reggiana put it, "he has taught us to be confident of our ways of using our minds." I think my Reggio friends are right on target! Yes, they sometimes criticize Howard's work for being insufficiently concerned with HOW we cultivate

the varied uses of mind and intelligence. But interestingly, Howard too has become increasingly concerned with that question as well.

Howard Gardner has not only contributed to our understanding of intelligence in its various manifestations, but has also re-awakened us to the diversities in what we like to call “human nature.” And in doing so, he has provided a stimulating reawakening of our ideas about the conduct and aims of education. He has also reawakened us to a sense of the rich diversity of human intelligence (or perhaps I should say human nature) and, in so doing, has enlivened our imaginations about the functions of culture in helping shape mind. I am proud to have had him as a student, gratified to have him as a close friend, and hopeful that his insights will change our still rather conventional ideas about how to bring out the best in all of us.

Howard's Response to Jerome Bruner

Even before we met, fifty years ago, you were already a legend: in psychology, in education, in broader intellectual circles, a personality in Cambridge, and a good many other corners of the world. As Harvard student Andrew Weil put in a Harper's Magazine at the time, Harvard's Bruner and his Yeasty Ideas. Your achievements before the age of fifty were already mind-blowing and would have been legendary even if they had not come forth from a person who was blind for the first years of life, who required enormous corrective lenses throughout life, and who in so many categories was not only "the first person to…" but also "the first Jewish person to…"

That we met when we did was an incredible coincidence. Having finished Harvard College, as a protégé of Erik Erikson's with an interest in clinical phenomena but no interest in attending medical school, I decided to visit the University of Michigan's well regarded graduate program in clinical psychology. I would probably have taken a bus from Cambridge to Ann Arbor, but happened to catch a ride with David McNeill, a young post doc who had been working with you. As David learned of my interests (no doubt, we both needed stimuli to stay awake as we motored through Ohio), he thought that I might enjoy meeting Bruner and possibly working for him on a new curriculum project for middle school called "Man: A Course of Study." Rather like Woody Allen casting a minor role, you, Jerry, chatted with me for a few minutes and said to your assistant Annette Kaysen, "Please offer Howard a job on the ESI (Educational Services Incorporated) Project."

To say that this was the most important moment in my personal and professional life would be more understatement, than hyperbole. Jerry, you had also hired Judy Krieger to work for you that summer. Judy and I fell in love and within a year we had gotten married. Judy and I had three children, Kerith, Jay, and Andrew, and in a non-literal sense you are their godfather. (It was great for you to reconnect with Judy and my children a few years ago, when I gave a series of lectures at New York's Museum of Modern Art which you and Eleanor Fox were kind enough to attend). Indeed, you also played a paternal role in other ways; suggesting that they attend the Shady Hill School, making it possible for Dr. T Berry Brazelton to be their pediatrician, and above all, serving as Judy's mentor and thesis adviser.

It would take many pages to lay out the multiple ways in which you have shaped my professional career—in terms of the topics examined (creativity, intelligence, developmental theory, learning in Reggio Emilia); the ways in which I study and write about these topics; and less evident to those who have not worked with both of us, how I work with and relate to my close associates at work. I have been flattered by the kind remarks about mentoring in these pages, and I know that the traits referred to are often ones that I imbibed from you, as well as from a few individuals, now deceased and only alluded in these pages, such as Roger Brown and Norman Geschwind and Nelson Goodman.

As I write, Jerry you are about to turn 99. And while your mobility is not quite was it was a few years ago, you are still in many ways 'the youngest and the most eager member of the class,' an inspiration to all who know you and many who only know of you.

In your warm remarks in the Festschrift, you touch lightly on some of the similarities and differences in our interests and styles. Both of us are interested in the differences among individuals, yet as a psychologist you have been much more focused on the universal conditions, what makes us into human beings and what then can make us "more so." As you once casually remarked to me, "I am congenitally uninterested in studying individual differences." The arts and literature play a tremendously important role in your life, and yet you have never taken the Project Zero route of a specific focus on the arts. It cannot be accident that we have both been attracted to and spend decades visiting the small city of Reggio Emilia, in Northern Italy. We go there, not only because of the wonderful atmosphere, food, and citizens, but also because we are looking for existence proofs of how human beings can mobilize themselves in a positive direction. (Alas, we have plenty of existence proofs of how human beings can be destructive). That's the reason you threw yourself into the creation of Man: A Course of Study, worked at Shady Hill School, collaborated with the Underwood School in Newton, and taught (both solo and team) for decades at Harvard, Oxford, and most recently the New York University Law School.

Indeed, Jerry, you rightly point out that an interest in improving the human condition, rather than simply chronicling it, has been an important aspect of my work in recent years; in particular, the probing of GoodWork and the launching of the Good Project (www.thegoodproject.org). For quite a while I was 'just the bookish scholar.' Not so, you, Jerry Bruner. You have always had it in mind to improve human capabilities whenever possible. (The third motto of "Man a course of study" - How can we make human beings more human?) You seek excellence, do your best to realize it in every aspect of your life, and have inspired uncountable others to do the same. What a role model for us all!

John Landrum Bryant

Dear Howard,

I was struck once more at the simple way you have answering questions as I glanced at articles and interviews in the latest batch of clippings. You still are “on message” only enriching it as your own understanding grows, relentlessly planting seeds even in places that you know the likelihood of their growth and survival is minimal.

I think of Saint Bernard, whose character was actually not so saintly, and whose opinion was biased—but he was the Church’s first ‘fixer,’ stitching together factions, keeping things moving toward unity, solving problems. This is in no way a parallel to you (or, on reflection, maybe it is!), but only an entrance to his motto (which he breached far more than observed): “See Everything; Overlook Much; Change A Little.”

It is a calling to be able to stay in the game, year after year, politely responding to the same questions an infinite number of times. The staying in the game is the first part. The much more significant second part is an unshakeable belief that you are contributing to systemic change for the good. Another bromide: It is said that of Lincoln and Lee, Lincoln was the greater because he took his virtue and beliefs into the market place and bargained with them every day, trying to achieve his vision, while Lee sat upon his principals.

Having you as a friend is one of my joys, and I am enriched simply knowing that you, like Woody Allen, are “showing up.”

John

Howard's Response to John Landrum Bryant

It has become a legend for both of us: our initial meeting at the Isabella Stewart Gardner museum, where the conversation went all over the map, and the mushrooms splattered all over the table. The intention was good, to try to wed the expertise at Project Zero on student learning in the arts, with the fine collection and expert personnel at one of America's landmark museums. But even when all of the 'signs' are positive, things do not always work out neatly. In fact, our own challenges with 'collaboration' at Project Zero have been significant enough that we have actually studied the nature of good and flawed collaborations. (For those who want the fine details, our findings can be read under the 'Good Collaboration' tab at www.thegoodproject.org).

Still, John, you and I were lucky enough to hit it off and to remain friends ever since. You and Patricia have been kind enough to provide support for some of our research endeavors and it has been the best kind of support—no strings attached, trusting us to make prudent use of the resources and then reporting back what we have found, what we have learned, and what we would do different next time. We've had various partners in these projects, most notably Jessica Davis, who could regale us with her own vivid (and, no doubt, idiosyncratically different) stories of the Gardner Museum. (Funny how two Gardners—John and Isabella Stewart—to whom I have no relationship, have cropped up in these pages).

It's not just that we often read the same magazines (even scanning the same Chester Karrass ads), look at the same art works, visit the same exotic spots (I remember a rendezvous in Hong Kong over a decade ago). Rather, despite our obvious differences in background and daily occupations, we bring the same skeptical attitude toward the world. Not expecting that things will work out necessarily in the way that we want them to, but not so cynical as to give up entirely. And realizing, as you so puckishly remind us, that a large part of life is 'showing up;' trying to do one's best once one gets there. Your faith in me has meant a great deal to me, perhaps more than I can express in words.

From Book to Life

Thomas Carothers

I first met Howard, fittingly enough, in the form of a book. It was one of his books. In fact I believe it was his very first single-authored volume, the mouthpiece of the river of books that would pour out of him over the next several decades. It was the early spring of 1976, and I was a sophomore at Harvard, majoring in psychology. That year a sharp desire to study creativity captured me. I wanted to examine rigorously what creativity represented as a form of thinking and how it developed in people, and I decided to write my required departmental "sophomore essay" on the topic. A couple of professors in the psychology department whom I approached as possible advisers brushed me off, dismissing it as an unwieldy topic and saying that in any event they didn't know much about it. I repaired to the lugubrious stacks of Widener Library, determined to immerse myself in the existing literature on the subject. But there I met only further disappointment. Everything I found struck me either as superficial and cloying—semi-mysterious accounts of inspiration as the key to creativity—or dismayingly reductionistic—explanations of creativity as being the product of the familiar psychodynamic tensions common to people born of anything less than perfect parents.

But then one day I came across a bright red book entitled, "The Arts and Human Development." As I stood in the gloomy corridor leafing through its pages, I immediately saw that it went to the heart of my inquiry and was not like anything else I had found. It was practically focused yet conceptually sophisticated, analytically rich yet accessible. If I had known the term "cognitive," I would have identified the book as a pioneering application of that perspective on the subject. After checking out and reading the book I was surprised and happy to discover that the author was in fact at Harvard, not in the psychology department, but at the Graduate School of Education, an uncharted sub-region of the university for most undergraduates. The Harvard telephone operator had a phone number for him and so I called him up, told him of my interest, my search for an adviser, and my discovery of his book. He agreed to see me the following week.

Despite my high hopes, our first meeting was inauspicious. In a small, cluttered office in Longfellow Hall, I encountered a man in his early 30s, far younger than I had expected, with none of the gravitas of the ponderous professors who dominated the psychology department. He was dressed in brown corduroys that had seen better days and an apparently tuck-resistant oxford shirt. He seemed to have forgotten to comb his hair that morning or possibly to have forgotten how to comb it all together. He was restless, a bit distracted, and clearly in a hurry to get back to the IBM Selectric in front of him. He was pleased to hear that I liked his book, commenting wryly that I was one of a very small number of people who had ever read it. But he declined my request to serve as my essay adviser, telling me that he was swamped with projects and just could not take on any additional commitments. He did add however that if I ended up writing on the topic of creativity he would be willing to read whatever I produced.

I went ahead with the essay without an adviser. The red book was enough to give me confidence that the topic was worthwhile and to show me a way into it. It also pointed me to the work of Nelson Goodman, which opened the door to a serious epistemological grounding of my whole effort. The resultant essay was accepted by the psychology department as sufficient for the requirement and as a sort of curious example of what a stubborn student intent on a particular path might do if left to his own devices. Remembering what Howard had said at the end of our meeting, which was then several months in the past, I sent it to him. He replied with a short typed note suggesting we meet again.

At our second meeting his appearance was unchanged, but this time he was not distracted. Instead he fixed his eyes on me, seeming to look both above his glasses and through them at the same time, which gave the unsettling impression of especially acute scrutiny. He told me that he had found the paper interesting. He didn't elaborate much his opinion of it, only briefly mentioning one or two points that struck him. But he conveyed to me as much by his manner as his words that I had passed through some sort of door into his world, the compelling world of researchers grappling in new ways with deep questions about how people think and learn in multiple domains, especially those domains not normally examined in the conventional world of academic psychology. I instinctively felt that my undergraduate education, or perhaps even something larger than that, had finally started for real.

He advised me to take Nelson Goodman's graduate epistemology seminar in the coming year and wrote a note to Goodman that got me into the seminar even though I was only an undergraduate and had never taken a philosophy class. He listed some books he thought I should read. And he pushed me to think early and hard about my senior thesis and offered to be my adviser for it. I followed his advice and also took him up on his offer. As a result I saw him regularly during my senior year. He was a wonderful adviser, combining probing questions with continual support and caring. I appreciated his unusual combination of deep respect for his intellectual forerunners and entirely unceremonious penchant for questioning everything that had come before. When my thoughts about my topic became overcomplicated, he helped me through my confusion by insisting that any good thesis idea could, as he vividly said, be summarized on a 3 x 5 card with room left over for a good recipe. After I finished the thesis he generously worked with me on a version for publication, which came out as a co-authored article by us in a developmental psychology journal—a heady and gratifying moment for an undergraduate.

After leaving Harvard I ended up changing academic paths. In London on a fellowship for graduate work (an undertaking that reflected Howard's advice and example), I switched from psychology to international relations, seeking to broaden my terribly limited knowledge of the world. When I wrote to Howard about this decision, I was worried about how he might react and whether it would mean losing my tie with him. But his reply was warm and gracious, urging me not to hesitate to follow my instincts about what fascinated me most, no matter how many curves that meant on the road ahead. And he made a point of looking me up in London over the next several years whenever he passed through. Each time he did he peppered me with friendly questions about my new pursuits, my travels as well as my studies, helping me deepen my understanding about all that I was experiencing. It struck me after one of our meetings that our conversations were changing from ones between professor and student to ones between older and younger friend. I was startled by this realization and happily held fast to it, and have continued to do so across the intervening 30-plus years.

During those years I have enjoyed watching Howard's work and Howard himself evolve through successive stages reflecting his ceaseless quest for understanding and his extraordinary ability to tackle and then

advance diverse domains. My understanding and appreciation of him has quietly evolved alongside his remarkable quest, moving in stages that track his major steps.

In the first years I knew him, largely his 30s, I was deeply affected both by his breathtaking intelligence (I use the latter word advisedly) and relentless drive. Each was formidable on its own, and together they were unstoppable. Among the many dazzling attributes of his intellect, one that struck me most was its observational quality. In the context of the world of U.S. social science turning in on itself, building self-referential theories on the foundation of abstractions, Howard's proclivity to define problems that struck him in the real world and then address them through close examination married with careful reflection and innovative synthesis was bracing and inspiring. It ended up shaping my approach to a very different domain, the study of democratic change around the world, leading me to emphasize naturalistic, first-hand observation and then yoke it to practically-oriented analytic synthesis as a way of untangling foreign political complexities. His drive was notable not simply for its strength but for its nature. In contrast to so many other people I was coming to know in the world of law and politics in Washington, Howard was not driven by the external attributes of success but by the desire for pure insight and understanding and the grail of translating such progress into useful applications.

As Howard moved through his 40s, I added another arrow of appreciation to the quiver—for the amplitude of his curiosity. He began moving in new directions, such as his foray in China, bucking the common academic trend of singular specializations. I marveled at how his analytic antenna moved out ahead of him constantly exploring the terrain around him, guiding him to places and questions he had not previously encountered and helping him find entry-points. He also displayed an unusual ability to build bridges among the diverse domains he explored, seeing the deeper connections that more narrowly focused explorers missed. And he complemented this analysis with searching discussions and debates with an ever widening array of lively colleagues and peers.

Watching the next phase of his life, his 50s, I saw his still-energetic intellectual pursuits become more consciously grounded in a commitment to a wider set of societal values, having to do with community in both the local and national senses of the term, above all

the challenge of preserving positive community values in the face of myriad countervailing pressures. I was surprised at first how upset he was by the internal struggle at Harvard surrounding Larry Summers' presidency there, as Howard had always been the last person one expected to become embroiled in academic politics. Yet I came to understand that what stirred him up were not specific grievances over budgets or positions, but his feeling that a very special community, the Harvard one, was at risk of losing the cardinal virtues that had made it a preserve for original, deep thinking and intellectual sharing for so long. Howard became a community activist of a type in that context and then, in classic Howard fashion, linked the specific experience with his ongoing larger intellectual and practical exploration of a whole new field—his innovative inquiry into the topic of "good work."

As he moved into his 60s I experienced more vividly than before yet a further side of Howard due to developments in my own life. My son reached college age and ended up going to Harvard. Howard was generous in taking a genuine, sustained interest in him and his college experience, welcoming him repeatedly at his home. I was moved by his evident care and interest. And then when I went through some personal travails in my life, I found myself talking about them with Howard, talking much more frankly and personally with him than I ever had before. I discovered in him a sensitive, caring, and helpful listener on the most difficult of subjects. After one such conversation it occurred to me how far we have traveled along the road of friendship together. But then when I thought back to the origins of this path, to the unusual red book and the inquisitive eyes trained on me in the cluttered office in Longfellow, I realized that the seeds had been there from the start.

Howard's Response to Thomas Carothers

I have always admired the keenness of your memory and your ability to capture those memories in precise words and vivid, sometimes memorable phrases; and, more recently, to capture experiences in photos, videos, and, I suspect someday, one or more unique works of fiction. I cannot attempt to substitute my own recollections in comparable detail because I am almost certain that your memories would be more accurate than mine. Indeed, though I am the card- carrying developmental psychologist, I consider your essay as a textbook example of a 'developmental account of a friendship' which now has lasted—and as you indicate, deepened—for close to forty years.

Attraction among specific individuals retains a mysterious phenomenon, whether or not it has an erotic component. (And I am not sure that any 'online dating service' has quite cracked the code). You and I have always shared a wide curiosity about scholarly areas, though you are perhaps more of an auto-didactic than I am, and you have ventured much further and wider in terms of languages and cultures. You, Tom, are an adventurer in a way that I am congenitally not, except perhaps in the range of topics that I decide to write about and my willingness to stick my neck out and make a fool of myself; though, at least occasionally, in the end I turn out not to have been the complete fool.

I suspect that, for perhaps different reasons, you and I always have felt a bit of an 'outsider;' not just an ordinary member of the club, not just going the way that others went. You had ample opportunity to go on in psychology, in law, in teaching, the leadership of big institutions, and a significant role in government. And while you have certainly had a taste of each of these you have always preferred to go 'your way' and because you are so able, the world has basically cooperated.

Anecdote: Some years ago, you gave a talk in Washington. Nothing unusual about that, you must give dozens a year in Washington and at least as many in Carnegie Endowment offices dotting the globe. After the talk, a woman whom you apparently did not know said, "Mr. Carothers, you have no idea how much power you have."

You looked a bit taken aback and said, "What do you mean?"

"It's simple, Mr. Carothers," she replied, "You actually tell the truth."

I'm not sure whether this is a remark about human nature, or about Washington politics, but in your case it is powerful and accurate.

I've noticed that there is a small group of persons represented in these pages—I often think of you, Nat Glazer, and Alan Wolfe as a small secret organization—who form your own views of things. It simply does not make sense to call you left or right, conservative or liberal, Federalist or Democrat, Europhile or Europhobe. You know a great deal, you hold on to what you know, and you are able to draw on it appropriately when issues of controversy arise. This does *not* mean that we will always agree; I can remember any number of occasions where we come out on different sides of an argument. But it does mean that I will take seriously what you argue, why you argue it, and probably more often than I can recall, moving in your direction. I consider you an example of 'disinterestedness' in the best sense of the word—perhaps that is why, though you would be welcome in so many clubs, you are not tempted to a lifetime membership in any one of them.

Greatness in Concrete Terms

Jie-Qi Chen

Many people aspire to achieve greatness in their work. Few actually do. Greatness is not a destination. Instead, it emerges as an individual's contributions prove transformative to a field. It is based not on one or two achievements, but on work that develops over the course of a lifetime. Howard Gardner is one of those rare individuals whose work has achieved greatness. He is a living legend, one of the most influential psychologists of our time. His greatness is the ultimate expression of his creative vision, innovative power, enormous impact, and enduring contributions to the field.

Greatness is an abstract concept to many people. They may see the Nobel Prize and other prestigious awards as indicators of greatness but find it difficult to articulate what is great about the work. Through working with Howard, I have had many opportunities to learn what greatness is in concrete terms. My work with Howard has focused on applications of MI theory in the context of early childhood education. My personal journey from graduate student to classroom teacher, school interventionist, and scholar in teacher development has demonstrated the power of MI theory in transforming early education practices and the lives of many, many children and teachers in the United States and around the world. In my tribute to Howard and his work, I would like to share my perspective on his greatness.

Meeting MI Theory

I came to America as a graduate student in 1984. My first encounter with MI theory was in 1985 during a graduate course on human development at the University of Northern Iowa. It was the last class meeting of the semester. After summarizing the material he had presented in the course, the professor suddenly snapped his fingers and said, "I almost forgot. I just read an article by Howard Gardner. He is proposing a new theory, called 'multiple intelligences theory.'" The professor spent about 10 minutes briefing us on the main points of the theory and apologized for not including an article about Gardner's work in the reading package. Two phrases the professor used in this hurried introduction caught my attention: IQ test and equality.

IQ test! I knew what that was. Right before I came to the United States, I participated in a national survey project of children with special needs in China. My group was sent to a coal mining area in Shanxi Province. It was a shocking and disturbing experience. The children had extreme special needs. Most were physically deformed and mentally challenged. According to a local contact, these children were suffering from the effects of either fetal alcohol syndrome or abnormal fetal development caused by defective birth control drugs. Introduced in 1978, China's family planning policy mandated that each married couple could have only one child. To implement the policy, birth control pills were made available at no cost to the public. Some of the pills proved ineffective; they did not prevent pregnancy. Large numbers of women found themselves pregnant even though they were taking the pills. Exposed to these drugs *in utero*, many babies were born with handicapping conditions.

We were asked to test the children with a Chinese translation of the Wechsler Intelligence Scale for Children (WISC). In China, the WISC was highly regarded because it came from the United States. During the testing process, I began to question the usefulness of the test. "What does this test score tell us?" "How do the scores help us work with these children?" I was also puzzled by some of the specific WISC test items. In one section of the test, for example, there were four pictures on a page that the child had to recognize in order to answer the test question correctly. For one question, the correct answer was to point to the picture of the pretzel. Asking around, none of the team members knew what a pretzel was. We had never eaten nor even seen one. Did that make us less intelligent than someone who correctly selected the picture of the pretzel? When I came to the US, one of the first things I tried to find out was what a pretzel was like. I was not able to question the tenets of the IQ test then, but my own experience allowed me to see at least its limitations.

The second point from the professor's last-minute introduction was Gardner's reference to "equality" in the theory of multiple intelligences. Equality? I was in my late 20's and the concept of equality had not been part of my life experience. I was born and grew up in Xi'an, China. At the age of two, my father was jailed as a political dissident. His academic leadership and achievements were stripped off. Our house and all of our belongings were taken from us. Though not imprisoned, my

grandmother, mother, four sisters, and I were made outcasts and were discriminated against in every possible way. From being denied entry to community organizations to being verbally and physically abused by the Red Guards—paramilitary enforcers of the teachings of Mao—my family had no power to defend ourselves and no resources to change our circumstances. Because of the physical and psychological torture, two of my sisters suffered from schizophrenia and one committed suicide. I was humiliated by authorities and harassed by peers throughout my childhood.

School administrators and teachers referred to me as "a child who can be educated," meaning that I was born with the bad traits my father had, but I might be changed through exposure to the communist ideology. Even after the start of China's opening and reform in 1979, I entered the university still with this label attached to my record. The same label was applied to me in an official university letter that was required for my application to enroll in graduate study in America. This label, a denigrating and dismissive charge, was applied to me so often that I began to accept it as true, to believe that I was inferior and worth less than others. Second guessing myself has become an automatic response that remains with me to this day.

At the start of summer break in 1985, I went to the library and checked out a copy of Howard's *Frames of Mind*. My questions about IQ testing in the coal mining region of China were addressed in Howard's criticism that the IQ test was not an accurate or a complete assessment of an individual's intellectual abilities. I also related the discrimination I experienced throughout my years in China to my immediate grasp of the promotion of equality inherent in MI theory. MI theory denounces the practice of using narrowly defined intellectual abilities to define an individual's potential to learn and grow. Traditionally, IQ scores have been used to rank order children. Children with the lowest scores were thought to have the least potential for learning. Children who find themselves at the bottom began to see themselves as inferior. The result was a downward spiral of low self-esteem and a sense of hopelessness. Though I had not taken an IQ test, I understood the plight of those at the bottom. Howard argues that discriminating against a child based on an incomplete understanding of what constitutes intelligence is not justifiable. No two children are alike, nor are their intellectual profiles.

Respect for individual differences in their ways of perceiving and processing information is a basic human rights issue.

The significance of Howard's promotion of equality among students goes beyond the argument for multiple intelligences. People around the world are discriminated against for all sorts of reasons: the color of their skin, their socio-economic status, religious beliefs, political opinions, and even how they dress and look. It is on this basis that MI theory has touched the hearts and minds of millions across the continents. People associate the theory with their personal experiences of stratified societies as I did. The theory becomes concrete, meaningful, and personal. It is this personal touch that often has the most enduring value to change, as in the case of my journey from a downtrodden child to a scholar in the field of early education.

MI and its Innovation in Assessment

In 1986, during my first year in the doctoral program in Education at Tufts University, I taught at the Eliot-Pearson Children's School. Staff members from Project Spectrum were at the school to test a newly developed assessment system based on MI theory. Co-directed by Howard and David Feldman, my advisor at Tufts, the name *Spectrum* reflects the project's mission to recognize diverse intellectual strengths in children at an early age. The *Spectrum Assessment* includes activities that represent a range of intellectual abilities, including linguistic, mathematical, music, art, social understanding, science, and movement. By virtue of the wide range of intelligences it measures, Spectrum assessment identifies more children as "smart" than the traditional form of assessment. As one of the first MI-based experiments, the Spectrum work indicated that Howard is a theoretician with insights who strives to put his principles in practice. He was the initiator, organizer, and soul of the project, through which MI theory was tested and further developed.

I observed the staff using the Spectrum activities with children in the classroom. Excited about what the assessment activities revealed and their relevance to classroom teaching, I began to adapt the activities for use in my kindergarten classroom. As the year progressed, educationally significant stories emerged through children's participation in Spectrum activities. Uchi came to my classroom in late October. She spoke to no one for the first month. I started wondering if she had a language delay or other developmental issues. Setting aside my speculations, I drew

Uchi's attention to the Spectrum Storyboard. The storyboard invites a child to tell a story of her choice using different props, such as people and animal figures. I asked Uchi to use any of the props to tell me a story. Slowly but surely, she picked up one prop after another and set them down on the storyboard. All the props she selected related to farms. Though she still didn't speak, she moved the props around in ways that were deliberate. Day after day, she went back to the storyboard and played with the same props. Although she said little, she was engaged with the materials and varied what she did with them. One day, she asked me to sit with her and told me a beautiful story about her grandparents and their farm. Before moving to Boston, Uchi had lived with her grandparents on a farm in South Carolina. She missed them terribly and felt sad that she couldn't see the farm animals she loved. Boston was an alien place for her. She felt cut off from the countryside and did not know what to expect in her new home and in her new school. The Spectrum Storyboard made it possible for her to share her experience. It also provided a means for me to learn more about her and find more ways to engage her in meaningful learning experiences.

Over the years of my early childhood teaching, I used many Spectrum assessment activities with my children. Time and again, I was amazed by the multiple representations that children used to solve math problems presented in the Spectrum Bus Game. I observed otherwise easily overlooked musical sensitivity in some children when we played the Spectrum Montessori Bells Game. I was often surprised and impressed by their sophisticated understanding of classroom social dynamics when my kindergarteners played with the Spectrum Classroom Model (See Krechevsky, 1998 for a complete description of the *Spectrum Preschool Assessment Activities*). My annual report of each child's progress was rich because I had many interesting stories to tell. My relationship with parents was meaningful and informative because I could describe their child's cognitive strengths in great detail. Through using the Spectrum materials, I began to appreciate domain-specific knowledge that is critical to the development of young minds. I also learned to recognize and value children's different ways of knowing and to remain mindful that children have the potential to produce quality intellectual work.

My use of Spectrum assessment activities to learn about children and improve teaching reflects MI theory's influence on the field of early

childhood education in at least two ways: First, it has contributed to our more differentiated understanding of early learning and development. In the field of early education, promoting development of the whole child has been the gold standard. Referring to general cognitive, social/emotional, language, and physical growth, development of the whole child does not relate directly to specific teaching and learning processes in content areas. Early childhood teachers believe in the importance of whole child development but have found it difficult to apply as a guide in daily teaching activities. MI theory offers a more differentiated understanding of what early development entails. Knowledge of children in the MI framework identifies a wider range of more specific developmental potentials. Of critical importance to the development of these potentials is to expose children to a wide range of learning experiences. The development of the whole child is promoted through integrated content-specific learning and teaching processes. Nowadays, early childhood programs are guided by content-specific early learning standards, which are more consistent with MI theory's differentiated understanding of early development.

Another undeniable imprint that MI theory has made on early education is to promote the development of alternative assessment guided by the work of Project Spectrum. In the early 1980s, educators, politicians, parents, and concerned citizens began to speak of our country as a "nation at risk" (National Commission on Excellence in Education, 1983). One factor identified as contributing to this state of affairs was testing. The lack of assessment information useful to teachers in planning daily learning experiences was seen as restraining the power of education. These and similar concerns spawned the "alternative assessment movement" (Baker, O'Neil, & Linn, 1993). Early childhood educators joined this effort. Project Spectrum became the flagship for alternative assessment in early childhood because of Spectrum assessment's distinctive features. It is theory-based, assesses diverse intellectual domains, uses inviting materials and engaging activities, and produces a narrative profile describing each child's strengths and areas for improvement based on the assessment activities. Influenced by Spectrum's work, many alternative assessments were developed for early childhood teachers (e.g., Work Sampling System; Creative Curriculum.Net; Preschool Child Observation Record; Bridging; Rainbows of Intelligences; MIDAS-Young Child). Early childhood teachers across the country started to use various alternative assessment tools.

For many of them, this was the first time that they found the assessment process meaningful, because it informed their teaching and helped to improve children's learning.

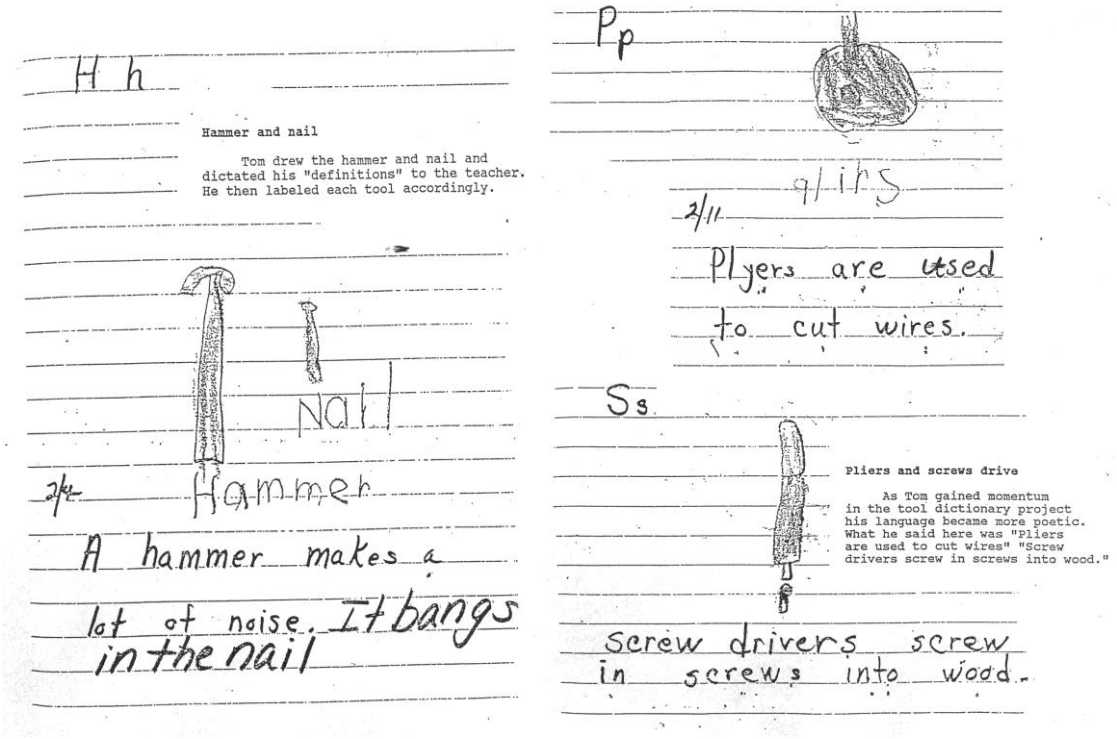
MI and its Approach to Intervention

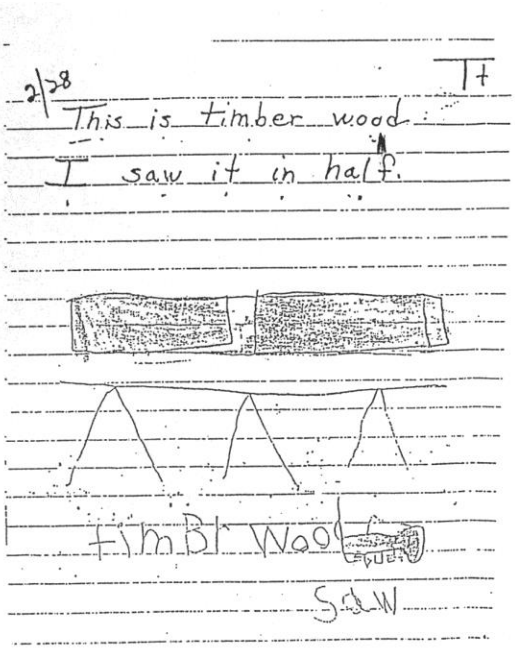
I joined the Project Spectrum staff in 1989 as a researcher and school interventionist when the project was shifting its emphasis from alternative assessment to school intervention. Spectrum partnered with public schools in Boston area that served children largely from low- and lower-middle income families with diverse ethnic backgrounds. Many children in these schools had been identified as at-risk for school failure. The traditional approach to educating children at-risk was to quantify their deficits in reading and math, then rely on drill-based instruction to bring their performance up to standards. This approach had not worked for the large majority of children. Guided by MI theory, the Spectrum team developed an alternative approach to helping children at-risk. The approach was based on using four interrelated strategies: (1) introducing children to a wide range of learning areas; (2) identifying children's areas of strength; (3) nurturing the strengths identified; and (4) building on children's strengths to improve their performance in areas of weakness. The key to affecting changes in practice was helping teachers to see at-risk children differently. MI theory offered teachers systematic processes for identifying children's strengths and building on those strengths to improve children's performance.

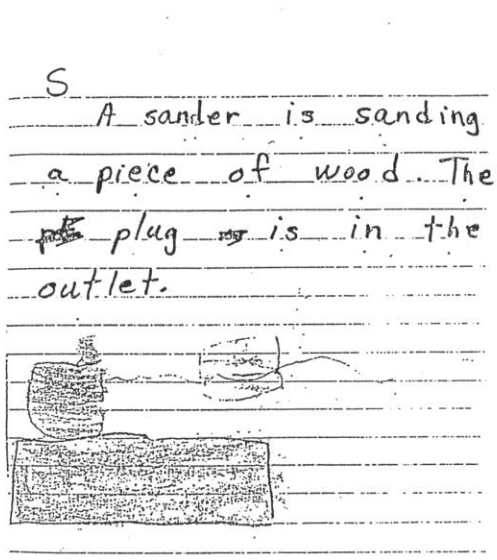
Working with teachers, we identified specific strengths among many of the at-risk children. Finding strengths was surprising to many teachers and unprecedented as a basis for teaching children at risk. Building on these strengths, teachers developed new strategies for helping children gain academic skills. Through analyzing data based on classroom observation, the project staff learned that these children were more self-directed and confident when they were engaged in their areas of strength. They also stayed focused and engaged for longer periods when involved in activities related to their areas of strength. The story of a child whose area of strength was encouraged during the intervention illustrates the significance of the shift in teacher perception from shortfalls to capabilities for children at risk.

Tom was a 1st grader whose reading test score was among the lowest in the class. He was identified as in need of remediation. In our

initial discussions of his interests and strengths, the classroom teacher said he loved to build things. He was fascinated by tools and had an extensive knowledge base. We brainstormed with the teacher about how to bridge Tom's interest in building and tools to his performance in reading. An interesting idea came alive. With the teacher's support, Tom created a tool dictionary for the classroom mechanical center, introduced through the Spectrum intervention project. On each page of the dictionary, Tom wrote the name of the tool, drew a picture of it, and dictated how it was used. He was proud to show his classmates the work he'd done and excited to tell them what he was planning next. When the teacher told Tom that other people had written books about tools too, he asked to read them. This was the first time he'd shown any interest in reading anything at school (see the excerpts from Tom's Tool Dictionary).

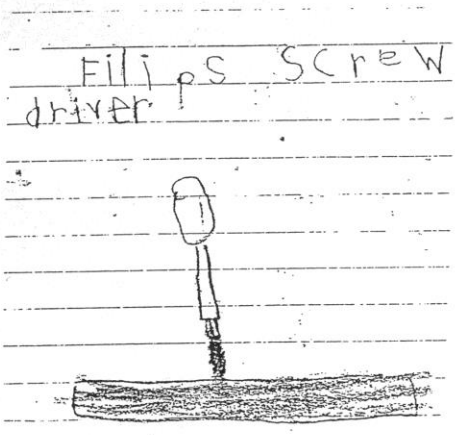


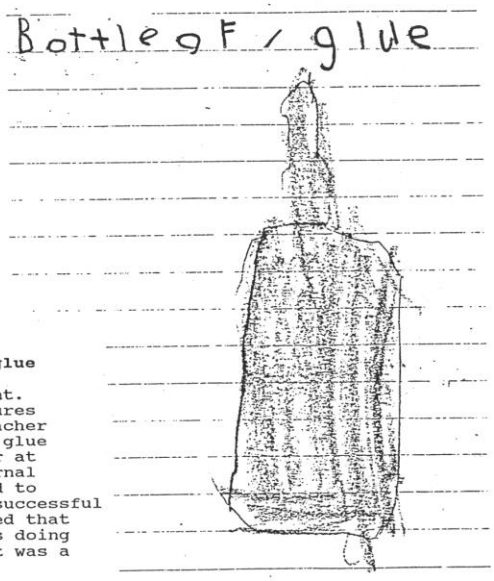




Timber wood and electric sander

Here we can see that Tom's confidence in description was improving. The dictations became longer and more detailed. Tom also demonstrated significant knowledge about tools, what they do, and how they work.





Phillips head screw driver and bottle of glue

This work demonstrates a turning point. Tom now was able to render detailed pictures as well as do his own labeling without teacher assistance. He used the actual bottle of glue as his resource for spelling. The teacher at this point commented that he read the journal back to her everyday. She was sure he had to memorized but was also sure that he felt successful with this reading experience. She realized that this was the first in-class activity he was doing that was self directed. In her words, "it was a breakthrough."

Tom's story demonstrates what can happen when children are offered means other than language to communicate their experience and given ways to draw on a strength to improve their basic skills. To be sure, Tom's reading and writing did not instantaneously reach grade level. What did happen immediately was Tom's experience of excitement about a school activity, and the teacher saw this right away. This excitement and enthusiasm about learning is a prerequisite for every child's school success. One experience is not enough to sustain progress, but it is a beginning. For Tom and many other students deemed at-risk for school failure, one beginning is itself a significant achievement.

I moved to Chicago in 1994 and for the past 18 years, I have been working with teachers and children in inner-city schools. I see too many children who are labeled at-risk for school failure based on narrowly focused standardized testing scores in reading and math. The label can be assigned at a very early age, affecting the remainder of a child's school career and beyond. The possibility that an at-risk child has strengths in other areas is rarely considered in devising an intervention strategy. Too often, schools and teachers rely on heavy use of drill as an instructional strategy for low performers—in the name of "focused effort." The requirement is that all children learn the same content and learn it in the same way. The consequence of such practice is disengaged learners. Some of these students do pass end-of-year standardized tests. They nonetheless dislike school and learning. Yet learning is such a vital quality for citizens of 21st century. Our society has lost too many children due to the deficit model of instruction and intervention. Our nation is "at risk" not because we are in economic crisis, but because we fail to help our children develop their fullest potential and fail to inspire them to mobilize their best qualities to serve the society.

Howard's MI theory provides a different map of children's potential, one that plots greater success for much larger numbers of children. Although it is not necessary to adopt the Project Spectrum approach, what is key is seeing children as individuals rather than arraying them on one continuum as "smart," "average," and "at risk." In today's era of accountability, with education constrained by narrow vision and teaching to the test, MI theory has a renewed significance. It again calls our attention to diversity, individuality, and multiple potentials for growth. It provides the foundation for moving away from the practice of labeling

children according to narrowly defined intellectual ability. It points the way to effective forms of teaching that start from children's interests and build on their strengths to lead them to experiences of school success.

MI and its Global Impacts

Howard has invited me to collaborate on a number of writing projects related to educational implementations of MI theory. Most recently, we worked together with Seana Moran on a book titled *Multiple Intelligences around the World*. A total of 31 authors from17 countries wrote chapters for the volume. Contributors came from different fields such as education, policy, media, entertainment, museum education, and business. They reported on their work with learners from infancy to adulthood who came from varied socio-economic backgrounds. The authors addressed a wide array of issues, including pre-service and in-service education of teachers, assessment, program design, digital learning, gifted education, children with special needs, and parenting. The book clearly documented that MI theory has traveled from the United States to countries around the world. Not only has it been introduced, but it has also been implemented. Regions where it has influenced education include both developing and industrialized countries in Europe, Asia and Pacific Areas, and South America. In these countries, MI is implemented across grade levels in schools that are rich in resources as well as in schools that are impoverished. In one case, MI theory has been applied to develop a science park. The richness of description, depth of analysis, and freshness of insight from the contributors is impressive.

My personal observations of the cross-cultural impact of MI on early education tell the same stories revealed in *Multiple Intelligences around the World*. As a Fulbright Senior Specialist in Early Education with expertise in MI theory, I was invited by several countries to give talks about Howard's work. In each country or region I visited, I observed how MI was implemented locally. In Peru, I visited a preschool in a shanty town that uses MI to guide its program of involving children in gardening, raising chickens and rabbits, observing the growth of plants and animals, drawing and describing the change processes, selling the products, and using the money to buy classroom supplies. In Saudi Arabia, where public performances in music and theater are prohibited, I was asked to talk about the importance of music education in promoting young children's intellectual potential. In Taiwan, I was shown a newly

developed preschool program for indigenous residents based on MI theory that aimed at building on their cultural heritage to foster diverse intellectual potentials in their children. In a Russian orphanage, I saw many regional and national trophies the children had received for their musical performances, dance competitions, sports events, math and science fairs, and poetry writing. The principal was proud of his students and credited their many diverse achievements to MI theory. "We are one of the few schools in Russia to take MI seriously. It helps us look at children's strengths and interests. We provide them with opportunities and support, and they fly from there."

In China, where I spend a great deal of time yearly to work with early childhood educators, I have experienced MI influences on every level of the early education system. Reviewing versions of the *Educational Guidelines for Kindergartens* issued by China's Ministry of Education, one finds that language calling for respecting individual differences and nurturing diverse intellectual potentials in young children appeared in 2002, the same year that three books describing Project Spectrum's work were translated into Chinese. The translator of these volumes has also been the chief architect of the *Guidelines* since 2002. In China, educational guidelines from the central government have predominant power over program development and teaching practices. From 2002 to date, more than a dozen preschool curricula have been published under the name "Multiple Intelligences Curriculum" (personal communication with Bizhu Wen, June 4, 2011). Most of these curricula use a project-based approach to stress the integration of different skills and content knowledge needed to understand topics relevant to young children, such as "growing up" and "my family." In traditional Chinese preschool teaching, large group activities dominate. Teachers talk to children, direct their actions, and instruct them with prepared lessons. Such practice is less common nowadays based on my observation of many preschool classrooms across China, and this is particularly true in big metropolitan areas such as Beijing and Shanghai. I am frequently impressed with the language used by Chinese preschool teachers to describe their teaching. "Individual differences," "learning potential," "respect for the child," and "multiple intelligences" are among phrases frequently heard in our conversations. According to the Chinese translator of the Spectrum book series, "almost every single preschool teacher in Shanghai has a copy of *Spectrum Early Learning Activities*." It appears that sizable numbers of Chinese preschool teachers have

adapted MI concepts into their own practice through the example of Spectrum's work.

Howard is regarded by the Chinese as one of the most influential educators in our time. People in China compare him to John Dewey, because both men made critical contributions to Chinese educational practices. In the Red Flag Kindergarten in Urumqi, Xinjiang Autonomous Region, Howard's portrait-sized photo hangs alongside photos of Piaget and Vygotsky at the school's entrance (see attached photo). I can think of no better tribute to the enduring significance of Howard Gardner's work.

Why are educators around the world attracted by MI theory despite differences in cultural history, religious beliefs, economic development, and educational systems? The attraction may be a function of the responsive, explanatory, and generative power of the theory. MI theory speaks to the hearts of educators. It is not only an intelligence theory; it is also a perspective on human beings. Individual differences are a universal quality of humans. Responding to these differences is a prerequisite to fulfilling human potentials. With respect to explanatory power, MI theory accounts for a wide range of observations across cultures. It makes sense to practitioners and fits their experiences of individuals' intellectual strengths and weaknesses. That it makes sense is clear evidence of the explanatory power of MI theory. In terms of its generative power, innovations based on MI theory are not limited by Howard's direction. The theory has been applied in diverse educational settings with a wide range of student populations. MI theory orients educators to the future by offering a new framework, stimulating new

ideas, providing new perspectives, and this leads to new ways of understanding children, teaching, and education.

Howard as an Exceptional Mentor

Howard has contributed to changing our perception and understanding of human intellectual abilities. Nowadays, his claim that the nature of human intelligences is pluralistic is no longer a novel idea in the field of cognitive psychology. However, my experience of his greatness goes beyond the recognition of Howard as an influential theoretician and a prolific scholar. To me, Howard is also a beloved teacher, a superb mentor, and a great human being. Howard is a good listener and gives constructive feedback. He is encouraging and supportive. I see four characteristics that define Howard's greatness as a mentor: his capacity to envision students' futures, invest in students' development, prepare students to become leaders in the field, and attend to their well-being.

Envisioning a student's future: As a theoretician, Howard calls our attention to diverse human intellectual profiles. As a mentor, Howard walks his talk. He recognizes that graduate students' profiles are uneven. He helps students identify their strengths and build on them. His mentoring is individualized based on each student's interests and experience, which helps to insure that all of his students succeed in ways that reflect their distinctive profiles of potential. When I was defining my dissertation topic, I talked to him. He quickly pointed out the problem with my initial proposal to construct psychometric properties of a Spectrum-related assessment inventory. "It won't help you with your career development!" Instead, he recommended that I focus my dissertation on Spectrum's intervention project and study the relative effectiveness of alternative approaches to working with at-risk students. Thanks to his advice, I received an outstanding dissertation award from the National Association of Early Childhood Teacher Educators. Learning of the award from other staff, Howard came to me with congratulations and advice, "Do not be shy about sharing the news with others. You are capable of doing good work." He knew of my low confidence in my own ability and took this as another opportunity to help me see my own potential. My dissertation became a high-interest topic for my job interviews. More importantly, it established my qualifications and readiness to work with Chicago Public Schools where a sizable number of students are unfortunately at risk for school failure.

Investing in student development: Howard is committed to his students' development as he constantly provides them with professional or scholarly opportunities, such as speaking engagements and writing book chapters. He shares the credit with students for the work they do. These benefits cannot be experienced through coursework. Yet they are vital for the professional success of a graduate student. I was not a student at Harvard Graduate School of Education. This did not stop Howard's investment in my development. Over the years, I have received many invitations from or through him for writing and speeches. When we worked on the book "*Multiple Intelligences around the World*," I was given the opportunity to be the senior editor. Throughout the editorial process, I felt that Howard was striving to cultivate my growth in my zone of proximal development. He knew when and how to push and encourage me. Sometimes, he was completely hands-free, letting me and the other editor put our heads together for problem solving. Other times, he pulled his sleeves up and became actively involved in specific tasks by communicating with authors and revising and commenting on chapters. While I felt his complete trust in me throughout the process, I also knew that I could count on him whenever I needed help. The result was a quality product, the first collection of essays on MI theory around the world.

Preparing students to become leaders in the field: Through his own work, Howard shows students how to become contributors and leaders in their fields. His boldness to challenge the established view of intelligence as IQ, his confidence to develop new ideas, and his constant search for greater understanding exemplify what leadership in a field looks like. Howard did not reach the top simply because he is extremely articulate, visionary, and possesses highly developed analytical skills. He rose to the top also because he understands the dynamics of academic institutions, the critical importance of networking, and the vicissitudes of funding. He shares his understanding of these aspects of getting work done with his students. When I left Boston for a tenure track teaching position in Chicago, Howard provided me with a list of possible local contacts. When I accompanied Howard on his speaking tour in Beijing and Shanghai, he took the opportunity to introduce me to national and local leaders. When I made some progress with my work, he sent me an email titled "coping with success" with a long list of "advice from an elder," such as "stress and even occasional crises are part of our jobs," "make maximum use of networks," "excellent help is imperative," and

"set aside certain times for writing and thinking." I posted his list next to my computer in the office. Reviewing it continues to inform my professional development.

Attending to students' well-being: Many individuals who are recognized for their greatness become arrogant and self-absorbed. They no longer feel responsible for helping others. In Howard's case, greatness is complemented by his compassion and caring for others. Everyone who knows Howard knows he has an incredibly busy schedule. Yet, he takes time to check in with his students. His advice and support are not limited to professional progress, but also include personal well-being. Howard's sincere care made a critical difference in my life countless times. When my son was young, he was hospitalized many times. Howard checked with me each time he knew I came back from the hospital. He was concerned about my son's health as well as with mine. When Project Spectrum ended in the early 1990's, he encouraged me to apply for a teaching position and also assured me that I could stay at Project Zero if I didn't get an offer. A single mother at the time, I burst into tears when I received this very much needed support. Since moving to Chicago, I don't get many chances to talk with Howard in person. Whenever we do meet, he always sets some time aside for the two of us to talk. Our conversations always begin with his question, "How are you doing?" When I was hospitalized with cancer surgery, he called and sent flowers with speedy recovery wishes. It is a mark of Howard's character that he makes students' well-being a priority. He didn't have to do any of these things, but he did all of them with care, sincerity, and ease.

Final Word

I've worked with Howard in various capacities for more than 25 years. MI theory succeeded because of Howard, not the other way around. Howard's students benefit not only because he is the recipient of many prestigious awards, but also because he is Howard. The recognition he receives is a reflection of the excellence and significance of his work. My tribute is about more than what Howard has achieved. It is also about who he chooses to be and how he has helped others to become.

I am sure that every graduate student who has worked with Howard has benefitted from the experience and is grateful to him. For me, the benefit has been very great. After being disgraced and excluded

throughout my years in China, I believed what I had been told—that I was inferior and worth less than others. Coming to America to pursue graduate studies, I worked hard in my courses and did well, despite the fact that I didn't start learning the western alphabet until the age of 24. However I still doubted my abilities and lacked confidence in myself. The attention of Howard, whom I knew was a renowned scholar, helped me finally to release my childhood pain and rebuild my self-esteem. Howard helped me, not by telling me to be confident or assuring me that I was capable, but by giving me responsibilities as a researcher. I began to believe in myself because I knew he believed in me.

True to his exceptionality as a mentor, Howard's support did more than encourage me. It lifted me up, enabling me to see new possibilities in my future and to see myself succeeding. Without Howard, I would never have reached my potential as a teacher, a scholar, or a parent because I didn't believe I had that potential. Howard's support did not end when I left Boston. Whatever I have needed, he is always ready to help. To say that he has contributed to my development would be like trying to catch rainwater in a bucket during a downpour. Like the bucket, my words are much too futile to capture all that Howard and his work mean to me. Four more words will have to suffice: I thank you forever.

References

Baker, E.L., O'Neil, H.F., & Linn, R.L. (1993). Policy and validity prospects for performance-based assessment. *American Psychologist, 48*, 1210-1218.

Krechevsky, M. (1998). *Project Spectrum preschool assessment handbook*. New York: Teachers College Press.

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* Washington, DC: U.S. Government Printing Office.

Howard's Response to Jie-Qi Chen

To someone who has only the dates and events at her disposal, it may look as if you, Jie-Qi, were my student and that you are indebted to me for my teaching about psychology, education, and assessment, and as you kindly suggest, about the not-officially-taught but very important "politics of academe." There is a skein of truth in that characterization, but we should not be too Howard-centric. It is also true that David Henry Feldman served as your mentor for several years and that you had many important formative experiences—negative but also positive—in China and in your original landing at the University of Northern Iowa.

But from the first days that we spent together, now two decades ago, it was clear to me that you, Jie-Qi are an original, and that all of us who were privileged to work with you on Project Spectrum, would learn as much from you as vice versa. There was, to begin with, your amazing personal story; how you (and your family) managed to survive the wretched Cultural Revolution and then somehow made it out of China to the West. There was your capacity to rebuild a life in a strange country, with very little support. But above all, it was your lively interest in the minds and behaviors of young children and your steadfast belief that these could be understood and nurtured through systematic observation and sensitive programming.

For some expatriates, it is clear that they could choose any of a number of specialties and probably do equally well. Indeed, perhaps Jie-Qi, you could have been a dentist, an accountant, or trial lawyer. But from everything I know, and from what you've written here about your own observations in the coal mining community in the Shanxi Province, you chose an area of specialization for which you have a special genius. And this has been borne out by the exquisite work that you have done, mostly in Chicago, in improving the mathematical understanding of young children and of their teachers. This work is being widely recognized around the world; and I suspect that no expert on early child development is more welcome in China today than Jie-Qi Chen! Indeed, even though my Chinese language skills are close to non–existent I've watched with amazement as you hold forth to Chinese audience, hour upon hour, and they listen with rapt attention. They know that they are in the presence of a very special educator—and a very special person.

Because you were among the chief architects of Project Spectrum, and because Project Zero and Project Spectrum became second homes, you became familiar, indeed intimately familiar, with the Theory of Multiple Intelligences in its early days. Perhaps you have misgivings about the theory—I certainly do! But you have been a wonderful, faithful partner in the exposition and clarification of MI theory. I thank you for your wonderful essays on how to assess intelligences; and on the education implications of the MI theory. And I stand in awe of your lead editorial role in our jointly conceived book Multiple Intelligences Around the World. You took the chief roles: the encourager, inspirer, and when necessary, disciplinarian that was needed to bring that unique volume to fruition. And as a result of your incredible efforts, educators around the world can both have an introduction to the general ideas of MI theory and see the exquisite curricular and assessment materials that you have developed in your unique laboratory at the Erikson Institute. Because I know you well, I know that you will always be genuinely humble and so I want to declare, from the top of a high mountain, for all to hear: "Jie-Qi Chen, you have a lot to be proud of, and we are all proud of what you've achieved!"

Joel E. Cohen

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JOEL E. COHEN
ABBY ROCKEFELLER MAUZÉ PROFESSOR

LABORATORY OF POPULATIONS
ROCKEFELLER & COLUMBIA UNIVERSITIES

15 January 2012

Dear Howard,

The global reach of your ideas became clear to me one dusky afternoon several decades ago in the narrow streets of Bellagio, Italy. I glanced in the display window of a small bookshop and was startled and delighted to see, in Italian translation, several books by you. I learned that the Italian translation of Howard Gardner is Howard Gardner, and that the Italian translation of your ideas had enough appeal to justify devoting most of the display window to your books.

Perhaps foremost among your many contributions as a confessed public intellectual is your theory of multiple intelligences. As I understand it, you propose that a person's ways of learning and doing are generated not by a unitary intelligence that can be measured by a single number such as the intelligence quotient, but by an array of different abilities. You have recognized eight intelligences: linguistic, logical-mathematical, musical, spatial, bodily- kinesthetic, interpersonal, intrapersonal, and naturalistic, and are reportedly considering adding "existential intelligence" to this palette.

Barring organic damage, every person has some mixture of these abilities. Whether these abilities deserve the honorific title of "intelligences" and whether these "intelligences" vary independently from one person to another are debated questions. Skeptics point to evidence that some of these "intelligences" are statistically associated. Such superficially hard-headed skepticism deserves to be taken with a grain of salt, since the statistics depend on the instruments used to measure each of the "intelligences." More refined instruments might identify distinct, independently varying components of different "intelligences."

To my mind, such critiques and responses misclassify a precative statement as a positive statement and therefore miss the value of your theory of multiple intelligences. Your vision instructs us that we ought to treat each learner, child or adult, as having some way or ways to learn, to create, and to be effective in life. Yours is a theory in the same sense that "all men are created equal" is a theory: it commends modes of behavior that grant dignity and opportunity to all. Your theory has affected educational practice around the world for good. Thank you, Howard!

Yours,

Howard's Response to Joel E. Cohen

As far as I know, Joel, you and I entered Harvard College at the same time (1961) and graduated at the same time (1965). I was a good but in no way exceptional student. You were from the first an extraordinary student, one whose achievements in mathematics, music, and 'information theoretical' links among them were already legendary. And your achievements have continued to dazzle the academy even as they have increasingly made contributions to our understanding of the health of our planet, what it can sustain, and how that sustenance might be achieved.

Life coincidences being what they are, our paths have crossed periodically, from a chance meeting in Europe when we were both on travelling fellowships, to our joint receipt of MacArthur Prize Fellowships, to our more recent work together in the American Philosophical Society. In every milieu you have acted as an ideal citizen and an ideal scholar—setting an enviable intellectual standard while at the same time displaying a kindness and generosity to others, even when (in my view) those others should have been listening more carefully. Your characterization of "MI theory" epitomizes those qualities; you point out the constructive aspects of the theory, while gently suggesting that it needs to be critiqued in ways that are appropriate to the nature of the claims.

I also recall, and can reveal publicly for the first time, a private phone call that you made to me when I had failed to receive a Fellowship for which I applied. You generously indicated that I had run into a political wall and suggested that I take a different path. I followed your advice and … it worked!! In the end I declined to accept the monetary stipend attached to the award. I concluded that others could make better use of the money and I was more than content with the honor that you, Joel, believed that I merited.

There are many justifiable criticisms of baby boomers, and of those who went to Harvard as part of 'the best and the brightest' generation. But I am proud to be a member of a cohort that includes Joel Cohen, Susan Berresford, Bill Drayton, Ben Heineman, Michael Lerner, and others who have made and continue to make substantive contributions to the betterment of our planet.

James Comer

Dear Howard,

Congratulations on arriving at 70 years of age! For me, as I am sure it will be for you, reaching the seventh decade spurred more reflection than ever. It also produces a sense of urgency, "Will I have enough time to do all the things I would like to do; that *must* be done in my lifetime?"

And thanks for the enormous contributions you have made to psychology, and without initial intent, to education as well. Most importantly, thanks for the support you have given me and my career over the years; and for your friendship. It was a pleasure to get to know you and Ellen better during our time together at the Center for Advanced Study in the Behavioral Sciences and during our work together on the ATLAS Project.

In thinking about what to write, I reviewed some of your work and I was particularly struck by the AERA presentation you made on the occasion of your 60th birthday and the 20th anniversary of your book, *Frames of Mind.* Your description of your intellectual journey resonated very strongly with me and I continue to reflect on my own intellectual and career journey, trying to fully understand what it has been about and what to pull from it to be useful in this remarkable new age. Your 70th year milestone prompts me to reflect on and share some of my experiences and thoughts about my own journey.

I was particularly struck by your reference to *turning points*. I have thought often of how concerns, life conditions, opportunities and obstacles, chance, and more interacted to serve as turning points to send me in directions different from what I had planned; and the way I was sometimes an active director and sometimes a passive recipient of the career and life turns these conditions brought about. My initial career plan was to become a practitioner of general medicine in my hometown of East Chicago, Indiana. This desire was related to several things—my family doctor as the closest role model after my mother and father, my parents' high aspirations for me, my love of science, and a deep desire to be useful and helpful to the people around me. I was a first generation college graduate and I could not have imagined an academic career.

Also, being a physician was the highest aspiration an African-American child born in 1934 could hope for. In my gritty home town, African-Americans worked in the steel mills, as domestics, had day labor jobs; or they became the professionals who served this population. My sister, 17 years older, who was the salutatorian of her college class but could not be hired to teach French in our local high school, had to go back to school to obtain an elementary education degree to be hired in the elementary school that served most of the African-American students in our area of town.

About 20 years later, I attended a predominantly white elementary school where I had a very positive experience. After my 4th grade year, students from the school in which my sister taught were sent for their 5th and 6th grade years to the predominantly white school that I had attended since kindergarten. She often asked me how they were doing, indicating that one or the other was very smart. They did not appear so in "our" school. The summer after the first increased integration year, I attended a church Sunday school class with four or five of them. The class was held in their previous K-4 school, and was taught by a black church teacher. I made the lowest score on the final examination. I admit to underestimating the competition and maybe paying summertime attention. But I got a better appreciation for their ability and pondered a small bit about the performance difference in the different settings.

The only truly difficult racial experience for me was in 6th grade, and the situation reversed itself at mid-year when the teacher realized that I was the kid brother of the very smart black student, my sister, in her local graduate school class—a confusing but welcome change for me. She had me mixed up with "those other kids," the transferred students, some of whom had outperformed me the summer before. Those experiences, along with the poor school performance of my three African-American friends from kindergarten, left deep and troublesome memories in my young mind. I could not formulate an explanation at the time, but did later as issues about race and social class—when and how they come into play and affect academic performance, and the harm they appeared to engender—became an important focus of my attention. These incidents and reactions contributed to my early and deep intolerance of unfairness and a strong identification with the underdog, regardless of who that happened to be.

I attended a gradually racially changing, but still predominantly white, middle school and high school. Again, I had a largely positive school experience, but I continued to note that many other African-American friends did not participate fully in the school experience and became marginalized low performers even though they appeared to be as able as most of us. But my goal was to become a doctor, and my interest in and fight for social justice and fairness, although strongly felt, was on an as-possible basis. Nonetheless, I remember planning to use my power as a respected doctor to help desegregate the education work force in my home town. But this began to happen about the time I finished high school; my older sister eventually taught French in the high school, and my younger brother eventually became the superintendent of our city school system. These experiences gave me a balanced, while often confusing, perspective and set the stage for my first major turning point.

During my medical internship I noted that many of the people who underperformed in school were now heading on a downhill life course and were likely to pass on behaviors that would probably prevent their children from having educational and life success. I began to actively search for explanations, gradually developing a greater interest in under achievement and harmful behavior than in medicine. I decided to kill three birds with one stone: join the United States Public Health Service (USPHS) and give myself time to think about how I could address my strong social interests; serve my required military service time; and support my young family, wife, and son. This turning point changed the trajectory of my life and career.

While in the USPHS I did volunteer work in a facility, organized and sponsored by a middle class African-American woman and her friends, serving families that had been removed from the public welfare roles for a “man in the house” infraction that was essentially a political tool of some Southern Democrats who controlled all affairs of the District of Columbia. I observed how the schools, health, welfare, and other services operated, noting that it would be impossible for most families to prepare their children for school under those conditions. At the same time it was clear that the changing economy required a good education to obtain a living wage job, and that the pace of change would only increase. This early observation, and realization that the problem was more than racial segregation, eventually led to my first book, *Beyond*

Black and White, 1972—pointing to the interplay of education, economics, race relations, and more, that were going to put the nation in peril. My observations during the time I was in the USPHS led me to the University of Michigan School of Public Health to learn and think about problem prevention.

While there I turned inward to deeply explore the plight of poor Black children, largely because there was nowhere else to go. Why was my outcome so different than many? I found most social and behavioral science literature and thinking, well, "academic," perhaps defensive, even when empathetic. For example there was the well-received argument by James Coleman and his colleagues in 1966 that suggested that schools could not help poor children because as students they lacked the social capital they should have received at home. But between 1968 and 1973, my colleagues and I demonstrated in two New Haven elementary schools that school-based experiences could be created that would provide such students, with the involvement of their families in the life of the school, the social capital needed for a reasonably high level of academic learning. This enabled the project schools to move over several years from 32nd and 33rd of 33 schools to tie for 3rd and 4th with the best attendance records in the city and no serious behavior problems. Over the years we have worked in more than 1000 schools, including some elementary and high schools.

But several observations, decisions, and chance events spurred other important turning points before this work was possible. First, I gradually began to realize that my life experience had been different from that of many of my friends although our families were of the same race and had similar socio-economic histories and status. My mother was a domestic worker from Mississippi and Tennessee, who had an abusive step-father, and my father was a steel mill worker from a poor but better functioning Alabama family; both were poorly educated but committed to providing a good education for their five children. They provided us with a well-functioning family experience in a reasonably well functioning primary social network of relatives and friends anchored in a supportive church-based black culture.

At the same time I was closely involved with African-American friends who had very different family and cultural conditions, despite similar socio-economic conditions. My experience prepared me to manage adequately in the mainstream environment of the public school while

that of my friends did not. I also noted that some of my African-American friends who functioned well in school and were beginning to take advantage of newly emerging life opportunities for all of us often had early experiences similar to my own.

Second, I decided that I needed to know more about people to be able to understand the complex and confusing behaviors and conditions I observed and experienced. This, and continued USPHS membership and support, led to my work at Yale in psychiatry, child psychiatry, and child and adolescent development. But I had no idea of how I might apply the skills and knowledge gained to an effort to limit the deteriorating plight of too many young African-Americans. I was still considering returning to private medical practice. My recent participation in a symposium revisiting Lyndon Johnson's "Great Society" program reminded me of an experience that contributed to the eventual turn away from the private practice plan that I had made.

President Johnson gave his "Great Society Speech" at my graduation from the University of Michigan School of Public Health in 1964. He urged us to use our talents and privilege to help the poor and to create a better America. Despite the thousands in the audience, I felt like he was speaking directly to me. But my question was "how," and I continued to ask this as I pursued my education.

By chance, just as I finished my training in 1968, social justice issues in America reached a peak. As part of his personal, professional, and citizenship concerns. Al Solnit, the director of the Yale Child Study Center where I trained, had applied for and received a Ford Foundation grant for a school intervention project to address the very question that I had been concerned about, intensely for almost a decade, but actually all of my early life—why many able black students performed poorly in school, and how to greatly improve the situation. He asked me to head the project. My acceptance marked a sharp turning point; I was then unlikely to return to the private practice of medicine.

Al's mentorship and friendship helped me to apply the knowledge and skills I had obtained in clinical medicine, psychiatry, and public health and prevention training to education practice; and to manage an academic environment that was completely foreign to me, and not totally in line with my advocacy and problem solving interests. How "green" was I? He asked me how I wanted my TIAA-CREF benefits allocated, and

because I had no idea what he was talking about but did not want to reveal it, I said, “50-50.” That turned out to be an uninformed but very good choice at the time.

I anticipated the research university vs. problem-solving interest conflict that I would face. Experimental design is the gold standard in research communities. But in my opinion this approach cannot possibly provide a framework for understanding and efficiently informing change efforts in complex, interactive, real-world settings that are influenced by past, dynamic and changing present and future conditions. The holistic, ecological research perspective that I had gained from medicine and public health appeared to be much more useful.

One of the reasons I elected to return to Yale rather than several other places that expressed interest was that I suspected that the Yale psychiatry leadership would be more open and able to support “my way” if I could make a good case for it. While Al Solnit, a psychoanalyst who applied the principles to real world issues, never said so, I suspected, given the way he had set up the program, that he had similar thoughts about experimental design research. The project design for which he received Ford support had us living in the two pilot elementary schools, learning about schools in the process, and then using our knowledge and skills to help the stakeholders apply social and behavioral science principles to improve school performance guided by what we had learned.

Nonetheless, Al and I, along with the late William Kessen, a developmental psychologist at Yale, carefully reviewed our project to determine whether an experimental design, or other approaches, might be possible and useful. We concluded that the number of subjects involved, our purpose, and other factors worked against an experimental design and supported the idea of allowing our first year experience to suggest our research approach. Because of the racial tensions of the late 1960s, distrust, and other factors, there was an explosive disruption of our planned approach, and I had to fall back on the experience and tools that I had to save the program—knowledge and skills from my life experiences, the diagnostic and treatment approach similar to that of physicians, psychiatry and child development principles, and my ecological and/or interactive knowledge base from public health and prevention.

At the same time I had misgivings about drawing heavily on my life experience to inform academic work. Although some of the most important insights in the social and behavioral sciences have been made by researchers using small subject numbers and family members, it is still said that a subject number of one is a vignette. But experiences at Yale during my residency and later gave me some justification. During a seminar for our residency class, Ted Lidz, the faculty leader and a nationally known student of families, asked me if I wanted to comment on my perception of the special situation of black families. About 40 minutes later Dr. Lidz and my 11 colleagues asked me to give a full hour discussion at the next meeting.

One classmate, the late David Musto, eventually an internationally known expert on the history of drugs, and a lifetime friend and colleague, encouraged me to use my personal experiences and understanding to help think and write about American race relations. He suggested that I write for academics and thoughtful lay people alike, not just for academics, most already empathetic. I had never written a paper for publication, had not even thought about it. Two years later, April, 1967, my first paper, "The Social Power of the Negro" was published in *Scientific American*. This paper caught the attention of several academic psychiatry leaders and helped to move me toward an academic future.

The racial tension of the late 1960s and early 1970s made it difficult for people from mainstream institutions to do research and write about education in the black community. We made an agreement with the parents in our pilot schools that we would not write about their children until we could demonstrate that what we were doing could be helpful to similar children elsewhere. This gave me time to write many papers on race relations and child development, because it was about three years before the school work clearly demonstrated beneficial outcomes.

During this period I thought a great deal about the way the African-American community was stripped of the instrumental aspects of African culture(s) and created a black church-based culture to protect against the ill effects of slavery, abuse, and exclusion after slavery. While the new culture protected and promoted a reasonable level of positive functioning for many families and individuals, slavery was a powerful system of forced dependency, rationalized by a claim of black inferiority, and there was no bright future to work toward. These conditions

exceeded the protective ability of the newly devised culture and had negative effects on blacks and whites which were internalized. They have been attenuated over time but persist as latent and unconscious aspects of our culture even today. I tied this understanding to what I observed among too many black students in my earlier school years—their debilitating sense of marginality, doubt about their ability and reluctance to engage fully in school life in the face of real and imagined obstacles, all combining to make matters worse in a circular fashion.

Our work in schools suggested that this dynamic was alive and well in 1968, more as a result of a traditional but wrong understanding of how students learn and why they behave in troublesome ways than blatant racism. The experiences many of our students received before and outside of school did not provide them with the precursor academic learning skills in the same way as most students from mainstream experiences, even poor mainstream students. We observed student behavior that was considered intentionally "bad" or evidence of low ability levels by most school professionals, even inferiority by some, but which were actually due to their lack of preparation and underdevelopment. The traditional cultural response of control through punishment and of low expectations led to student and parental perceptions that school staff did not like or care about them or the students—or worse, that the staff were racists. These interactions and outcomes fed into longstanding distrust of mainstream institutions and the people in them, psychological and physical withdrawal on the part of students, and tentative, often conflict laden participation (or none at all) on the part of parents.

This situation was problematic because learning and responsible behavior takes place best among students when there is good teacher-learner engagement, a sense of belonging, competence, and confidence. To address this critical and difficult problem, we had to address student underdevelopment, home and school interaction problems, distrust and conflict, with a school staff that did not have the knowledge and skills from their educator preparation programs to understand these dynamics and to intervene. Most felt they were doing the best they could.

This led us to a strategy in which school staff, parents, and other stakeholders simultaneously learned and applied child and adolescent principles to all aspects of the work of schools—governance and management, climate and culture, staff development, student

development, curriculum, instruction, and assessment. The School Development Program (SDP) framework and processes needed to reduce behavior and academic performance problems were created and codified as they proved effective. The guidelines of no-fault problem solving and consensus decision making made the third guideline, collaboration, possible. This then made it possible for a governance and management team representative of all the adult stakeholders to carry-out and own a change process that promoted student development first, but parent and staff development as well, and to intentionally integrate social-interactive, physical, psycho-emotional, moral-ethical, linguistic, and cognitive-intellectual development with academic learning.

Eventually a project within the pilot program that focused on preparing early school age students for later school and for the major aspects of adult life dramatically improved student behavior and their social and academic performance. In the process students were motivated to take responsibility for their own learning. Modern neuroscience tells us that we were bolstering executive functions—the thinking needed to complete tasks efficiently and effectively.

The SDP process eventually became organic: as the local facilitator and schools learned the model, our SDP staff role diminished and became minimal by five years. Eager parent and student participation and the display of significant competence gradually eroded unconscious and even conscious beliefs that the students were not interested or not capable. I believe that the intervention was and is successful because it counters unconscious dependency, concerns about student ability, because it counters doubt about the possibility of present and future success, and because it creates a culture of connection and good relationships, belonging, and the high value of all individuals. The supportive culture is the "secret sauce." But it is easier to note the absence and state what is needed than to change school culture from harmful to helpful.

The understanding of the centrality of student development, its inextricable link to academic learning, and how to empower school staffs to create relationships and a culture that promotes both is what we consider my/our contribution. Unlike the issue of intelligences that you addressed, where there were significant education and psychology communities who were skeptical about the limits of the traditional definition of intelligence, the importance of applying developmental

principles, addressing issues of connection, inclusion, and belonging, did not have a ready audience. In fact, there was no real interest in or sense of urgency about educating all students well until the last 10-15 years. Even now the decision is not unanimous.

But perhaps it would not be correct to say that there was no audience or recognition for addressing these issues. My book *Maggie's American Dream* that essentially described how growing up in my family provided me with much of the insight that contributed significantly to the creation of our SDP process model, and my *Scientific American* article, "Educating Poor Minority Students," were both published in 1988. Both were well received as indicated by the fact that I received an offer of 17 honorary degrees in 1990, often sponsored by schools of education. But the ideas did not lead to much increased attention on the part of education policy makers. Despite important findings in neuroscience indicating that supportive social interactions influence positive brain development and functioning, it was another 15-20 years before the issue of the whole child, relationships, school climate, culture and developmental concerns began to get real traction. And even now they remain the major unfinished business in school reform.

Nonetheless, for over 40-plus years we have worked in more than 1000 schools, including some middle and high schools. Our "guesstimate," supported by several in depth evaluations, is that about a third of these schools made outstanding improvement, about a third improved reasonably well, and about a third didn't change. We moved from significant building level improvement, to clusters of schools, to the improvement of five full districts, but the problem of sustaining the gains—even the sometimes spectacular, racial gap closing gains—remained. While "buy in" and fidelity of implementation were the most important determinants of outcome, it became apparent that the preparation of teachers and administrators was the major cause of slow buy-in and loss of continuity. Several schools that went from the bottom of a system to the top in three to five years went back to the bottom in a year or two when a critical mass of teachers and/or a superintendent who were not trained in the method or did not believe that a focus on development should be central entered a school or system.

The pool of educators well prepared to understand and apply child development principles to all aspects of practice is very small; and yet the underlying problem of poor and non-mainstream students is that they are

not adequately prepared to meet school expectations, or that they are underdeveloped in the critical areas needed for school success—social-interactive, psycho-emotional, moral-ethical, linguistic, physical, including brain development (pre-frontal lobe in particular), and cognitive. Unlike what the medical profession did with the 1911 Flexner Report, educators did not decide on the core or foundational disciplines needed for teacher and administrator success, and failed to require all preparatory institutions to teach these and to gear education to meeting the major challenges of society. In the case of medicine it was anatomy and physiology focused on communicable disease, and in education it is now apparent that it should have been the developmental and learning sciences focused on preparing students to successfully meet the challenges of a changing society. With this in mind we continued our dissemination work but began to pay more attention to teacher and administrator preparation.

A generous 1990 Rockefeller Foundation grant supported our model dissemination work, and a plan to create a process through which the model could be infused into school districts through preparatory institutions. The design simultaneously strengthened pre-service teaching and learning in a way that future teachers were better prepared to understand and to apply child and youth development principles in real life practice. We have been involved with nine such partnerships. The fullest expression of this arrangement was with Eastern Michigan University School of Education and the Detroit Public School System, a project initiated and supported by the Skillman Foundation. The Detroit Teacher's Union president was on the steering committee that helped plan and oversee this work. There were very positive outcomes for the university, pre-service students, the district, and the K-6 to K-8 students in the 18 school cluster.

The death of a key Detroit leader and a political struggle between the city and state contributed to the discontinuation of our formal SDP involvement in this project in spite of some remarkable successes and significant learning on the part of the institutions involved. This discontinuation brought us to face the need for better understanding of the political context of education policy-making. In the three policy conferences that we then sponsored, we shared child development knowledge and received input from stakeholders in all parts of the education enterprise—students, parents, central office, superintendents,

city council, state legislators, Congress people and their aides, business and community leaders. The shift toward policy was in line with our pursuit of understanding the complexity of our education system and the effort to understand how student development and academic learning are affected. But it was also necessary because of the unintended consequences of the 2001 revision of Title I, "No Child Left Behind (NCLB) Act."

Educators became the "the fall guy" for all education problems. Most educators want to be successful, are able and potentially very creative, and seek to do the best they can, but they have not been well prepared to do the job they are asked to do. Yet there is an underlying suspicion, for whatever reason, that educators are simply not smart, concerned, or motivated enough and that they must be coerced to do their job right. Thus, the "No Child Left Behind Act" focused primarily on accountability through high-stakes testing and other punitive measures, as if educators did not want to be successful and did not want their students to be successful. The Act does not identify and address the critical underlying problem—the *absence of a work force prepared to apply child development principles in practice, and the absence of support for doing so.* Even the teacher quality component largely ignores the near absence of the application of child and adolescent development knowledge and skills in educator preparation and practice.

As a result, NCLB, as implemented, narrowed the education experience of poor children, when social and behavioral and neuroscience research suggested that such students need the kind of exposure and experiences that most mainstream students receive simply by growing up in well functioning mainstream families, and the kind of in-school conditions our SDP created for poor and marginalized students. Disaggregating the 2009 PISA data suggests that our education system works for students who are prepared for school, or prepared in school, about as well as systems in the other 38 reasonably affluent to rich countries in the comparison. Asian Americans are the first in the world, White Americans are *fourth*, Hispanic Americans are 34thout of 38, and African Americans are 37th out of 38. There is evidence that poor white and South East Asian students under perform but it is difficult to disaggregate these data. The education reform policies and practices that have gained ascendancy do not adequately address the needs of our most poor and marginalized students.

NCLB greatly hurt our SDP. Our business plan was anchored by our large training program. NCLB reduced the number of people who could be sent for training and decreased the interest in child development, because many educators felt that they had to teach to the test. We even had to convince the schools that were already doing very well using developmental principles that it was not necessary to focus on the test alone. This is still a big problem although the call for attention to the whole child is slowly gaining traction. Again, the absence of an "Education Flexner Report" contributed to the vulnerability of professional educators. In the absence of a largely accepted science-based understanding of how students learn, and in the absence of training institutions, accreditation programs, and legislation designed to promote a focus on the related science, political and economic opportunism carried the day.

In the face of these changed conditions in education, we continued our work in transforming and/or turning around schools, though there were now necessarily fewer of them, and we deepened our interest in education policy making. Valerie Maholmes, the SDP staff member who initiated our SDP policy work, joined the National Institute of Child Health and Human Development (NICHD) and almost immediately connected our School Development Program (SDP) to the National Council for Accreditation of Teacher Education (NCATE) interest in child and adolescent development application in practice. Subsequently, I chaired and co-chaired expert panels that deepened my understanding of the extent to which the application of developmental principles was lacking in pre-service preparation. This work led to the publication of two reports—*Child and Adolescent Development Research and Teacher Education: Evidence-based Pedagogy, Policy, and Practice: Summary of Roundtable Meetings December 1-2, 2005, March 20-21, 2006;* and *The Road Less Traveled: How the Developmental Sciences Can Prepare Educators to Improve Student Achievement: Policy Recommendations.* The NCATE intention is to make the demonstration of developmental knowledge and skills by preparatory school graduates a standard for education school accreditation.

In addition, from the beginning of my work in schools I have believed in the importance of integrating the arts, athletics, and academics. And for the last 20 years I have been interested in the findings of neuroscience and their implications for academic learning,

and particularly executive functions—organizing, planning, initiating, monitoring, avoiding distractions, and more. I suspect that in time education will focus as much or more on these capacities than on test scores. These cognitive capacities probably predict school and lifetime learning, work, career, and citizenship performance as well as test scores. We can't continue to ignore executive functioning capacities. To do so makes as much sense as a doctor using a normal thermometer reading as an indicator of overall good health when deadly organ disease and other dysfunctions can exist without an elevated temperature.

Finally, the arc and twists and turns of my work have been shaped by the initial questions I asked, "Why did so many African-American students perform poorly in school, even though they appeared to be as able as most successful blacks and whites? And how can this situation be improved?" The quest for an answer led me from front-line school-based participant observation to educator preparation, then to the study of the political, economic and social influences on education policy, and finally to the study of the impact of all of these situations on the critical school-teacher-student interaction needed for good student development, learning, and preparation for adult life. The insights I have gained validate our original decision to take an open, holistic, ecological, sometimes clinical and qualitative and sometimes quantitative approach to trying to answer the original question. But the problems spawned by our traditional defective educational system(s), the political and economic interests of today, fueled by the real need to provide an effective education for most young people, leave me with considerable doubt that our society can fashion an effective system based on what experience and science indicate that all students need.

Nonetheless we must keep trying. While the focus on curriculum, instruction, assessment, accountability, new ideas, technology, and innovation have gained the greatest favor, I believe more than ever that the defect in our understanding of how children learn—our lack of understanding of the relationship of development to academic learning—is at the core of our education problem. This lack of understanding has consequences most negative for non-mainstream students. The issue of development is foundational: children are born with a natural curiosity and survival energy, but not with an inherent interest in or capacity to learn academic material. Their survival requires support by others for their development so that they can develop increased personal

responsibility. By ignoring this foundational reality, our education policy and practice is like that of a football team in a losing season turning to trick plays when they can't run, pass, catch, block, or tackle very well.

This conclusion has led to our current focus on preparing future educators by helping them to create the conditions needed to promote child development and to link development to academic learning. We are beginning with a school of education course based on our SDP principles, and we are extending this course to the university's professional development school partnership with an urban school district, and eventually and hopefully the entire district, and other districts. This project differs from our previous partnership projects because now we hope to involve a state department of education from the outset. The intent of this arrangement is to engage the most important stakeholders in a process that enables all to think and apply child and adolescent development principles, to learn from one another, and to make decisions that will internalize this foundational piece throughout the education enterprise—with all elements of the enterprise organized around supporting student development and learning in order to prepare our young to be successful in school, in their personal lives and as citizens of an open, democratic society.

If this works, we will enhance the ability of preparatory programs to meet the needs of today's students and society, institutionalize desired practice, and make it portable. This could create a large pool of educators who understand how to promote and sustain good developmental and learning conditions, and could create policy makers who can understand and facilitate the creation of supportive conditions.

Pie in the sky? Maybe. Too much money, politics, and self interest involved to make room for science, logic, and common sense? Maybe. But as my father often told me, "Nothing beats a failure but a try." And the stakes are very high.

While our proficient, high scoring students are not receiving the best kind of education to prepare them for adult life, they can at least do well enough to help the country remain economically competitive. The danger is the almost-certain overwhelming individual, financial, and social burden being created by the ever increasing number of people who

will not be able to function well in our societal mainstream, even though most could if adequately prepared. Let me stop here.

Again, Howard, congratulations on your 70th birthday! And again I thank you for your remarkable contributions. I also thank you and Ellen for giving me an opportunity to reflect deeply, express my joys, frustrations and hopes in this letter to a friend and colleague.

With best wishes and great respect,

Jim Comer

Howard's Response to James Comer

Whenever I think of you, Jim, and I think of you often, I cannot do so without a broad smile. It is not that your life has been easy; it has not been. You have had personal losses and professional setbacks. But you have an incredibly positive spirit, a belief in your basic principles that is unyielding, while at the same time a quintessential American pragmatism which allows you to accept what is possible and then, building on it, moving forward.

Though we are both interested in children (you as a psychiatrist, I as a psychologist) and in education, it was not preordained that we would meet, let alone become collaborators for several years. After all, there's a historically long distance between Cambridge and New Haven, our backgrounds are quite different, and we've worked in quite distinct educational settings interventions.

My good luck in getting to meet you grew out of our mutual acquaintanceship with Ted Sizer, the architect-in-chief of ATLAS (Authentic Teaching and Learning for All Students). ATLAS was our two-decade-long effort at school reform, where our three respective organizations combined with the Educational Development Center, under the leadership of Janet Whitla. I learned a great deal from that collaboration, and enjoyed nearly every moment spent with my esteemed partners, including, of course, you.

But in my own view, ATLAS never achieved its potential. I take a significant responsibility for that failure; I did not put into practice some of my own beliefs about leadership. I think that we all failed to understand that a true ATLAS would have had to include a genuine melding of our four organizations, a task that we were not prepared, and perhaps not even equipped, to undertake at the time. In retrospect, I would say that sometimes it is easier to start a new organization than to meld four organizations, no matter how much they admire one another and want to collaborate.

The lack of success of ATLAS touches on a major theme of your essay, as I read it. In life we constantly have opportunities, turning points, bolts of good luck, or, of course of misfortune. You have reflected profoundly on those events in your own life—the effects that they had on you, your family, your organization, and ultimately, the larger school

reform community, where you are held in quasi-saintly regard. You also mention, as do others in this collection, that you/we were not prepared for the powerful forces in American society that led to bi-partisan support of "No Child Left Behind" and "Race to the Top;" cleverly named programs that, alas, miss the heart of the deep human-developmental principles in which you and I believe. And yet, as I said before, neither of us has thrown in the towel, tempting though that may be. And while you may not succeed in shifting the American educational conversation toward less 'metrical madness,' you will continue to influence not only thousands of young people, but also scores of those young professionals who are privileged to work with you.

Another turning point: The good fortune that we were neighbors for a year at the Stanford Center for Advancement in the Behavioral Sciences. This sabbatical gave us the chance to learn from, and rub elbows with, other esteemed educators, like Claude Steele and Ed Haertel. But as you know, it was particularly important for me to have the chance to work with and to get know better Bill Damon and Mihaly Csikszentmihalyi and to lay the ground work for our studies of good work (now the Good Project) on which we have been involved for two decades.

Jim, you were never directly involved in the good project—you cannot be blamed for its errors and its excesses! But there is no question that your example stood vividly in our minds as we thought about the combination of Excellence, Engagement, and Ethics, which epitomizes good workers. Your School Development Program organization has kept the faith for forty years, having good workers as leaders, and helping to develop good persons and good citizens. It was one of the highlights of my life that I was able to escort you when you received an honorary degree at Harvard University a few years ago—one of many honors for you, but for me, a uniquely special one.

There's More Than One Way to Bridge a Gap: On the Promise of Computational Neuroscience for Education

Michael W. Connell

Foreword

I have spent a great deal of time as a student and a good deal of time as a teacher. Both are deeply rewarding. Indeed, I became a learning scientist because I love everything about learning—as a process, an experience, and an outcome, for myself and for others. Learning may well be the Ultimate Good as far as I am concerned.

The two roles are very different, of course. As a student I arrived at each learning experience with goals and expectations for what *I* might take away immediately. That story would end simply—with my expectations being more or less satisfied. As a teacher, in contrast, I arrived with a set of goals and hopes for what my *students* might take away from the exchange to support their long-term development and life outcomes. Because that's what teaching really is—a long-term investment in the learner that will ideally mature over time into a better life for them and the people they touch. In most cases, I only ever saw the beginning of that story. In fact, as a teacher I rarely found out anything more about how my students' stories played out, or even whether our time together had made any lasting impression on them at all (for better or worse).

As I was considering my contribution to this festschrift, I wracked my brain pondering what essay I might write to honor Howard and his great body of work and to make connections reflecting his work's influence on mine. Three separate times over a period of more than a year I began this project in earnest—outlining, researching, writing, reading, revising.

And three times I failed.

The trouble was not in coming up with relevant things to say. Quite the contrary—there were far too many ideas crowding my mind and vying for expression all at once. Gradually I came to recognize a

deeper issue at play—a matter of perspective. As someone who has been inspired regularly by Howard's vast body of work, I see myriad interesting ideas to share and connections to trace to my own work. As a colleague, there are an infinite number of things I might say.

But I am also Howard's student—and as such, there is just one thing I really want to say: thank you.

Thank you for guiding me into that surprisingly narrow space between education and cognitive science, and revealing to me the Map of the World in your extraordinary class "Cognitive and Symbolic Development."

Thank you for teaching me that the primary purpose of writing is not to communicate with others, but to better understand our selves.[1]

Thank you for letting me teach, fail, and teach again the lecture on Goodman in "Art and Mind." The second version still stands as one of the finest classes I've ever led, and I was hooked.

Thank you for keeping the trust—for always exemplifying integrity and championing Good Work. (We students are ever watchful, and we take our cues from you.)

Above all: thank you, Howard—my teacher, mentor, colleague, and friend—for investing in me. Today I am doing exactly what I was meant to do, and I wake up every day excited to jump in—mapping, writing, teaching, learning—while striving always to do work that is both high quality and ethically sound. Without your example and your guidance, I might never have found my way in.

Michael W. Connell, Ed.D.

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[1] I consider the accompanying essay to be one of the most important pieces I have ever written, for two reasons: 1) it was the first serious essay I wrote in the domain of neuroscience and education, and 2) through the process of writing it—using techniques I had recently learned from Howard—I worked out fundamental ideas that have shaped my research, writing, and practice all the way through to the present day. It seems fitting to include it here as a tribute to Howard and his profound influence on my life and work.

Introduction

Educationists have long been optimistic about the possibility that neuroscience research will inform educational practice. In recent decades, significant advances in neuroscience—accompanied by a stream of articles in newspapers, popular magazines, and professional journals touting the putative educational implications of these findings—have made neuroscience factoids a staple in the literature on educational theory, practice, and policy. Unfortunately, though, most of the educational claims based on these findings range in credibility from highly speculative to totally unfounded to downright nonsensical or even incomprehensible (Bruer, 1997; Bruer, 1999). Examples include the movement to develop curricula specifically tailored to the strengths and weaknesses of the "right-brain" vs. the "left brain" and more recently the popular but unfounded notion that parents can stimulate neural development that will boost children's ultimate mathematical abilities simply by exposing them to the music of Mozart from an early age (the so-called "Mozart effect").

In an effort to debunk some of the more widespread myths and redirect the general dialogue in this area into a more promising channel, Bruer (1997) wrote an influential paper entitled *Education and the Brain: A Bridge Too Far* ("BTF"). The argument in BTF is that neuroscience cannot now—and possibly never will—inform education directly, because the knowledge gap separating neuroscience from education is too large. Conclusions made in the paper include:

- Cognitive psychology is a more appropriate basis for a theory of education and instruction than neuroscience,
- Neuroscience findings can only inform education indirectly, and
- The only feasible indirect route between neursocience and education is the one that begins with cognitive psychology as a middle ground and bridges to education on one side and neuroscience on the other (Figure 1).

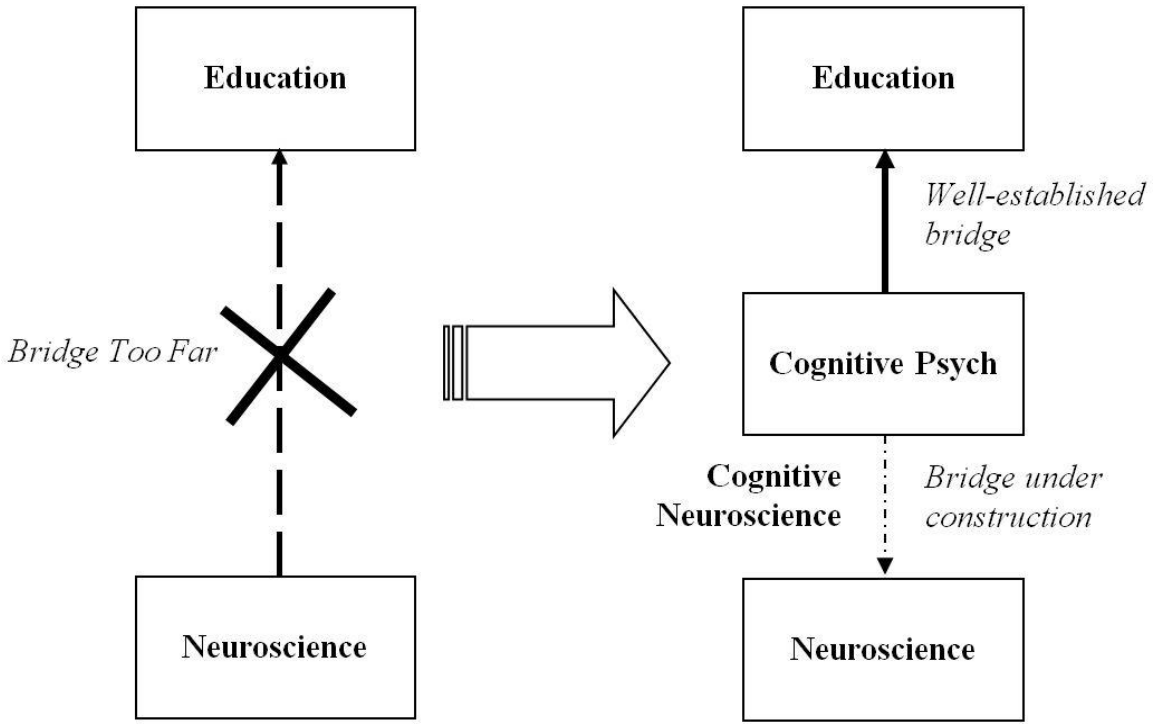

Figure 1: Schematic representation of the "Bridge Too Far" (BTF) argument about neuroscience and education.

I agree with the BTF critique of the existing neuroscience and education literature, and I hope that its cautionary message will reach the widest possible audience, encouraging educators, researchers, journalists, and the general public to adopt a more critical stance toward claims concerning the educational implications of particular neuroscience findings. I also think, however, that the more general BTF claims concerning prospects for linking neuroscience to education are overly pessimistic. I would argue that these general conclusions are based on a conception of neuroscience that is too circumscribed, which excludes some promising alternative links from neuroscience to behavior (and education). Specifically, BTF seems to focus on neuroimaging techniques within cognitive neuroscience to the exclusion of other sub-disciplines. I will argue in particular that computational neuroscience, in which computer models of the brain are used to explore the brain-mind relationship, is a promising alternative approach for linking neuroscience to education more directly than is possible with models based on neuroimaging studies alone.

In this paper, I offer a fresh analysis of the relationships among neuroscience, cognitive neuroscience, cognitive psychology, and

education that is organized in terms of levels of analysis instead of disciplinary boundaries. The result is, I believe, a perspective on the "gap" separating neuroscience from education that is quite different from the view embodied in BTF. In addition, I introduce computational neuroscience into the mix in an effort to illustrate how this relatively new framework relates to more established disciplines and approaches. I conclude by arguing that computational neuroscience is a promising avenue of research with the potential to inform education in principled ways, even in the near future, and therefore deserves attention from educationists.

Building Bridges between Neuroscience and Education

The force of the argument depicted in Figure 1 derives in part from its efficiency in mapping out the relationships between the disciplines of neuroscience, cognitive neuroscience, cognitive psychology, and education while simultaneously suggesting how the various disciplines can be roughly identified with the three levels of analysis from brain ("neuroscience") to mind ("cognitive psychology") to behavior ("education").

The correlation between disciplines and levels of analysis is not perfect, however, and in my view this analysis masks important insights that are relevant to the neuroscience and education discussion. I therefore endeavor to construct a parallel analysis in which I place the disciplines within an organizing framework based on three levels of analysis instead of the other way around.

Defining the Levels of Analysis

As a starting point for defining the three levels of analysis, consider the colloquial terms "brain," "mind," and "behavior." Behavior can be defined simply as any directly observable externalized action (including such experimentally elicited responses as linguistic utterances, button presses, eye movements, etc.).

The word "brain" is most closely associated with the pinkish organ situated inside the skull—the complex structure composed of smaller structures like cells, synapses, proteins, etc.

The mind can be defined in terms of the other two—roughly speaking, it is everything that comes "between" the physical organ of the brain and the externally observable behavior. That is, "mind" is an

abstract category containing all the internal representations and processes not directly observable that enable behavior and that are ultimately instantiated physically in the brain.

A difficulty arises at this point, however. The brain is most closely associated with the physical organ by that name, but the brain also has a functional aspect. The cells, synapses, and neurotransmitters generate entities like physical spike trains. These are measurable physical phenomena, and in that sense they should be considered part of the brain. However, these phenomena are information-carrying processes (or the products of processes), not independently stable material structures like cells, and therefore they also participate in the mind category (we can refer to these physical brain processes collectively as the "brain-mind" to distinguish this description of the mind from alternative descriptions derived from other sources of data, such as behavioral observation—more on this below).

For my purposes, the distinction between physical entities (including synapses as well as spike trains) and functional categories (like "mind" and "behavior") is as important as the distinction between the levels of analysis, and I therefore introduce the nomenclature specified in Figure 2 to preserve both. I continue to use the colloquial terms "brain," "mind," and "behavior" where this does not introduce any ambiguity into the discussion.

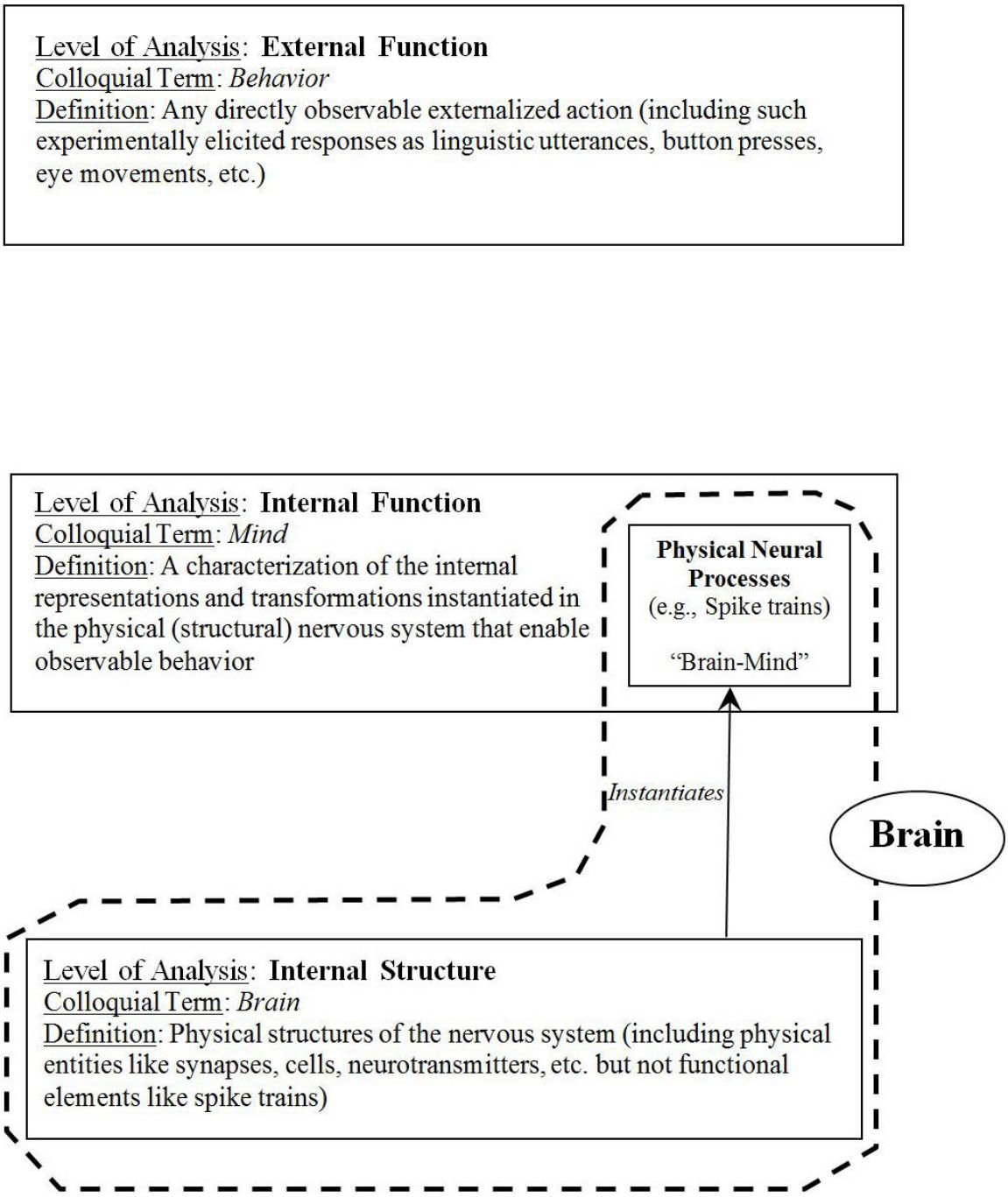

Figure 2: Levels of Analysis.

Reconstructing the BTF Bridge

In this section, I examine the links among neuroscience, cognitive neuroscience, cognitive psychology, and education using the levels of analysis defined in the previous section. First, I place each discipline from Figure 1 within my organizing framework from Figure 2 (the result

is illustrated in Figure 3), and then I discuss insights and implications following from this alternative analysis.

Cognitive Psychology: The Functional Architecture of the Mind

Cognitive psychology is "the study of mental activity as an information-processing problem" (Gazzaniga, Ivry, et al., 2002, p. 97). The basic approach in cognitive psychology involves designing behavioral experiments to test hypotheses about the unobservable contents of mind: representations and transformation processes (Gazzaniga, Ivry, et al., 2002). In Figure 2, I have therefore placed cognitive psychology at the behavioral level, since that is where its data come from, with a dashed arrow pointing down to the level of internal function, indicating that from these behavioral data cognitive psychologists make inferences about the functional architecture of the mind—that is, about *what* abstract representations and transformations the mind contains, and *what* effect the transformations have on the representations, without regard for *how* or *where* those contents are physically realized in the brain.

Cognitive Neuroscience: The Functional Architecture of the Brain

Cognitive neuroscience is, generally speaking, the study of how the brain enables the mind (Gazzaniga, Ivry, et al., 2002). Although it encompasses a variety of experimental methodologies, this discipline is often most closely associated with brain imaging techniques including fMRI, PET, MEG, and EEG. Indeed, from the examples used in BTF this seems to be what Bruer (1997) primarily means when he refers to cognitive neuroscience, and I will therefore restrict my comments to those methods in the present discussion.

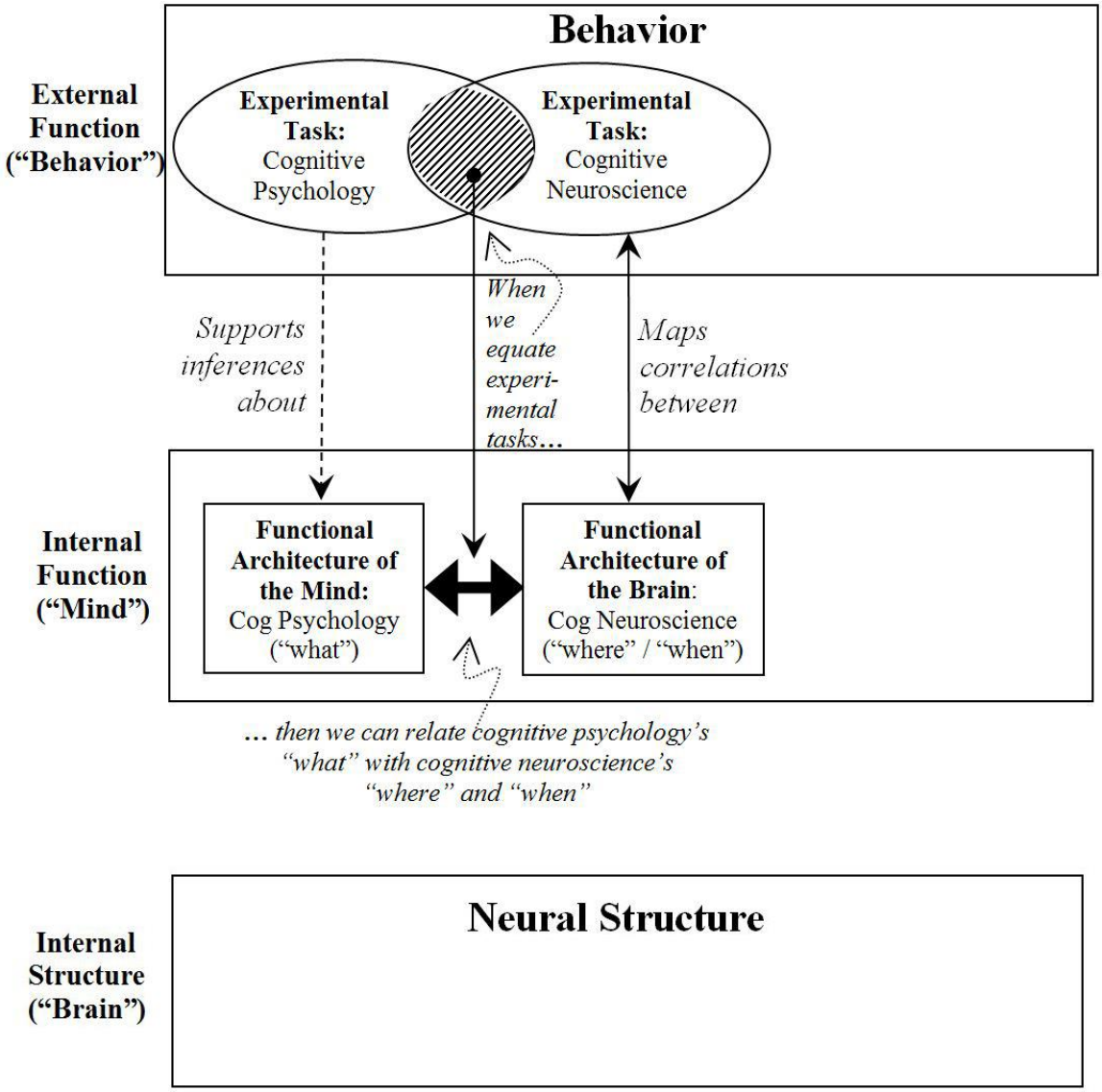

Figure 3: Schematic summary of my reanalysis of the BTF argument (from Figure 1), organized from the perspective of levels of analysis rather than disciplines

The basic behavioral paradigm in brain imaging experiments is similar to the paradigm used in cognitive psychology. That is, in both cases a subject performs a behavioral task. There are two key differences between them, however. First, in a classic cognitive psychology experiment, the experimental setup does not generally impose any physical restrictions on the behaviors that can be studied. In a brain imaging experiment, in contrast, physical motion is severely constrained by both the imaging apparatus and the need to minimize the amount of motor activation that is generated in the brain (so it does not swamp the

brain activity of interest). Second, while they measure the behaviors of interest, cognitive neuroscientists simultaneously use one or more of the technologies described previously to monitor associated brain activity.

The neural activity patterns associated with a behavior are widely assumed to identify the principal brain areas involved in performing that behavior (Gazzaniga, Ivry, et al., 2002). In other words, fMRI and PET scans provide data about "where" in the brain a particular behavior is processed and MEG and EEG provide data on its evolution over time ("when"). A major benefit of this approach is that it provides fixed points of reference (a brain map and time line) for comparing experimentally elicited behaviors with one another. On the one hand, if two behaviors activate roughly the same brain areas, then researchers infer that they involve some of the same neural processes. On the other hand, if two ostensibly similar behaviors activate different brain areas (either within a single group of subjects or across two different subpopulations), then researchers conclude that the behaviors are supported by internally distinct processes, even though they appear similar externally.[2]

Like cognitive psychological methods, neuroimaging techniques are grounded in behavioral data and therefore provide information about

[2] Neuroimaging experiments are much more expensive and time-consuming to conduct than purely behavioral experiments. It is therefore desirable to conduct a relatively small number of strategic neuroimaging experiments that can shed light on data from a much larger set of behavioral experiments—especially to leverage the large corpus of cognitive psychological data collected in the decades before neuroimaging technologies were available. As discussed in the text, however, neuroimaging experiments place much greater restrictions on the range of behaviors that can be studied than do classic experiments in cognitive psychology. This raises a challenge, in that cognitive neuroscientists frequently cannot replicate the exact behavioral paradigm used in cognitive psychological experiments they want to investigate further—they must design a different behavioral protocol that they believe is functionally equivalent in all important respects to the original behavioral protocol. For example: in a study of reading, the original study might have a subject sitting comfortably in a chair reading the book of their choice out loud and the researcher might make measurements based on direct behavioral observation. In an fMRI experiment, in contrast, the same subject would have to lie in a narrowly confined cylindrical tube (the fMRI chamber), and would typically read words silently from a small screen and press a button to indicate some response (when they were finished reading, for example, or perhaps which word of the two presented was a noun). The behavioral paradigms are very different, but if the researchers want to draw on both sets of data they have to assume that the brain processes involved in the two scenarios are essentially the same in terms of the variables of interest. This is what I mean by the expression "equating experimental tasks" in Figure 3: assuming that two behaviorally different tasks are functionally equivalent in terms of their underlying brain activation patterns.

functional architecture. Unlike cognitive psychological methods, which typically support inferences about the mind from behavioral data alone, these cognitive neuroscience techniques correlate behavior with brain activation patterns, and in this sense they give insight into the functional architecture of the *brain*.

It is important to recognize, however, that neuroimaging technologies like functional MRI (as well as EEG/MEG and PET scans) "detect localized physiological *activity* within the brain, brain *function* … rather than brain structure" (Churchland, 1995, p. 299, emphasis in the original). These techniques still do not reveal *how* the brain actually implements these processes, either at the structural level (e.g., what role synapses and specific neurotransmitters play in the target behavior) or even at the level of brain function (e.g., how a specific pattern of neural firing encodes the target behavior). For these reasons, I have placed cognitive neuroscience (again, referring only to brain imaging techniques) at two levels in Figure 2 (external function and internal function) with a solid double-headed arrow between them to indicate that these techniques correlate these two types of data.

Interlude: Reflections on the Bridge

Figure 1 summarizes the original discipline-based analysis from BTF, and Figure 3 summarizes my re-analysis of it, organized from the perspective of three non-overlapping levels of analysis spanning from neural structure to overt behavior. Two insights emerge at this point.

First, it is apparent that cognitive psychology and cognitive neuroscience are mutually complementary because they provide different kinds of information about the same general level of analysis (internal function). If the experimental task is held constant (for example, a word-recognition task), then the behavioral data from a cognitive psychology experiment (information about mental contents) can be married to data from a brain imaging experiment (information about the sites where that information is processed, and the time course of that processing). This link is represented by the double-headed horizontal arrow in the middle layer of Figure 3. Generally speaking, cognitive psychology provides a rich database of hypotheses about the contents of the mind, while cognitive neuroscience provides powerful new methods for testing and refining those hypotheses, and each perspective is enriched by the exchange.

Second, the representation in Figure 3 suggests that the bridge in Figure 1 does not actually reach all the way down to the level of neural structure. The brain-imaging approaches are, in this view, better characterized as bridging from behavior to internal function (just like cognitive psychology) rather than from internal function to internal structure (as Figure 1 might seem to imply). They do extend cognitive psychology—by grounding the inferences cognitive psychologists were already making about internal function, but not by revealing *how* brain structures implement mental functions. Indeed, none of the disciplines represented in Figure 3 addresses the question of how the brain actually instantiates the processes that do the work of mental processing. Other branches of neuroscience are responsible for those kinds of questions.

"Wet" Neuroscience: Brain Structure and Brain Function

"Wet" neuroscience is the invasive study of the brain in a laboratory setting. Wet neuroscientists work at many levels of analysis, from the chemical structure of neurotransmitters in molecular neuroscience to the overall organization of the complete organ in systems neuroscience (Bear, Connors, et al., 1996). It is sometimes difficult to delineate where structure ends and process begins, but for present purposes it is sufficient to think of structures as the physical components of the brain—the properties and entities of the inert brain that can be studied reductively using tools like chemical assays, dyes, scalpels, and microscopes. These methods and data belong primarily at the "internal structure" level of analysis (Figure 4). In contrast, brain function can be studied *in vivo* using techniques like single-cell and cell array recording equipment, and *in vitro* using various techniques that monitor physical, chemical, or electrical changes resulting when a stimulus is applied to a brain preparation (for instance, a brain slice). These methods and data capture dynamic processes of the brain unfolding in time, and belong primarily at the level of "internal function" (Figure 4). An upward pointing arrow signifies that the brain structures generate the brain processes, and a downward arrow represents the fact that these processes can, in turn, modify the underlying structures (for example, as happens during learning). Together, these structures and processes constitute the physical brain (indicated in Figure 4 by the dashed outline labeled "Brain"). Note that the physical brain spans the levels of internal structure and internal function in this framework.

Although wet neuroscience approaches can be applied to a variety of questions, they are primarily distinguished by their ability to address implementation questions. For example, they address *how* proteins are used to build structures like ion channels that regulate the flow of charged particles into and out of neurons, and also *how* these particle flows contribute to the initiation and maintenance of spikes when a neuron fires.

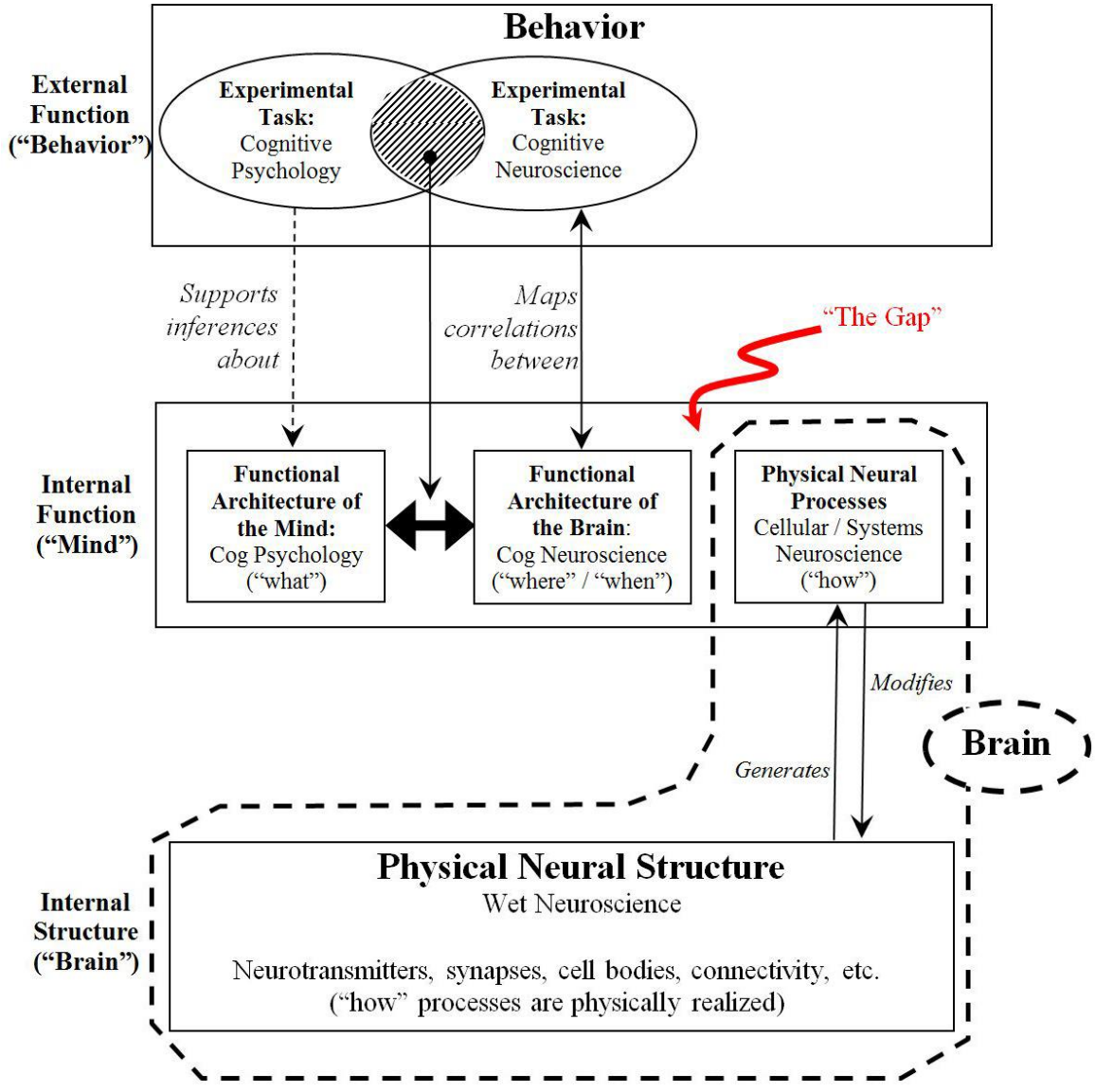

Figure 4: Relationships between major levels of analysis (external function, internal function, and internal structure) and key disciplines within cognitive science

Mind the Gap

As Figure 4 illustrates, multiple disciplinary accounts of mental phenomena (that is, phenomena at the level of internal function) are available. Cognitive psychology provides a language for talking about the contents of mind (representations and transformations), and brain imaging provides a basis for investigating the location and time course of processing. I discussed previously how these two accounts can be linked by holding constant the experimental task. As Figure 4 illustrates, these approaches move from the outside (external behavior) inward (toward internal function) and their theoretical formulations reflect this fact, being rooted in behaviorally-derived categories and concepts.

In addition, the brain itself embodies a third "language" for describing neural structures and mechanisms that actually do the work, some of which (for example, synapses, spike trains, long-term potentiation) have already been identified and are being characterized by researchers from various disciplines (see, for example, Hodgkin & Huxley, 1939; Bailey & Chen, 1983; Andersen & R.E.K. II, 1992; Catterall, 1993; Alberts, Bray, et al., 1994). In contrast to the other two descriptions of internal function discussed previously, this description moves from the inside (starting with brain structure) outward (toward internal function and external behavior).

In my view, the gap separating neuroscience from behavior and education (alluded to in BTF and identified as "The Gap" in Figure 4) arises from the disconnection between these multiple descriptions of mind, some rooted in behavior and others rooted in neuroscience. To bridge this gap will require a way to translate the concepts of cognitive psychology into the language of neuroscience. For instance, "memory formation" is a cognitive psychological notion that might be translated into a neurological description involving gene expression at a set of synapses resulting from long-term potentiation arising in response to a novel stimulus. This would connect the descriptive "what" from cognitive psychology with the explanatory "how" of neural mechanisms. The feasibility of making this translation is controversial, and in the following sections, I discuss current opinion on the prospects for making this link.

Competing Views on the Compatibility of Different Descriptions of Mind

Philosophers of mind have identified on the order of ten distinct theories concerning the nature of the brain-mind (Churchland, 1988). These theories are classified into two major categories called *dualist* and *materialist*. Since the materialists consider the brain to be the physical substrate of the mind, and since most members of the scientific community today are materialists, I restrict the present discussion to these theories. Of the four major materialist theories, I only consider the three that provide an explicit account of the relationship between the neurological and psychological levels of analysis. Each of the three different materialist theories offers a different explanation of the relationship between the "internal structure" and "internal function" levels of analysis. I introduce them here to demonstrate that the assumption that cognitive psychology is reconcilable with neuroscience (even in principle) is controversial. The three theories I discuss are called *reductive materialism*, *functionalism*, and *eliminative materialism*, and each provides a different explanation for the gap identified in Figure 4.

Reductive Materialism

The central claim of reductive materialism is that each *type* of familiar introspectible mental state (for example, a state of pain, an intentional state) can be identified with a well-defined *type* of physical brain state (Churchland, 1988; Vitzthum, 1995). In the present context, the reductive materialist would argue that concepts from cognitive psychology (for example, "visual memory") can in principle be identified with (reduced to) characteristic types or configurations of neural processes, even if we do not yet have the necessary knowledge to define those relationships. This position optimistically assumes that cognitive psychologists and neuroscientists tunneling toward one another will eventually close the gap in Figure 4, which implies that the metaphorical gap is in reality a gap in our scientific knowledge.

Functionalism

The problem with the reductive materialist position (says the functionalist) is that there is no way, even in principle, to define a uniform set of conditions that would capture all and only the brain states associated with the mental phenomenon in question (for instance, "pain" or "visual memory"). While most functionalists do believe that each

instance of a given mental state can be identified with a specific physical brain state (i.e., they are materialists), they reject the idea that we can ever define a set of conditions on brain states that will unequivocally map one-to-one onto the concepts of our "common-sense mental taxonomy" (see also Nunn, 1979; Churchland, 1988, p. 37).

According to functionalism, "the essential or defining feature of any type of mental state is the set of causal relations it bears to (1) environmental effects on the body, (2) other types of mental states, and (3) bodily behavior" (Churchland, 1988, p. 36). A standard example is pain, which (1) is typically caused by damage to the body, (2) causes mental states like discomfort, irritation, and the initiation of cognitive processes aimed at relief, and (3) causes behaviors like wincing, grunting, and nursing the affected area (Churchland, 1988). Note that there is no allusion to any neural structure or function in this definition.

Typically, the functionalist position is interpreted as supporting the claim that cognitive psychology cannot be reduced to neuroscience, and that it therefore "is or should be *methodologically autonomous*" (Churchland, 1988, p. 37) from neuroscience (see Figure 5). In other words, the functionalist would argue that the gap in Figure 4 cannot be bridged, because there is no useful or coherent way to translate the important behavioral and mental phenomena identified by cognitive psychologists into the language of neuroscience. Therefore, mental and behavioral phenomena should only be related to each other and the environment. This implies that the gap arises not from a gap in scientific knowledge, but instead from a fundamental incompatibility between the two types of mental descriptions (those derived from behavioral data and neurological data, respectively).

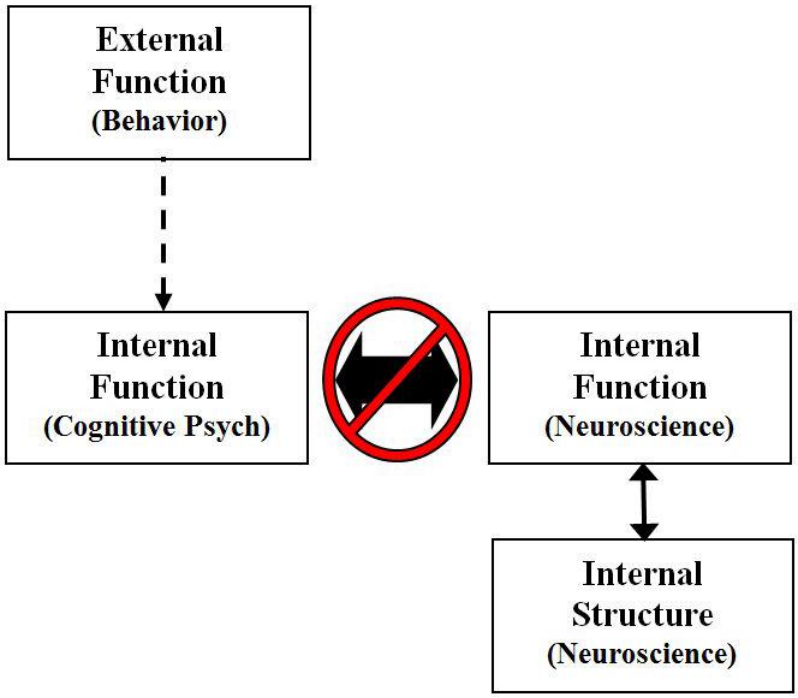

Figure 5: According to the functionalist view, psychology is not reducible to neuroscience. Instead, functionalists claim that psychology has its own set of laws and content, independent of the laws and content constituting neuroscience

Eliminative Materialism

Like functionalists, eliminative materialists challenge the assumption that the concepts of common-sense psychology can be identified with the concepts of neuroscience in a systematic manner, although their reasons are different (Churchland, 1981). The eliminative materialist doubts that mental concepts can be translated into neuroscientific terms, *"because our common-sense psychological framework is a false and radically misleading conception of the causes of human behavior and the nature of cognitive activity"* (Churchland, 1988, p. 43, emphasis in the original). In other words, instead of eventually being reduced to neuroscience (reductive materialism) or made autonomous from neuroscience (functionalism), much of cognitive psychology will likely be eliminated altogether as neuroscience becomes a mature discipline (Churchland 1988—see Figure 6). The implication here is that the gap in Figure 4 arises from a fundamental incompatibility between the two descriptions of mind (similar to the functionalist view, but with different consequences for cognitive psychology).

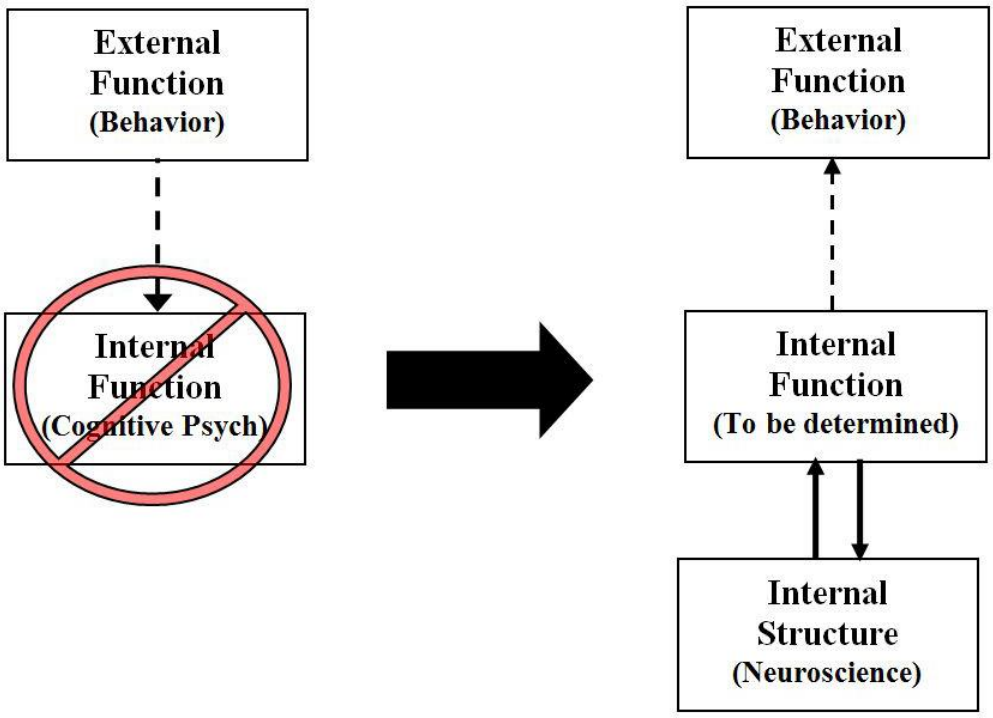

Figure 6: **According to the eliminative materialist view, psychology is not reducible to neuroscience because the common-sense framework underlying current theories of psychology is a fundamentally false and misleading theory of cognition and must eventually be replaced.**

Conclusions Concerning the Compatibility of Cognitive Psychology and Neuroscience

Two conclusions can be drawn at this point concerning the role of cognitive psychology as an intermediate level of analysis via which neuroscience can be linked to education. First, my examination of the disciplines in terms of their levels of analysis (Figure 3) suggests that although neuroimaging techniques from cognitive neuroscience do help ground and refine the theories of cognitive psychology, their combined reach still does not extend into the area of explanatory neural mechanisms (either functional or structural). Second, the fact that there are currently at least three viable materialist theories of the brain-mind (reductive materialism, functionalism, and eliminative materialism) suggests that there is not yet a consensus on whether cognitive psychology can, in fact, ever be made compatible with neuroscience (Figures 5 and 6), regardless of the methods employed.

The foregoing analysis suggests that cognitive psychology might not be the ideal ground in which to anchor the bridges connecting neuroscience to education. Fortunately, the discipline of computational neuroscience offers a distinctly different kind of bridge that virtually bypasses cognitive psychology altogether and which educators and psychologists have already started traversing, as I discuss in the next section.

Computational Neuroscience

The basic approach in computational neuroscience is to take data from molecular, cellular, and systems neuroscience and use them to specify a mathematical or computational model of neurons and neural networks in order to study how behavioral phenomena connect to molecular and cellular phenomena in the brain (Sejnowski, Koch, et al., 1988). In most cases, these models are then run on computers to explore their structure and dynamics, in order to compare their behavior with observed behavior of biological nervous systems or to generate new hypotheses about the mechanisms underlying observed behavior. As a group, these models are often referred to as artificial neural networks (ANNs).

ANNs take many different forms, useful for studying a range of neural and cognitive phenomena at different levels of organization. For example, researchers interested in the details of synaptic and neural dynamics often use very complex, biologically realistic models that capture as many of the structural and functional details of the individual neuron as possible.

On the other end of the spectrum are highly simplified models, often used to study phenomena at higher levels of organization (e.g., language processing). This is the approach followed by most researchers who use ANNs to study higher cognitive functions and brain-mind connections. The connectionist model, a well-studied type of simplified model, is described below. As I discuss in a later section, a literature is emerging around potential applications of these ANNs to educational research and practice.

The Connectionist Framework

The connectionist model is a specific kind of ANN. In order to explain how these models are derived from neurological data, it is

convenient to focus on two key findings from neuroscience that inform the model design. These neuroscience facts are quite well established:

- Neurologically speaking, *learning* involves processes that modify the *structural synapses* via which neurons in the brain communicate with one another. This appears to be case for many major brain areas and structures, and across all the major kinds of learning, including motor, associative, declarative, and episodic kinds of memory formation (Bear, Connors, et al., 1996).
- In most nervous systems, usable *knowledge* of a stimulus is encoded in the dynamic and fleeting *functional pattern of activation* across a large number of neurons (Abbott & Sejnowski, 1999).

Figure 7 illustrates the relationship between structural synapses and functional patterns of activation in a neural network. Learning induces structural changes in a set of synapses (making them stronger or weaker). These structural changes affect the functional relationships between activation patterns at different points in the network, which determine what knowledge is stored in the network and how that information can be processed. Note that this thumbnail description embodies a simple conceptual explanation for how internal structures (that is, neural synapses) relate to internal functions (that is, neural activation patterns).

As I mentioned previously, *artificial* neural networks (ANNs) are mathematical models of *real* neural networks, like those that make up the human brain. Whereas the basic processing element in the brain is the *neuron*, the analogous element in a connectionist network is called a *node*. Figure 8 illustrates the correspondence between a biological neuron and a simulated connectionist node. Nodes are connected together to form networks, informed by data on neural connectivity patterns in the brain.

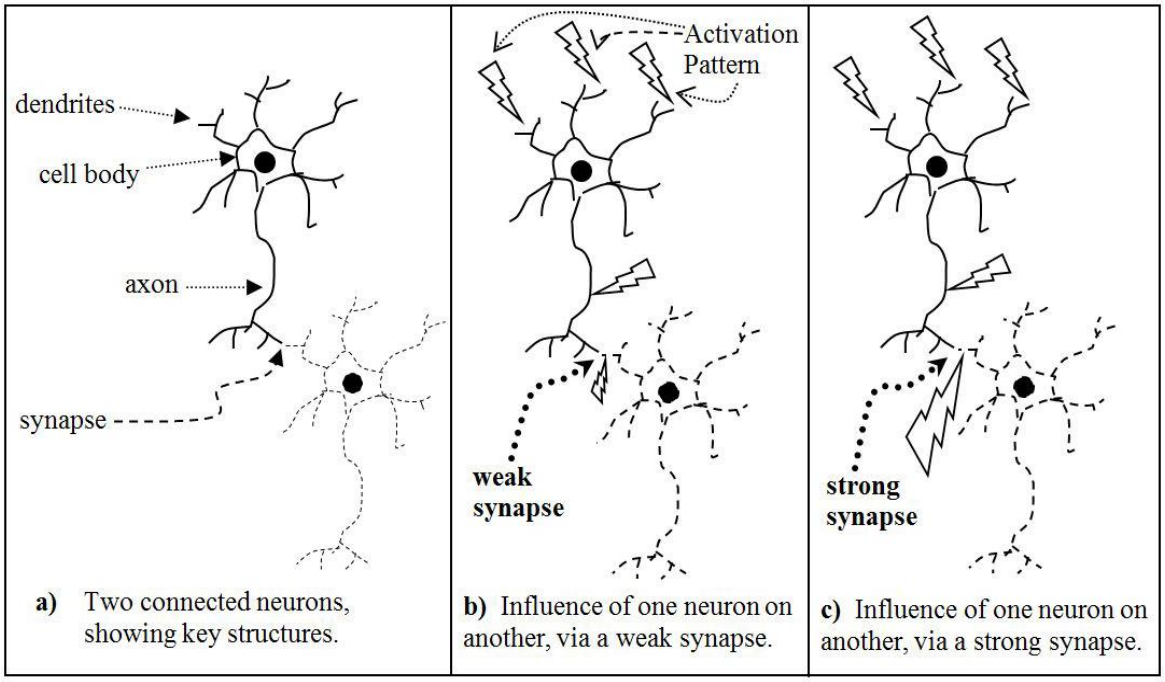

Figure 7: Neural structure and neural function. a) Key structures of a neuron include the dendrites, cell body, axon, and synapses. A neuron communicates by dumping neurotransmitters into the synaptic junction separating it from another neuron. These chemicals are detected by the dendrites of the neuron on the other side. b) The lightning bolts represent levels of activation at the neural inputs (dendrites) and output (axon). The size of a lightning bolt indicates the level of activation at a given site in the network, which is in turn controlled by the strength of the synapses through which it passes in traveling from one neuron to the next. *Learning processes* change the *strengths of synapses*. *Thought and action*, on the other hand, depend upon the *patterns of activation* across many neurons in the network. Synapse strength affects the influence of one neuron on another one, shown in panel (b) by the small lightning bolt beyond the weak synapse compared to the large lightning bolt at the same site in panel (c) beyond the strong synapse.

Although the nodes themselves are quite simple, the networks they form are surprisingly powerful. Indeed, computer scientists generally agree that anything computable by the human brain is, in principle, also computable by some appropriately specified connectionist ANN (Hertz, Krogh, et al., 1991). Because connectionist models are based on neurological data, they exhibit characteristics of the information processing that go on in real nervous systems.

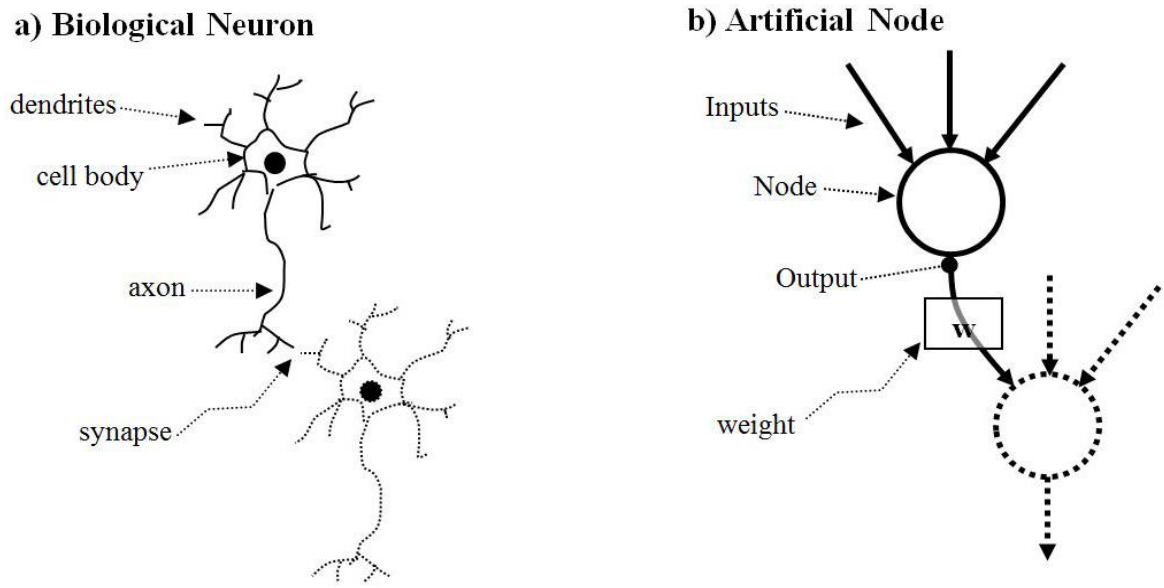

Figure 8: Key structures of a spinal motor neuron (left), and corresponding elements of an analogous node from an ANN (right). In the biological neuron, dendrites collect stimulation from other neurons. In nonlinear proportion to the total stimulation arriving on all the dendrites at one time, the neuron fires, sending activation down its axon and on to other neurons connected to it via synapses. The simulated node performs a similar operation. It sums its inputs, performs a computation on that sum, and sends the result on to other neurons. The efficacy of the biological synapse (which is modified by biological learning processes) is represented in the simulated model by the weight on the connection between two nodes (which is modified by simulated learning algorithms). The output from a neuron is modulated by the synaptic efficacy before being input to the next neuron in the chain, just as the output of a node is multiplied by the weight before being passed along to the next node in the chain.

Of course, the connectionist model is intentionally very simplified compared to the biological nervous system. It is therefore not offered as a complete model of every process involved in human cognition. For example, connectionist networks often have no short-term or working memory, the sensory and motor systems are excluded, the modular architecture of the brain is generally not accounted for, and affective mechanisms are not explicitly included (though some parameters do crudely model some general influences of affect). Furthermore, as

mentioned above, not every important aspect of the synaptic or cellular behavior is captured in this framework. Nevertheless, many researchers think this is a good first approximation to the function of real neurons (see, for example, O'Reilly & Munakata, 2000), and that the analytic simplicity of the model is a worthwhile tradeoff against the complexity that goes with strict neural realism.

To summarize, computational neuroscience is a branch of neuroscience that draws on wet neuroscience data to construct computer models of neural structures and processes. Researchers study the behavior of the resulting models via simulations to glean insight into the operation of biological nervous systems. This approach therefore links the level of internal neural structure to the level of internal neural function, enabling researchers to investigate *how* the neural mechanisms implement cognitive processes (Figure 9). Moreover, model behavior is often used to make inferences about the internal functions generating externally observable human behavior (Abdi & Valentin, 1994; Addanki, 1984; Baker, Croot et al., 2001; Berg & Schade, 2000; Bollaert 2000; Brady, 1995; Elman, 1989, 1993; Quinn & Johnson, 1997), represented in Figure 9 by the upward pointing dashed arrow connecting ANN internal representations to experimental task behavior.

In addition, computational neuroscience models are considered a promising tool for integrating across many of the other neuroscience disciplines, including wet neuroscience (Kandel, Schwartz, et al., 2000) and cognitive neuroscience (Kosslyn, Chabris, et al., 1992; Gazzaniga, Ivry, et al., 2002). This is represented in Figure 9 by the horizontal dashed lines linking the multiple descriptions at the level of "internal function." In other words, although computational neuroscience has the potential to bridge from neuroscience to behavior without making use of cognitive psychology, the converse is not necessarily true. Even if cognitive psychology ultimately is compatible with neuroscience, it would appear that the most promising route to follow in making that connection goes through computational neuroscience. Either way, computational neuroscience may offer more promise than cognitive psychology for crossing the neuroscience-education divide.

ANNs and Educational Practice

ANNs have been used to inform educational practice in at least two distinct ways. The first type of application involves the use of neural

networks as “black box” technologies, where a network is used to solve some problem or perform some task, but its behavior is not analyzed for clues about human cognition in general or about the knowledge of any student in particular. One example of this type of application is the network applied by Jones, Hill, and Coffee (1998) to provide a more “organic” software tutoring system for teaching negotiation skills to students than a strictly rule-based software tutor could provide. The authors concluded that this neural network-based software is a useful pedagogical tool that helps students studying the analytical approach to negotiation to visualize the “solution space” of possible scenarios and outcomes for a given negotiation problem.

The second type of practical application involves the use of ANNs to actually assess students’ knowledge of a domain, such that the network becomes a model of the students’ general knowledge of the domain rather than just providing a snapshot of their performance in a single instance, as most assessment instruments do. For example, McKnight and Walberg (1998) evaluated the performance of a neural network software package called “Galileo” used to analyze the conceptual content of 157 essays written by 11th grade students identifying the problems of the Chicago Public Schools and suggesting strategies for solving them. These researchers concluded from their experiment that Galileo was helpful in mapping out the conceptual structures used by the group. In contrasting this approach to qualitative analysis with more traditional methods, they consider the network performance to be “an efficient, objective, reproducible procedure for analysis that suggests meaningful ideas that can be succinctly categorized and understood” (McKnight & Walberg, 1998).

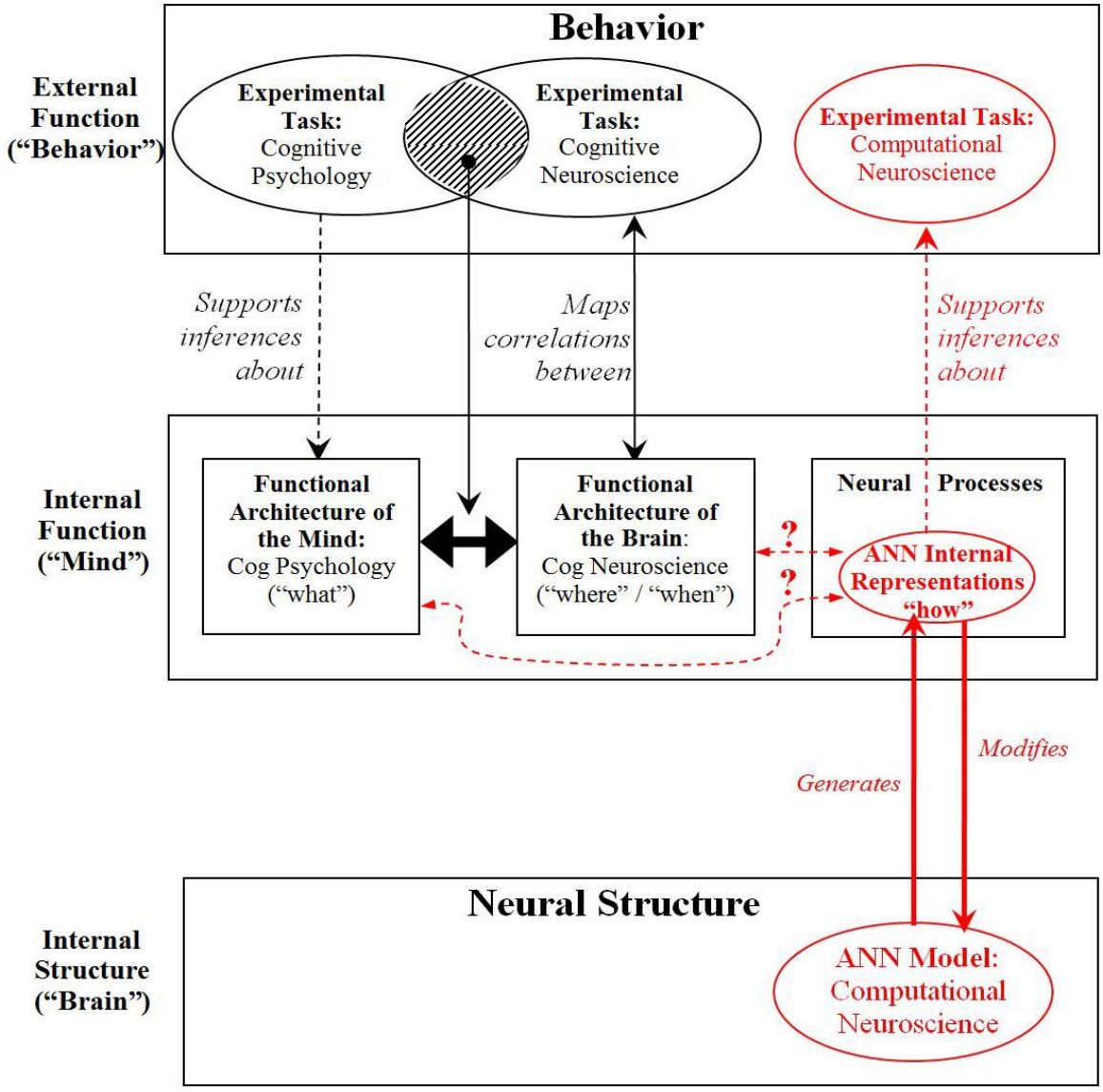

Figure 9: Computational neuroscience represents a distinct bridge from internal neural structure to external behavior that bypasses cognitive psychology.

In addition to their efficiency in processing text, the ANNs produce categories that might reflect something about the underlying knowledge organization of the students as a group. A similar analysis was done in the language domain by Elman (1993), who demonstrated that a network trained to predict the next letter in a word from the previous letters could learn to identify the same word boundaries recognized by humans, and a network trained to predict the next word in a sentence given the preceding words could acquire implicit knowledge of grammatical categories (e.g., noun, transitive verb, intransitive verb) that are

recognized by humans. As these networks demonstrate, neural networks like Galileo may be able to extract knowledge representations that reflect not just performance but also give insight into the underlying neural organization supporting the observed performance.

A third example of ANNs used to extract a cognitive model of students' knowledge is the differential diagnosis assessment instrument of Papa, Stone, and Aldrich (1994). In contrast to the McKnight and Walberg study, which aimed to produce a set of qualitative conceptual categories that would apply across a *population* of students, Papa, Stone, and Aldrich did an experiment to evaluate the possibility of using neural network models to construct a model of an *individual* student's knowledge organization in a specific sub-domain of medical diagnosis.

The problem these researchers were trying to address is the difficulty of assessing the knowledge medical students use to make a differential diagnosis of a particular disease from among a number of possible diseases based on observed symptoms. Assessing this knowledge is difficult for at least three reasons: 1) there are a number of diagnostic domains (e.g., chest pain vs. difficulty breathing), 2) performance in one domain is a poor predictor of performance in other domains, and 3) assessing even a single domain adequately is very expensive in terms of time and money.

Their experiment involved having a student interact with an artificial neural network that monitored their performance in response to a number of differential diagnostic problems, and from this input the network extracted a model of the student's *general* knowledge of different symptoms and disease classes. They then tested the network model of each student across different diagnostic domains and scored their performance. In essence, they trained the network on the student's general knowledge, and then tested the network rather than the person on a range of sub-domains, which is much faster than testing the individual on all those domains directly.

When the researchers compared the network-based cognitive models of expert diagnosticians to those of novices, they found that the superiority of expert network performance over novice network performance was statistically significant, suggesting that the networks were indeed able to extract at least some of the general dimensions underlying the knowledge organizations of individual students.

All three of these applications (the negotiation tutor, the qualitative analysis network based on Galileo, and the medical assessment network) represent real examples of ANNs that have been applied directly in educational practice either as "black box" tools or in ways that evidently reveal something about how knowledge is organized in the brains of individual students or groups of students in a particular knowledge domain. These cases represent relatively early efforts at traversing the computational neuroscience bridge from neuroscience to education. However, in all three cases the neuroscience-education link is only implicit, because the researchers all use the ANNs as practical pre-packaged tools without considering the theoretical connection between ANNs and neuroscience. Nonetheless, I think these demonstrations at the very least represent a proof-of-existence that neuroscience can inform education indirectly (and possibly quite directly) through the vehicle of ANNs.

ANNs and Educational Theory

In addition to the applications of ANNs to educational practice just described, numerous researchers have also applied these models to reason about educational theory. For example, Bereiter (1991) focused on the non-propositional nature of representations and computations in ANNs to urge a reconsideration of the role of rules and rule-like statements as "instruments and objects of instruction … [such as] definitions, principles, explicit premises, and conclusions…" (p. 15). In another article, Anderson (1992) discussed the self-organizing nature of learning in neural networks (as exhibited by ANNs) and argued that they provide theoretical support for constructivist approaches to science teaching. In a third study, Roth (2000) advocated ANNs as models of cognition and development, and particularly as models of cognitive development and learning in scientific knowledge domains.

Such applications of ANNs to educational theory have revealed provocative insights about their characteristics and behavior in specific domains that could prove fruitful in reasoning about the human brain, mind, and behavior, as well as in reasoning about the merits and limitations of different educational theories more abstractly. Methods have not yet been developed to assess ANN "goodness-of-fit," however, and producers as well as consumers of the models and the literature need to be careful when drawing inferences about human cognition from ANN behavior. While it is likely that at least some behaviors of ANNs

reflect the behavior of their counterparts in biological neural networks, some ANN behaviors are simply artifacts of the model employed or the specific scenario in which the network is trained and analyzed. As Schneider and Graham (1992) put it, "Education researchers must be careful to avoid allowing 'neuroscience envy' to inhibit critical review of connectionist models" (p. 520).

Possibility and Promise

In my own work with ANNs (e.g., Connell, 2005), I have sought to identify usable insights about learning that are non-obvious in the sense that either a) they open up new possibilities for effective learning that have not been widely recognized before, and/or b) they actually challenge what people think of as "common sense" or "best practices" in education.

Consider, for instance, science museums as informal learning environments. Most exhibits are designed based on some combination of the designer's personal professional experience, best practices, and exhibit evaluations. While these are all important and useful inputs, design principles informed by insights about the brain gleaned from ANNs can enable people to leverage their design expertise more systematically, ultimately helping them to more reliably deliver the kinds of experiences and learning outcomes they envision for exhibit visitors.

An example of a non-obvious insight from ANN research, applied to museum exhibit design, is the fact that the brain naturally makes inferences about an exhibit's subject matter from the structure or design of the exhibit, not just the exhibit's formal content (Boren & Connell, 2010; Connell & Boren, 2010). What this means is that an exhibit can actually enhance or impede a learner's understanding of the target subject matter—notwithstanding the designer's best intentions—as a result of how the brain naturally tends to make sense of experiences.

To take one concrete example, consider the "optical bench," which is an exhibit developed at the Exploratorium in San Francisco to engage visitors in exploring physics concepts such as reflection and refraction (Bruman, 1975). In this exhibit, the table displays a beam of light. The exhibit contains three different kinds of mirrors—convex, flat, and concave—that visitors can use singly or in combination to experiment with the principle of light reflection.

There is one physics concept that explains reflection no matter what kind of mirror or mirrors are used, and the designer presumably wants people to build intuition about three different incarnations of that unitary physical principle. The visitor's experience, however, is that there are three different mirrors, each one producing a different effect on the pattern of light. ANN models would suggest that, despite the actual physical reality and the designer's intent, the human brain is likely to infer that *there are actually three distinct principles of reflection*: *flat-reflection, concave-reflection, and convex-reflection*. In other words, according to the ANN models, this particular exhibit is probably inadvertently teaching visitors misconceptions about physics.

The same ANN insight that informs our understanding of the potential problem here also suggests a constructive alternative to the three-mirror design, which is to make the implicit, physical structure of the exhibit echo the conceptual structure it is meant to communicate to visitors. In the case of the optical bench, in particular, this might entail creating a single mirror with curvature that visitors can adjust through the whole range from convex to flat to concave. Such a design would be more likely to support the visitors' understanding of the correct conception that reflection is a single principle with different visible effects on light depending on the shape of the mirror, instead of the misconception that there are three distinct principles of reflection at work.

This example from the optical bench is but one instance of a very widespread phenomenon. From musical notation to statistics to electrical engineering to astronomy, virtually every human knowledge domain is littered with violations of the principle of consistency described previously. This powerful, general principle about learning is derived from ANN research and is evidently not at all obvious from introspection, experience, or even cognitive psychology. If it were, people would presumably adhere to it whenever possible in order to maximize human learning and understanding. But they clearly do not and have not throughout history.

Conclusions

BTF identifies cognitive psychology as the discipline most central to applying principles from neuroscience to education:

There are two shorter bridges, already in place, that indirectly link brain function with educational practice. There is a well-established bridge, now nearly 50 years old, between education and cognitive psychology. There is a second bridge, only around 10 years old, between cognitive psychology and neuroscience.... Cognitive psychology provides the only firm ground we have to anchor these bridges. It is the only way to go if we eventually want to move between education and the brain (Bruer, 1997, p. 4).

In this paper, I have constructed a parallel analysis of the relationships between the disciplines of cognitive psychology, cognitive neuroscience, computational neuroscience, and wet neuroscience from the perspective of three distinct and non-overlapping levels of analysis: external function ("behavior"), internal function ("mind"), and internal structure ("brain"). This alternative analysis raises three challenges to the conclusions of BTF.

First, my analysis suggests that the "bridge between cognitive psychology and neuroscience" mentioned above does not actually extend into the realm of physical neuroscience to explain *how* mental processes are implemented in brain structures and functions. In my view, it is this gap separating the behavior-based descriptions of mental contents on the one hand from physically grounded explanations of brain function on the other that requires bridging, and both cognitive psychology and neuroimaging methods fall short of explaining how to accomplish this.

Second, a survey of extant philosophical positions on the brain-mind relationship (specifically, reductive materialism, functionalism, and eliminative materialism) reveals that the very idea that cognitive psychology can be reconciled with mechanistic neurological explanations of mind—even in principle—is controversial at the present time. In other words, it is not obvious that cognitive psychology represents an intermediate point on *any* path from neuroscience to education, let alone a necessary stop along *every* such path.

Third, an examination of computational neuroscience from the levels-of-analysis perspective supports the contention that this approach represents a distinct bridge from neuroscience to behavior that bypasses cognitive psychology altogether, challenging the view that the route through cognitive psychology is the *only* way to bridge from neuroscience to education. A brief review of the emerging literature on ANNs and

education suggests that educational researchers and practitioners are already traversing this bridge in their efforts to relate the behavior of ANNs to pedagogy, learning behavior, and knowledge organization in people. Moreover, leading researchers in the domains of wet neuroscience and cognitive neuroscience point to computational neuroscience as the most likely way to integrate multiple theories of mind, to the extent that that turns out to be possible.

The foregoing analysis suggests that computational neuroscience represents a viable bridge from physical neural mechanisms to behavior, and that this route has several features to recommend it. For one thing, it is solidly anchored at each point: grounded at one end in well-defined neural structures and functions, and in observable external behavior at the other (in contrast to the shifting sands of cognitive psychology). In addition, computational neuroscience represents a single disciplinary framework that unifies the levels of organization from neural structures to behavior. Neural data must be translated into ANN model properties at one end and ANN activation patterns must be related to behavior at the other, but no paradigmatic translations are required in between. In the BTF bridge of Figure 1, in contrast, multiple disciplinary boundaries must be crossed in making the trek, and each translation introduces new assumptions and layers of interpretation. Perhaps most significantly for educators, the computational neuroscience bridge is already open to two-way traffic. For all of these reasons, computational neuroscience and artificial neural networks warrant serious attention from members of the educational research community who are interested in applying principles of neuroscience to education in the relatively short term.

References

Abbott, L. & Sejnowski, T. J. (Eds.), (1999). *Neural codes and distributed representations: Foundations of neural computation.* Cambridge, MA: The MIT Press.

Abdi, H. & Valentin, D. (1994). Neural, connectionist, and numerical models of face recognition. *Psychologie Francaise 39*(4), 375-391.

Addanki, S. (1984). Applications of connectionist modeling techniques to simulations of motor control systems (Doctoral dissertation). University of Rochester Computer Science Department, Rochester, NY.

Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K., & Watson, J.D. (1994). *Molecular biology of the cell* (3rd Ed). New York: Garland.

Andersen, O. S., & R. E. K. II (1992). Molecular determinants of channel function. *Physiological Review, 72,* S89-S158.

Anderson, O. R. (1992). Some interrelationships between constructivist models of learning and current neurobiological theory, with implications for science education. *Journal of Research in Science Teaching, 29*(10), 1037-1058.

Bailey, C. H., & Chen, M. C. (1983). Morphological basis of long-term habituation and sensitization in aplysia. *Science, 220,* 91-93.

Baker, E., Croot, K., & McLeod, S. (2001). Psycholinguistic models of speech development and their application to clinical practice. *Journal of Speech Language & Hearing Research 44*(3), 685-702.

Bear, M. F., Connors, B. W., & Paradiso, M.A. (1996). *Neuroscience: Exploring the brain.* Baltimore, MD: Williams and Wilkins.

Bereiter, C. (1991). Implications of connectionism for thinking about rules. *Educational Researcher, 20,* 10-16.

Berg, T., & Schade, U. (2000). A local connectionist account of consonant harmony in child language. *Cognitive Science, 24*(1), 123-149.

Bollaert, M. (2000). A connectionist model of the processes involved in generating and exploring visual mental images. In S. O. Nuallain (Ed.), *Spatial cognition: Foundations and applications: Selected papers from Mind III, Annual Conference of the Cognitive Science Society of Ireland, 1998* (Advances in consciousness research) (pp. 239-346). Amsterdam, Netherlands: John Benjamins Publishing Company.

Boren, S., & Connell, M. W. (2010). How the brain wants to learn: Cognitive science informing interactive exhibit design. Hand to hand: *Quarterly Journal of the Association of Children's Museums 24*(2), Summer, 2010.

Brady, J. A. (1995). Connectionist models of reading and spelling transfer (Doctoral Dissertation). University of Delaware, Newark, Delaware.

Bruer, J. T. (1997). Education and the Brain: A bridge too far. *Educational Researcher, 26*(8), 4-16.

Bruer, J. T. (1999). *The myth of the first three years.* New York: The Free Press.

Bruman, R., (1975). *Optical bench, Exploratorium cookbook I*, pp. 12.1 - 12.3, San Francisco: Exploratorium.

Catterall, W. A. (1993). Structure and function of voltage-gated ion channels. *Trends in Neurosciences, 16,* 500-506.

Churchland, P. M. (1981). Eliminative materialism and propositional attitudes. *Journal of Philosophy, 78,* 67-90.

Churchland, P. M. (1988). *Matter and consciousness: A contemporary introduction to the philosophy of mind* (Rev. ed.). Cambridge, MA: The MIT Press.

Churchland, P. M. (1995). *The engine of reason, the seat of the soul: A philosophical journey into the brain.* Cambridge, MA: The MIT Press.

Connell, M. W. (2005). Foundations of educational neuroscience: Integrating theory, experiment, and design. Unpublished doctoral dissertation, Harvard University, Cambridge, MA.

Connell, M. W., & Boren, S. (2010). What the exhibit says vs. what the brain learns. Unpublished white paper prepared for the Association of Children's Museums Interactivy Conference, Crowne Plaza St. Paul-Riverfront Hotel, St. Paul, MN, May 6-8, 2010.

Elman, J. L. (1989). Connectionist approaches to acoustic/phonetic processing. In W. Marslen-Wilson (Ed), *Lexical representation and process* (pp. 227-260). Cambridge, MA: The MIT Press.

Elman, J. L. (1993). Learning and development in neural networks: The importance of starting small. *Cognition, 48*(1), 71-99.

Gazzaniga, M. S., Ivry, R. B., & Mangun, G. R. (2002). *Cognitive neuroscience: The biology of the mind.* New York: W. W. Norton & Co.

Hertz, J., Krogh, A., & Palmer, R. G. (1991). *Introduction to the theory of neural computation.* Reading, MA: Addison-Wesley/Addison Wesley Longman, Inc.

Hodgkin, A. L., & Huxley, A. F. (1939). Action potentials recorded from inside a nerve fiber. *Nature, 144,* 710-711.

Jones, B. H., Hill, T. R. & Coffee, D. (1998). Computer-aided negotiation for classroom instruction: Assessing neural network potential. *Journal of Educational Technology Systems, 27*(1), 55-62.

Kandel, E. R., Schwartz, J. H., & Jessell, T.M. (2000). *Principles of neural science.* New York: McGraw-Hill.

Kosslyn, S. M., Chabris, C. F., Marsolek, C. M., & Koenig, O. (1992). Categorical versus coordinate spatial relations: Computational analyses

and computer simulations. *Journal of Experimental Psychology: Human Perception & Performance, 18*(2), 562-577.

McKnight, K. S., & Walberg, H. J. (1998). Neural network analysis of student essays. *Journal of Research & Development in Education, 32*(1), 26-31.

Nunn, R. T. (1979). Functionalist Psychology: Limiting the range of physical law. *Journal of Thought, 14,* 182-186.

O'Reilly, R. C., & Munakata, Y. (2000). *Computational explorations in cognitive neuroscience.* Cambridge, MA: The MIT Press.

Papa, F. J., Stone, R. C. & Aldrich, D.G. (1994). A neural network-based differential diagnosis assessment instrument. *Journal of Educational Computing Research 10*(3), 277-290.

Quinn, P. C., & Johnson, M. H. (1997). The emergence of perceptual category representations in young infants: A Connectionist Analysis. *Journal of Experimental Child Psychology, 66*(2), 236-63.

Roth, W.M. (2000). Artificial neural networks for modeling knowing and learning in science. *Journal of Research in Science Teaching, 37*(1), 63-80.

Schneider, W., & Graham, D. J. (1992). Introduction to connectionist modeling in education. *Educational Psychologist, 27*(4), 513-530.

Sejnowski, T. J., Koch, C., & Churchland, P. S. (1988). Computational neuroscience. *Science, 241,* 1299-1306.

Vitzthum, R. C. (1995). *Materialism: An affirmative history and definition.* Amherst, NY: Prometheus Books.

Howard's Response to Michael W. Connell

Ask most persons about the greatest contribution to education made by Microsoft, they are likely to mention a program like Microsoft Word, or the support of Khan Academy by Microsoft and the Gates Foundation. Both achievements have merit. But in my humble view, one day you, Mike Connell, will be seen as one of the greatest "flagship" gifts from Microsoft to the world of education.

We first got to know each other over a decade ago, when you were a student at the Harvard Graduate School of Education. From the start it was clear to me that you had a wide band of knowledge, a deep dedication to education, and the ambition to bring together, both theoretically and practically, what is known about the mind, the brain, computational capacity, and learning. Quite an agenda! … Even for someone who had cut his teeth at Microsoft!

I freely admit that I did not understand all the components with which you were working, nor the precise nature of the contribution that you hoped to make. (And this was my limitation). I noted that you were an incredibly clear teacher, able to break down points in ways that they could be grasped by even the least knowledgeable students. And so, I readily put myself into the shoes of these students and allowed you to explain your enterprise to me, often numerous times, sometimes in front of a blackboard, sometimes in my office, sometimes over a drink at the Casablanca—our late, lamented watering hole on Brattle Street in Harvard Square.

Around the academy there are certain favored routes for 'getting ahead;' for example, carrying out a short set of experiments that, taken together, tell a new story about human learning or motivation; or writing a very powerful monograph or book which persuasively attacks some orthodox belief. These are the routes followed by some of your classmates. But it became clear to me, early on, Mike, that you were going down the Frank Sinatra path; that is, that you were going to do your things "my way." And that is in fact what you have done, to the gain of many individuals with a range of concerns about effective education.

Your essay is a brilliant example of your ability to think originally and communicate clearly. Intentionally or not, you have encapsulated the history of cognitive science (which I once knew, at least up to the

publication of my book on the topic in 1985!) and its relation to neuroscience as it has been construed over the decades. You make a strong case that the appropriate level to focus on is computational neuroscience, as it is realized in artificial neural networks. You then give three examples of how ANN modeling may have payoff in learning: from the diverse areas of negotiating skills; the understanding of conceptual content as conveyed in essays by secondary school students; and the execution of a challenging differential diagnosis by an individual medical student. And then you add your own compelling example of how a well-intentioned museum display is likely to be misunderstood, unless the lessons from ANN models are taken into account.

In your current work you have come closer than ever before to yoking your sophisticated understanding of learning in the brain, on the one hand, to the processes whereby ordinary learners can master the materials that they need if they are to be successful students in math, science, and literacy. No doubt each of these accomplishments would be notable on its own; and the fact that you are able to synergize sophisticated theoretical mapping of the mind-brain terrain, on the one hand, with the day-to-day work of the classroom (or the tablet at home) is remarkable, and perhaps epoch-making. With many other admirers, I look forward to further reports from the front!

Wise, Humanising Creativity: Learning with Howard Gardner

Anna Craft

A decade ago, following a five-year correspondence with Howard about multiple intelligences in which he encouraged me as an enthusiastic young researcher to develop my educational ideas about creativity, Howard and I had a conversation which changed my life and research direction. We were at the 2002 International Conference on Thinking (ICOT), held that year in Harrogate in the North of England. Howard had given an excellent question-and-answer session which was, of course, packed full of interested listeners and questioners. Afterwards, I joined the queue of around 30 people waiting to talk with Howard. My intention was simply to thank him, but the conversation spun on into a long discussion which led to an invitation to join Project Zero as a Visiting Scholar.

This conversation preluded a four-year period of close association with Howard and colleagues at Harvard's Project Zero, during which time I travelled back and forth collaborating and sharing, but mostly learning, from the work being undertaken there, particularly the initiatives under Howard's leadership. What this chapter charts is the development of a line of research that stemmed from this opportunity to work with Howard and his colleagues and that culminates in the currently evolving notion of wise creativity for global change. Howard's work on multiple intelligences and creativity had already set a deep course for my work, which focused on everyday creativity and the role of education in its nurturing. As the global call for schools to deliver creative young people for economic innovation gathered momentum, the collaboration with Howard and his colleagues at Project Zero and the GoodWork project in particular led me to re-approach creativity with wisdom in mind—a path that I continue to travel.

Key texts by Howard and his colleagues, discussed in this chapter, have closely influenced this journey, although a wider array of papers and books of Howard's have been additional sources of inspiration. During one of my visits to Project Zero, Howard introduced me to a group of colleagues in the GoodWork project as a 'Fellow Traveller,' an apposite

description. The conceptual and applied explorations documented here on 'Wise, Humanising Creativity' have been influenced by working with Howard and reading his writings and those of his colleagues—hence the chapter's sub-title: learning with Howard Gardner.

Framing Everyday Creativity

Over the years leading up to my first visit to Project Zero as a Visiting Scholar, I had begun to explore the notion of everyday creativity, influenced significantly by, and framed in relation to, Howard's work, *Creating Minds* (Gardner, 1993a). His social psychological study of high creativity traces the work of seven great creators whose contributions span arts, science, and politics. His framework for understanding world-changing creators highlights the integration of cognitive/intellectual strength, domain contribution and field contribution in creativity that changes the world. The intellectual strengths of six 20th-century men and one woman (namely Freud, Einstein, Picasso, Stravinsky, Eliot, Graham and Ghandi), are framed within Howard's theory of multiple intelligences which he continues to revisit (1983, 1993b, 1999, 2006), each one highlighting one or more of the intelligences.

Creating Minds offers a fascinating analysis of the personality and biographical aspects of these creators' lives. It offered a range of characteristics that these creators shared. From Howard's synthesis, one of these shared elements that struck me was how each creator sought out, and thrived on, asynchronies in the 'fit' between individual, domain, and field. Each appeared to be driven to operate 'at the edge' of their work, challenging the fit between their intellectual strengths, the nature and framing of the domain they were working in, and how the field received it.

There was also something fascinating about the matrix of support at the time of creative breakthrough; in each case these creators had key support in their theory-development from close associates or relationships (something akin to Gruber's networks of enterprise, e.g., Gruber, 1989). And finally, the extreme, close-up focus of each of these creators meant sacrificing many aspects of usual personal life—what Howard calls the 'Faustian Bargain' (p. 386).

As an educator who had taught children up to the age of eleven, and who had experienced an increasingly performance-oriented approach to education in my own country of England, my research concerns

focussed on the nature of children's creativity and that of their teachers, and how each might be nurtured. With a background in social sciences and philosophy of education, I began with a conceptual enquiry which later moved into empirical work within the interpretive tradition, through fine-grained qualitative studies. My initial questions examined how children's and teachers' imaginative activity might be described as 'creative' in relation to person, domain, and field.

Seeking to set my own exploration of 'everyday' creativity apart from that of 'high creators,' I drew initially on Howard's multiple intelligences framework with respect to intellectual gifts. However, I argued that the kind of originality involved in 'everyday' creativity had a different sort of reach, extending into personal and shared understandings between immediate peers rather than necessarily domain-wide understanding (Craft, 1996, 1997, 2000, 2002). This was related to the nature of the 'field' which could be understood as the child and his or her immediate peers and/or adults, rather than the wider field of, for example, all four-year-old children, or all kindergarten classrooms (Craft, 2005). Working in contrast to Howard's big C creativity then, I began with colleagues to delineate 'everyday' or 'little c' creativity.

The spectrum of little c (e.g., Beghetto & Plucker, 2006; Craft, 2003; Runco, 2003) to big C creativity is now well-developed (e.g., alongside Gardner, Csikszentmihalyi, 1996; Simonton, 1994, 1995), although the discussions on either side of the Atlantic Ocean seem not yet to have integrated closely. One way in which the contrast between little and big C creativity has been described in England is as 'personal' creativity rather than 'historical' creativity (Boden, 2001, 2004). Boden highlights the role of exploration, new combinations and transformation in personal and historical creativity. Again in England, creativity is characterised as at the heart of what it is to be human by Robinson (2001), who emphasised the need for finding one's own passion (Robinson, 2009) so as to make something of one's life. This notion of creativity as self-creating also underpins my own perspective on the guiding force of 'little c' creativity in learners' and teachers' lives (Craft, 2001, 2010).

An expansion of this spectrum has been undertaken in the U.S. by Beghetto and Kaufman (2007) who distinguish between 'mini-c' creativity (focused on the intrapersonal, essentially meaning-making), 'little c' (everyday creativity) and 'big C' (eminent creativity). Later adding 'pro-c,'

(i.e., professional creativity), Kaufman and Beghetto (2009) tease out the fine line between novel and original understandings with reference to the learner, spurred on by the influential APA address made nearly 60 years earlier by Guilford (1950) to whom the rise in volume of creativity studies is frequently attributed. Guilford urged psychologists to research the nature of creativity in children in schools and in particular to recognise the relationships between learning and creativity.

Research into everyday creativity has been developed in many parts of the world, although as Feldman and Benjamin (2006) note, much of this has been undertaken outside of the USA despite Guilford's original American calls. In England it had seemed to me for some time that at the heart of any creativity whether 'big C' or 'little c', and whatever its domain of application, was 'possibility thinking,' i.e. the capacity to pose the question, 'what if?' and to engage in 'as if' behaviours. The study of the concept of possibility thinking has become a long-term thread in my own research.

Everyday Creativity as Possibility Thinking

Originally developed as conceptual work (Craft, 1999, 2000, 2001, 2002), possibility thinking was offered as a way of understanding the shift from 'what is this and what does it do?' to 'what can I or we do with this?' Inherent in this shift was questioning, imagination, and combinatorial play (Craft 1999, 2000). Close-grained qualitative studies of possibility thinking have followed. Jeffrey (2006) adopted the concept in an ethnographic study of 3-11 year olds and concluded that possibility thinking involves engagement with problems. Further qualitative analysis of Jeffrey's data led to the suggestion that possibility thinking involves finding and honing questions as well as solving them (Jeffrey & Craft, 2004, 2006).

From 2004 onward, further qualitative studies of this phenomenon have been undertaken by an expanding team (Burnard, Craft, & Cremin, 2006; Cremin, Burnard, & Craft 2006) through several overlapping stages of naturalistic, qualitative co-participative enquiry. Emergent from the first stage (2002–2006) which focused on possibility thinking of 3- to 7-year old children and pedagogy that nurtured it, were a number of distinct but interlinked features of children's and teachers' engagement, nurtured in the broader context of a playful enabling environment. The features of possibility thinking included the driving force of posing

questions, alongside self-determination, play, immersion, imagination, innovation, and risk-taking. In this first stage, pedagogical strategies associated with nurturing possibility thinking included standing back, placing high value on learner agency, and making time and space for creativity.

The second stage (2006-2007) of research into possibility thinking focused on question-posing and question-responding among children aged five to seven, and allowed the development of a taxonomy of questioning together with how question-posing and question responding are enabled in the classroom. In each site, play and immersion provided the context for possibility thinking and intentional action, autonomy and agency were encouraged. Core components of possibility thinking identified in this second stage of research were found to be imagination, risk-taking, question-posing, and question-responding. Innovation was conceptualised as not only part of the process, but also a possible outcome and thus, potentially, a condition for attributing creative learning (Burnard et al., 2008). A taxonomy of children's question-posing and question-responding emerged from the analysis (Chappell et al., 2008a, 2008b), revealing the dynamic relationship between the two.

More recent work in possibility thinking (2008-2012) has again adopted a fine-grained qualitative approach to explore the nature of possibility thinking among 4-5 year olds and 9-11 year olds. In the study of 4-5 year olds (Craft, McConnon & Matthews, 2011), the focus was on child-initiated play from practitioner-provided provocations and illuminated how children developed extensive collaborative and collective imaginations. The study also demonstrated the complex interactions involved as teachers engaged in children's play, 'meddling in the middle' of children's imaginary playworlds. The study of 9-11 year olds (Craft, Cremin, Burnard, Dragovic, & Chappell, 2012) focused on the nature of children's possibility thinking in a range of domain contexts (English, geography, science and art) and the strategies adopted by teachers. This study highlighted the pivotal role of the teacher in offering opportunities for possibility thinking. Whilst in both of the research sites investigated in this study of 9-11 year olds, children were able to demonstrate self-determination, intentional action and development in their thinking, strong opportunities for children to be imaginative, or to be playful or improvise in their thinking were not consistently offered. The most recent work on possibility thinking (2012-2013) has focused on the role of

narrative in episodes of possibility thinking in classrooms across the age span 3-11 (Cremin, Chappell, & Craft, in preparation).

Many other studies of possibility thinking in early childhood have been spawned, and primary and secondary contexts in Europe and the Far East. Doctoral theses on this topic from Cyprus (Gregoriou[1], Aristidou[2]), England (Greenwood[3], McConnon[4], Pye[5]), Wales (Alderson[6]), and Taiwan (Ting[7], Yeh[8]) are, at the time of writing, in process, and studies have been completed on possibility thinking in the upper primary years in mathematics (Clack, 2011), dance (Craft & Chappell, 2009), and drama (Lin, 2010, 2011).

These and indeed other studies of creativity across the spectrum from little c to big C have developed in parallel with rising concern by governments around the world about the need to foster creativity. This new emphasis stood in contrast to the previous tight focus on raising achievement, although it was driven by the same narrative: economic need.

The Economic Imperative for Creativity in Education

About the time I took up the opportunity to work with Howard and his colleagues at Project Zero, the nurturing of creativity alongside high performance in key knowledge areas was increasingly seen, globally, as necessary to economic competitiveness and success. This economic driver, along with social, technological, environmental and other imperatives, triggered an increased emphasis in education systems on the development of creativity in children and young people.

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[1] Focusing on possibility thinking in museum education in upper end of primary schools in Cyprus
[2] Focusing on possibility thinking in the context of drama in Cyprus
[3] Exploring possibility thinking in relation to teenagers who have been excluded from schools in England
[4] Focusing on the development children's artistic identity as possibility thinkers in the early years in England
[5] Focusing on possibility thinking within digital learning contexts in upper primary education in England
[6] Focusing on possibility thinking in creative partnership in upper primary education in Wales
[7] Focusing on possibility thinking in secondary art teacher training students in Taiwan
[8] Focusing on possibility thinking in individualized piano tuition in Taiwan

The growing emphasis on creativity adds performance pressures to education systems which already compete to nurture excellence. Large scale international assessment systems provide comparative summative information for educational policy making and have rapidly gained international governmental support. The International Association for the Evaluation of Achievement's Trends in International Mathematics and Science Study (TIMSS) introduced in 1995 involved more than 60 countries in 2011. The Progress in International Reading Literacy Study (PIRLS) for grades 4 and 8 introduced in 2001, involved almost 50 countries that same year. Introduced in 1997, the Organization for Economic Cooperation and Development's Programme for International Student Assessment (PISA) for fifteen year olds, involved 65 countries and economies in 2012, including all thirty-four OECD member countries. And as governments come to recognise the contribution of creativity to wider society in economic terms, we see changes in assessment moving beyond the pure acquisition of knowledge (Stewart, 2011).

Whilst TIMSS and PIRLS focus on mathematics, science, and literacy, PISA offers an interesting blend. PISA sets out to measure knowledge and skills seen as vital to living as an effective 21st century citizen. Therefore, its focus is not only on domains of academic knowledge, but also on appropriate skills (Schleicher & Tamassia, 2003). Thus since 2003, PISA has assessed problem-solving within the context of using mathematics and science knowledge to solve everyday problems.

The inclusion of problem solving highlights increasing international concern to find ways of measuring complex skills in relation to traditional domains of knowledge. Work undertaken by OECD has also recently focused on the development of a composite indicator for creativity (reported by Saltelli & Villalba, 2008). What is not yet in place is a way of assessing creativity in the context of other domains of knowledge, and it is not clear how this might develop; the European Commission's Joint Research Centre probe was sceptical about the cost and effectiveness of using PISA or another international test (Villalba, 2008). It may also be undesirable to do so, with the danger of straight-jacketing creative activity. Nevertheless, there is international interest in finding ways to assess creativity (Hingel, 2009; Villalba, 2009).

The pervasive economic imperative provided a compelling case for educational policy making, unlocking significant resources for fostering

creativity in education in many parts of the world. For example, a literature review undertaken during the 2009 European Year of Creativity and Innovation (Ferrari et al., 2009) emphasized creative learning and innovative teaching across the European Union. These would develop the 21st century knowledge society, contributing to economic prosperity and also individual and social wellbeing. Following the 2009 Year of Creativity and Innovation, Heilmann and Korte (2010) published a report on the role of creativity and innovation in school curricula in European Union countries revealing extensive although uneven provision. Digging a little further, Banaji, Canmer, Perroter, Farrari, Cachia, and Punie (2010) undertook a study of exemplary creative and innovative practices across Europe drawing on data from educational stakeholders across the 27 EU Member States. The report identified a number of trends, most notably the diversity of provision for creativity and innovation across Europe with excellence seen in pockets, i.e. sparsely, rather than pervasively. The study therefore highlighted the need for greater systemic intervention and support. In 2011, creativity and innovation were identified in the 2020 policy goals for Education and Training (EC, 2010) at all levels of education and training. That same year, the new European Union 'Creative Europe' programme was launched to support enterprises and organisations that operate across borders, and the 2014-2020 Budget Plan (EC, 2012) includes a commitment to fund greater numbers of young people studying abroad. In April, 2011, the European Commission launched a Green Paper strategy for unlocking the potential of cultural and creative industries which recognized the contribution that can be made by art schools. By November, 2011, the Creative Europe Programme dedicated to development of the creative and cultural sectors across Europe, was formally proposed by the European Commission and at the time of writing (September 2012) is under discussion in the Council of EU Ministers and the European Parliament (EC, 2012).

The European example is mirrored across the world; in general, following a long period in the late 20th century when creativity was largely absent from the educational landscape, creativity in education is again being seen as 'a good thing.' The international effort toward providing creative opportunities and also seeking to assess the creative outputs of education alongside the knowledge outcomes underlines how the spectrum of little to big c creativity is increasingly valued.

However, the economic is not the only narrative for creativity in education. While Gibson (2005) for example highlights the instrumentalist perspective that frames creativity as a skill that enables economic innovation, he also reminds us of the 'self-actualisation' perspective according to which creativity is inherent in all people and a vital aspect of development and learning. In a similar but perhaps more nuanced analysis, Banaji, Burn, & Buckingham (2010) identify nine distinctive different 'rhetorics' of creativity evident in 21st century life which reflect the historical and social context in which the term is used. Of these, only one focuses directly on *creativity as an economic imperative*, harnessing creativity in the service of a neo-liberal economic programme. A second rhetoric, however, focuses on the *creative affordances of technology*, viewing creativity as social and situational, with machines, through digital technologies, facilitating creativity. Of the remaining seven rhetorics identified by Banaji et al., one foregrounds *creative genius* (i.e., ground-breaking, paradigm-shifting)—the focus of Howard's 1993 book discussed above (Gardner, 1993a). Six rhetorics remain: *democratic and political creativity* (i.e., cultural and political identity-development through explicitly anti-elitist approaches), *ubiquitous creativity* (i.e., creativity as a pervasive and 'natural' attribute of human behaviour), *creativity as a social good* (i.e., with the emphasis on how society can be developed through a focus on inclusion, the arts and regeneration), *play and creativity* (i.e., childhood play as the origin of adult creativity), *creativity and cognition* (i.e, approaches that seek to understand in psychological and scientific terms where creativity comes from and how it is applied).

The analysis by Banaji et al. highlights another set of issues—the capacity of creativity to challenge and to turn values on their heads, in particular within 'democratic and political' discourse. For creativity—particularly through the arts—involves generating novelty that can shake previously held assumptions and accepted ways of understanding or doing things.

The co-existence of different perspectives highlights the potency of creativity in education, which enables imaginative extension and embellishment of shared values, and also the capacity to challenge these. That creativity can both extend and challenge perhaps reflects the capacity of great creators to operate at the edge of convention, which was highlighted by Howard's study of great creators (Gardner, 1993a)

discussed earlier. The edge of the map of what is known is one dimension of operating at the edge; and another aspect is the subliminal which Claxton (2006) discusses. In considering how creativity is relevant in education, Claxton argues that creativity is neither 'light relief' nor 'moments of illumination' in problem solving but rather is 'thinking at the edge' (TATE) with delicate attention to the evolution of hazy and pre-conceptual ideas. He argues that some forms of learning contribute to this evolution and that TATE might form the heart of learning how to learn, enabling thinking dispositions to be cultivated.

The field of research exploring creativity in education expanded rapidly during the early years of the 21st century, reflecting creativity's currency among policy makers in many parts of the world. This wider context seemed to offer educators opportunities to nurture 'what if' and 'as if' thinking in children and young people—and indeed in their own pedagogic practices. Many educators welcomed the opportunity to value creativity alongside the standards- and comparison-driven practices which Ball (2003) has described as 'performative'. The creativity agenda seemed to encourage teachers to work imaginatively with young learners—in contrast with the increasingly pervasive technicist approach to teaching and teacher development (see e.g., Jeffrey, 2003; Jeffrey & Woods, 1998).

As I began to work with Howard and his team from 2003, I began to challenge the widely-held notion that economically-harnessed creativity was 'a good thing.' It became increasingly evident that the educational landscape that welcomes creativity is influenced substantially by a neo-liberal agenda that views creativity as supporting a particular set of global economic arrangements (Craft, 2005). Thus not only are the kinds of creativity which are valued in education narrowed to prioritise those that deliver economic outputs, but they are blinkered from 'at the edge' thinking inherent to creativity.

Challenging the Economically-driven Conceptualisation of Creativity

In their GoodWork project, Howard and his colleagues have researched for some years the ethics of creative excellence in the workplace (Gardner, Csikszentmihalyi, & Damon, 2001). For creativity is in itself a value-free construct; we can use it to many ends, reflecting many possible values-positions. Creativity at work, in the home, in

education and in life in general, can be harnessed for the good of some or many, and also for destruction. As I engaged with the GoodWork project and its early development, I began to be particularly aware of some of the problems of a model of creativity that was harnessed to global capitalism.

The first problem I saw was *cultural blindness*, a 'universalization' of creativity (Jeffrey & Craft, 2001) that assumed global capitalism as a natural goal. The liberal individualism embedded within this Western economic model paid no attention to other and alternative models, and thus could be described as 'culture blind' (Craft, 2005; Ng & Smith, 2004). The second was a *concern for the consequences of marketizing creativity and prioritising profit-led innovation* over making do and mending, which cycled endlessly into fashion-based short-term accumulation followed by disposal, with obvious consequences for sustainability (Craft, 2003, 2005). The third was the *consequence of these in relation to education*. Reading about the ways in which young people coped with moral dilemmas at work (Fischman et al., 2004) highlighted for me the role of education in relation to encouraging creative action in students. It seemed to me that promoting creativity harnessed to the market was not necessarily a responsible act for educators to engage in. In a world struggling with challenges on many fronts—economic, environmental, and geopolitical—, questions must surely be asked within education about the impact, or the ends, of creativity.

I have argued that other ends might include those that pull away from globalisation toward community development and social justice (Craft, 2005). Exploring these ideas with Howard, this concern began to coalesce around the impact of creativity, and the need for educators to nurture young people capable of sensitive, responsible, wise yet creative action. We hatched a seminar held at the University of Cambridge in 2006, with Guy Claxton and some 250 colleagues (researchers, practitioners, policy makers), in which the idea of creativity and wisdom were discussed. Influenced by the GoodWork project, trusteeship emerged as a third theme, emphasising the vital importance of a sense of stewardship in creative endeavours.

Emergence of Wise Creativity

The book, *Creativity, Wisdom, and Trusteeship,* that emerged from the seminar developed further collaborative thinking on creativity, wisdom and trusteeship in education (Craft, Gardner, & Claxton, 2008). We

sought to work at the edge (i.e., of our applied field of education and transform its boundaries. We argued for education that could nurture creativity at the edge, which attended to the impact of ideas on people, places and potential. Our focus was how education might go beyond its traditional aims of instilling basic literacies, the fundamentals of major disciplines, and socialization to engage with the forces of globalisation, pervasive (digital) media, and pressing planetary challenges. The challenge was to begin to map out what 'wise creativity' might look like, along with the implications for practice and practitioners.

Out of the debate among the book's twelve contributors came the position that marketized creativity cannot be the only response of education, governments or indeed markets to the range of urgent challenges now facing us. Developing the notion of 'trusteeship' in the educative process, and the need for wise creativity, is, we argued, overdue and urgent. The book surfaced some key principle in relation to creativity and wisdom:

- Creativity is more than 'occasional burst of "light relief," leaving a dull and unimaginative curriculum in place' (p. 168); it should be seen instead as a deep goal of education as it is an essential part of everyday life.
- Creativity is not all fun and easy; it often involves disciplined hard work which may involve 'passages of frustration or indecision' (p. 169).
- Creativity frequently involves working with others.
- Creativity is not culturally universal but rather is culturally saturated.
- Wisdom primarily involves navigating complex human affairs with concern for others. Wisdom 'frequently involves the discovery of innovative possibilities that resolve conflicts and reduce tensions' (p. 169).
- Creativity occurs in a social context and thus needs to be exercised with attention to principled, ethical consideration of potential impacts.

We argued that wise creativity attends to the complex social and cultural systems that creativity emerges from and affects. In particular, wise creativity recognises that our activity emerges from thoughts, feelings, and actions that are suspended between the ecological and sociocultural context and the biochemical and neuronal networks that make up who we each are: 'midi-systems in constant reverberation with the hierarchy of megasystems and minisystems that surround them' (p. 171). As a result, wise creativity is always contingent on the temporal

particulars of these macro and micro- contexts, and so is nuanced, subtle and 'custom-made' (p. 171). Wise creativity therefore depends on a deep 'systemic awareness' (p. 171), which includes a detailed, accurate and honest perception of the situation which is not clouded by personal beliefs and needs. Systemic awareness also involves being able to perceive what lies 'beneath the surface' in any situation. This is aided considerably by empathy and intuition. Although conscious reason, too, has a role to play, it handles less simultaneous considerations than intuition where the outcome path in complex predicaments is not clear. Further, wise creativity is informed by a deeper set of values which reflect systemic engagement with the social, cultural and ecological contexts to our action. Thus, it was suggested that wise creativity involves a 'relaxing and broadening' (p. 173) both of identity and decision-making.

Wise creativity, then, at an everyday level, does not require the Faustian Bargain which Howard had written about in relation to the big C creators (Gardner, 1993), where their single-minded commitment to their field had involved sacrificing everything else in their lives. This tension raised the question of which way creativity 'faces,' leading me to coin the term 'LifeWork' to represent "creative engagement that both faces 'in' (to home, family and self) and faces 'out' (to work, public life and the wider environmental, social and spiritual contexts)" (p. 161). I had suggested that facing in and also facing out might be "the big challenge for teachers and schools who want to foster creativity in the twenty-first century" (p. 161).

Working with Howard and Guy Claxton, I came to understand that wise creativity inherently faces *both* outward and *also* inward. Leaving aside the question of whether it might be possible to generate big C creativity that is wise (although the work of Ghandi, for example, or of emancipatory political movements suggests it is), the positioning of wise (*everyday*) creativity embraces the holistic picture, both logically and intuitively, and acts with focused attention to possible impacts, sensitive to possible harm as well as possible gain. Inherently it connects people with their own internal and external realities as well as with others and so begins to move away from an individualized conceptualisation of creativity.

From this collaborative work, then, wise creativity emerged as a different perspective on creativity from the individualised, marketized,

universalized notion of creativity in education harnessed to a performative agenda, pervasive in global educational policy making and practices.

Developing Wise, Humanising Creativity in Education

The publication of *Creativity, Wisdom, and Trusteeship* coalesced the conceptual heart of further collaborations, this time with colleagues in England, moving toward a more developed notion of collaborative and collective creativity. This emerged from working with Chappell's (2008) concept of 'humanising creativity' drawn from her study of dance in education, which emphasises the individual, collaborative and communal dimensions to creativity. Chappell's work explores how communal creativity is effectively a 'humanising' process through shared ownership, group identity, and empathy. For Chappell, humanising creativity encompasses the emotional journey of lows as well as highs, conflict, and shared struggles. Her study reveals how valuable new ideas thus emerge from communal collective work.

Combining wise creativity with humanising creativity through empirical work at the University of Exeter in a range of educational contexts (from dance to school transformation), we began to develop the concept of wise, humanising creativity. In common with wise creativity, wise, humanising creativity is ethically grounded rather than being driven by the marketplace. But it goes a step further than wise creativity, in that it focuses on collective rather than individual action, expression rather than competition, questioning the performativity that Ball (2003) highlights in education, rather than accepting it. It aligns personal with wider values, and values emotional, physical, aesthetic, and virtual dimensions of learning.

Our work at Exeter has been both practical and theoretical, attending to how students, teachers, schools and specialist external partners working with schools, can nurture collective, expressive, ethically grounded action. We see this as an emancipatory approach that can bring a 'quiet revolution' (Chappell, Rolfe, Craft, & Jobbins, 2011) into education. This revolution might transform cohort-based teaching by adults imbued with power and authority in which judgments of quality are based on performative measures that overshadow, creative goals of education. Such approaches have the capacity to exclude children's and teachers' agency and deny them the opportunity to possibility-think by

asking not only 'what if?' but also to behave 'as if.' Drawing on wise, humanising creativity to develop approaches offering greater agency and enabling greater engagement (Wrigley Thomson, & Lingard 2012), we have devised an approach to educational development that shifts the leadership balance. It extends voice and participation beyond the traditional power hierarchy of the school community to include students, parents, external partners, and it offers new, shared freedoms rather than control. And, it seeks to construct and build on a matrix of support for creative ideas (with resonances back to Howard's big C work (Gardner, 1993a).

Essentially our approach since early 2007 has been to work with schools to produce systemically sensitive opportunities for wise, humanising creativity. These opportunities attend to complex social and cultural systems and are informed by deeper values embedded in the social, cultural, and ecological contexts of action. This work, situated under the umbrella of the Educational Futures Research Centre at the University of Exeter's Graduate School of Education, prioritises wise, humanising creativity. It seeks to initiate emancipatory educational change by generating collaborative space between creativity and performativity for rich engagement between students and adults. Two key initiatives within this work are:

Aspire: offering school students, with their teachers, ways of researching their schools so as to support transformational change[9], using qualitative methods to investigate a collectively-generated question (Craft & Chappell, 2010). Examples of research questions include, 'What are students learning in lessons?' 'How do students experience the pastoral (i.e., social and emotional) care in our school?' and 'What role could mobile learning technology play in our learning?' Aspire seeks to transform school climate, through a University facilitation team who help to open the co-enquiry space and also research what occurs. Such analysis has led to the characterisation of creative learning conversations (Chappell & Craft, 2009, 2011).

Dance Partners for Creativity (DPC): funded by the Arts and Humanities Research Council from 2008–2011[10], DPC conducted collaborative

[9] (http://elac.exeter.ac.uk/aspire/index.php)
[10] (http://education.exeter.ac.uk/dpc)

qualitative research on fostering student creativity in dance through creative partnerships between dance artists and lower secondary school dance teachers. Dance education researchers, teachers and artists co-researched the over-arching question, What kinds of creative partnership are manifested between dance-artists and teachers in co-developing the creativity of 11-14 year olds, in dance education, and how do these develop? The qualitative project involved university-based and school-based researchers (teachers and dance-artists) working in collaboration within four school sites. In addition to the project's overarching question, each site team developed their own, locally-guiding research questions as well.

Aspire and DPC investigated how we conceive of and work for creative educational futures, seeking to actively change pedagogy, learning and curriculum. Each initiative therefore extends what educators typically engage in, by using the methodological device of the 'creative learning conversation.' This device promotes equality and orientation toward action through flattened hierarchies distinct from the usual top-down power conversations often found in schools and in their relationships with universities. Thus, in Aspire schools, students collaborate with staff in exploring but also critiquing practice and in developing educational provision. In DPC, enquiry-focused conversations between those involved: students, partner researchers and university staff, indicated differences in perspective, sometimes deep or even irreconcilable. At the heart of the creative learning conversations which drive the enquiry in each initiative are the following characteristics (Chappell & Craft, 2011):

partiality (expression/interpretation is partial, i.e., a 'lens' on experience, not 'the truth')

emancipation (empowerment, or freeing from possible oppression)

working from the bottom up (valuing all; especially those who have least power)

participation (opportunities for high involvement)

debate and difference (expression of difference, openness to possible conflict)

These are experienced in a culture of openness to action, involving embodied and verbalised idea exchange, and explicit shifts from research to action. We have come to understand the potential dynamic in the expression and interpretation of perspectives, as living dialogic space conceptualised in terms of social and spatial reciprocity as well as political co-construction and dialogue (Chappell & Craft, 2011; Craft, Chappell, Rolfe, & Jobbins, 2012). Such shared enquiry can expose different and sometimes conflicting perspectives, including changing points of view over time. Progress is not always linear. These approaches contrast markedly with the perhaps more common school practice of fixing things and moving on. Our contention is that deeper transformation is resonant with all of those involved and can mean abandoning and re-examining what appear to be 'solutions.'

It is our hope that living dialogic space may challenge the lethargy in current education systems that Claxton highlights (Claxton, 2008). Living dialogic space offers a process of engagement between students, staff and others in generating change in education, perhaps enabling more appropriately-oriented ways for 21st century education to emerge. It may help, too, in transcending the current tensions between creativity and performativity discussed above. But perhaps most importantly, these initiatives are oriented toward wise, humanising creativity. They seek very practically to embed creative 'working at the edge' into the heart of teaching and learning. They harness individual, collaborative, and communal creativity to help structure education in ways that enable shared ownership, multiple forms of group identity, intuition, and empathy. They operate in clear tension with marketized narratives for creative educational futures.

Creative Educational Futures: Reflection, Leveraging, and Framing

In 2012, when this essay was written, educators across the world were grappling with how to frame the future provision of education in a world torn between two competing narratives regarding children and young people (Craft, 2011).

One narrative, reflecting adults' concerns to protect young people, saw them as at risk (and therefore vulnerable, passive, novices and as being able to be consumers only through a layer of adults). This 'risk-averse' perspective leaned toward forms of education that could protect but also perhaps contain young people. The other narrative,

contrastingly, saw young people as capable (and therefore liberated, active, capable and as producers and consumers in their own right). This 'capability-oriented' perspective leaned toward forms of education that might empower young people.

Our concept of wise, humanising creativity emerges from the empowerment narrative that dares to dream of alternative possible global arrangements than those which currently threaten the future of the planet. Wise, humanising creativity involves collective, imaginative, committed and responsible engagement with alternatives. And this means developing educational futures that continue to nurture this sort of thinking and action alongside deep and robust disciplinary knowledge.

But it may be that this is not enough. In considering other qualities that may be important in developing educational futures, I turn again to Howard's work. In *Extraordinary Minds* (Gardner, 1997), Howard developed a fourfold typology of big C creative endeavours. In relation to the wise, humanising creativity that my own work has come to focus on, particularly pertinent are the three characteristics that these four great creators shared in common. Firstly, they each made time to reflect. Secondly, they were good at leveraging, i.e. working out what they were talented at and putting effort into developing this. Lastly, they were able to frame their experiences, particularly those which could be seen as failures, instead asking what can be learned in such situations so as to benefit from what might otherwise be experienced as disaster.

Time to reflect, leveraging what we are each talented at, and re-framing what appear to be failures, whilst drawn from a study of big C creators, seem also highly relevant to developing a wise and humanising approach to the development of creative educational futures. But these do not happen by accident. Howard concludes his book on extraordinary creativity with a discussion of humane creativity, or humane extraordinariness, calling for 'an ongoing serious grappling with the social, economic, political, and cultural implications of what one has made or how one has exerted influence' (Gardner, 1997, p. 159). It is my hope that, with this and so many other inspirations developed by Howard and his collaborators, students, and educators can stay open to reflecting, leveraging, and reframing for productive, long, and wise creative futures.

References

Ball, S.J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, *18*(2), 215–228.

Banaji, S., & Burn, A. (2010). *The rhetorics of creativity: A review of the literature, 2nd edition.* London: Arts Council England.

Banaji, S., Canmer, S., Perroter, C., Farrari, A., Cachia, R., & Punie, Y. (2010). *Expert perspectives on creativity and innovation in European schools and teacher training: Enabling factors and barriers to creativity and innovation in compulsory education in Europe, based on interviews with educational stakeholders.* European Commission Joint Research Centre Institute for Prospective Technological Studies. Luxembourg: Publications Office of the European Union.

Beghetto, R. A., & Kaufman, J. C. (2007). Toward a broader conception of creativity: A case for 'mini-c' creativity. *Psychology of Aesthetics, Creativity, and the Arts*, *1*2, 73-79.

Beghetto, R. A., & Plucker, J. A. (2006). The relationship among schooling, learning, and creativity: "All roads lead to creativity" or "You can't get there from here"? In J. C. Kaufman and J. Baer (Eds.), *Creativity and reason in cognitive development,* pp. 316-332. Cambridge: Cambridge University Press.

Boden, M. A. (2001). Creativity and knowledge. In A. Craft, B. Jeffrey and M. Leibling (Eds.), *Creativity in education,* pp. 95-102. London: Continuum.

Boden, M.A. (2004). *The creative mind: Myths and mechanisms*, 2nd edition. London: Routledge

Burnard, P., Craft, A., & Cremin, T. (2006). Documenting 'possibility thinking': A journey of collaborative inquiry. *International Journal of Early Years Education, 14(*3), 243–62.

Burnard, P., Craft A., Cremin, T., & Chappell, K. (2008). Developing methodology for exploring 'creative learning' and 'possibility thinking'. Paper presented at *American Educational Research Association* annual meeting, New York, March 1, 2008.

Chappell, K. (2008). Towards humanising creativity. *UNESCO Observatory E-Journal* Special issue on *Creativity, policy and practice discourses: productive tensions in the new millennium*, *1*(3). http://www.abp.unimelb.edu.au/unesco/ejournal/vol-one-issue-three.html

Chappell, K., Craft, A., Burnard, P., & T. Cremin. (2008a). Features of 'possibility thinking' in fostering creative learning. Paper given at *American Educational Research Association* annual meeting, New York, April 1, 2008.

Chappell, K., Craft A., Burnard P., & Cremin T. (2008b). Question-posing and question-responding: The heart of 'possibility thinking' in the early years. *Early Years: An International Research Journal, 28*(3), 267–86.

Chappell, K., & Craft, A. (2009). What makes a creative learning conversation? Presentation prepared for *British Educational Research Association* conference, Manchester, September 2009.

Chappell, K., & Craft, A. (2011). Creative learning conversations. *Educational Research*, *53*(3), 363–85.

Chappell, K., Rolfe, L., Craft, A., & Jobbins, V. (2011). *Close encounters*. Stoke- on-Trent: Trentham Books

Clack, J. (2011). *What features of mathematics activity enable Possibility Thinking in the Key Stage 2 classroom and how do teachers enable them?* Unpublished Doctoral Thesis, University of Exeter, July 2011.

Claxton, G. (2006). Thinking at the edge: Developing soft creativity. *Cambridge Journal of Education, 26*(3) 351-362

Craft, A. (1996). Nourishing educator creativity: A holistic approach to CPD. *British Journal of In-service Education, 22*(3), 309-322.

Craft, A. (1997). Identity and creativity: educating for post-modernism? *Teacher Development: An international Journal of Teachers' Professional Development, 1*(1), 83-96.

Craft, A. (1999). Creative development in the early years: Implications of policy for practice. *The Curriculum Journal, 10*(1) 135-150.

Craft, A. (2000). Creativity Across the Primary Curriculum. London: RoutledgeFalmer.

Craft, A. (2001). Little c creativity. In A. Craft, B. Jeffrey, & M. Leibling (Eds.), *Creativity in Education*. London: Continuum.

Craft, A. (2002). *Creativity and Early Years Education*. London: Continuum.

Craft, A. (2003). The limits to creativity in education. *British Journal of Educational Studies, 51*(2), 113–127.

Craft, A. (2005a). Creativity in schools: tensions and dilemmas. Abingdon: Routledge.

Craft, A. (2010). Possibility thinking and fostering creativity with wisdom: Opportunities and constraints in an English context. In R. Beghetto and J. Kaufman (Eds.), *Nurturing creativity in the classroom*, pp. 289-312. Cambridge: Cambridge University Press

Craft, A. (2011). *Creativity and educational futures.* Stoke-on-Trent: Trentham Books.

Craft, A., & Chappell, K. (2009). Fostering possibility through co-researching creative movement with 7-11 year olds. In S. Blenkinsop (Ed.), *The imagination in education: Extending the boundaries of theory and practice.* Newcastle upon Tyne: Cambridge Scholars Publishing.

Craft, A., Cremin, T., Burnard, P., Dragovic, T., & Chappell, K. (2012). Possibility thinking: culminative studies of an evidence-based concept driving creativity? *Education 3-13: International Journal of Primary, Elementary and Early Years Education*, DOI: 10.1080/03004279.2012.656671 Link: http://dx.doi.org/10.1080/03004279.2012.656671

Craft, A., Chappell, K., Rolfe, L., & Jobbins, V. (2012). Reflective creative partnerships as 'meddling in the middle': Developing practice. *Reflective Practice: International and Multidisciplinary Perspectives*, DOI:10.1080/14623943.2012.670624

Craft, A., Gardner, H., & Claxton, G (2008). *Creativity, wisdom and trusteeship: Exploring the role of education.* Thousand Oaks: Corwin Press.

Craft, A. McConnon, L., & Matthews, A. (2012). Creativity and child-initiated play: Fostering possibility thinking in four-year-olds. *Thinking Skills and Creativity, 7*(1) 48-61.

Cremin, T., Burnard, P., and Craft, A. (2006). Pedagogy and possibility thinking in the early years. *Thinking Skills and Creativity, 1*(2) 108-119.

Cremin, T., Chappell, K., Craft, A. (in review). The role of narrative in Possibility Thinking. *Thinking Skills and Creativity.* September 2012.

Czikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York: HarperCollins.

European Commission (2012). Creative Europe: Support for Europe's Cultural and Creative Sectors from 2014. http://ec.europa.eu/culture/creative-europe/ (Accessed 21 September 2012).

Feldman, D., & Benjamin, A. (2006). Creativity and education: An American retrospective. *Cambridge Journal of Education*, *36*(3), 319-336.

Ferrari, A., Cachia, R., & Punie, Y. (2009). *Innovation and creativity in education and training in the EU member states: Fostering creative learning and supporting innovative teaching. Literature review on innovation and creativity in education and training in the EU Member States ICEAC*. Luxembourg: Office for Official Publications of the European Communities.

Fischman, W., Solomon, B., Greenspan, D., & Gardner, H. (2004). *Making good: How young people cope with moral dilemmas at work*. Cambridge: Harvard University Press.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1993a). *Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi.* New York: BasicBooks.

Gardner, H. (1993b). *Multiple Intelligences: The theory in practice.* New York: BasicBooks.

Gardner, H. (1997). *Extraordinary minds: Portraits of four exceptional individuals and an examination of our own extraordinariness*. New York: BasicBooks.

Gardner, H. (1999). *Intelligence reframed.* New York: BasicBooks.

Gardner, H. (2006). *Multiple intelligences: New Horizons.* New York: BasicBooks.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good Work: When excellence and ethics meet.* New York: BasicBooks.

Gardner, H., Kornhaber, M., & Wake, W. (1996). *Intelligence: Multiple perspectives.* Fort Worth, TX: Harcourt Brace.

Gibson, H. (2005). What creativity isn't: The presumptions of instrumentalism and individual justifications for creativity in education. *British Journal of Educational Studies, 53*(2), 148-167.

Gruber, H. (1989). Networks of enterprise in scientific creativity. In Gholson, B., Shadish, W.R., Neimeyer R.A., & Houts, A.C.C. (Eds.), *Psychology of science: Contributions to meta-science,* pp. 246-265. Cambridge: Cambridge University Press.

Guilford, J.P. (1950). Creativity. *American Psychologist*, *5*9, 444-454.

Heilmann, G., & Korte, W. B. (2010). *The role of creativity and innovation in school curricula in the EU27. A content analysis of curricula documents.*

The Institute for Prospective Technological Studies; European Commission's Joint Research Centre.

Hingel, A. (2009). Creativity measurement in the policy context. In E. Villalba (Ed.), *Measuring Creativity: The book*. Available: http:// ec.europa.eu/education/lifelong-learning-policy/doc2082_en.htm [Accessed 5.02.12]: European Commission

Jeffrey, B. (2003) Countering student instrumentalism: A creative response, *British Educational Research Journal*, *29*(4), 489–504.

Jeffrey, B. (Ed.). (2006). *Creative learning practices: European experiences*. London, Tufnell Press.

Jeffrey, B., & Craft, A. (2001). The Universalization of creativity, in A. Craft, B Jeffrey, andM. Leibling, *Creativity in Education,* pp. 1-13. London: Continuum.

Jeffrey, B., & Craft, A. (2004). Teaching creatively and teaching for creativity: Distinctions and relationships, *Educational Studies, 30*(1) 77-87.

Jeffrey, B., & Craft, A. (2006). Creative learning and possibility thinking. In Jeffrey, B. (Ed.), *Creative Learning Practices: European Experiences.* London: Tufnell Press.

Jeffrey, B., & Woods, P. (1998). *Testing teachers: The effects of school inspections on primary teachers*. London: RoutledgeFalmer.

Jeffrey, B., & Woods, P. (2003). *The creative school: A framework for success, quality and effectiveness*. London: RoutledgeFalmer.

Kaufman, J. C. and Beghetto, R.A. (2009). Beyond big and little: The four C model of creativity. *Review of General Psychology*, *13*(1) 1-12.

Lin, Y-S (2010). Drama and possibility thinking—Taiwanese pupils' perspectives regarding creative pedagogy in drama. *Thinking Skills and Creativity*, *5*(3), 108-119.

Lin, Y-S (2011). Fostering creativity through education—A conceptual framework of creative pedagogy. *Creative Education, 2*(3) 149-155.

Ng, A. K., & Smith, I. (2004). Why is there a paradox in promoting creativity in the Asian classroom? In L. Sing, A. Hui, and G. Ng (Eds.), *Creativity: When East meets West*, pp. 87-112. Singapore: World Scientific Publishing.

Robinson, K. (2001). Introduction. In K. Robinson (Ed.), *Out of our minds: Learning to be creative.* Chichester: Capstone.

Robinson, K. (2009). *The element: How finding your passion changes everything*. London: Allen Lane,

Runco, M.A. (2003). Education for creative potential. *Scandinavian Journal of Educational Research*, *47*(3), 317-324,

Saltelli, A., & Villalba, E. (2008). How about composite indicators? In E. Villalba (Ed.), *Measuring creativity: The book.* Available: http:// ec.europa.eu/education/lifelong-learning-policy/doc2082_en.htm [Accessed 05.02.12]: European Commission.

Schleicher, A., & Tamassia, C. (2003). *The PISA 2003 assessment framework: Mathematics, reading, science and problem solving knowledge and skills* [Online]. OECD Directorate for Education. Available: http://www.oecd.org/pages/0,3417,en_32252351_32236113_1_1_1_1_1 ,00.html [Accessed 05.02.12].

Simonton, D. K. (1994). *Greatness: Who makes history and why.* London: Guilford Press.

Simonton, D. K. (1995). Exceptional personal influence: An integrative paradigm. *Creativity Research Journal, 8*(4), 371-376.

Stewart, W., 2011. (2011, October 7). Mr. Gove fixes PISA's new problems by ignoring them: England won't take part in the survey's latest test. *TES Magazine*.

Thomson, P., Lingard, B., Wrigley, T. (2012). Reimagining school change: the necessity and reasons for hope..In Wrigley, T., Thomson, P., Lingard, B. (Eds.), *Changing Schools: Alternative ways to make a world of difference*. Abingdon: Routledge.

Villalba, E. (2008). *Towards an understanding of creativity and its measures*. Luxembourg: European Commission Joint Research Centre.

Villalba, E. (2009). *Measuring creativity: The book* [Online]. European Commission. Available: http://ec.europa.eu/education/lifelong-learning-policy/doc2082_en.htm [Accessed 05.02.12].

Wrigley, T., Thomson, P., & Lingard, T. (Eds.), (2012). *Changing schools: Alternative ways to make a world of difference*. London: Routledge.

Howard's Response to Anna Craft

It was not preordained that we would meet and work together. I am a Yankee, you are a Brit; you are a generation younger; while my training is in psychology and social science, yours was initially in the philosophy of education; and by a macabre twist of fate, your teacher in philosophy was one John White—to my knowledge, the only scholar in the world who has devoted several books and articles to the critique of MI theory! So, as we say on my side of the pond, "two strikes against our meeting, three strikes against our hitting it off."

But clichés can be wrong. Meeting we did, well over a decade ago, hit it off well, and became personal as well as professional friends. (You even housesat for us some years ago, thereby earning a hallowed place in the heart of our dog Nero, and his master Benjamin). Moreover, our work has taken quite similar paths; trying to understand the creative potentials of young children, the ways in which creative skills can be enhanced, and more recently, the importance of yoking creative capacities to positive ends (what we call 'good work'). And your own scholarly work now spans many disciplines.

As we would both note, my interest tends toward big C creativity of the masters, while, along with Teresa Amabile, your interest has focused more on the kinds of creativity that we can expect of ordinary children; little or perhaps, at least on occasion, middle C creativity. Of course, no one begins as a big C creator (even Yo-Yo Ma and Picasso had to stick to work tirelessly and rigorously for a decade or more). And so, as discussed in my comments on Teresa Amabile's essay, each of us hopes to clarify the same set of phenomena, starting from different ends of the spectrum. And you have added the powerful concept of 'possibility thinking,' which is certainly appropriate across the age, genre, and ambition spectrum—a concept that has affected many people's thinking, including mine.

What I find most intriguing in your most recent writing is your confrontation with the larger political and economic ambience. While you and I are inclined to value creativity for its own sake, and to encourage it across domains and disciplines, many of those who now call for creativity see it as hand-in-parcel with the neo-liberal agenda; invention, disruption, creation of new markets. (You do a fine job of outlining the various 'rhetorics' that now undergird the promotion, the 'selling' of

creativity). I don't have anything against creativity in Silicon Valley or Hollywood (though I do have something against creativity on 'the Street' that brought us the poisons of September 2008). But it is a bastardization of human creativity to think of it simply as the best means of improving the gross national product. And so perhaps, on our different sides of the Atlantic, we can give some pause to the easy pronouncements of our leading 'opinion makers.' Indeed, I hope that we can strongly join forces in favor of what you term 'wise creativity,' and more recently 'wise humane creativity,' providing not only a critique of the current superficial versions and justifications of creativity, but also positive examples of the 'possibilities' and the 'creativities' that we cherish.

Mihaly Csikszentmihalyi

If I had to single out one aspect of our current culture to complain about, it might well be the fact that human relations have become so dismally boring. I just can't believe that in the 17th, 18th, or even 19th century, or any time earlier, there was so little stimulating conversation among grown people as there is these days. True, specialists can talk to each other about interesting things (to fellow specialists), but when the conversation is among persons who do not share the same narrow intellectual niche, platitudes and silence take over. Public intellectuals, who can address the important issues of the moment concerning men and women across the spectrum of parochial world-views, are few and far between.

This is why those of us who know Howard are privileged. Talking with him is never going to be dull, and one can always learn a new perspective, a new connection from the interchange. True, there will be some topics about which Howard will probably not be able to summon wisdom: I'm thinking sports, or rap, or other fleeting manifestations of current lifestyle.

But about more enduring matters, chances are that Howard has thought deeply, and has come up with original and valuable insights. Personally I can say that I would probably not have pursued my early interest in creativity if a few conversations with Howard had not reassured me that the pursuit might be worthwhile. In fact, his example has been an important reason for me to continue as a psychologist, when the "dustbowl empiricism" of the last half of the past century was raging.

So, while cloning is not yet an option, I hope all of his friends—and of course myself among them—will have more chances to share bread with Howard (and Ellen!), to sharpen our understanding of the human condition in animated discourse.

Howard's Response to Mihaly Czikszentmihalyi

Historians apparently differ on exactly when Mihaly (usually called "Mike") and I first met. Clearly it was sometime in the 1970s and clearly we realized that, despite our different backgrounds, training, and interest, we were destined to find 'real time' together and, perhaps, to work together as well. And so, indeed, in the 1980s, we found ourselves on various committees and panels, where we had a chance to learn each other's views about motivation, cognition, creativity, art making, work, leisure, and no doubt other topics as well.

I suspect that some of our views reflected our different trainings. Mihaly was almost exclusively a product of the University of Chicago, and chiefly its Committee on Human Development. I, however, was almost exclusively a product of the Harvard Department of Social Relations, already defunct by the 1980s, but still a potent influence on the dozens of students who had achieved their doctorates over the decades in the subfields of psychology, sociology, or anthropology.

But I suspect as well that our own views had more personal origins as well. Mihaly, you had quite an exotic background—emanating from the aristocracy in Hungary, training in a Jesuit seminary, part of your youth in Fascist Italy where your father was ambassador to the Vatican, and then traveling around the world on various steamships before you apparently heard a life-transforming talk by the psychoanalyst Carl Jung. My background was far less exotic—the offspring of German Jews who managed to make it to the United States just in time, arriving in New York on Kristallnacht. Not highly educated themselves, they respected education, and while we lived in the intellectual backwater of Scranton, Pennsylvania, they made sure that my sister and I were exposed to books, arts, politics, music, and ideas, as well as almost weekly trips to Manhattan, which was not quite the backwater that Scranton was.

Mihaly, you and I were fortunate enough to spend two intensive periods together: a six week fellowship to the Rockefeller Foundation villa at Bellagio, Italy during the summer of 1993, and then, a year later, a full year sabbatical (with Bill Damon, Jim Comer, and Tanya Luhrmann, among others) at the Stanford University Center for Advanced Study in the Behavioral Sciences. Not only did we and our families become closer

at that time, but we also had the chance to probe more deeply our many areas of common interest (as well as some instructive disjunctions—I am enamored of modern, and of much of contemporary art, while you would just as soon that the history of art had ceased with the cubist canvases of Pablo Picasso…if not before). And I'll never forget your telling quip, "Howard, cognition is easy, it's motivation that's hard to understand!"

Most important, owing to our time together with Bill Damon, another old time friend (and, not incidentally, a product of Harvard Social Relations), we began to meet, on an almost daily basis, to talk about the relationship between work of high quality, on the one end, and work that was directed toward the common good. Our discussion took many directions, we wrote many position papers, we had several false starts, a wonderful boost from our hero John Gardner, and eventually enough support to launch a small project called "Humane Creativity." Over the next two decades, the project grew in size and scope and actually underwent two changes of names: to "the GoodWork Project" by which it is now widely known; and, more recently, The Good Project, which serves as a holding company for several lines of work that grew initially out of our year of conferring in California. It is too early to say, but I harbor the hope that this work will eventually be seen as being important as your work on 'flow,' Bill's work on 'the moral development of the child,' and my work on 'multiple intelligences.'

In your contribution to the Festschrift, you allude kindly to the many conversations that we have had over the years. I look forward as well to those conversations (better in person, than on the phone) both because of your incredibly deep knowledge of so many areas of thought, (it is daunting!) but also because your genuine civic virtues—you care enormously about what is truly important in our world and in our time and ponder what you can do, to bolster those precious virtues.

Is There a Moral Brain?

Antonio Damasio and Hanna Damasio

We are celebrating Howard Gardner's birthday with an essay on the neuroscience of moral behavior. Why this choice? Moral behavior is a constant theme of Howard's work, to be found in his scientific articles and philosophical essays, in his books and his lectures. It is also a preoccupation in his daily life, as scholar, friend, family man, citizen.

Is it not the case that moral laws exist outside the brain, something developed in a culture or handed over by divinity but, either way, external to the brain? Does not the brain simply absorb and execute such laws much the same way in which one learns how to drive a car or master social graces? Is it reasonable, then, to join "moral" and "brain" as we do in our title?

The answers to these questions are unequivocal. First, it makes good sense to talk about a moral brain even if the brain has no moral centers as such but rather systems whose concerted operations yield moral behaviors. Second, moral laws are not simply a learned veneer applied during development. They are deeply ingrained in brain physiology, even though their full mastery does require extensive learning. Third, moral behaviors developed over evolutionary time, as executed by the brains of organisms living in social settings. The beginnings of that development appear to have taken place in organisms that were not even human.

Before we go any further, we need to pose another question. Given that moral behaviors had their beginnings in non-human species, is there a connection between morality and human consciousness? The answer is that there is indeed. Morality in the proper sense of the term is conceivable only after brains that were robustly conscious, not merely sentient, appeared on the scene. It is apparent that the human conscious brain had a decisive role in the development of the most complex aspects of morality. In fact, the appearance of *conscience* is inconceivable in the absence of a brain capable of the highest levels of consciousness, namely, an autobiographical level of consciousness with its conjoining of personal and social information.

Morals in the Brain

Which evidence can we bring to a reader to make the case for the idea that brain function plays specific roles in moral behavior? We think that a reader of this piece might like to know that there are parts of the brain required for the execution of moral behaviors or for the judgment of moral behaviors, while other parts or the brain have no role to play in either. The reader might also wish to know that certain parts of the brain are indispensable for the individual acquisition of moral behaviors and learning of moral rules. Gratifyingly, there is substantial evidence in both of these areas.

To present the first line of evidence we will draw on repeated observations of the following type of situation. Imagine someone you know quite well, a friend perhaps, an accomplished professional whom you have always found to be socially pleasant, charming even. We will identify him by the initials PF. You have invited him and his wife to parties on a few occasions, and once, you found him to be of great assistance with a problem you were having at work. He promised to help you and he kept his word. The advice he gave was sound. A wise man indeed. A couple of years ago you heard that PF was in the hospital. After a rapid illness he had been found to have a brain tumor and a famous neurosurgeon—another acquaintance of yours—had removed the tumor. Fortunately, the tumor was benign, a meningioma, not brain cancer. Your acquaintance would survive in health.

Sometime later, when you inquired about PF's recovery, you learned that all was not well. What other friends whispered, and what eventually you yourself confirmed, is that PF had undergone a profound change of personality. He was still bright, cheerful, and able-bodied, not paralyzed of limb or tongue, obviously alert to the world around him. But there was something odd about his demeanor. He was a bit facetious and seemed socially careless. The word was that he had lost his job because he no longer could be trusted at work. He had already tried for another job but that had failed too. His business decisions had become erratic. His family life had spiraled down. His friends were abandoning him. Much later, you learned that his wife had left him and that the children no longer wanted to be with him.

Sadly, the imaginary PF follows step by step cases that are not that infrequent in neurological practice, as a result of damage in a specific

sector of the frontal lobe. Besides the surgical excision of meningiomas, the causes of such damage include traumatic brain injury affecting the frontal lobe and, more rarely, stroke. We have studied many such cases of adults, men and women, whose entire mind and behavior were normal, prior to the onset of brain disease but whose life was turned upside down, literally overnight, as a result of brain disease, and remained upside down in the years that followed. Such cases are of great importance to science for a variety of reasons. First, systematic investigations reveal that the dramatic change in social behavior touches on moral aspects. For example, the patients fail to keep their promises and violate the trust of others but do not seem troubled by guilt or shame over the violations. They are often not compassionate even toward those who are close to them and who expect such sentiments to be expressed when the occasion calls for it. They violate social conventions. For anyone who knew them from before the disease, these are novel features of behavior, something of a Dr. Jekyll turning into a Mr. Hyde, except that the turn is permanent rather than episodic. Second, their changes in mind and behavior are attributable to the newly acquired brain damage and not to other causes, such as a changed social environment or the use of drugs or alcohol. Had there been no brain disease there would have been no change in mind and behavior. Third, damage elsewhere in the brain, anywhere outside the territory of the prefrontal cortices, does not cause a comparable constellation of symptoms. In other words, the relation between the impairment and the damaged brain section is specific. But the specificity cuts even deeper. Within the prefrontal cortex region, the symptoms are associated with damage centered on the ventral and medial aspect of the frontal lobe rather than on the dorsal and lateral aspect.

The past two decades have brought an accumulation of important evidence on brain and moral behavior. The studies uncovered a network of critical brain regions and highlighted the link between moral behavior and emotion, including the underlying mechanisms of reward and punishment. And yet, the history of neurology had already contributed, through the famous case of Phineas Gage, a much neglected hint of what was to be discovered. The hint pointed to the frontal cortex as an important participant in processes of social and moral behavior. Our research group, and others since, have turned the hint into a solid body of evidence that is still growing, conducting modern studies of essentially

the same condition, and establishing the significance of this historical precedent.

Over the past decade this line of work has been expanded in studies involving both neurological patients and normal individuals through participation in functional imaging experiments.

Prefrontal Damage in Early Onset Lesions

Let us now turn to the second line of evidence, which is also related to disturbances of moral behavior caused by brain damage but now as a result of lesions incurred early in life rather than in the adult age. Almost a decade after we reported the first studies of adult-onset prefrontal damage, our research group was able to identify a comparable condition occurring in young individuals who had sustained brain damage very early in life rather than in adulthood. The contrast with what we already knew from adult-onset condition was a revelation. In a nutshell, following neurological damage to the prefrontal cortices in the first years of life, children develop a comparable behavioral disorder which persists into adolescence and adulthood. Based on the evidence available to date, however, the violations noted in early onset damage are more serious than in the adult condition. Whereas adult-onset patients know the rules they violate, early-onset patients do not. They have failed to learn those rules. The problem can still be classified as an "acquired sociopathy" but with a developmental course. Another difference is that the location of the lesions within the prefrontal territory is more broadly distributed, a finding that goes hand in hand with the notion that the prefrontal cortex of children is not mature and is less well-specialized functionally. The fact that there appears to be little or no recovery from the disorder is, in and of itself, an important finding. Comparable early lesions resulting in language defects, for example, tend to attenuate with time. The meaning of this distinction awaits elucidation.

Much is yet to be understood of this condition, more heterogeneous than the adult variety, as larger samples of subjects with early onset frontal damage are now being investigated. Combining and contrasting data from the adult-onset and early-onset populations, however, indicates that the prefrontal cortices (1) are required for making adequate social and moral decisions once the relevant knowledge is acquired, and (2) are probably essential to acquire the relevant knowledge in the first place. Moreover, early-onset cases reinforce the

notion that emotions and their underpinnings play a critical role in two distinct processes: the making of wise decisions in the normal adult, and the learning of the knowledge relevant to making wise decisions during the formative years.

The study of these patient populations has significant theoretical implications. For example, it suggests that damage to the prefrontal cortices compromises a collection of interwoven neural networks which are possibly related to three distinct functions: (1) in adults, they would produce emotional signals capable of guiding the process of decision in accordance with past successful experience; (2) in both children and adults, they would modify the settings of the network as a result of new experiences, so that learning would adjust future performance accordingly; and, (3) again in both children and adults they would contain an inherited neural network design capable of delivering evolutionarily advantageous emotional programs and behavioral biases.

The evidence discussed above leads us to some preliminary conclusions. First, damage to a small number of brain regions can disturb the learning of moral behavior and its deployment and yet spare other major brain functions.

Second, the brain regions identified in these studies are also involved in decisions that do not involve moral norms. These regions are also involved in the processing of the emotions, and in particular social emotions, in general decision-making, and in social decision-making. They overlap within the prefrontal cortex. We are suggesting, then, that the moral brain arises in systems made up of many other component sites, in the prefrontal cortex and elsewhere in the brain, which interlock in the prefrontal region.

The Moral Emotions

Damage to the prefrontal cortices consistently impairs the processing of social emotions, the most elaborate and distinctive components of the human emotional repertoire. It turns out that the social emotions embody values usually called moral. For example, the theme behind emotions such as embarrassment and shame is the blaming of the self for the violation of a norm. The violation may be esthetic—having to do with one's appearance—or it may be related to universal principles of morality—do no harm, be fair, loyal, respectful, pure. Guilt is another social emotion with a built-in moral value. Those

who experience guilt reproach and punish themselves for the violation they regret to have committed.

On the other hand, contempt and indignation feature the blaming of another individual for a violation committed by that other individual. The engagement of such emotions conjures up punishment of violators and retribution.

By contrast, compassion embodies forgiveness and consolation, while admiration and awe, conjured up by the special achievement of others, speak of virtuosity and virtue.

The experience of social emotions in the person in whom they occur, clearly alters their mental processing, their evaluation of the situations in which they found themselves, and, ultimately, may influence their moral judgments and subsequent actions. These emotions also have a major impact on others. Emotional expressions communicate a specific state of mind of the person to the outside world, and they help rearrange the balance of the group to which the person belongs.

In brief, social emotions are carriers of more than just social conventions. The also carry moral principles and values. As is the case of primary emotions such as fear, sadness or joy, social emotions are combinations of action and cognitive programs which incorporate aspects of biological regulation, such as punishment and reward mechanisms, as well as drives and motivations. In the grand scheme of biology, social emotions may appear to be lofty but they remain connected to fundamental biological processes.

The engagement of social emotions by emotionally-competent stimuli requires frontal lobe structures. After adults sustain damage to prefrontal cortices, witnessing pain no longer triggers compassion and when damage occurs early in life compassion is never incorporated in the repertoire of the subject's behavior. The prefrontal cortices are indispensable.

The Beginning of Ethics

The mechanisms for the execution and experience of social emotions rely on brain structures involved in life regulation. Together with the fact that there are precursors to such emotions in animals (see below), this indicates an early evolutionary origin for these processes.

These emotions were selected in evolution because they contributed to better management of life by solving social problems. They prevailed because they improved the chances of survival before conscious reasoning first appeared. In brief, actions with a moral content were not *invented* by reason.

On the other hand, moral conventions and rules, as expressed in religious and philosophical texts, are indeed human creations. They probably result from accepting early intuitions and beliefs that were derived from social emotions as advantageous, and from rejecting some of those intuitions and beliefs as disadvantageous and turning the resulting analyses into collections of explicit rules.

Is there any substantial evidence that human morality had its humble origins in simple brains? The answer is affirmative. All we need is to turn to the example of prairie voles, a species of rodent in whom mating induces the release of the neuropeptide oxytocin in parts of the brain related to emotion. This happens in both the male brain and the female brain. Specifically, the release of oxytocin results in a monogamous attachment between male and female; it generates close bonding and attachment of the mother to her infants; and even involves the male in the care of the progeny. The suppression of the gene responsible for the production of oxytocin entirely suspends these behaviors.

The attachment and concern for others that these animals show are not exactly like the moral actions that humans perform in similar circumstances but the resemblance is suggestive. The fact that such perfectly targeted behaviors exist in animals certainly indicates that the human behaviors that occur in comparable circumstances were not invented by human reason. It is reasonable to propose that the comparable human behaviors are variations on biological precedents that emerged in evolution without the help of reason.

But ethics, in the full sense of the term, began as a creation of the human mind. The main manifestations included social conventions, moral rules, simple laws, and the practice of justice. The main forces behind true ethics were knowledge and reasoning, the combination of which yielded wisdom. Those forces are still important, of course. But the hard work of examining facts and of reflecting on them that has culminated in the formulation of ethical rules, laws, and systems of

justice, had distant beginnings in certain kinds of emotion. Moreover, the socio-cultural tuning of those kinds of emotion during individual development along with the practice of ethical behavior in adults, depended on the brain's emotional apparatus. It still does. While ethics is no doubt human-made, it is grounded in the apparatus of biological regulation which includes mechanisms of punishment and reward, drives and motivations, kin altruism, and reciprocity, in other words in the apparatus of survival of organisms and the genes they carry.

When we look at moral behavior through the lens of biology, we are drawn to the conclusion that moral behavior is a special case of social behavior. Moral knowledge, the collection of principles, conventions and rules that make up morality, is largely a special case of social knowledge, the collection of parameters that govern human sociality. We could say that what distinguishes the moral from the merely social depends on the judgment made by peers and on the application (or not) of serious reward or punishment to the actor being judged. The judgment is expressed informally, through opinion, or formally through laws and justice. To make matters more complicated, social knowledge is itself a special case of general knowledge. We are dealing here with a nested design commonly encountered when we look into the past with an evolutionary optic. Moral knowledge is a special case of social knowledge, which is a special case of general knowledge; moral behavior is a special case of social behavior which is a special case of general behavior. We are unlikely to understand the workings of morality if we do not consider the chain of its social and biological underpinnings.

Creativity and reason have extended the discoveries of nature and the reach of biological regulation to the human social space. In the process they invented sociocultural homeostasis. The basic homeostasis of the human body is automated and non-conscious, designed to ensure our survival thoughtlessly. Sociocultural homeostasis, on the other hand, is largely deliberate and conscious, and morality is the most important consequence of sociocultural homeostasis.

The irony, no doubt, is that deliberate, conscious, moral behavior can be "practiced" to the point of becoming an "automatic skill" for the most frequently encountered moral problems. Practice makes perfect, and, in everyday circumstances, the execution of moral actions becomes, once again, less dependent on conscious reasoning, not unlike the basic and good emotions that first guided human behavior. If it is true that the

efficient trend is to move from the “deliberated” to the “automatic,” it is also the case, again to make matters less than simple, that when humans are confronted with new problems, then, once again, conscious reason and creativity are needed to help them deal with the situation in a truly moral way.

Layer upon layer, we move from automatic to deliberated, from deliberated to automatic, and then the cycle begins again.

Howard's Response to Antonio Damasio and Hanna Damasio

While you are each distinguished scholars in your own right, worthy of world recognition, (which you have received), I almost always think of you together. Ellen and I have had the privilege of knowing you for four decades, have talked shop, looked at art, gossiped, and simply had the pleasure of watching our works reach audiences that we had never thought of before.

Like Ellen and me, you are unusual in that your scholarly works are close to one another. On the basis of your common background in medicine and neurology, the two of you have worked for decades on issues of brain, neural representation, and cognitive and emotional representations in the brain. Some of the most beautiful pictorial representations of the brain, and some of the most poetic descriptions of thought and emotion have come from your creative efforts. Similarly, on the basis of our common background in psychology and the arts, Ellen and I have worked for decades on issues of artistic cognition and development, often under the aegis of Project Zero, where we have worked together for over 40 years! While our own collaborations are now less evident than they were twenty years ago, we still count on one another for criticism and I know that if my argument is weak or the data equivocal, Ellen will have no hesitation in saying 'baloney' or perhaps a less printable epithet.

When you first began to write about the brain and emotions, this was seen as exotic territory; work for European speculators perhaps, but not for serious American bench-top cognitive scientists. Same when you began to use words like 'morality' or 'feeling' or 'consciousness' or even 'ethics.' But of course you were not just talking about these items, nor were you creating a 'just so' Darwinian tale. Rather, on the basis of meticulous study of brain injured patients, well devised studies with normal subjects, and an unparalleled knowledge of neural structures and connections, you were actually able to support your claims with data, and to invite skeptics to critique your studies and/or to put forth more convincing explanations. And you have composed narratives about these human dimensions which have struck a chord of recognition among scientists and readers all around the world.

Your essay puts forth a very strong argument for why we should think about various facets of morality in terms of brain evolution and specialization. And that argument is bolstered by the persuasive evidence that your laboratory has collected over the decades, to which I just referred. Nonetheless, the question arises about which aspects of complex human behaviors are adequately explained by their neural underpinnings and which call for a different level of analysis.

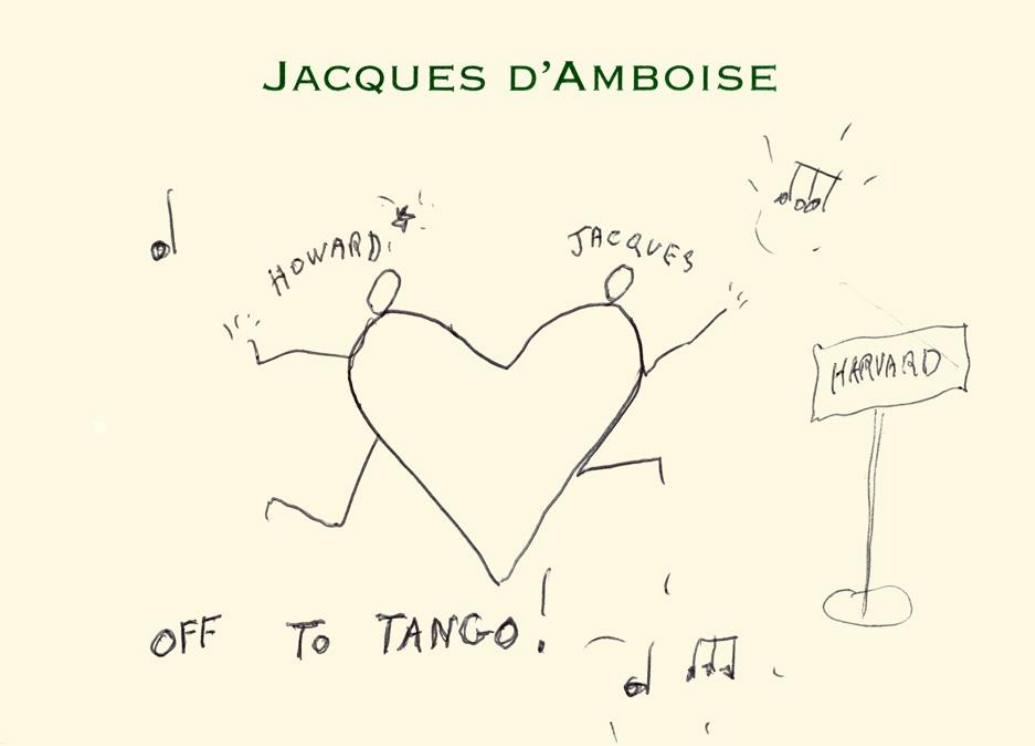
You touch upon this topic when you mention ethics, a subject that we have discussed at length. I like to distinguish between two concepts: 1) "neighborly morality" which we share across our species and which has deep evolutionary roots and clear neural representation; and 2) "the ethics of roles" which are the particular patterns of behavior that we come to associate with various professional roles (e.g. physician, engineer) and with various civic roles as well. It's been my contention that the ethics of roles is better understood through historical and cultural studies, than through an understanding of the nervous system and its evolution. As just one example, we have the role of journalist in many societies; and yet the differences in how journalism is conceived and practiced differs so greatly across borders (and sometimes even within borders) that to think of any general 'journalistic morality' is to play with words.

I do not know to what extent you, Antonio and Hanna, are sympathetic to this line of discussion. We have also invoked an analogous tension in discussions of whether the neural or biological approach to the arts makes sense, as neuroscientist V.S. Ramachandran, strongly argues, or whether that approach misses what is most central in the history of art or in contemporary art works and performances. What I do know is that you both consider these issues very seriously, and that I will learn, and sometimes be converted, by the answers that you provide.

You are all too familiar with the sequence in science: 1) "Oh that's nonsense;" 2) "That's common sense;" or 3) "I thought of this years ago." You have had the pleasure of seeing such comments applied to several lines of your work, a remarkable achievement. I think that pattern will continue for years to come. And I am so pleased that you have been honored with garlands of prizes, including the Prince of Asturias Prize and, just recently, with the Grawemeyer Award in Psychology.

Antonio, you and I share one more tie which is not well known. In the mid-1970s, you were the chairman of a group called *The Academy of Aphasia*. When your term was over, you approached me and simply said "Howard, would you like to take over?" I was honored, said "Yes," and did, I think, inspired by your example, a credible job. I mention this anecdote because nowadays such 'old boy network' processes, even if ratified by the collective body, would never be tolerated. And yet sometimes they were, in my view, the right thing to do…. Or at least a reasonable thing to do.

Jacques d'Amboise



WATCHING #5 GO BY
BACK TURNED YOU BOARDED
THE BUS AND LEFT....
.... ME? SOBBING ON A BENCH
CONCRETE COLD
MOCKED BY RAIN FROM
A DISMAL SKY
WATCHING #5 GO BY

Howard's Response to Jacques d'Amboise

You are one of the giants of our time—in fact a double giant.

First of your gigantic accomplishments: A beloved principal of the New York City Ballet for thirty years, a person with unprecedented knowledge of and intimacy with George Balanchine, by all accounts the genius behind modern ballet.

And then in 1976, you reinvented yourself, starting the National Dance Institute, a unique program which has given many thousands of young people all over the world the opportunity to express themselves through dance. As an admiring movie title put it, "He makes me feel like dancin'." All sort of claims are made about the benefits of dance for young people and some of these may indeed be true! But you have always believed that it is the opportunity to dance that gives individuals of all ages the chance to show that they can make and share meanings in public and that those meanings contribute to a range of feelings and understandings, most of which could never be put into words. And if they can accomplish this through movement, we can expect them to accept challenges across the spectrum of life.

In your ninth decade you are still developing, still growing, still learning, and still helping others. And as your contribution shows, you continue to express yourself in a variety of media, with explicit and implicit messages. You stand as a rare example of the Complete Good Worker and Ellen and I feel privileged to know you and to count you as a friend.

Our Leading Mind: Moral Exemplar Research in Howard Gardner's Footsteps

William Damon and Anne Colby

In his masterful recent book, *Truth, Beauty, and Goodness Reframed*, Howard Gardner challenges the way contemporary science has misconstrued the essence of human behavior. In a sweeping preface to the book, Gardner writes: "When I examine my own motives for writing the present book, I realize that I have been stimulated, in significant measure, by the need to respond to two powerful analyses of the human condition—one emanating from biology, the other from economics.... Those beholden to biological or economic accounts regularly give short shrift to the power of individual agents, and to the efficacy of individuals voluntarily and tirelessly working together to achieve desirable ends. In a sense, the book may be read as a sustained argument against biological and/or economic determinism" (Gardner, 2011, p. 14).

For the past 40 years, the two present authors (Bill Damon and Anne Colby) have been trying to understand one mysterious, sometimes fragile, but undeniably central part of the human condition—the moral commitment of "individuals voluntarily and tirelessly working together to achieve desirable ends." In our past work, we often have been informed and encouraged in this task by Howard Gardner's pioneering work on related dimensions of human excellence. Once again, as we embark on yet another examination of moral commitment in some of its finer real-life expressions, we have been guided by Gardner's deeply humane writings.

Our own present work explores the lives of seven moral leaders from the 20th century: Jane Addams, Dietrich Bonhoeffer, Dag Hammarskjold, Abraham Heschel, Pope John Paul II, Nelson Mandela, and Eleanor Roosevelt. The investigatory motive that Howard identified in his preface to *Truth, Beauty, and Goodness Reframed* has animated our study too. Like Howard, we have observed with distress how the scientific vision of morality has become distorted in recent years with the increasing dominance of deterministic models of human behavior. In studies that emanate from such models, morality is reduced to low-level, atypical, or hypothetical responses that poorly represent the vast

spectrum of moral commitment in human affairs. Compounding the damage that these deterministic models have done to our scientific understanding, they are often the basis of influential news media stories, thus degrading the popular as well as scholarly sense of morality's potential to address human problems.

Biological determinism, as Howard notes, has captured the imagination of the scientific community in recent years. According to this view, inborn emotional reactions fuel moral action, and consciousness is a mere epiphenomenon that plays a role only in rationalizing, after the fact, whatever our emotions compel us to do. The primary evidence for such claims comes from brain responses to a hypothetical situation originally written for philosophical discourse: A trolley car loses its brakes while heading towards five hikers; if the conductor lets the train stay on its deadly course, the five hikers will be run down; if he instead decides to veer the train in another direction, he will run down only one hapless hiker who happens to be walking on a side track—but this means that the conductor will have done this actively rather than passively, thus killing one person intentionally rather than allowing the train to wreak its own havoc with five times that number of people. Of course, this is a strangely improbable situation (perhaps even impossible) that provides no match with anything that people actually experience or care about in their moral lives. Yet based on subjects' neurological responses to one or another version of this dilemma, the claim is made that "we evolved a moral instinct … designed to generate rapid judgments about what is morally right or wrong based on an unconscious grammar of action" and that therefore "morality is grounded in our biology" (Hauser, 2006, p. xviii). This claim has been widely heralded in present-day scientific and popular accounts of the human moral sense.

Along with this influential model, which deduces biologically-determined moral instincts from hypothetical trolley cars careening out of control, there is yet another biologically-driven research paradigm that has captured the imagination of many scientists today. A method of this paradigm is to trigger feelings of disgust by asking subjects to think about activities such as incest between a brother and a sister or sex with dead chickens. In these hypothetical scenarios, the investigator tries to rule out any rational basis for moral objections, asking respondents to assume, for example, that the amorous siblings will use birth control,

will not experience any psychological ill effects, and will keep their activity entirely private. When respondents nevertheless instantly (and unsurprisingly) recoil from thoughts of incest or bestiality, their reactions are taken as evidence that morality is ruled by non-rational inborn emotions rather than by conscious choices or moral understanding.

In a *Science* article, one promoter of this paradigm claimed that this kind of study demonstrates "the importance of inborn moral intuitions and the socially functional (rather than truth-seeking) nature of moral thinking…" (Haidt, 2007). In other words, according to this biological dogma, moral behavior is ruled by impulses rather than by rationality, truth, faith, individual judgment, conscience, or beliefs of any kind. Of course, one must wonder whether the reaction of disgust when contemplating sex with dead chickens represents the grand spectrum of human moral responses.

Interestingly, this kind of biological determinism leads not only to a vision of human nature as bound by uncontrollable instinct, but also to moral relativism. The logic goes like this: Because it is impossible to deny the obvious variation in moral behavior across cultures, no one studying morality can be an absolute biological determinist: the environment must be given a certain degree of credit. Thus, socialization into cultural norms is seen to co-determine moral feelings and behavior by creating a set of intuitions that are based in biology but then shaped from early childhood by the cultural context. There is no role in this view for human judgment in interpreting or controlling one's environmental experience, because conscious truth-seeking in the moral domain has been dismissed as illusory and impotent. With moral inquiry and judgment playing no serious role, there is no place for evaluating the moral validity of cultural values. This means that all cultural values have equal moral status. To the extent, therefore, that people are not enslaved by their inborn biological reactions, they are helplessly dragged around by unexamined cultural values that are also beyond their control.

From a different perspective that is just as deterministic, social-situational paradigms reduce moral choice to forces that lie beyond the individual's own conscious control, because those choices are determined by powerful situational pressures and other externally imposed contingencies. Evidence for such claims comes from experiments that place subjects in conditions that often elicit immoral behavior, such as the maltreatment of helpless victims (Milgram, 1974;

Zimbardo, 2008). Yet what is rarely noted by either scientific publications or news accounts of these studies is that there is always a significant minority of subjects who resist the situational pressures in these experiments. And even those who succumb and act badly often regret their actions, thus triggering a positive change in their moral orientations.

Economic determinism, whose contemporary ascendency as an explanation of the human condition Howard also decries, shares a good deal with social psychological explanations. Here too, the idea that moral ideals and commitments drive many people's behavior is understood to be illusory. Instead, individual choices are determined by implicit calculations of risk and gain, the maximization of "utilities," which represent various aspects of the individual's self-interest. It is true that experimental studies of behavior in economic games do sometimes grant the existence of altruism and preferences for something like fair solutions, at least to some extent. But in most cases these apparently moral considerations are seen to reduce to self-interest if the experimental controls are tight enough. When moral concerns cannot be controlled out of existence, they are understood to be "anomalies" that only minimally disrupt the overall account of the human condition as a collection of self-interested actors pursuing their own preferences—or "utilities."

One thing that the research supporting all of these models shares is that the investigators are relatively unconcerned with the nature of their samples. If most subjects in these studies are confused about the morality of wildly contrived and improbable situations, pliable in carrying out nefarious commands from authoritative investigators, or profit-maximizing in economic games played with strangers, the conclusions in each case are that *people* are morally irrational, blindly obedient to authority, and fundamentally self-interested. We have yet to see a paper in which the investigators conclude that many average folks are morally confused or biased on their own behalf but that perhaps such limitations could and should be addressed educationally. Or that limitations seen in a random or convenience sample might not be shared by people whose moral understanding and character are more fully developed. The lack of attention to individual differences, and especially to the responses of highly moral individuals, is a serious limitation of this work.

The biological/evolutionary, social-psychological, and economic lines of work that we have outlined here cannot capture the complexity of moral behavior in its full human sense, in part because of their methodological limitations, in part because of their impoverished theoretical vision. We agree with Howard Gardner that this vision fails to acknowledge the power of moral agency and the tireless commitment of those individuals and groups who work to improve the status quo. The deterministic vision discounts beliefs, choices, and ideals that have moved individuals to moral action all throughout recorded history. Many people who have been moved by moral convictions have sacrificed their own interests, thrown themselves into breaches during battles, transcended their prejudices to make peace with old enemies, and turned over large shares of their own wealth to others. Many have dedicated long periods of their lives to pursuing moral purposes centered on peace, justice, or the welfare of others.

Research paradigms that fail to examine and account for phenomena like this are extrapolating from the moral limitations of the average person to the nature of morality itself. This is like concluding that there is no such thing as rigorous analytical thinking on the grounds that most people exhibit fallacious reasoning in studies of systematic cognitive bias (Tversky, 1974).

Because we believe that investigations of exceptional moral commitment are essential to a full understanding of morality and its development, we are currently conducting our second study of such people. Our psychological cases studies of relatively small numbers of exceptional individuals have been inspired by Howard Gardner's pioneering studies of people who exhibit outstanding creativity and leadership. We have looked to this work as a model of research that is both productive and credible despite small samples and unconventional methods.

In our current study, we are investigating the roles of faith, truth, and humility in seven 20th century moral leaders. All of these individuals have withstood situational contingencies, actively questioned and responded to unjust or inhumane cultural norms, reflected on and attempted to reshape their own baser impulses, and tried to live in the light of transcendent ideals that ennoble the frail and faltering human condition. By looking closely at their lives and their own understanding

of their challenges and aspirations, we are trying to describe something of the dynamics of moral courage, commitment, and leadership.

For example, Nelson Mandela, one of our current case studies, survived unbowed, with dignity, will, and purpose intact, during 27 years of confinement in brutal South African prisons (Meredith, 2010). Despite some of the most extreme situational pressures imaginable, Mandela found ways at every stage of his imprisonment, often at the risk of his life, to continue working toward greater justice for the African people. Through his fearless and relentless determination, he even managed to gain significant national and international political power while still in prison. In the last several years of imprisonment, Mandela was offered release but under conditions that he believed would undermine his ability to achieve his democratic goals. Each time, he refused release under those conditions and remained in prison with no assurance that he would ever be released. Throughout his long ordeal, he controlled his anger and resisted the warders' efforts at manipulation in order to keep advancing his humanitarian and political goals.

After his release from prison, Mandela showed an astonishing, almost miraculous, generosity of spirit and absence of bitterness, which infused his presidency and shaped his responses to the country's warring constituencies. Early in his presidency, that spirit of hope and conciliation was the source of truly exceptional moral creativity. In the face of horrific offenses against his people, Mandela instituted a strategy for national healing that was original, counter-intuitive, risky, and controversial—the Truth and Reconciliation Commission (TRC). The TRC departed radically from the Nuremburg model that the Allies used to prosecute Nazi war crimes after World War II. Its purpose was to discover and reveal past wrongdoing on all sides. To this end, the forum was opened to accused and accusers alike, and amnesty was liberally used to elicit frank confessions. Although its de-emphasis on criminal prosecutions was understandably controversial among Apartheid's victims and their families, Mandela's Truth and Reconciliation Commission was universally given credit for bringing out the full scope of human rights violations that had occurred under previous regimes. It led to confessions, apologies, and statements of regret by perpetrators that made possible the beginnings of productive dialogues among previous opponents, a large step towards national healing and the eventual national unity that many thought impossible in South Africa. Mandela's

Truth and Reconciliation model has been adopted in over 20 countries since its use in South Africa during the 1990s.

Another dramatic illustration of the ways that Mandela was able to draw creatively on his ideal of forgiveness is provided in the film *Invictus*. The film depicts how, in the face of opposition and cries of betrayal from his own supporters, Mandela threw the blessings of his government behind the South African national rugby team, long a hated symbol of white privilege among the black and colored communities. He invested his own time and political capital to build the team's morale. Few understood what Mandela was doing: his own bewildered staff counseled him against it. But it worked. As time passed, everyone could see that he had created a strategy for uniting a society that had seemed hopelessly fractured. On a moral level, the sins of Apartheid were starting to be absolved; on a practical and political level, Mandela strengthened his own mandate and stabilized his society.

Mandela is but one recent shining example in history's pantheon of moral leaders. Every society honors those who have shown courage, commitment, integrity, and moral imagination in service of the common good. Ordinary people, too, make sacrifices and show such elevated qualities, even if in less heroic and celebrated ways. People the world over love and care for others, both within their own families and well beyond. They dedicate themselves to their work and try to do it in a way that is socially responsible. They help people in need without expecting recognition or reward. Some even risk their lives to rescue a stranger. This kind of vital moral force cannot be explained by a science that reduces morality to biological impulses, situational pressures, or economic self-interest.

A more promising line of work has come out of the developmental tradition (Killen & Smetana, 2006; Lapsley, 2004). Studies of morality within this tradition have concluded that the importance of a person's moral concerns to his or her sense of self—a person's *moral identity*—is the best predictor of the person's commitment to moral action, and thus a central component in the process of moral formation. Moral identity provides a powerful incentive for conduct, because identity engenders a sense of responsibility to act in accord with one's conception of self (Blasi, 1993; Damon, 1999). Moral judgment alone does not provide this sense of personal responsibility: it is only when people conceive of themselves and their life goals in moral terms that they acquire a strong

propensity to act according to their moral judgments. As Nisan writes, "if a person sees a value or a way of life as essential to their identity, then they feel that they ought to act accordingly" (Nisan, 1996, p. 78).

In our earlier study of twenty-three adult moral exemplars, we found strong degrees of integration between self and moral concerns (Colby & Damon, 1992), and we concluded from this that moral commitment requires a "uniting of self and morality": As we wrote at the time, "People who define themselves in terms of their moral goals are likely to see moral problems in everyday events, and they are also likely to see themselves as necessarily implicated in these problems: from there, it is but a small step to taking responsibility for the solution" (Colby & Damon, 1992, p. 307). People differ in the degree to which they define themselves in terms of moral concerns and aims. In one study, Walker and his colleagues have found that "morality had differing degrees of centrality in people's identities: for some, moral considerations and issues were pervasive in their experience because morality was rooted in the heart of their being; for others, moral issues seemed remote, and moral values and standards were not basic to their self-concept" (Walker, Pitts, Hennig, & Matsuba, 1995).

Our present study aims to build on our previous work to investigate more fully the phenomenon of moral leadership, including the developmental processes and belief systems that account for moral formation in exceptional moral leaders. The study also examines how moral formation can stay on track in the face of the kinds of pressures and temptations that face leaders everywhere. As we noted at the start of this chapter, we are exploring these questions through case studies of seven historical figures of the 20th century. In our choice of this psychologically-oriented case study method, we owe another debt to Howard Gardner.

In the mid-1990s, Howard published two remarkable volumes of case studies exploring the lives and achievements of notable historical figures. The first, *Creating Minds* (1994), examined how creative giants such as Sigmund Freud and Albert Einstein formed their unique goals and their capacities for transforming their domains. In the second book, *Leading Minds* (1996), Howard looked at eleven consequential 20th century leaders—people such as Eleanor Roosevelt and Mahatma Gandhi—to determine how leadership in public life works. He made the case that leaders of society ("persons who by word and/or personal

example markedly influence the behaviors, thoughts and/or feelings of a significant number of their fellow human beings") make their mark by communicating stories that speak directly to the aspirations of large numbers of people who become their followers.

What's remarkable about these two books is not only the many insights about creativity and leadership that they brought forth but also the way these studies pioneered an important new approach to the psychological study of history. Rather than relying on what often seem to be gratuitous interpretations of subjects' unconscious motives and character structures, Howard describes objectively observable patterns in their behavioral strategies, drawing directly on the subjects' own representations of their intentions, goals, and strategies. Using this descriptive and cognitive approach, Howard finds patterns that suggest the sources of these individuals' special gifts (and also, in some cases, their limitations). This approach redeems the promise of historical case material for serious scholarship on the psychological development of extraordinary people. Among other virtues, Howard's inquiry grants us access to the ideas that moved the creative (or social/political) leader and those who were influenced by that leader. It is hard to imagine a satisfying account of moral leadership without examining and taking seriously the particulars of such ideas; and the same is clearly true in the case of extraordinary creativity.

Beyond the fruitfulness of his overall approach to the psychological study of historical figures, in this line of work Howard made other wise choices that point the way for like-minded investigators such as us. He has shown that when studying a phenomenon as complex and difficult to define as creativity, it is useful to begin with individuals whose work is undeniably creative. Approaching clear cases in a holistic way allows us to avoid the problems of a more atomistic approach, in which samples of work chosen for study may be remote from universally acknowledged instances of creativity. The same argument can be made for the complex and difficult-to-define phenomenon of moral leadership; and indeed, such considerations have contributed to our choice of a historical case method for our own study. As Howard has shown, it is especially appropriate to use a case study method to create an initial description of an understudied phenomenon, particularly when mapping out a phenomenon that occurs relatively infrequently, such as outstanding creativity, exceptional moral commitment, or leadership. This allows the

investigator to elaborate theoretical ideas in the context of very clear-cut cases.

For these reasons, among many others, Howard Gardner has been the "leading mind" for us in our present work on moral leadership. In *Leading Minds,* Howard presents his views on the qualities of an effective leader: a bond with a community of followers; a life rhythm that includes both isolation and immersion; a story that tells audiences what the leader stands for; a strong link between this story and the traits the leader embodies; and the acquisition of power with the consent of the people rather than by external force. Some of these qualities (especially the final two) have moral implications. But they do not tell us everything we need to know about how and why some leaders manage to sustain their moral integrity in the face of the immense pressures and temptations brought on by their ascension to power, and why others cave into the pressures or become seduced by the temptations.

Our own study of historical moral leaders is guided by the hypothesis that three virtues in particular can facilitate the formation and sustenance of enduring moral commitment: inner truthfulness, humility, and faith. Our main question concerns the processes that support the formation and sustenance of lived moral ideals and virtues. Our study acknowledges the common experience of "weakness of will," and it explores factors that support greater coherence between ideals and lived reality, exploring more deeply a number of factors that earlier studies, including our own (Colby & Damon, 1992), only hinted at. With regard to the question of how stamina, commitment, and lived embodiments of virtue are formed, one of our hypotheses is that religious faith can provide the personal strength to turn belief into action (see Colby & Damon, 1992, for some preliminary evidence of this). Faith offers an escape from self-absorption and its attendant perils of fear, avarice, and egotism. A strong sense of faith in God enables a person to feel secure when acting according to principle, despite the apparent risks or temptations, and provides a framework for making sense of the human condition that is able to maintain a sense of hope and long-term efficacy in the face of even overpowering evil. Moreover, if the individual's faith is guided by a devotion to moral truth (an important caveat), the perils of self-deception and moral ignorance may be avoided or at least significantly mitigated.

A devotion to truth requires open-minded humility and a willingness to look honestly at one's own behavior. Accordingly, the formation of moral character can be facilitated by faith, truth, and humility, working in conjunction with one another. These factors are likely to play important roles in spurring moral commitment and in keeping people on track when, inevitably, their commitment is tested by difficult challenges.

The developmental perspective that we share with Howard Gardner is, above all, a hopeful view. It is surely true, as the biological, social psychological, and economic lenses on humanity suggest, that many people are morally confused or driven to a large extent by self-interest, especially under situational pressures. But the developmental perspective begins from an assumption that all can aspire to more elevated selves, and it documents the verifiable fact that many achieve this goal.

This developmentally-grounded hope forms the basis for educational programs that support the growth of integrity, clarity of thought and judgment, and a life informed by a positive sense of purpose. As busy as Howard Gardner has been as a scholar of unparalleled productivity, he has found the time to work with young people at Harvard and other colleges, developing and implementing programs that can help set these young and talented lives on a track toward personal meaning and social contribution. His work and ours recognizes the hard reality that good work and good citizenship are constantly at risk. But we also share with him the conviction that moral ideals and wisdom provide the essential foundation for good work and citizenship and that educators can do a great deal to strengthen that foundation.

References

Colby, A., & Damon, W. (1992). *Some do care: Contemporary lives of moral commitment*. New York: The Free Press.

Damon, W. (1999, August). The moral development of children. *Scientific American, 281*(2), 72-88.

Hauser, M. (2006) *Moral minds: How nature designed our universal sense of right and wrong.* New York: Ecco.

Haidt, J. (2007). The new synthesis in moral psychology. *Science, 316*, 998-1002.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the 21st century.* New York: BasicBooks

Gardner, H. (1996). *Leading minds: An anatomy of leadership.* New York: BasicBooks.

Gardner, H. (1994). *Creating minds: An anatomy of creativity as seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi.* New York: BasicBooks.

Killen, M., & Smetana, J. (Eds.) (2006). *Handbook of moral development*. Mahwah, N.J. LEA Associates.

Lapsley, D. (2006). Moral stage theory. In M. Killen & J. Smetana (Eds.), *Handbook of moral development*. Mahwah, N.J.: LEA Associates.

Meredith, M. (2010). *Mandela: A biography.* New York: Public Affairs.

Milgram, S. (1974). *Obedience to authority: An experimental view.* Cambridge, MA: Harvard University Press.

Nisan, M. (1996). Personal identity and education for the desirable. *Journal of Moral Education*, *25*(1), 75-83.

Tversky, A. (1974) *Judgment under uncertainty: Heuristics and biases*. *Science, 185,* 1124-1131.

Walker, L., Pitts, R., Hennig, K., & Matsuba, M. (1995). Reasoning about morality and real- life moral problems. In M. Killen and D. Hart (Eds.), *Morality in everyday life,* pp. 371-407. New York: Cambridge University Press,

Zimbardo, P. (2008). *The Lucifer effect: Understanding how good people turn evil.* New York: Random House.

Howard's Response to William Damon and Anne Colby

Except for those in my family, and the few who were with me in my college class, I have known you, Bill, longer than any other contributor to the Festschrift. I remember our first encounter quite vividly. My doctoral adviser (who was also your undergraduate adviser) Roger Brown said that I might enjoy a presentation by one of his 'star' students, Bill Damon. And so I went to an afternoon seminar where you presented the highlights of your undergraduate thesis "The Child's Understanding of Literary Emotions." As was often the case, Roger was right (one reason why so many of us were honored to be his advisees); and without his having anticipated it, this was the start a lifelong personal and professional friendship between the two of us, one that has spanned the coasts, professional organizations, granting agencies, and in the last twenty years an ambitious common research agenda.

The relationship between two of you, Bill and Anne, and Ellen and me is of more recent vintage—25 years, not 45 years—but it is equally close and equally important, we have no closer friends. We have gone through much together both personally and professionally. We have been as supportive as possible during times of trouble, and as with the Damasios, we can—and do!—count on one another's spouse to tell it to us 'as it is.'

Bill and I were both trained in classical developmental psychology by Jean Piaget, Erik Erikson, Larry Kohlberg, Heinz Werner and Bernard Kaplan, and their most immediate and most eminent students. As students (or grand-students) of these masters, we see their deficits, perhaps more clearly than those who have but a superficial (often textbook) knowledge and understanding of their remarkable achievements. Like most of the next generation, we have dabbled in experiments of short duration, hoping to ascertain the importance of one or another independent variable. And yet, in the last few years, working in parallel and tandem, but also with regular invaluable exchanges, we—Anne, Bill, and I—have seen the need to make a strong case for a lifelong developmental perspective.

In a famous pointed exchange, Jean Piaget declared to Jerome Bruner, "Development takes a long time." Our lifetime biographical studies—my studies of historical figures who were creators and leaders—

and your studies (Anne and Bill) of contemporaries 'who care' have impressed us and convinced us of the importance, nay, the necessity of deeming human moral development and human moral identity as a lifelong adventure, course, and struggle. Sure, with the right cue or image or subliminal percept, one can nudge a person toward a more or less pro-social act or stance, but then it is just as easy to get the person to revert to a former status, should the opposing nudge be forthcoming.

When it comes to extraordinary moral exemplars, the situation is different. We are not dealing here with a few accidental events, but with rather a lifetime of patterns of behaviors, habits of mind, deep grooves of practice, which get so deeply engraved, engrained, etched that it would be very difficult to alter them. (You aptly term this world-view a person's 'moral identity'). Needless to say, these patterns are much harder to study in the lab than is the latest social psychology twist, but if we want to understand a Gandhi or Mandela, or unknown persons who rescued Jews or who adopted a dozen foster children, we need to be able to take this longer, indeed lifelong view. While this perspective may not have grown directly out of our twenty year collaboration on The Good Project, it is certainly part-and-parcel of what we mean by a life of purpose, a good life, a good citizen.

Still, interesting questions remain. What do we make of those not-so-short social psychological experiments that have riveted the public imagination? Muzafer Sherif's Robber Cave Experiment (where young summer campers were manipulated to work together or to detest one another); Phliip Zimbardo's simulation, using Stanford students, of the roles of prisoners and guards (the roles proved so effective that Zimbardo had to call off the experiment); and, above all, Stanley Milgram's demonstrations of "obedience to authority" (where ordinary individuals apply dangerous levels of electric shock to those with whom they have been yoked in a psychological experiment). These demonstrations cannot be so easily dismissed and yet they scarcely span a lifetime. And there is also the intriguing question of whether, on occasion, a person who has been harboring a negative identity undergoes a "damascene experience" and ends up working to achieve the good… Such a transformation seems, intuitively, much more likely than a saintly person suddenly finding himself leading a life of sin. And then there is the whole question of whether there is a genuine tension or even incompatibility with the Damasio view of 'morality and the brain,' on the one hand, and a lifelong

developmental account, which places much greater emphasis on familial, religious, cultural, and historical factors, and where invocation of the brain seems superfluous.

Lots for the Damon-Colby team to work on in the next two decades—go for it!

Cultivating Human Abilities: The Legacy of Howard Gardner

Linda Darling-Hammond

Looking at the long list of book titles authored by Howard Gardner, it would be sensible to conclude that he has had a career-long fascination with the human mind. This would certainly be true, but reading between the covers, something more becomes apparent. Howard has been concerned with a celebration of human capacities that recognizes the special qualities within each of us, opening up pathways by which we can each excel.

This is a recognition of the human spirit that can open up potentials for each individual and for humankind as a whole. It is why teachers seeking to enable success for their students so resonate with Howard's work. His work offers lenses that allow them to see and teach children more fully, while so much of the machinery of schooling—standardized curriculum and testing, and factory model school designs—asks them to put on blinders instead. The truth of this work—and its power to elevate human abilities—is why the theory of multiple intelligences has gained such traction in the world of real schools, even when teachers have sometimes had to be subversive to use it.

For me, like so many humanistic educators, Howard Gardner has served as a North Star: a beacon in the long, dark night of standardized testing and oppressive educational sorting used to exacerbate inequality. His has been a voice of reason and his work, through Project Zero and so many other projects, has helped us conceptualize curriculum, teaching, and assessment used instead for understanding and developing the talents needed in our diverse and complex world.

When I think of the broader importance of these ideas to our society, I am reminded of a parable recounted by the great African American cleric, Howard Thurman. Like all great stories, this one has evolved and been amended in the retelling. This version may not be exactly the one Thurman told, but it makes the point:

Once in the Animal Kingdom, there was a decree from the new Overseer of Education—that each animal would need to achieve mastery

in a set of basic skills essential to animal life. These skills were flying, hopping, running, and swimming. Now the Kingdom had some magnificent animals. The eagle could fly further and faster than any bird in any other nation on the continent. The kangaroo could hop higher and farther than any other marsupial anywhere. The gazelle could run more swiftly and gracefully than any land animal from here to the setting sun. And the porpoise could swim and jump and dive more beautifully than anything else in the Sea. These abilities allowed them to protect the Kingdom from every vantage point, and the Kingdom was a safe and prosperous place as a result.

The animals had spent a great deal of time perfecting their talents, but had rarely tried to master each others' skills. But they were willing to try. They worked and worked at it with all their might. The eagle learned to hop passably, but had a devil of a time running and nearly drowned trying to swim. In fact he damaged his feathers so badly, he could no longer fly very far. The kangaroo took to running. But swimming taxed her tiny arms dreadfully and her attempts to fly by throwing herself from the top of a tall ledge caused her to break a leg, so she could no longer hop. The gazelle met the same fate in the flying lesson, and the two of them now limped around pitifully together. The porpoise developed his own form of flying and hopping in the water—though this was frowned on by the schoolmaster as highly unorthodox—but simply could not figure out how to run, and finally became so dehydrated squirming about on the land, that he had to be hospitalized. At this point, with no one to patrol the skies or the sea, and no scouts on the land, the Animal Kingdom was invaded by a hostile force and taken over for a period of time, until the animals recovered enough of their abilities to recapture their land. In the effort to mimic one another, they had nearly lost themselves and their magnificent abilities—each special and each essential to the functioning of the Kingdom as a whole.

I am often reminded of this fable when I see the results of exit exam testing in states where students must pass exams in four or five different subject areas in order to graduate, and young people who are highly skilled in some areas but struggle in another see their hopes for a productive life squelched even before it begins. This is quite often the case with exceptional needs students who excel in particular areas despite their challenges in others, and with recent immigrants who, for example, are highly adept in mathematics although they struggle with

the English language or do not have a base of knowledge in U.S. history. In an effort to create standardized outcomes, schools often feel compelled to adopt standardized methods, making it even more difficult for students to use the ways they learn most effectively to help them develop new abilities or to develop the abilities they have.

This story, which is a story about the value of diverse abilities and the dangers of standardization, is also a tale of multiple intelligences. It conveys the importance of appreciating and developing the distinctive highly-developed abilities that individuals possess. Howard made this point in *Multiple Intelligences: The Theory in Practice* (1993), when he defined intelligence as the ability to solve problems or fashion products that are valued in the full realm of human activity:

Think, for example, of sailors in the South Seas, who find their way around hundreds, or even thousands of islands by looking at the constellations of stars in the sky, feeling the way a boat passes over the water, and noticing a few scattered landmarks. A word for intelligence in a society of these sailors would probably refer to that kind of navigational ability. Think of surgeons and engineers, hunters and fishermen, dancers and choreographers, athletes and athletic coaches, tribal chiefs and sorcerers. All of these different roles need to be taken into account if we accept the way I define intelligence—that is, as the ability to solve problems, or to fashion products, that are valued in one or more cultural or community settings (p. 3).

In his wry way, Howard has observed that exclusive reliance in education on the usually favored verbal and logical intelligences would produce a nation full of law professors, something that no society could manage, much less desire. This point has always resonated with me, and not only because I am married to a law professor! Howard's work has helped educators explicitly appreciate and take account of human diversity and recognize that many abilities are worth developing, within and across individuals, in addition to those required for basic reading, writing, and mathematics. In fact, these other intelligences—spatial, musical, interpersonal, intrapersonal, and bodily-kinesthetic—can often create useful pathways toward the development of essential literacy and quantitative skills, as well as play valuable roles in their own right.

I think if this understanding had been widespread 25 years ago, when Howard first published *Frames of Mind,* we might have had a

different outcome from another major report issued in 1983—*A Nation at Risk*, which led to many of the standardizing influences that his work warns against.

We fight these battles still, as today's 'scientific managers' redouble their efforts to make schools behave as they imagine businesses do—but, interestingly, not as successful knowledge industry firms actually do. This is obvious from a visit to Google's collaborative campus where groups with distributed expertise engage intensely on creative projects in an environment that is equal parts work, play, physical exertion, meditation, art, music, and food for the body and mind. This more productive future will not be secured by engaging students in rote drill and test prep under the threat of rewards and sanctions in schools that have eliminated music, art, physical education, inquiry, great works of literature, and everything else that is engaging to the human mind and spirit.

Despite the forces battling against progressive impulses in U.S. education, Howard's work has had an important influence on teaching and on teacher education in this country and around the world. It is front and center in many Asian nations that are seeking to move beyond rote learning to an education that develops a range of creative potentials and abilities. In thoughtful schools of education, we now start with the presumption that teachers should seek to understand how students learn differently from one another and build a bridge between their distinctive starting points and the content being taught. Much more than was the case 30 years ago, teachers are taught to see their role as learning to identify students' strengths, providing entry points and pathways into subject matter, enabling connections, and encouraging students to represent their understanding in a range of different ways. These understandings about learning are now embedded in standards for teaching nationally and in states.

In Stanford's Teacher Education Program, like many others, teachers now use observations and interviews as part of child or adolescent case studies they conduct, finding student strengths, drawing on them in instruction, and watching the results (see for example, Darling-Hammond et al., 2006). Prospective teachers also learn the strategies described in *The Disciplined Mind* (Gardner, 1999) to teach rich concepts to diverse students by providing distinctive points of entry, which could be narrative, aesthetic, tactile, or quantitative, analogies

that connect new ideas to familiar experiences, and multiple representations of the core ideas.

I've seen many classrooms come alive as teachers incorporate multiple intelligences in the service of understanding. Some years ago, I was asked to do a television series for the Corporation for Public Broadcasting to teach learning theory to teachers. Howard and his work on multiple intelligences star in one of the sessions. In the *Learning Classroom* videos developed for this series, you will see teachers in a 1st and 2nd grade class aim for their students to understand the structure of flowers, including the names and functions of different parts. Students read about and dissect flowers, build a model, teach each other what they have learned, and write about flowers. It is clear that understanding means being able to think about an idea in more than one way and produce different representations of that understanding. In a high school classroom, the teacher asked his students to develop an understanding of the 1970s in terms of the history, culture, politics, social movements, and economic forces at play. Students draw on different intelligences as they research, discuss, write, and develop artistic and dramatic presentations.

In another part of this series, a skilled high school mathematics teacher who works with a large number of special education students in an inclusion classroom leads into a set of algebra lessons with a story about the journey of a group of Western settlers that sets a narrative, historical context in which mathematical problems can be more deeply understood. These problems have authentic purposes, such as calculating how long a quantity of food or water will last and how much should be taken. Graphing is taught as students envision how their wagonload will vary as they fill up the wagon with food and water and then use them up over time before it can be refilled. The geography of the trip is part of the puzzle: how far can the settlers go on different legs of the journey with the provisions that can be carried, knowing where they can stock up again? When learning is integrated, it comes alive and makes sense. What is most heart-warming in this teacher's classroom is to see the deep understanding of students who, in another context, would never have had access to this kind of content at all.

I have also benefited from Howard's work on authentic assessment in my own teaching and in the work I do with many schools, including a high school I work with in East Palo Alto, where 95 percent of the

students are low-income and 85 percent are new English learners. Although students enter the 9th grade with math and reading achievement averaging at about the 4th grade level, they are immediately immersed in a project-based curriculum aimed at preparing them for college. A key element is that students engage in exhibitions of their learning that require extended projects in each of the core disciplines—science investigations, social science research papers, literary analyses, and mathematical modeling projects—as part of a graduation portfolio. The design of these "performances of understanding" benefited from the work of Project Zero and the applications of these ideas that have been developed across the country.

After more than a decade, even within the constraints of high-stakes accountability, teachers in this school see year after year that greater motivation and deeper learning are stimulated by projects that are publicly presented and evaluated by teachers, peers, and outside experts against standards of thinking and performance. This work also promotes the development of school-wide standards that are widely understood, and encourages greater rigor, as students revise their work to meet standards.

When students' portfolios and products are evaluated by the students themselves, their peers, and their teachers, every member of the school community receives a steady stream of feedback about what quality work looks like. Teachers learn about the success of their curriculum and gain insights about individual students. This system of assessment makes the act of teaching itself an act of professional development, because teachers continually analyze student responses and use them in the development of their pedagogy. The press to cover content is replaced by a press to support students in successful learning. About 90 percent of graduates are admitted to college. When asked what helped them most, they invariably talk about the authentic assessments embedded in the exhibitions system as a critical component of their success. These are the words of some of them:

The [exhibition] system helped me to think critically, to question, to read on my own. In college, no one is directing me, I have to develop my own opinions.

Exhibitions helped me with writing and with public speaking. The last couple weeks of school, I was involved in a presentation to the president of my college and to foreign visitors, and I felt really ready.

Exhibitions helped me participate in college. They encouraged my research and my social skills. It was the most important thing I experienced, a big part of my high school. I want the teachers to know that the presentations mattered a lot.

As a teacher or researcher, one cannot fully know how the ripples of one's work eventually touch many others. Howard's work has produced waves on many shores, and I feel fortunate to be able to use it to help teachers and young people develop their abilities in ways that would have been unlikely without it.

References

Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs.* San Francisco: Jossey-Bass.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1993). *Multiple intelligences: The theory in practice.* New York: BasicBooks.

Gardner, H. (1999). *The disciplined mind.* New York: Simon and Schuster.

Howard's Response to Linda Darling-Hammond

Though I feel very close to you, Linda, both personally and professionally, to my knowledge we have actually not worked together on any sustained project. To be sure, we have been on many panels and broadcasts and even signed a few documents in common; and at one time it looked like you would be our geographical neighbors, in the Cambridge-Larchwood area. But with my life centered in Cambridge, and your professional life anchored first at Columbia Teachers College, and then at Stanford University, each for over a decade, that elbow-to-elbow collaboration still awaits us.

And so I have come to think of it you as 'twin star,' an ideological 'soul mate,' someone whom I do not see or speak to that often, someone whom I nearly always read carefully, and someone with whom I feel on the same page with respect to most of the major educational issues of our time. The coincidences are sufficiently striking that it leads me to conclude, only partly tongue in cheek, that we must be right!

How different our American educational policies and rhetoric would be today if Barack Obama had chosen you as his Secretary of Education! Let's say that, under a Darling-Hammond administration, the professionalization of the teaching cohort and the understanding, the confirmation, that education need not be 'one size fits all' had been foregrounded. I'm very moved, deeply moved, to read in your essay about how some of the ideas that colleagues and I have developed have proved useful on the ground in East Palo Alto—that portfolios, exhibitions, performances of understandings, and different solutions to a complex problem each have their places … And the fables are just right!

Alas, I 've come to believe that President Obama chose the person that was closest to his and Michelle's personal philosophy—and that philosophy fails to incorporate a generous view of human learning and the diverse forms and ends it can take.

In a recent poll undertaken by Rick Hess and colleagues, you were listed as the number one educational authority in America. (See http://www.frederickhess.org/2013/01/the-2013-rhsu-edu-scholar-public-presence-rankings). Your status is deserved! I was intrigued to find that Diane Ravitch was listed second, and amazed to find myself listed third. Perhaps that listing holds a glimmer of hope that sooner,

rather than later, American policy makers will pay more attention to your powerful philosophy of teaching and learning. When I am discouraged about the prospects of educational change in America, I am cheered by recalling the wisecrack often attributed to Winston Churchill: "The American people always do the right thing.... after they've tried every other alternative."

Reflections on Howard Gardner: Early Variations on C

Jessica Hoffmann Davis

I see now that my first encounter with Howard Gardner was a kind of cultural collision. Approaching 40, I was returning to school after years away in which I had raised a family, illustrated books and walls, taught mural making to children, and administrated a visiting artists program. Building on a spine of children and art, I hoped to make useful sense of my experience through the Master's program at the Harvard Graduate School of Education.

In my application, I described an observation that had intrigued me since the 1960s when I taught arts and crafts in the summer day camp at my mother's school in New York City[1]: the striking similarities between the artwork (process and product) of young children and professional artists. It was not just that five-year-old campers drew and painted with enviable freedom, turning the unintended stroke or slip of a brush into a new possibility, capturing emotion and gesture in a few simple lines. The images they produced looked a lot like what I was seeing on the walls of the Museum of Modern Art. What were the roots and implications of these similarities? This was a topic, I argued, that I was ready to address in graduate study. The admissions committee thankfully agreed.

During "shopping week," when Ed School students get to visit and preview the roster of available classes, I was immediately drawn to a course called, "Creativity." I was enthralled by the artistry of young children and certain that the class would directly inform my interests and passion. Instead, to my great surprise, the instructor seemed way off the mark. An energetic academic (slightly disheveled in appearance and definitely intense), he spoke to a packed lecture hall about the creativity

[1] My mother directed (and my family lived in the attic of) the Hoffmann School for Individual Attention in Riverdale, New York. They (the school and my mother) are the topic of my recent memoir, *Ordinary gifted children: The power and promise of individual attention* (2010, New York: Teachers College Press).

not of young children but of the movers and shakers of grown-up worlds such as psychology, dance, visual arts, and music. Yes, he was articulate, superbly organized, and really quite compelling in his presentation. But what was he doing, I wondered, in a school of education?

After the lecture, I went up to ask my burning question. “Professor Gardner,” I began, “did you ever consider that you might be ‘just wrong’?” “Just wrong” was an expression my favorite tutor at St. John’s College[2] sometimes used either to soften the blow or to humiliate a student (one was never quite sure) when an answer was wildly off base. “Just wrong?” Howard asked me hesitantly. “Yes,” I replied lightly, hoping to sound witty if not erudite, holding my ground even as I took a reckless leap: “Just wrong is what you are when the opposite is just right.”

Apparently on a roll, I went on with my question as to why Professor Gardner thought an audience of educators would care at all about the obvious creativity of folks like Gandhi and Freud or Picasso and Graham. Surely they were more interested in the unsung creativity of the small child or the unwavering creativity of that eccentric friend or relative who sculpts in her attic without recognition. “Creativity with a small c,” I explained. Although I thought I sensed a fleeting chill, Howard’s demeanor did not betray whatever measure of incredulity he must have experienced. He was calm as he asked, “Can you come to my office at Project Zero this afternoon at 4 p.m.?”

I spent the afternoon considering the appointment. Perhaps after all and even though this was just my first day at Harvard, I was about to be asked to leave. It was possible that there were different expectations for a rapport between student and professor than there were at St. John’s College where we were all learners together. There, in spite of their degrees and wisdom, the professors were called tutors. And in the spirit of reaching beyond imparting content to demonstrating the process of learning, tutors even taught subjects that were new to them or at least

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[2] St. John’s College is a liberal arts college known for its distinctive "great books" curriculum. All classes are discussion-based. My favorite tutor was the great Ford K. Brown, author of *Fathers of the Victorians: The Age of Wilberforce* (1961, Cambridge at the University Press). For more about St. John’s, go to http://www.stjohnscollege.edu/about/main.shtml

beyond their realm of expertise. Howard Gardner had seemed tutor-like in his bearing and was surely my contemporary in age, but it might not be customary to speak so candidly to a Harvard professor.

At the meeting, my concerns were shockingly upended. Professor Gardner was direct, as those who know him know he always is. Indeed (a word he has told me I use too frequently in my writing), he wasted no time in asking me if I would be his teaching fellow in the Creativity class. I was astonished, relieved, and curious as to what exactly a "teaching fellow" was. Flattered by his explanation (teaching assistant), I asked if I would still be able to take his class—I was genuinely interested. He explained that at Harvard one was not allowed to teach and take a course at the same time. What kind of place was this? But, he offered, I could do an independent study with him as an additional course. It seemed a good solution. After all, I'd get to hear his lectures in the class and I'd get to explore in depth and with an expert a question about creativity. I called my husband and told him I'd be a little late. I was stopping at the Harvard Coop to buy this professor's book (they all seemed to have a book).

As you can imagine, I could barely carry home the bag of books I found by Howard Gardner. This was 1983 and there was at that time already *The Arts and Human Development* (1973), the groundbreaking and to this day best and most beautifully written book on children's artistic development. This book, as well as the wonderful *Artful Scribbles* (1980), addressed—beyond my wildest expectations—my interests and passions, perhaps most centrally in their serious consideration of the artistry of young children. Equally exciting was the notion Gardner advanced that the mature artist might serve as a viable end-state for development—a bold step away from the logical-quantitative model launched famously by Jean Piaget. And yes, I learned lots about Piaget from *The Quest for Mind: Jean Piaget, Claude Levi-Strauss and the Structuralist Movement* (1973), that was also in the heavy bag I dragged home from the Coop. I had always believed that artists represented the heights of human potential. It was a tenet of my mother's philosophy as director of the Hoffmann School for Individual Attention.

The Hoffmann School celebrated not the norms to which children might from time to time aspire, but the differences that most importantly persist. Indeed (there it is again), at Hoffmann, difference was the given and sameness the illusion (Davis, 2010). Emerging from that context, I

felt that *Frames of Mind: The Theory of Multiple Intelligences* (Gardner, 1983) spoke directly to what I knew to be true about children and learning. As many teachers did, I experienced a certain homecoming reading that work. But I did not realize at the time that just as my clumsy collision with Howard Gardner would change the course of my professional direction, his theory of multiple intelligences would change forever the broader landscape of education.

I read them all, from the fascinating *Shattered Mind* (1975) to the immediately relevant (to the course we were teaching) *Art, Mind, and Brain: A Cognitive Approach to Creativity* (1982), which to my utter delight touted the creativity of the young child as artist. There it was up front in Gardner's preface: "If there is a single theme that haunts this book and my scholarly life, it has been the similarities and the differences between 'child art' and Art" (1982, p. xiv). Bingo. It was as if I had come to Harvard purposefully to study with Howard Gardner instead of stumbling upon him by accident in shopping week.

Lest it all seem too perfect, I must tell you that there was at first a serious disjuncture in the apparently spot-on alignment between my experiential interests and the scholarly focus of Howard Gardner's work. Howard and the folks at Project Zero were interested in something called artistic thinking (hence the zero because there was so little known about the subject). If we could drag out the old heart-mind dilemma, with all of us considering the arts and development, I was firmly stationed in the camp of heart and Gardner et. al. in what they saw as the new terrain of mind. I was a person who believed that art was magic—something I learned to keep to myself as a newcomer to the cognitive environment of Project Zero.

Veteran Zero researcher and Howard's wife, Ellen Winner[3] invited me to join a drawing group in which I remember we focused on the developing child's ability to compose objects in a drawing—usually with shapes of equal size balanced from side to side or up and down (Winner & Gardner, 1981). We discussed children's thoughtful planning where I had imagined intuitive action, and we explored the special case of balance found in asymmetry—where, for example, a large dense shape at

[3] And I devoured and adored Ellen's now classic book (new at that time), *Invented worlds: The psychology of the arts* (1982, Cambridge: Harvard University Press).

the base of one side of a drawing is offset by a small shape high on the other side (Arnheim, 1974). This approach was new to me and admittedly fascinating. I was learning about art even as I was learning about children's development, but the process was out of sync with the soft contours of artistic expression that for me defied the boundaries of rational thought.

Resisting the apparently hard if not limiting edges of the cognitive approach, I was astonished to see that it stretched so far as to re-envision emotion itself as constructed and mediated by intellect (Goodman, 1976; Sheffler, 1977). Indeed (again), I felt the shaking of certainties that I held dear, and I eschewed an approach that seemed decidedly un-artistic. Was I the only heart-driven artist among these students of art? Over time, I came to realize that within the ample arenas of art and arts learning, there was plenty of room for (if not a definite invitation to) multiple perspectives. One could pull the petals off the rose (does the saying go this way?) and there would always be more. In the end and for decades as now, I jumped in with optimism and enthusiasm, ready to learn what I was yet to know and to put to use what I already knew.

Creativity was the first course that Howard taught at the Ed School and the student reception was unprecedented. In the end (or perhaps I was the last on board), I was one of about eight teaching assistants needed to accommodate the large numbers of students eager to take the class. Howard was an extraordinary mentor to us all, meeting with us regularly, expecting us to know things I stayed up all night learning, requiring our utmost respect for student interest and autonomy (our comments were to read as collegial critique), and fostering among us a community of high standards and dedication. So much of what I learned about teaching at the graduate level was from that first encounter in Howard's new course. We were excited to be working with and for a superstar and eager to help make his main stage debut a success. And it was.

Howard made everything clear—his expectations for student work, and his expectations for our timely responses. Even as I learned about peer critique and framing and pursuing research studies, I marveled at his lectures in which, to my surprise, he spoke very little of himself or his own work. With all these splendid books on which a course in Howard Gardner could easily be structured, he was providing students with a

contextual framework of history and theory. He wanted us to know what we needed in order to read and appraise rather than to have content spoon-fed. He invited students into the conversations of the field and challenged them to embrace one perspective or another (from cognitive to psychoanalytic to psychometric) and make their own individuated sense of it all. Perhaps I wasn't as far from St. John's as I had imagined. Or from the Hoffmann School.

I would go on through my doctoral study to work as a teaching fellow for Howard in later iterations (smaller, more seminar like) of the Creativity course. It was wonderful to see the class evolve and to be learning and reinterpreting the lessons of course development and planning. The population changed constantly and with it the nature of individual student research. We had veteran teachers, musicians, psychology majors from Harvard College, and budding architects from the School of Design and MIT. They considered varied and new elements of creativity, incorporating markers as subtle as the movement of a physically disabled child's hand or the little noted sounds of empty buildings.

Howard embodied the teacher as learner (this was poignantly true), because he was genuinely interested in others' ideas and respectful of even the most nascent (if earnest) researcher. I enjoyed and am grateful for my experience teaching with him and, with the forgiving lens of recollection, I can only remember one obstacle to our collective process. That was our ability to focus together on individual students. In addition (if not contrast) to the bursting file chest of details that abides in Howard's brain, he has a condition through which he has difficulty distinguishing individual faces. I on the other hand am extremely visual with if not a condition then at least real difficulty remembering what I see as small details such as a person's name. And so it would go:

Jessica: "You know Howard, the one with the red hair who is always smiling?"

Howard: "Is it Leslie Andrews from Indiana with the interest in music?"

Jessica: "She wears a lot of make up and looks super-engaged."

Howard: "Did she go to Williams College and study political science?"

In the independent study that first allowed me to assist in the Creativity course (as in the research I was to go on to do at Project Zero and beyond), most communication with Howard occurred through memos. From all the work we did and for no good reason, I saved a file drawer's worth of these memos. Reviewing them for this festschrift, both those I wrote or received individually and those to other students and researchers on which I was cc'ed, I was overwhelmed by the breadth and depth of attention that Howard shared with all of us.

Fellow alumnae of the memo loop may remember that HG memos often began with an apology, "I am sorry. I am en route to wherever and do not have time to pay real attention to (or the attention deserved by) your draft (of a research questionnaire or a letter to some important funder, or the outline for your research study, or the latest version of your paper)." After that introduction, you found easily three pages of detailed commentary on whatever it was to which he was too rushed to attend. After weeks of working on a long draft of a qualifying paper or thesis, there was relief in turning it in to Howard and hearing him say, "I won't be able to get to this for several days." But invariably his comments (great ones by the way) were in your box at day's end. One can only imagine what we might have received had he had any time. Either way, I believe that my memos to Howard were regularly longer than any from him to me. And as far as I can see, I never opened with an apology for their length. I think/hope a festschrift may have room for this: "Sorry Howard for all those extra words."

In my first independent study memos to Professor Gardner, my primary objective was to impress. Asked to brainstorm a topic for research, I wrote a five page single space memo which included everything I knew about Thomas Mann, focusing deftly on his quintessential story of the artist, "Tonio Kroeger"(1903), Franz Kafka, reaching for Holocaust implications in his famous story, *In the Penal Colony* (1919), and Rainer Maria Rilke who was my favorite poet. Howard's comments burned to the quick: "I know you know how to write about these authors; let's try something new, something you don't know how to do. Why don't you try it my way? Find something you can demonstrate empirically."

I was livid. I had worked for hours on my memo and, by the way, received "A"s from other teachers at other schools on earlier versions of the included topics. It felt as if Howard had barely read it. When I

studied HG's last comment (a postscript), I decided for a day and a half to drop out of the independent study: "And try to make your memos less than a page double spaced." I was beyond offended and shaken with a discombobulation that I think now was akin to what Piaget called disequilibrium. It is always easier to rail against new thinking—to quit before taking the risk of extending yourself—than to rearrange the comfortable knowing that you enjoy with a new way of putting things together. Moving up a rung on Piaget's hierarchical ladder, I calmed down, looked up "empirical" (verifiable by observation), and learned how to frame a research question and to think seriously, and perhaps even creatively, about ways to address it.

What are the similarities and differences between the drawings of young children and those of professional artists? Originally, I was only interested in the similarities. Indeed (see what he means?), that was the way I performed my initial analysis of my independent study data. I spread out on the floor the drawings that I had collected from children and artists and walked around grabbing the ones that looked alike. It was heady and great fun. "Look, this artist and this child, expressing the emotion sad, have both drawn a lonely figure on a chair." Bingo. But Howard insisted that I look beyond the reassuring matches and remember that the differences (and some other things called outliers) had to be noted as well.

At first a downer, these mandates opened up a whole new sense of rigor, a whole new heart of the matter, and a whole new understanding and interest in trajectories of development (Davis, 1992). Inquiry and reportage awakened new questions and more research, writing, and teaching opportunities. Propelled by passionate advocacy for the importance of development and learning in the arts, my endeavors would finally lead to the creation of a master's program in the arts in education. Throughout it all, at the end of a memo, in a chair in the audience, at a conference table, in a glowing recommendation, a phone call correcting a faux pas, or a letter suggesting I fill in on whatever writing assignment he had not time to do (or I sometimes thought felt it was time for me to do): Howard.

In 1996, Howard invited me to write a chapter with him for a festschrift for the creativity scholar Frank Barron who, as Howard is now, was turning 70 (Davis & Gardner, 1997). I happily said yes, went home to look up "festschrift" (a collection of writings written as a tribute

to a scholar), and set out to do something novel if not creative with the construction of our essay. Howard was as usual supportive of my ideational flight as long as it was grounded in reality. There had been that time in his doctoral seminar on symbolic functioning where I had suggested in my class presentation that the developmental theories of pretend play launched by Lev Vygotsky were heavily influenced by the writing on the same subject by Jean Piaget.

Howard had been listening attentively to my presentation, as he did to all the seminar presentations, and was careful not to interrupt under any circumstances (he jotted notes for consultation at the end). On this account, I knew I was in deep trouble when he politely interrupted, "Excuse me Jessica. I think it is important to note that Vygotsky (1896-1934) had been dead for eleven years when Piaget wrote his treatise on play and imitation (1945)." I was mortified. "Dead?" I asked with genuine surprise. "Dead." He replied. What was I to do? I gave it a shot. "Well," I said as if this was no big deal, "you'd have to agree that Piaget's writing on play and imitation was pretty much foreshadowed in his earlier work." The room was silent; my fellow students sat at the edge of their seats, and in one of those great moments with a great teacher in which above and beyond all else compassion and humanity rule, Howard nodded, "I'll accept that."

But for the festschrift for Frank Barron, I knew there would be no such leaps of faith. Drawing carefully not only on work done by Barron, but also from studies by Howard and his colleagues, our essay was called, "Creativity: Who, What, When, Where" (1997). With faint but apparent connections to a Socratic dialogue, and less obvious ties to Howard and my shopping week encounter, two characters were in dialogue: A Mystic (me of course) and a Solver (Howard). The Mystic envisioned creativity as a "divine madness," something that possessed small children and Uncle Harold who painted without recognition in his garage (small c creators). The Solver envisioned a dynamic in which the where (the occurrence of creativity) emerged from an interaction among the who (the individual), the what (the domain or medium of the creation), and the when (the field of others who recognize the work as creative) (Csikszentimihalyi, 1988).

Mystic and Solver parried back and forth around the differences between Big C Creativity (like Freud's creation of psychoanalysis) and small c creativity (like the minimally if at all creative gesture of serving

salad at an unexpected moment in a dinner). Overall, the Mystic was disturbed by the fluidity of the when of creativity (today's vs. tomorrow's field). She wondered if the domain, field, and individual paradigm were stretched across centuries, if the work of small c Uncle George might one day be considered big c Creative. In the end, the two protagonists allowed that, "The who and what and when of creativity may be beyond our judgment so long as the where of creativity is not necessarily of this moment." The Solver ends the piece by saying, "By not elaborating on what you say, I hope you will accept from me to you: the last word" (1997, p.147). It had seemed hilarious at the time.

I saw the essay primarily as a return to the very first conversation I had had with Howard. But the content and perspectives, like the rapport between speakers, had substantively changed. The Mystic portrayed a very different version of me, equipped with a new vocabulary and broader theoretical vision, seeing beyond "just wrong" and "just right" to the territory of what if and why not. I cannot attribute all that change to Howard (he'd be horrified if I did). In a very real sense we choose our mentors and we learn from them whether they make it easy or hard. Like so many folks I expect to see in this volume, I chose Howard. There was ambivalence at first because of my resistance to a cognitive approach. But that quickly turned to enthusiasm as I was privileged to enjoy his insights, guidance, and the inspirational example he provides of tireless intellectual curiosity. Enthusiasm has turned to persistence as even now after I have moved away from the academy to write on my own, I find myself thinking, "This is pretty good. I better show it to Howard."[4]

Howard has shaken the rafters of right and wrong definitions from his celebration of childhood artistry to his recapitulation of intelligence to his new frames for creativity and leadership and more recently his wise and generative insights into the very same issues—truth, beauty, virtue—that occupied the minds of the great philosophers whose work we studied at St. John's. Howard has braved new territories of thought and thankfully written about it in language that others can understand. He is

[4] In this vein, I recently sent Howard a copy of my latest book, *Why Our High Schools Need the Arts* (2012, New York: Teachers College Press). He thanked me for the book and urged me to consider (and perhaps make the focus of my next writing project) the ways in which I disagreed with others in the field. I was outraged. Had he even read my book? Nonetheless, and as always, I've begun to think it over. Might not be a bad idea. We'll see.

a skilled and graceful writer who generously guides others in their writing, a profound thinker who respects others' perspectives, and a splendid mentor who takes risks on people and ideas.

This tribute could have been so much longer. I didn't even mention our first collaboration with the Isabella Stewart Gardner Museum, the beacon that arose therefrom as Project MUSE, the brave step beyond school walls that was Project Co-arts, or the many meetings around the once imagined, now-well- established Arts in Education Program. But I believe a tribute should embody its message. The hardest thing Howard taught (or tried to teach) me was that less is always more. I'm still not sure I agree, but in deference to that guidance, I close, ignoring the much more that there is to say, sharing my admiration, appreciation, and applause, and leaving for you "dear Solver as in all things, the very last word." Indeed.

References

Arnheim, R. (1974). *Art and visual perception: A psychology of the creative eye*. Berkeley, Los Angeles, London: University of California Press.

Brown, F.K. (1961). *Fathers of the Victorians: The age of Wilberforce.* Cambridge at the University Press.

Csikszentmihalyi, M. (1988). Society, culture, and person: A systems view of creativity. In R. Sternberg (Ed.), *The nature of creativity* (pp. 325-339). Cambridge: Cambridge University Press.

Davis, J. H. (1997). Drawing's demise: U-shaped development in graphic symbolization In McRorie, S. (Ed.), *Studies in Art Education, 38*(3), 132-157.

Davis, J. H. (2010). *Ordinary gifted children: The power and promise of individual attention.* New York: Teachers College Press.

Davis, J. H. (2012). *Why our high schools need the arts.* New York: Teachers College Press.

Davis, J.H., & Gardner, H. (1992). The cognitive revolution: Its consequences for the understanding and education of the child as artist. In B. Reimer & R. A. Smith (Eds.), *The arts, education, and aesthetic knowing: Ninety-first yearbook of the National Society for the Study of Education, Part II* (pp. 92–123). Chicago: University of Chicago Press.

Davis, J.H., & Gardner, H. (1997). Creativity: Who, what, when, where. In A. Montuori (Ed.), *Unusual associates: A festschrift for Frank Barron* (pp. 138–147). Cresskill, NJ: Hampton Press.

Gardner H. (1973). *The arts and human development.* New York: Wiley.

Gardner H. (1973). *The quest for mind: Jean Piaget, Claude Levi-Strauss and the structuralist movement.* New York: Knopf.

Gardner H. (1973). *Shattered mind.* New York: Knopf.

Gardner H. (1980). *Artful scribbles.* New York: BasicBooks.

Gardner H. (1982). *Art, mind, and brain: A cognitive approach to creativity.* New York: BasicBooks.

Gardner H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: BasicBooks.

Goodman, N. (1976). *Languages of art.* Indianapolis, IN: Hackett Publishing Co.

Kafka, F. (orig. 1919/1995). In the penal colony. In *The complete stories of Franz Kafka*. New York, Schocken Books).

Mann, T. (orig. 1903/1989). Tonio Kröger. In *Death in Venice and seven other stories* (pp. 75-132). New York: Vintage Books.

Piaget, J. (1945). *Play, dreams and imitation in childhood*. London: Heinemann.

Sheffler, I. (1977). *In praise of the cognitive emotions and other essays in the philosophy of education.* London, New York: Routledge.

Winner, E, (1982). *Invented worlds: The psychology of the arts.* Cambridge, MA: Harvard University Press.

Winner, E., & Gardner, H. (1981). The art in children's drawings. *Review of Research in Visual Arts Education*, *14,* 18-31.

Howard's Response to Jessica Hoffman Davis

The record shows that we have never been married and, indeed, we spent the first few decades of life in different parts of the world, and now, once again, live many miles apart. (For the record: we each have our own spouses, children, and grandchildren!) Yet for a period of two decades, the last decades of the 20th century, our contacts were as regular, and our discussions, debates, and decisions were as vivid as those of many married couples.

Officially I was your mentor; first in your doctoral studies, then as the director of the teaching fellow cohort, and then in your earlier years as an investigator at Project Zero. And even though the idea of an "Arts in Education" concentration for students at the Graduate School of Education was clearly your idea, it was my responsibility to shepherd it through our sometimes—perhaps, I should quip, *always*—skeptical senior faculty.

But anyone who was close to the ground would have seen that our interactions were mutual, equal, bilateral, and synergistic. From your own background as a student at your family's Hoffmann School and St John's College, from your work as an artist (and now a playwright), from your early life in the artistic corners of New York City, and, not least, from your own parenting and teaching, you had formed very strong and very cogent ideas about how education in general, and arts education, in particular, should take place. And while we did not always disagree, there were, as you chronicle vividly in your essay, many areas of distance between us; debating, discussing, arguing, experimenting, how best to accomplish our goals of strong arts education was an education-in-itself for me, and, I suspect, one for you as well. The lion of 'cognitive rational artistry' did not always rest easily aside the sheep of 'emotional, impulsive, authentic creativity,' but we talked it out, whether we were trying to compare child art to modern abstract art or pondering the best set of questions to pose to a young first-time visitor to a gallery or museum.

Nor, can I say, were our resolutions ones where the person in power (bureaucratically, I'd be that person), or the person on the ground (usually, you) or a safe middle ground prevailed. Rather, we discussed, debated, and argued until we came up with solutions and resolutions

that were stronger and more appropriate than either of us would have advocated alone. Neither the Mystic nor the Solver is nearly as powerful as a judicious blend of these contrasting stances.

I salute your willingness to wrestle difficult issues to the ground and to come up with solutions which build on the widest gamut of strengths. And I must single you out as one of the best "Menschen-kenners" I've ever encountered. The fact that twenty years later, I am still working closely with Wendy Fischman and Lissa Soep, is a tribute to your keen, virtually unerring eye for talent and your capacity to nurture that talent. I can't name them—and apparently you can't either!—but I know that there are hundreds of individuals whom you took under your wing at Harvard and who now are artistic leaders all around the globe. Bravo!

Learning from My Mentor

Katie Davis

MI Inspiration

I decided that I wanted to be a teacher after spending the summer between my sophomore and junior years of college as a camp counselor at an oceanography day camp in Bermuda. When I returned to Williams, I enrolled in Susan Engel's Psychology of Education course. Susan introduced me to Piaget's stages of cognitive development, Vygotsky's zone of proximal development, and, of course, Gardner's multiple intelligences theory. The readings interested me and affirmed my decision to enter the field of education, but they didn't particularly inspire me. That was perfectly fine with me. I wasn't looking to theory for inspiration; I found plenty of that in the classroom.

But then a funny thing happened when I returned home to Bermuda for Thanksgiving. I had recently celebrated my 21st birthday, and my step-mother gave me a copy of *Creating Minds*, by Howard Gardner. I'm still not sure if she selected the book because of Howard's connection to education, or if she simply thought I would enjoy reading the biographies of some of the 20th century's most creative figures. For my part, I was surprised—and intrigued—to see a name from a course reading list show up on the cover of a popular book.

As a scholar of education, I admit somewhat sheepishly that it was *Creating Minds* and not *Frames of Mind, Intelligences Reframed,* or *The Disciplined Mind* that brought me to Howard and Appian Way, first as a master's student in 2001, then as a doctoral student in 2005. Though I was an English major and had grown up devouring books, I had never been inspired by a book quite in this way. My inspiration came from Howard's use of a compelling theoretical framework—MI Theory—to provide new insight into relatively well-trodden subject matter: the distinctive creativity and genius of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi. By the time I had finished the chapter on Martha Graham, I knew with the certainty that only a 21 year-old can have that I must—and would—study with this Howard Gardner and learn to think and write like he does. The fact that Howard was based at an education school only re-affirmed this certainty.

From Star-Struck to Scholar

I took both of the courses that Howard taught during my master's program at HGSE. H-105 was what Howard described during the first class as a "meat and potatoes" survey of research and theory in cognitive development. H-175 was the inaugural GoodWork course, a much smaller and individualized course that was more boeuf Wellington and pommes frites than meat and potatoes. Though the two courses were quite different from one another, I felt equally intimidated by each. I was particularly unnerved by the speed with which Howard absorbed, synthesized, and offered an astute opinion on my classmates' reactions to and questions about the course readings. (I say my classmates' reactions and questions and not my own, as I mustered the courage to speak in class infrequently.) If this is what it meant to think like Howard, I was now unsure that I would ever learn.

By the end of my first semester at HGSE, I was less sure of my intellectual potential but no less enamored with the intellectual life. And then one day, Howard called me into his office. It was a few minutes before our final H-175 class, and I was sitting on the couch outside the classroom on the second floor of Larsen Hall. Howard emerged from his office just around the corner and asked if I had a moment to speak. I followed him nervously into his office and took a seat amidst the piles of papers strewn purposefully on the floor, desk, meeting table, and chairs.

Howard sat down in his chair and got straight to the point. He was pleased with my work in both of his classes, though he noted that I was quiet, particularly in the larger class. I explained to him that I'm typically more outspoken in class, but in his presence I found myself somewhat star-struck. He dismissed my awe with a chuckle and an assurance that—while flattered—he saw no reason for me to feel intimidated. His sincerity was evident and corresponded with the understated décor of his office. Looking back on this scene after seven years as Howard's student and colleague, I understand now that he was communicating to me a message more profound than "Relax, I won't bite." He was telling me that I needed to move beyond my awe if I wanted to learn what he had to teach me about the life of a scholar.

In the conversation that followed, Howard asked if I had given any thought to doctoral work and, specifically, whether I had applied to the doctoral program at HGSE. (I had not but was planning to apply after I

had some teaching experience.) He thought I would do well as a doctoral student and, though he couldn't guarantee I'd ultimately be admitted, encouraged me to apply to HGSE when I was ready. I can't remember what I said in response or how our conversation ended. I remember only that I put considerable effort into masking the thrill of receiving such encouragement from my intellectual idol. The remainder of my master's program fades to a blur compared with those few minutes in Howard's office. His encouragement made me believe that perhaps there was a scholar in me, after all.

After three years as an elementary school teacher and days into my doctoral program, I found myself sitting once again in Howard's office. He wanted to know what courses I was taking, what research opportunities I was pursuing, and what I hoped to get out of my time at Harvard. Though I was only slightly less intimidated than I had been during my first visit to his office, I was nevertheless determined not to let my nerves interfere with my primary goal of learning to be a scholar whose work mattered (in other words, to be like Howard).

Now, with my doctoral work completed, my nerves have been replaced by a deep admiration and respect for Howard. I've had the privilege to work with my mentor in a variety of capacities: as his student, teaching fellow, research colleague, and co-author. I've long since resigned myself to the simple fact that, though everyone has multiple intelligences, there can be only one mind like Howard's.

Even so, under Howard's tutelage, I've become a scholar. Among the many lessons he has imparted to me, the four I value most include: 1) reflecting consistently on the quality of one's work, 2) remaining open to different perspectives, 3) getting the job (or multiple jobs) done promptly, and 4) framing one's ideas for diverse audiences.

Reflection

I first learned to appreciate Howard's propensity toward self-reflection when I served as his teaching fellow for H-175, the "GoodWork" course. Before each week's class, Howard sat down with the two teaching fellows, Tiffanie Ting and me, to discuss his lesson plan for the afternoon. Though necessarily tied to the course syllabus, this agenda was shaped each week by our collective reflections on the preceding class, our intervening communications with students, and any current events that Howard thought would illuminate particular topics. In these

meetings, I observed that Howard's reflections tended toward the most vexing aspects of the course: an imbalance in class participation, a student's critique of the GoodWork framework, a paper (or five or six) that wasn't taking shape as hoped. If the same two students were dominating class discussion, we thought through strategies we might use to encourage others to contribute their ideas. In the case of challenges to the GoodWork model, Howard considered whether he had addressed them satisfactorily in the previous class; if he determined he had not, he considered how he might take a different approach in the next class. Howard's reflections weren't limited to the course as a whole; he also reflected on the progression of each individual student. He memorized everyone's name early in the course and monitored their growth, both in class and in their writing. He used these reflections to help Tiffanie and me in our efforts to support those students who were struggling. At the end of the semester, when all the papers had been graded and the evaluation forms completed, Howard convened his teaching staff for one final reflection on the strengths and weaknesses of the course. True to form, he homed in on the more critical student evaluations and prompted us to consider what changes we could make to the course to address them.

Perspective

Howard's reflective capacities are complemented by his openness to others' perspectives. He doesn't assume that his word is final simply because he's typically the most accomplished and smartest person in the room. During my first year as a doctoral student, I received an email from "Methusula" inviting members of the GoodPlay and Trust Projects to give him feedback on an op-ed he had just drafted for a major national newspaper. I've forgotten the precise topic, but not the surprise I felt when I received Howard's request. I, who had never written an op-ed other than for the high school newspaper, was being asked for my input by someone who had penned many. What could I possibly have to offer? Howard knew very well: a different perspective informed by a different set of experiences and understanding of the world.

I believe this openness to diverse points of view may also help to explain why Howard connects so well with children. Though I've only seen him around children on a handful of occasions, each time I've been impressed by the mutual understanding that marks their interactions. I suspect that this understanding comes from Howard's ability to open

himself up to viewing the world through their eyes. Children can sense the difference between someone who talks to them from a place of empathy and someone who talks to them from an adult's distant perch. I try to emulate this empathy in my own life. In addition to making me a better person in general, I believe it makes me a better scholar in particular. By remaining open to different perspectives, I'm more likely to avoid the trap of focusing solely on evidence that confirms my preexisting beliefs.

Productivity

Howard has an uncommon ability to sit down and get the job done. I continue to marvel at the way he can produce a fully realized piece of writing in a matter of hours. It sometimes makes working with him challenging, because he sets deadlines according to how long it would take him to complete a given task. My general rule of thumb is to triple the amount of time Howard suggests a task will take and plan my schedule accordingly. And, if I ever feel my motivation flagging, I remind myself of the time Howard went to the hospital for out-patient surgery one morning and showed up at the office before lunchtime. Sure, Howard's example is a high bar to reach, but I enjoy the challenge of aspiring to it, nonetheless.

Howard's prodigious work ethic is, in essence, a sign of respect. Whether grading student papers, critiquing advisees' and colleagues' work, or replying to the requests for jobs, book endorsements, and speaking engagements that he regularly receives, Howard manages to give his feedback within hours (often minutes) to just about every email and phone call that comes his way. His prompt response indicates, "I know you put effort into this and are waiting for my feedback. I won't keep you waiting." When I was his teaching fellow, by the time I had read through two papers, he had sent me detailed feedback on ten. That he continues to read and provide feedback on every one of his students' papers is rare among any university professor, let alone one as distinguished as Howard. His students often expressed to me their surprise and deep appreciation that Howard took the time to read and respond to their work. I must admit I wasn't quite so appreciative when I turned in the first draft of my thesis on a Friday afternoon and had received Howard's complete feedback—general comments lettered A through H, more specific points numbered 1 through 50—by 10am the next morning. I was hoping that I'd have at least a weekend free from

thinking about my dissertation, but I should have known better. I didn't grumble for long, because I recognized how fortunate I was to have an advisor who showed respect for my work and interest in my progress as a scholar by providing me with his immediate and detailed feedback. What's more, I know that I'm not a special case. Howard would do the same for a fellow professor or an undergraduate student, a principal investigator or a research assistant.

Framing Ideas

The fourth of my most valued lessons from Howard concerns his ability to frame ideas persuasively and memorably for diverse audiences. In our weekly team meetings at Project Zero, once we've updated him on the status of our subject recruitment, data collection, or analysis, Howard pushes us to identify—or at least anticipate—new and noteworthy themes. In these discussions, Howard encourages us to focus on the unexpected rather than the predictable, the peculiar rather than the mundane. No need to spend time on findings that others have explored before us. Rather, our time is better spent by focusing on those findings that speak to an unanswered question or that provide an alternate narrative to the one that dominates existing literature.

Howard is in good company with respect to wanting his research to contribute new insight into existing theory and research. What distinguishes him from many academics is his desire to speak to both academic scholarship and public discourse. Howard understands that if our work is to have impact beyond academe, it needs to capture the attention of and resonate with a non-academic audience. So, in addition to preparing journal articles and conference presentations, we spend time thinking about the elevator speech, the newspaper headline, the 140-character tweet. I know that Howard is rarely satisfied with the public attention that our work attracts. While I sometimes share this frustration, I'm nevertheless grateful to be encouraged at every turn to relate my work to a broader audience. Working with Howard, I'm reminded on a daily basis that scholarship can and should hold relevance beyond academia.

Reflection, perspective, productivity, framing ideas—powerful lessons to have learned from my mentor. These lessons have equipped me with the habits of mind and work ethic to become a conscientious and effective scholar. They've also given me something even more

meaningful: a sense of responsibility that extends beyond myself and my immediate context. After seven years in Howard's company, I find myself thinking frequently about the kind of person I want to be, the type of world I want to live in, and the contribution I might make to ensure that such a world comes to pass. In short, during the course of learning to become a better thinker, Howard's example has made me a better person.

Howard's Response to Katie Davis

Project Zero has been in existence for almost 50 years, and I have been there through all of them—for better or worse, through thick or thin, through deficits or (very, very rarely) through surpluses! Many wonderful individuals have worked at Project Zero; more than a few have chosen to build their careers within the organization that sports an enigmatic name and a whimsical mascot. Katie, you spent a solid decade at Project Zero—as masters student, doctoral student, researcher on several projects, and then as a post-doctoral fellow, before assuming your present position as a professor at the School of Information and Communication at the University of Washington in Seattle.

While we have been blessed with a great many 'stars' at Project Zero—past, present, and future—when you left Cambridge I took it upon myself to declare you a 'permanent member of Project Zero.' I don't think that I had the power to do it, and I don't think it's ever been done for anyone else, but no one raised an eyebrow because in so many ways you represent the best of Project Zero and, I might add, the best of young scholarship in America today. One price you must pay: you still get copies of most of my memos, but I hereby free you from having to respond to them.

You achieved this remarkable portrait against some odds—you come from Bermuda (a place which most citizens of the United States are unable to locate on a map), spent a lot of your youth in Nova Scotia (equally difficult for US citizens to locate), chose to attend Williams College (as a member of its Board, I can assure you that Amherst College is much better! :) But in fairness to Williams, you met Susan Engel there and began to pursue an interest in child and adolescent development and education, which remains a throughline in your research enterprise today. After a few years of 'real teaching,' you returned to GSE and there you probably set a record for the number of professors who wanted you to be <u>their</u> teaching fellow, whether it was on the topic of good work, quantitative analysis, qualitative analysis, adolescence, or media; indeed, nearly every section of our catalogue either bore or wanted to headline the name "Katie Davis."

Outstanding as are your teaching, writing, and research, I think you stand out most, Katie, as a person who sets very high standards for

yourself, can be quite critical of yourself, and then helps those around you to aspire to those standards, to the very best of their abilities. Not everyone is going to approach the standard of Katie Davis—very few will, in fact. But the opportunity to work alongside you and to see how you tackle things, and how well you deal with the unexpected; well, these are wonderful gifts. I know that you kindly attribute some of these traits to me, but believe me; I could see them there in you from the first … The most that I did was to season them a bit and then say 'go to it' and 'go for it.'

I leave to last the exceptional opportunity to co-author with you The App Generation. As one who has tried co-authoring with many people, I can assure you that it is not an easy undertaking, and in fact is one replete with pitfalls. (And that's mostly articles—books are that much harder!). I cannot speak for you but I had a wonderful time collaborating with you on this unusual joint project. And on those relatively rare occasions where we disagreed, I listened carefully and invariably learned. And while the book has not yet risen to the top of the best-seller list, I remain confident that it will enter into the thinking of thoughtful analysis of young people, in the US, Bermuda, Nova Scotia, and, indeed around the world (which now includes Korea, China, Spain, Romania, and Italy, among the various nations that are in the process of issuing translations).

Jared Diamond

Dear Howard,

You have my hearty congratulations on reaching your 70th birthday. Because I already passed that landmark a few years ago, I can assure you with wisdom of hindsight: you have just reached life's peak and the beginning of its best time. If you enjoyed your previous decades, you will enjoy the current years even more. Don't be misled by the dictum that American male life expectancy is 78 years, which would mean that you have statistically another eight years. That's for life expectancy at birth: for someone now actually at age 70, life expectancy is around 90. Congratulations, and keep on taking satisfaction out of your contributions to the world.

Best wishes,

Jared Diamond

Professor of Geography

Howard's Response to Jared Diamond

In the early 1990s, I published my book *Creating Minds*. The book consisted of portraits of seven creative geniuses, each of whom purportedly was outstanding in one of the intelligences that I had identified (e.g. T S Eliot, as Linguistic; Martha Graham as Bodily-kinesthetic). I was surprised and honored to be invited to speak about the book to the History of Science Colloquium at Harvard. I gave my standard talk, with featured the 1990s equivalent of PowerPoint slides, and then opened up for questions from the floor. The questions were routine until a short energetic elderly man spoke up and said, "Using your taxonomy of intelligences, you will never be able to account for the genius of Charles Darwin."

This seemed a thoughtful and perhaps even an accurate remark. After the colloquium had ended, I learned that the interrogator was Ernst Mayr, already in his 90s, the leading evolutionary biologist of his generation, and one with a deep understanding of what Darwin had achieved as anyone on the planet. (Mayr went on to publish four books in his 90s and died at the age of 100 in 2005).

Over the next years, stimulated by Mayr's probing comment, I came to think about two capacities that I had ignored in my original taxonomy: One was the ability of the naturalist—the person who could make consequential distinctions among one plant and another, one animal species and another, one cloud configuration or rock configuration—obviously crucial for a naturalist like Darwin or for Mayr, who was an expert on the birds of New Guinea. The other ability I came to call the synthesizer—the ability to take in huge amounts of information and then organize the mass of data in a way that is cogent, and that is understandable both to oneself and to others. Clearly, in his postulating a small set of basic laws of evolution, Charles Darwin had accomplished this feat as well.

There is no necessary link between being a keen naturalist, on the one hand, and the capacity to come up with powerful syntheses on the other. John James Audubon stands out much more as a naturalist, Karl Marx as a synthesizer. Yet in my experience, in the last 150 years, the concatenation of naturalist intelligence and the synthesizing mind is most likely to occur in the biological sciences and to the names of Darwin

and Mayr, I would add E.O. Wilson, Stephen Jay Gould, and Jared Diamond. (I would also add the name of D. Carleton Gajdusek, a teacher for both of us, but the necessary biographical exegesis of DCG will need to be saved for another occasion.)

When I decided to launch a small series of television shows on the topic "Extraordinary Minds," I asked you, Jared, if you would participate and you kindly agreed. As all who know you would testify, you were a total professional, though never without a twinkle in your eye. Jared, in that program, you certainly demonstrated your remarkable capacities as a naturalist, synthesizer, and more. I take it as a vote of confidence that you have assured me an actuarially long life—one that I plan to make actual as well as actuarial.

Howard Gardner and the Study of Education

Kieran Egan

Educational Research in a Mimetic World

The particular aspect of Howard Gardner's good work I would like to discuss requires some brief and relatively recent historical background. Around 200,000 years ago our hominid ancestors experienced as a species the last of the unusual spurts in brain size that have made us the odd animal we are. Increased brain size clearly was delivering to our ancestors some advantages that led to increased breeding possibilities for those endowed with the larger braiRs. No doubt all kinds of other mental refinements that did not confer breeding advantages just got lost along the way—otherwise we'd clearly be a much better lot than we are now.

This significant advantage also created a problem as it went forward. Having bigger and bigger brains is all very well, but half of my possible readers will likely be more sensitive than the other half to the problem bigger brained babies create. Women had to be able to give birth to these bigger brained babies while also being able to preserve the ability to walk and run when required. Being able to give birth to large brained babies is fine, but if you can't run away from something that fancies you for lunch, that's not much of an evolutionary advantage for your species. The evolutionary compromise and "solution" firstly accommodated the female pelvis as much as structurally possible while keeping running capacity intact and then, more successfully, accommodated by our giving birth to babies with their brains immature and letting significant development of the head size occur outside the womb. The amount of this development created a unique proportion of our life span dedicated just to becoming physically and mentally competent. Our big brains created the invention of an extended childhood. So we are born with a cranial capacity of around 350 cc., which is not dissimilar from that of our chimpanzee cousins. During the rest of their lives, chimpanzees add about 100 cc., whereas we add over 1,000 cc., much of which happens in the first five years of life.

The foremost educational researchers of the time came up with a series of brilliant innovations. They took the training of the young from

the previous reliance on the slow shaping of instinctual abilities to observe and copy behaviors—so that cultural products like stone-cutting tools could be made (without any significant developments over hundreds of thousands of years)—to more generative forms of apprenticeship allowed by, or developed dialectically with, the new cognitive developments. The new cognitive toolkit that these educational researchers could work with involved what Merlin Donald (1991, 2001) has characterized as a new set of "mimetic" capacities for expressing intentionality, and for what he describes as a new generativity in human behavior, adaptable public forms of communication, distinguishing representations from their referents, and "autocueing." This last is "the ability to reproduce actions on the basis of self-generated cues, which permits voluntary recall of mimetic representations, without the aid of external cues—probably the earliest form of representational 'thinking'" (Donald, 1991, p. 173). The social consequences of these skills becoming common due to the work of our educational researchers in these prehistoric communities would include "collectively invented and maintained customs, games, skills, and representations" (p. 173). These skills enable the sharing of knowledge without each member of the social group having to reinvent it.

These capacities also must have involved refinements of our hominid ancestors' emotional engagements with their world and relatedly their sense of humor, their patterning recognition and generation skills and relatedly their musicality (Mithen, 2007), and a number of other capacities whose embryonic forms have developed into features of our current conceptual make-up (Egan, 1997). Educational researchers among these hominid communities, sapiens and neanderthal, worked deliberately with the cognitive toolkit they observed developing in the children of the communities and shaped its resources to ensure a harmonious society deploying its skills to ensure survival and thriving.

The Cognitive Toolkit of Language

A little while later, maybe about 100,000 years ago or less, a new cultural invention challenged the educational researchers of the time. This was the invention and elaboration of language. One day, one person came up with the brilliant insight that regularly inflecting self-made noises in a particular way could be used as a convenient way of referring to the past, and she/he managed to convey this to others, who in turn conveyed it to yet others, who passed it along in the language they used

with their children, who . . . etc. Today, when we learn language as infants we pick up such clever tools as the past tense, the subjunctive, and metaphor, and so on. That is, we pick up a whole new kit of cognitive tools for making sense of the world and our experience within it, and new ways of representing that experience.

The foremost educational researchers of the time were faced by complex challenges to ensure the preservation, development, and cultural exploitation of these new tools. They managed to invent some stunning new ways to train the young, to socialize them to the norms and conventions and beliefs of the tribe, and to set in train a revolution in education we are still using. Among the tools that were shaped through subsequent millennia, as language dialectically developed and was developed by a range of social and cultural changes, was prominently the story. Stories were extended chunks of language that uniquely could shape the emotions of hearers to the stories' contents. They were thus ideal for binding the social group tightly together by means of sacred stories that told them where they came from, what their social roles were, and where they would go after death. They could supply a new layer of meaning to life and relationships. Such stories became the arch means of socializing the young into the knowledge and skills the society required and which formed its identity and that of each individual within it. And a bunch of other tools came along with it, like metaphor, forming images from words, emotionally charged abstractions (e.g. good/bad; brave/cowardly; security/fear), forming binary oppositions and mediating them, jokes, engaging puzzles and a sense of mystery, and so on. Ensuring that this complex tool kit was passed successfully from generation to generation and also constantly elaborated and used for social purposes and personal delight was one of the educational triumphs of the human species. It was done so successfully that we continue to deploy them as our foundational sense-making and communicating tools today.

The Problematic Toolkit of Literacy

Skipping forward through the millennia we come pretty much to our own time. "Our" time is what we have historical records of, and those records began to proliferate with the invention of literacy about 3,500 years ago. This was a remarkable trick, of externalizing one's memory: keeping an external record of what previously was preserved only in the mind. In an oral culture, if something was forgotten, it was lost forever.

With literacy this great burden was taken off the memory, and the important lore of the social group could be stored in external written characters, accessible when needed. Like many tools invented by culturally equipped humans, its initial purpose was soon exceeded by its elaboration to serve all kinds of further uses—so, within quite a short time we went from scratching marks to record numbers of wine jars or bags of grain to writing *Finnegans Wake.* (Some feel we should have stopped while we were ahead.) But, unlike the earlier developments and their brilliantly successful deployment by educational researchers, literacy has presented educators with problems from the beginning, and they still remain with us.

Plato wrote, Socrates didn't. Mind you, if the "VII Letter" is indeed Plato's, he did skeptically observe that only a fool writes something down and expects a reader will understand what is meant by it. Plato's possible ambivalence, or typical detachment, about the value of literacy is expressed at greater length in the *Phaedrus*. The ancient Egyptian and entrepreneurial god, Thot, inventor of writing and much else, clearly needed venture capital from Thamus, the chief god of Egypt, to get literacy launched, through a contemporary form of IPO, and widely implemented. Thamus was not concerned with the practical problems of doing this, and instead made a profound objection to literacy on the grounds that it could not give readers the truth, but only the semblance of truth—readers would take in only the external written characters and not their intended inner meaning. Thamus described the new and literate population Thot had promised as likely to be the readers of many things who will learn and understand nothing. Thot's proclaimed benefit of literacy—that it would remove the burden from the memory—was precisely what Thamus saw as its problem. What people would learn would fail to tie in with the emotional life and meanings of the individual. And that remains one of our problems. There has never been, since the invention of literacy, a difficulty with giving students access to knowledge, rather our main problem is the attenuated meaning most students seem able to derive from written texts, even when teachers do their utmost to expound their meaning. For a distressingly large proportion of students in schools, Thamus's skepticism was disturbingly prescient. (Jacques Derrida tried to resist the superficialities that prolific reading can produce. In Kirby Dick's 2002 film, *Derrida*, an interviewer, astonished by the massively piled books filling every spare inch of Derrida's Paris apartment, asked whether he had read them all. Derrida

replied, “Oh, no. Only four of them. But those four very, very carefully.” The kind of reader Plato, and James Joyce, hoped for.)

Another problem the program for developing literacy has created for us is due in some part to the way it was begun. Plato and Aristotle, in the most successful of all academic projects, launched literacy and the forms of rational thinking it gave rise to, as a battle against the oral mind and the forms of thinking it had given rise to. (At least, this is one way to put it, and this economical way of raising another educational problem created by literacy turns on the degree to which one finds the dramatic account given of it in such work as Havelock [1963, 1982, 1986] and Ong [1977, 1982] convincing.) Plato’s and Aristotle’s great project of arguing the exclusive value of their program of rationality as the sole assurer of the truth meant that forever after—so far—their convinced followers saw story, metaphor, images, and the other techniques of shaping beliefs as more likely to seduce the mind with what one would like to think rather than encourage a disciplined inquiry into what is real and true.

Not, of course, that this was a battle fought once long ago and victory established with literacy. It is a battle—between poetry and philosophy, as it was described in its early appearances, between the arts and rationality, between science and religion—that continues in our time and, indeed, within each of us in various ways and degrees. The attempts to seduce minds with images, metaphors, and stories continue endlessly against what today we, usually too vaguely, call “reason” or “science” with their tiresome demands for measurement and verification. One need only listen to debates among politicians to recognize continuing hostility to that ancient Greek innovation. And, indeed, observe the “media” themselves and the techniques that dominate in their presentation and shaping of facts and events. The continuing attraction of the old oral cognitive toolkit and the problems of educating the average person to accept in its place the new cognitive toolkit of rationality finds despairing and disparaging expression in such observations as Swift’s celebrated: “the bulk of mankind is as well qualified for flying as for thinking” and A.E. Housman’s “the faintest of all human passions is the love of truth” (2011, p. 43).

The foremost educational researchers of ancient Greek time were embattled. The new proposers of the value of rationality represented the task of education as the accumulation of particular forms of knowledge and understanding that will equip one to climb out of the initial

befuddlement of taking seductive appearances (*eikasia)* as adequate for establishing truth and to instead deploy the tools of reason to discover the truth about reality. (You can sprinkle inverted commas through that last sentence as you wish.) Rational inquiry looked set fair to conquer the educational world, if only the troglodytes arguing for seductive socialization could be defeated in practice as proponents of the new ideas felt they had been decisively defeated in theory. One problem, then, is that the new program was offered as an alternative to the older one; cooperation between the two was not part of the program.

But there was a further problem, evident in the first and most powerful promotional literature for the new ideas, Plato's *Republic*. He argues for a view of education that is to be based on reason and that will develop and strengthen the reasoning power of the mind, making it resistant to the old oral forms of persuasion. But he manages to create his persuasive view of the new education and the rational state appropriate for such new citizens by creating brilliantly seductive images, telling us mesmerizing stories, generating forceful metaphors, and creating what one might see as an immensely powerful mystical vision of a new form of human mind, society, and life. However one tries to argue that Plato, the accomplished poet, was not really being inconsistent, there is something distinctly odd about that best of all books about education. Maybe he simply concluded that his readers were not yet equipped to grasp his vision unless he used the old cognitive tools they had available and so did his best to give birth to the new vision through the tools of the old. Tricky, and perhaps too tricky even for that greatest of tricksters.

Science Comes to the Aid of Education

The toolkits of orality and literacy continued their uncomfortably intermingling roles in education through the western Middle Ages, striving to accommodate, by means of the heroic intellectual force of figures like the magisterial St. Thomas Aquinas, the religious uses of story, images, and metaphor with the cognitive toolkit of rigorous disciplined rationality. The uncomfortable intermingling persists today, with an added complication, contributed by J.-J. Rousseau amongst others. Rousseau seemed to recognize in a new way that minds developed, like bodies. There is an obvious sense in which everyone sees a process of development in both from birth to adulthood. But Rousseau seems to have seen the similarity not as a kind of metaphor, or of some

similar general changes going on within and without. He seemed to recognize that as the body goes through distinct stages in its progress towards adulthood, then the mind also goes through distinct stages of its own, which careful observation and analysis can describe. He described in some detail the distinguishing marks of those stages as his observation and analysis disclosed them to him. He also made the point that, if one hopes to educate children successfully, one needs to understand the character of those stages and shape one's pedagogy to suit them. This is now taken as a truism of educational thinking.

Educational researchers of his time went to work framing new pedagogies that would engage the minds of children at different stages in learning. Pestalozzi was one of the first to devise a curriculum and pedagogical methods to apply Rousseau's insights, moving away from the almost exclusive words, words, words of past practice to techniques that emphasized activity and materials together with encouraging students' own inquiry and problem solving. Indeed, reading Pestalozzi is like seeing an outline of at least half of what today are called "21st century learning skills." But Pestalozzi found that he needed to do research on his pedagogical methods with children in classrooms. The theoretical insights of Rousseau—his vision, stories, metaphors, and images—took the practical educator only so far. One needed to work out applications and solutions to pragmatic problems by deploying the rational toolkit to measure what children were understanding and to verify claims about what will happen if certain methods are used. And so, by the beginning of the 19th century we find in place the lineaments of much modern study of education.

The need to use science as a guide to understanding educational practice and roping in or controlling visionary theories was brought to a further stage of explicitness in the influential work of Herbert Spencer through his hugely selling book, *Education: Intellectual, Moral and Physical*, first published in New York in 1860. The book sold hundreds of thousands of copies during the next couple of decades in the US—virtually everyone involved in the educational system read it. He emphasized further the necessity for education to be undergirded by science, both in terms of the curriculum content for students and also for how education itself must be understood and researched.

Education, Spencer argued, had been most often conducted by forcing irrelevant information into the minds of reluctant children by

methods that were patently barbarous. He proposed instead that we should draw on new scientific principles to make the process efficient as well as pleasant for the child. In the past, education had dealt with subjects that held their place in the curriculum by dint of tradition and the pretensions to an ornamental culture of a leisured class; instead, he argued, we should make the curriculum of direct relevance and utility to the lives our students would actually lead. In the past, schooling was centered on the knowledge written in texts or authorized by teachers, whereas Spencer believed that the child's own developing needs, interests, and expanding activities should be central to the curriculum and to teachers' efforts.

Spencer underlined the need for scientific precision in thinking about children and how they learn, while in the process dismissing Pestalozzi, Herbart, and Froebel as proposing just another set of philosophical speculations, in contrast with his own rigorous scientifically founded theories. Unfortunately, the science on which his ideas were founded was a pre-Darwinian notion of evolution that was fundamentally flawed. Even so, this did not prevent him from articulating on their basis a series of educational principles which nearly everyone in education still seems to hold as true: begin with the concrete and move to the abstract; the student should be seen and treated as "an active inquirer" not the "mere recipient of others' ideas;" start with what students are already interested in; engage in less "telling" and more "discovery;" move from the simple to the complex; etc. Indeed, reading Spencer is like seeing an outline of at least the other half of what today are called "21st century learning skills." By "at least" I mean that Spencer also includes learning principles not a part of the usual suspects rounded up for accounts of the 21st. century set, and which we may hope to catch up with in the set of 22nd. century learning skills—such as the centrality of emotion in learning and understanding.

Spencer was more successful in engaging educators in the U.S. than in his home country of England. Many were persuaded to take up the principle of a scientific approach to educational phenomena, and some of his supporters were convinced that adopting a scientific approach to educational research would "reveal pedagogic possibilities now undreamed of" (Hall, 1904, p. 222). The great figure of John Dewey carried this idea further, and also gave it a decisive turn. In his pedagogic creed, Dewey establishes as a primary principle that: "I believe

that this educational process has two sides—one psychological and one sociological; and that neither can be subordinated to the other or neglected without evil results following. Of these two sides, the psychological is the basis" (1897, p. 78). There is something a little less than pellucid about this crucial claim, something with the slightly Orwellian flavor of one of the two being more equal than the other. And this "greater equality" of the psychological has certainly come to pass in educational research, where the "more equal" knowledge to be gained for education's improvement is deemed to be about the student's *psyche*. Separating the *psyche* from the *episteme* that constitutes it would have seemed very odd to Plato; separating out the psychological processes of learning from *what* is to be learned would have seemed an incomplete and mostly incoherent pursuit. Well, we have come a long way from Plato (a position that only the foolhardy inhabit with equanimity when it comes to education). But Dewey gave impetus to a way of studying education, focusing on its psychological basis, which has come to dominate the work of the most prominent educational researchers of our day. The preferred term now, perhaps more programmatic than descriptive, is "cognitive science."

The writings of Dewey remain important in defining for most researchers in education today what they think they are doing. And it's not just his writings, which have proven almost miraculously interpretable as supporting a large variety of often incompatible ideas and practices, but also his own range of educational activities. Regardless of his stances on educational research, and the influences on him of Wilhelm Wundt via G. Stanley Hall, his own work can be interpreted as philosophical, psychological, anthropological, sociological, and also a few other –ologicals, as well as pragmatically engaged with curriculum and instruction, with art, with vocational training, and so on. Indeed, it might be reasonable to say that one might gain an alternative image of how to do educational research if one observed Dewey's practices. He did not, in practice, separate out *psyche* from *episteme*, his psychological inquiries were informed by his philosophical inquiries, and vice-versa, his design of curricula were informed by both, and in turn informed them, and so on. That is, he saw education as a field in which it didn't make sense to approach one bit of it separately from the others. His crucial tool as a researcher was a synoptic view over the enterprise in general. An empirical researcher without refined conceptual skills would seem absurd to him, and someone who engaged only in conceptual work

without empirical testing of it would have seemed equally absurd. And those empirical and conceptual refinements must be accommodated to the practical contexts in which students daily lived and learned.

That is, we value Dewey's work not as the best exemplar of philosophy of education but rather because he transcended the questions and methods that define that sub-branch of educational studies, and transcended the limited grasp on educational phenomena that philosophy of education affords its practitioners. To call Dewey a philosopher of education is simplistic and misleading. His aim to strike an original transcending of both philosophical and psychological approaches is hinted at in the title of his lost Ph.D. thesis "The Psychology of Kant." It helps to remember also that in 1899 he was elected president of the American Psychological Association and that his first book, in 1887, was called *Psychology*, in which he proposed a synthesis between idealism and experimental science.

The Structure of Educational Research Today

Well, the dreams of G. Stanley Hall for new pedagogical possibilities remain but also remain largely unrealized. Hawthorne and charisma still seem the most effective drivers of dramatic successes in education. The 20th century saw a ferment of educational research, however. The "tiresome demand for measurement and verification" came to dominate in many fields and certainly displaced the kind of metaphysical schemes and philosophical speculations that Spencer successfully labored to oust. The search for measured and verified knowledge about education enlisted many other disciplines. With the post-Sputnik expansion of funding for educational research in the US, and the increase in the number of educational researchers in the 1960s and early 1970s, there grew up other scientifically oriented studies of education: the first meetings of the Sociology of Education Association took place in 1972/3; the first Council on Anthropology and Education Newsletter was circulated in 1970; the Organization of Educational Historians (OEH) began in 1965, along with others. Not all these have fared equally well. But during this period the shape of the institutions that study education began to take what has become a generally familiar form.

Quantitative/statistical approaches to research became the "gold standard" of educational research, in some part due to the major funders

of educational research in the U.S. mainly supporting "evidence-based" research that conformed with scientific methods that aimed to establish and expose causal factors that could directly lead to educationally effective practices and policies. While there have been disputes among groups of researchers supporting more quantitative methods and those who think qualitative/ethnographic research procedures give them a better grasp on educational phenomena (cf. Philips, 2009), more recently there as been a more common convergence in the use of "mixed methods research."

This large enterprise of empirical research goes forward mostly undeterred by the claims of some educational philosophers that education is very largely a field of values and meanings, which these dominant research methods have very little grasp on (e,g, Carr, 2003). Diminished in scale from its role in the 1960s, Philosophy of Education, sometimes under the name of "Policy Studies," sometimes disguised under other titles, continues to be seen as an appropriate part of the study of education. Similarly, most institutions have sociologists and historians of education engaged on the production of knowledge that is generally considered relevant to improving our schools and pedagogy within them. Also there are specialists in reading or literacy and early childhood education, whose members commonly use the same methodological procedures as other empirical researchers. In addition to these are a range of representatives of various forms of "Curriculum & Instruction" which might include be specialists in Arts—dance, plastic arts, new media—and also specialists in Educational Leadership and Policy and in Exceptional children, and so on. We have seen a ramifying expansion of specialties, each of which is represented in the larger faculties and as many as possible are represented in the smaller ones.

Now one problem with this ramified specialization of educational studies is that each group generates its own specialist journals, conferences, and its appropriate methods of research and realm of activity. From the sparse data we have about readership of particular articles in educational journals, to take one indicator of the problem I am trying to point to under the theme of ramified specialization, it is clear that for nearly all articles in nearly all journals, the readership is small. If we look at books, sales of specialist books—except in the case of large textbooks that are used in many introductory courses—are also small. If an education book other than a course text sells 1,500 copies, it is

assumed to have done well. If it sells 10,000 it is a best seller. Only a very small handful of authors in education routinely sell more. If we could get statistics on the number of psychologists of education who read articles in philosophy of education journals, and vice versa, I suspect the numbers would be also small, indeed handful small. How many articles in Dance journals do Leadership specialists read? That is, professionalization means that the outlets for research results of scholars in different specializations are read very largely only by specialists in those fields. That all these specialist areas contribute to education in some way is taken for granted. Why does the dance specialist, after all, need to read about policy studies or history of education? They deal with problems in their field and address teachers and students of dance and its uses in schools. Of course, it would be nice if everyone could read everything, but in the real world of limited time and pressures of all kinds this is not realistic.

So what are the foremost educational researchers of our time to do about all this? Well, in the case of Howard Gardner, his work has what seems to me some important guidance for us about how to get out of the constraining ways of thinking about education we seem to have created for ourselves, or that have been created for us and most of us are simply caught up in.

Staffing a New School of Education: Hiring Howard Gardner

I mentioned earlier that, regardless of Dewey's actual influence on how educational research is today conducted, the lesson his own research offers us is that his studies of various kinds were always tied together by an overarching synoptic vision of the nature of the educational enterprise as a whole. To put it maybe too simply, his work was guided by an educational theory. While many educationalists claim the mantle of John Dewey, I think an easy case can be made that his most evident heir today is Howard Gardner. We value Howard's work not because it is the best exemplar of psychology of education, but precisely because it transcends psychology of education. It would be as simplistic and misleading to label Dewey a philosopher of education as to label Howard a psychologist of education. Howard, over the years, has articulated a synoptic view of education that informs all his work; he has developed a distinctive concept of education. His interests and accomplishments involve significant theoretical contributions, significant empirical contributions, and significant curriculum and instructional

contributions. That is, he does the lot, and he can do the lot consistently because he has developed a synoptic view of the educational enterprise.

Now it must give us pause to reflect that the work we most highly value in education comes from people who transcend the structure of ramified sub-disciplines and sub-branches that have been created as the best way to study educational phenomena. This is surely a bit odd. Also I want to make clear that developing this kind of synoptic grasp of education as a whole is not something that is easier for philosophers than for psychologists, sociologists, or dance specialists. The analytic tradition of educational philosophy, just to take one example, trains its graduates in specific methods of research that seem to me to be as effective as those of any other specialization in distracting students from developing such a vision.

Well, let us assume you have the unlikely luxury of being able to set up a new school of education and hire all new faculty. You will likely advertise in the usual categories—something like the set of ramified sub-branches of education mentioned above—psychology, sociology, curriculum and instruction specialties like art education, science education, social studies, etc., then also reading specialists, policy or philosophy, leadership, ethics, early childhood, disadvantaged and disability, child development, and so on. You would examine the CV's of applicants who will apply for one, or in rare cases, two sub-specialties. Let us assume you are also blessed with a limitless budget and have been given license to search for a star person for your new faculty. You dream of enticing Howard Gardner to your new faculty. You have a strategic decision to make: For which of the open positions would he be a plausible candidate?

Looking at his CV, one would surely have to conclude that he would be plausible as a candidate for any of them. That he could be hired for the psychology of education position goes without saying, but his various books that articulate his distinctive concept of education and analyze educational concepts and curricula (e.g.—almost at random—1973, 1989, 1991, 1999, 2009, 2011) would make him a plausible candidate for a philosophy of education position. His curriculum development work would fit him well for a C&I position, and his related work would equip him well for quite a range of such specialist positions. If one has the stamina to work through his CV, it will be apparent that he could establish strong qualifications for almost any position in the

new faculty, edging out John Dewey for some of them and having a clear advantage over Dewey in a number more, though having to cede one or two to the pragmatist with the worse writing style. What are we to make of this? That is, if one of the most effective educational researchers of our time would seem to fit any of the divisions we have made and whose work spans all of them, could this be a clue to how we need to revise our professional lives in order to be more effective? Doesn't this oddity suggest there is something wrong with how we are going about studying education, and perhaps also with how we are preparing students to become educational researchers? We rigorously train students in our graduate programs to fit just a single slot in the wide array of sub-branches of educational study. Are we short-changing them?

One too easy response to what I am implying—i.e. the answer "yes" to the last couple of questions—is to say that Howard has an exceptional set of abilities that the rest of us cannot hope to emulate, and consequently his approach to dealing with education is not something we should try to follow. We can continue with the ramified specialties of educational study, pursuing the multi-diverging lines of inquiry that currently characterize it, hoping that the narrower specializations will somehow allow all our contributions to accumulate bit by bit to some improved educational system.

The dynamic of schools of education moves towards ever narrower specialization in that each generates increasing numbers of articles, journals, conferences, and books such that it takes longer and longer to become familiar with "the field." Thus we are driven to smaller and smaller and further ramified fields. As we do so it is increasingly unlikely that students aiming for competence and mastery of "the literature in the field" can also become familiar with other areas, and the idea of developing from wide familiarity with the range of educational work a synoptic view of the whole becomes increasingly impossible. If I might change the image somewhat, it is as though we are training students to be like the blind men with the elephant, focused on one part that gives them no clue about the whole. Indeed, many graduate training programs in education recognize this problem, and usually some attempt is made to address it by ensuring students take courses in areas outside their specialty. But this seems too anemic a response to an elephantine problem. The hairs on the elephant's leg are complex beyond any single person's powers to grasp, so after a while specialists not only know

nothing about the elephant as a whole but no longer are aware that their field of study is actually the hairy part of an animal's leg.

I acknowledge that Howard's exceptionalism justifies the expectation that he will do the synoptic job better than the rest of us, but not that it excuses us from even bothering to follow his, and Dewey's, example in this regard. In fact, I want to suggest that developing such a versatile overview of education is a prerequisite of effectiveness in educational research. While we will no doubt be less effective in addressing educational issues than they have been, we would likely be more effective than we currently are while captives of approaches that are not obviously delivering the educational goods. That is, we don't have to stop what we have been doing, but we do have to consider what else we might be doing to transcend the constraints we currently work within. Empirical research is vitiated unless informed by conceptual finesse, as is philosophical analysis that ignores empirical findings related to whatever concepts are being analyzed, and both of these activities can easily become fruitless if separated from pragmatically alert implementation in classrooms. To assume that these are all distinct contributions to be made by different sub-disciplines that will somehow be brought together to improve educational practice seems an illusion unless everyone is trained also to recognize not just the hairs, but the leg, and the elephant, and what the elephant is supposed to be doing.

One response to the suggestion that there is something wrong with a world in which the best exemplars of educational research are seemingly approaching the job in a way that is unlike nearly all others in the same area is to dismiss the implied criticism of current conditions by pointing out that Howard is a rare and unusual "one-off," and so cannot be considered a useful exemplar for the rest of us. But the difference between what Howard does and what most of us do should not be seen as a result of his superior multiple intelligences but rather to his having transcended boundaries and constraints that are disabling for most others. That is, the difference is more a matter of kind than of degree. Acknowledging the degree, and noting we can individually do nothing about make ourselves a lot smarter, doesn't release us from recognizing that we can do something about the kind. That is, we can try to improve how we deal with education as a whole, and even though we might not be able to do too much about it for ourselves we can equip our students to do better.

It may be said that developing a synoptic view is only for the rare scholar of great gifts, and anyway, even if we might think it of value for everyone in education, we simply don't know how to go about training students to develop such a view, so we needn't bother. But we might hope for something better if educational training in graduate schools make it a priority, rather than, as is currently the case, focusing almost exclusively on developing limited sub-disciplines. Spelling out the curriculum for such a transformation in researching education is a task I cannot manage here, or likely anywhere. But I suspect a functional form for such a curriculum will have less to do with specifying sets of courses, and more to do with the approach Derrida suggested, even if jokingly. Maybe reading Plato's *Republic* very slowly once a year might take us closer to greater practical effectiveness in educational research, or, indeed, following something closer to the curriculum that Howard lays out in *The Disciplined Mind* would take us in the right direction.

While we might admire Howard Gardner's achievements in education and learn from his contributions to many areas, we might also learn that those achievements are so effective because they were informed by a synoptic view of what the whole enterprise is about. And we might all benefit if we take this lesson from his good work.

References

Carr, D. (2003). *Making sense of education: An introduction to the philosophy and theory of education and teaching*. London: RoutledgeFalmer.

Cummings, B. (2012m Jan. 6th). Myriad-minded. *Times Literary Supplement*, 5675, p. 24.

Dewey, J. (1897). My pedagogic Creed. *School Journal*, 54, 77-80.

Donald, M. (1991). *Origins of the modern mind: Three stages in the evolution of culture and cognition*. Cambridge, MA: Harvard University Press.

Donald, M. (2001). *A mind so rare: The evolution of human consciousness*. New York: Norton.

Egan, K. (1997). *The educated mind: How cognitive tools shape our understanding*. Chicago: University of Chicago Press.

Gardner, H. (1973). *The arts and human development*. New York: BasicBooks.

Gardner, H. (1989). *To open minds: Chinese clues to the dilemma of contemporary education*. New York: BasicBooks.

Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach*. New York: BasicBooks.

Gardner, H. (1999). *The disciplined mind: What all students should understand*. New York: Simon & Schuster.

Gardner, H. (2009). *Five minds for the future.* Cambridge, MA: Harvard Business School Press.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the twenty-first century*. New York: BasicBooks.

Hall, G. S. (1904). *Adolescence: Its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion, and education (vol. 2)*. New York: Appleton.

Havelock, Eric A. (1963). *Preface to Plato.* Cambridge, MA: Harvard University Press.

Havelock, E. A. (1982). *The literate revolution in Greece and its cultural consequences.* Princeton, NJ: Princeton University Press.

Havelock, E. A. (1986). *The muse learns to write.* New Haven: Yale University Press.

Housman, A. E. (2011). *Introduction to Astronomicon of Manlius* (in 5 vols., 1903-1930; 2nd Ed. 1937). Cambridge: Cambridge University Press.

Mithen, S. (2007). *The singing neanderthals: The origins of music, language, mind, and body.* Cambridge, MA: Harvard University Press.

Ong, W. J. (1977). *Interfaces of the word*. Ithaca, NY: Cornell University Press.

Ong, W. J. (1982). *Orality and literacy*. London and New York: Methuen.

Philips, D. C. (2009). Empirical educational research: Charting philosophical disagreements in an undisciplined field. In H. Siegel (Ed.), *The Oxford handbook of philosophy of education*. Oxford: Oxford University Press.

Spencer, H. (1860). *Education: Intellectual, moral and physical*. New York: Appleton.

Howard's Response to Kieran Egan

While I probably had heard your name and perhaps read a paper or two of yours, I came to know you, Kieran, through an odd set of circumstances. You and I both happened to be early winners of the Grawemeyer Award in Education. So one or the other of us simply suggested that we meet for a coffee at the annual meeting of the American Educational Research Association…which we did. The lunch was fun (certainly for me) and we continued doing this annual 'winners' table for a number of years—stopping at about the time when there were so many winners that we could not all sit around one table and have a single conversation.

In our era there are many people who think about education—including many people who think about education even though they know nothing about it!—but there are very few 'Educational Thinkers.' By an 'Educational Thinker' I mean an individual who is well versed both in the history and literature of education and has thought a good deal about the practice of education. Within the United States, I think of my own predecessors John Dewey and William James, and my own teachers and role models Jerome Bruner and Lee Shulman. Thinking more globally, the names of Loris Malaguzzi in Italy, Michael Polanyi in England, Lev Vygotsky in the Soviet Union and the Piagetian Circle and followers in France and Switzerland come to mind.

In your essay, you are very kind about my contributions to education, but I could easily supply a long list of critics who would take issue with each of your positive remarks! I think that you are right that I pass more easily among the various in-posts and outposts of education, than most of my colleagues or most of our students. From one vantage point, (perhaps even the majority one), that would make me a <u>less</u> attractive candidate for a hire; and indeed, forty years ago, my adviser Roger Brown quipped: "Howard, yours will have to be a 'chimney appointment'—from the top down!" Whether or not I turn out to be hire-able, via one route or another, I agree with you totally that the "education of educators" needs to be broad and it has always been a source of frustration that, at least in the United States, there are almost no common 'takeaways' that any dozen randomly selected education students take from the one or two or even five years of formal study.

You, Kieran, are clearly an educational thinker in the full sense of that term. You know very well the early contributors—their strengths and their blind spots—and your essay presents a brilliant synoptic view of the features instituted in the Greek Classical era and its several aftermaths. You understand their disciplinary and epistemological strengths and weaknesses, and how those profiles influence the ways that each educational 'school' think about schooling. And going beyond critique, you have laid out in considerable detail a series of steps—I would call them developmental—on how best to educate young people, starting from the years before school, passing through the usual landmarks of the contemporary secular school, until the time when education becomes primarily one's own responsibility. You have done this artfully, and often humorously, through a variety of genres and modes of expression, each adding to our understanding, and summing up to what one might call "An Egan Education." I especially like the focus on Curiosity and Imagination in your most recent work (reminiscent of Anna Craft's current emphases)—capacities that are so vital for the full human being and yet likely to be given short (if any) shrift in our ever more mercenary and monetized society.

Though our backgrounds and epistemologies are quite different, I find much to applaud in Egan Education. Not only does it speak to the needs and aspirations of most young people as I've come to know them, but it promises to culminate in adults whom I would find attractive. You would likely contend that I tend to place a greater emphasis on traditional developmental and biological factors (which may seem more fixed in place and more likely to emerge across <u>all</u> traditional members of the species, given sufficient time and stimulus). You, however, place a greater emphasis on the cultural artifacts and inventions, such as literacies and genres, as emphasized by the Vygotskians in Russia and the followers of Marshall McLuhan and Merrill Donald in North America. I hope that you would agree that the best teachers would be aware of both an Egan Education and A Gardner Agenda and would try to draw on both of them, as appropriate, in their thinking about and teaching of students.

But perhaps not…and that could be the subject of discussion at our next lunch!

Howard Gardner's Imagination at Work

Elliot W. Eisner

Some scholars influence the field in which they work by providing it with new conceptions of the phenomena they study. John Watson and Edward L. Thorndike in American psychology are two scholars whose conceptual and empirical work redefined the "name of the game" for those trying to understand learning. Others have made contributions that unfold gradually, over time. John Dewey is a scholar whose contributions, initiated prior to the turn of the 20th century, helped people in the field think about what it means to be in a problematic situation and what conception or contribution is made when one finds oneself, partly as a result of his or her own making, with a new paradigm for inquiry.

Where does Howard Gardner's work stand with respect to these two important but different models of thinking? What kind of a contribution has he made to discourse about mind and schooling? What model of "man" emerges from his thinking about the psyche and, more specifically, about the psyche in the context of schooling.

The aim of this chapter is to describe the contributions that Howard has made to work in psychology and in education. It is after a portrait that will provide compliments when they are warranted and criticisms when they are needed. The basis for my critique of his work is rooted in the large number of years I have known him and the variety of experiences he has had. It also embraces a variety of practices that I hope will provide a fuller picture of his work and of him as a person, in both of which I place great significance.

Now it should be said that the use of poetic devices in writing social science and in, say, history is not necessarily a liability. How a word is used, the multiple meanings that it suggests, the power that it uses to reveal what has been said or written are strengths rather than weaknesses of writers throughout the century. We all deeply recognize that we know more than we can tell, at least in a literary form. Precision is no necessary virtue for all forms of representation. Finding avenues for those who write and speak to make plain through suggestion what meaning the writer wants to convey is a strength of language.

Just how do these multiple meanings get manifest? What role do they play, not only in the representation of meaning, but in its formulation, a formulation that functions before language gets formed? Consider the use of aphorisms. One of these is that meaning or conclusion or solution does not reside in a single response. Aphorisms open the door to multiple interpretations and therefore have the capacity to engender knowing in its several ways. Tolerance, indeed the enjoyment of multiple ways of knowing, is an important intellectual strength. In psychological circles the processes that promote an awareness, indeed a desire, to explore the multiplicity of solutions or assertions is, as I have indicated, a desirable intellectual virtue. The virtue is captured in the phrase divergent, as contrasted with convergent thinking. Problems can be established and a tone of exploration promoted in which singularity of solution and outcome is what received accolades. There are other kinds of problems, however, or, better yet, other ways of solving problems in which heterogeneity of outcome receives the prize.

It strikes me that such diversity is of benefit even when the solution seems to be strictly linear. Given this premise regarding what is virtuous in intellectual life, namely multiplicity of solutions, schools might do well to consider designing curriculum that encouraged students to see a problem from many angles and to seek solutions that are surprising and unexpected.

How does such a view of the ways in which progress is made in intellectual life relate to Howard's work in developmental psychology and education? You will recall that I made a point of the fact that historically speaking work in psychology, as in philosophy in the 20th century has been characterized by the pursuit of pluralism. It is true that in the 1920s and early 30s the salient approach to philosophy and psychology was uniform, or at least as uniform as one might expect. Logical positivism was the mainstream focus of western philosophy and behaviorism was the dominant focus in psychology. The psychological model that was salient during the 1920s and 30s was a model that emphasized uniformity, predictability, measurement, and mathematical approaches to the description of the world and to reveal what those descriptions meant in developing a causal model of the behavioral sciences. Those leading ideas became the core considerations in the formulation of an agenda for philosophy and psychology. Gradually the theoretical ethos of the social sciences was an emphasis on science and

field orientation that gave its deepest nod to what real scientists do; they measure, they experiment, they generalize, they find causes for what they have discovered. Psychology and philosophy needed to emulate these methods to become legitimate scientific fields of study. Given this context, it should not be surprising that Howard's work cast a new light on possibilities of research in the social sciences.

Consider the conception of intelligence that was dominant during the first 50 years of the 20th century. During that period intelligence was conceived of as something that you had, not as something that you developed or made. Intelligence was something that psychologists measured. Intelligence was largely fixed, an entity given at birth which stays with you throughout your life. Intelligence was largely defined as the ability to use language and number. It was not conceived of as a set of relationships that played out their vitality in virtually every field of inquiry. The idea of multiple intelligences was not an idea that had stature or visibility in other fields. This monolithic intellectual culture provided the parameters and the direction for both theoretical and practical work in the field. Psychologists worked in laboratories, not in studios. They were concerned with discovering those robust regularities that would provide comfort to those who sought a stable truth in a complex but emerging field.

Howard's work was quite different. The conceptualization he created and which has been generated by others since then embraces a multiple conception of what people know how to do. The problem for psychology and for education might be summed up in the question: How do you get smart about a process you need to use in order to learn how to use it to solve problems? His aim focuses on problem solving. Problem solving is itself conceived of as a state that needs resolution and which can be resolved with the assistance of models of knowing that are not limited to language and number.

As Howard Gardner is fond of saying, "we should not ask whether or not a child is smart, we should ask what is he smart at." By raising the question pertaining to the diversity of ways in which intelligence is developed, the field of intelligence becomes broader. It recognizes multiple manifestations of intellectual work, including in fields like the arts, which are typically excluded. This can democratize opportunity and provide students with different platforms with which to develop their aptitudes. The expansion of opportunities for the development of the self

is primary in studying human aptitude. Howard's theoretical work and the practical examples he gives lend credibility to the idea that intelligence is a diverse form of human behavior. This conception undermines the belief that only certain people are intelligent while others are not. Thus, what we have in Howard's work is permission to think about and act upon intelligence in ways that do not exclude individuals who, under a narrower conception, might otherwise be disregarded.

It must be said that not every social scientist in the nation puts Howard Gardner on a pedestal. Some think his work is vastly overrated. I regard such comments as a reflection of professional envy rather than a reflection of critical judgment. Howard has had a phenomenal trajectory in the status hierarchy that dominates most professions, particularly in education. It is hard for some to see how work so richly varied and so numerous could achieve the heights it has achieved. For others the work itself is believed to rest upon epistemological foundations that are not very steady. When one embarks on new terrain there is a need for an adjustment and, as we all know, adjustments are like change itself: difficult for many people.

This variability in the form, content, and assumptions that scholars make was reflected in the debate that Howard and I had regarding the epistemological status of art itself, especially the epistemological status of literature. This debate emerged at AERA and was centered on the question as to whether or not a novel, that is a work of fiction, could be a significant source for doing research. Could a work of fiction ever become a work of knowledge? The debate that we had at AERA stirred the interest of many, many people and I think as a result, scholars who work in the social science began to look at fiction as a source of understanding that was invaluable in the pursuit of knowledge. Fiction was seen not as a way to titillate our imaginative life, but as a genuine source of knowledge and understanding. One important American writer, when asked what a work of fiction had to be in order to be great, responded quickly, "A work of fiction, in order to be great, needs to be true." Here the conception of truth is a part of the work itself. It is a view that is rarely addressed in schools, but it is a view that has much to offer social scientists in broadening the ways in which the world is addressed.

Happily, the excursion into literature as a way to do research, has developed. The debate that Howard and I engaged in amidst a few

hundred members of AERA was invigorating, exciting, and insightful. It is one of the ways in which the methodology of the field gets on the fast track towards the enlargement of human understanding.

Why has Howard's work been so attractive? What accounts for the accolades he has received? What values does his work promote? The ideas that I expressed about the multiplicity of intelligences that Howard himself has promoted is, one may argue, the most important of the contributions that he has made. As the recipient of 26 honorary doctorates, the significance of his contributions should leave no person in doubt. But just what are these specific contributions? How do they relate to other ideas developed in the field of psychology in particular? Consider his view of the development of intelligence as a part of an ongoing developmental system. Quite the contrary to many views of intelligence who see it as fixed, Howard perceives of intelligence as being plastic, something that changes over time. Furthermore, not only does intelligence change over time, the locus of its initiation in the human organism is also variable. People can be fairly smart in music and not very smart in literature. The model that people are now able to use is one that celebrates diversity and does not appeal to uniformity as its major virtue.

The significance of this conception for the purposes and aims of schooling are profound. It tends to reduce reliance on models of development that are fixed and favor instead conceptions of a developing process which appeals to different sensory modalities. Howard and I have been examining that issue for near 30 years, and we still come out without a certain degree of consensus. But that is as it should be in scholarly realms. Scholarship feeds itself upon the uncertain; both he and I are certain of that.

Consider also Howard's view of the role of prior experience in learning. That view places great significance on prior experience as a precursor to specific learning that looks like, but may not be, reduced to learning a specific. Perception is, after all, funded. It is not an ad hoc singular event that has little or no connection with other activities in which individuals engage. The presence of prior learning is available in all that we do, and one of the difficult and important tasks that people have is making the connection between what they are doing now and what they have done. The concept of "funded perception" emphasizes the building up of prior learning so that eventually there is a view of the

whole that shapes one's perception of the present. The importance of recognizing the fundedness of perception should not be underestimated. Howard's work has been a significant source of support for promoting understanding of the fundedness of perception.

The fundedness of perception is but one idea that animates Gardner's work. Another and equally—some would say more importantly—is the concept of forms of representation. To talk about a form of representation is to imply that there is something that is represented. It would be supercilious to designate a form of representation that did not represent. What do we mean by representation? We mean by representation a symbol, sign, or work that stands for something else. It is through such symbolic devices that the world gets examined. Thus, a poem can represent a condition of life, an aspiration, a state of being. To represent is to "stand for." The arts are cultural vehicles in which representation plays an extraordinarily fundamental role. Furthermore, what representation stands for may be material or immaterial. It may be an object or an idea. The problem for the maker, the artist, is to craft the image so that it does represent. What often takes precedent in representation in art is the rendering of an image that reminds one of a condition that has already been experienced. The work of the artist is to remember what has been forgotten.

The term remember is an interesting one. To remember is to put together the members of a configuration. To remember is to make whole. To dismember is to separate. Artists typically remember, and when they dismember in remember's place, one has a work that is disturbing, out of balance, not particularly functional. The task in art education is to develop those perceptual skills that will make it possible for individuals to remember the images they recalled. This focus on the cognitive function of one's biography is an important perspective to take if one wants to develop a dynamic conception of experience and of learning. Howard Gardner's contribution to this perspective is of great importance. Without it we would have a static conception of intelligence and, even more broadly, of learning.

Another concept that Howard endorses pertains to what I have called "forms of representation." In many ways this concept is an obvious state of affairs when someone is trying to sort out what is given by nature and what is created by culture. To be able to represent the world, that is, to have some vehicle through which what one thinks or feels or

imagines can be shared with others, one must use some form that will carry such meaning forward. No form, no meaning. In some ways it's as simple as that.

There is another set of consequences that emanates from the recognition of needing forms through which to represent what one has conceptualized or felt or believes or is afraid of. That something else has to do with the assets and limitations of a form of representation. Howard himself recognizes the importance of this diversity in representational forms. I said that one of the features, intended or unintended, of the use of forms of representation is that each conjures up its own intellectual power to confer upon a medium, say, music, or mathematics. In other words, the diversity of forms of representation, which are vehicles through which what has been experienced is transformed into a public "statement," is productive heterogeneity that contributes significantly to intellectual and cultural life. Howard's work embraces such a conception of representational.

There are several other features of Howard Gardner's work that warrant attention. Features of a work written by someone with high status and prestige is a way of providing models that others may find stimulating, promising, or of a kind that they would like to reflect in their own work. One of the features of Howard Gardner's work that is influential is the character of a text. It has two important features. First, his work is conceptually dense. By that I mean that the work draws upon a range of sources that require the reader to make connections between ideas. Making changes among ideas is a way, as I have indicated, to make connections and making connections, in Howard's terms, is "what it's all about." What gets connected are relationships among phenomena that previously were not thought to have much relationship.

Consider, for example, the study of creativity and the work that Howard has done in that broad field. Seeing these relationships or, in the context of humor, those seemingly autonomous components is what is required in order to get the point of a story or a joke. What we have is a person who is able to see what everyone else thinks of as being an independent entity. The recognition of these relationships is an opportunity to "dance around" entities that require more than a solo performance. Thus, one of the contributions of Howard's work is to provide models of conceptually dense material related to a wide range of diverse phenomena. Conceptualization and diversification are important

dimensions or aspects of the work that needs to be done in the field from which those concepts and diversification are rooted.

The astute reader will note that the modeling of various cognitive functions need not be formally articulated. People teach who they are as well as who they want to be. Working with broad concepts supported by example rather than by explicit denotative cognitive structures is Howard's style. While it is not literary, it leans to the left and that is something to be pleased about. It must be recognized that forms of learning and styles of teaching that promote the kind of thinking and intelligence that individuals have is also a potential liability. Every way of seeing and, one might add, doing is also a way not to see and not to do. Life is filled with choices and these dimensions of pedagogy are a part of the options students have to pursue and teachers have to teach.

Howard's writing is conceptually dense—packed with thoughts regarding the way in which meaning can be made; there is more than one way to depict an urban street or a watermelon or the way in which people walk and talk in a particular southwestern town. Each of these ways is affected by the tools that the individual functioning as an artist has. This often leads to a picture that makes use of the diverse array of conceptually dense material that I just described.

The paper that you have just read represents an effort to identify and discuss the basic concepts in Howard Gardner's research efforts to understand human action, and even more broadly, human intelligence. It is not a comprehensive view. Nevertheless, it is a view that I believe to be important in understanding one of the leading figures in American psychology in the 1960s through the present. I have tried to illustrate the ways in which innovation, at a conceptual level, occurs in Howard's work. I am trying to identify at a practical level some of the features that impact the practice of schooling. Although Howard's work is not the work of an educator per se, it is, nevertheless, an extremely important resource for thinking broadly about how educational outcomes can be fostered. Perhaps the most important of these is the realization that learning is a multi-splendored thing. It occurs on many levels and is of a variety of kinds. There is no reason to believe that there will be in the future a single index for this critically important human cognitive ability.

Some of these concepts have been in the literature, others yearn for space in the literature. I spoke to the reader about the meaning of

funded perception. I talked about the meaning of forms of representation and how they function in Howard's thinking and in my own. I mentioned the fact that Howard's material is dense; it has its roots in many different sources. I pointed out that the sources for his attention to representational forms go back to the ancients and for the need to relate those sources so they will, if they can, constitute a structural system rather than a piecemeal one.

How one divides the territory one studies, the kind of concepts that are used, the meaning of the terms one employs, the saliency of the methods one imposes upon the data, are all relevant considerations that have to be taken into account in developing a thorough orientation to the state of meaning. As Winston Churchill once said, "First we build houses and then houses build us." Churchill's point is that who we become is not indifferent to the tools that we use. That is one of the important lessons, I believe, that Howard offers. Howard has beautifully articulated the features of the meaning systems that are employable in our culture. He has done this with style and panache. It is up to others to push the argument further. It is also up to others to give us newer tools, tools that are more effective in doing what those tools can do. That is not a bad contribution to American intellectual life. We have been fortunate to have Howard Gardner among us to share his insights into the educational world we care about.

Howard's Response to Eliot Eisner

Elliot, dear Eliot, it's hard to believe that, despite your severe Parkinson's condition, you made the trek from Palo Alto to Cambridge in September 2013. The visit meant so much to so many persons, both those known to you personally for decades and those who know you only by legend. "That's Elliot Eisner over there! Do you think I could meet him?" Those in attendance at the Festschrift will never forget your powerful presence and your act of kindness, and that of the Incomparable Ellie Eisner, in honoring us with your presence.

And then on January 10th, 2014, in a personal call from your wife Ellie, we learned that you had died. I could feel sadness all around, both from those who know you well and those for whom you were only a celebrity scholar.

Only rarely does one have the opportunity to spend a whole working life with someone whose interests ones share, who has a distinctive point of view, and who is willing to discuss, even argue with you, and yet remain good friends, even great friends. As Bennett Reimer recalls in his essay for this Festschrift, the four of us (the psychologist of art Rudolf Arnheim being the fourth) first came together in the early 1970s. We were the 'resources' responsible for intellectual content of a never-to-be-aired television show on the arts for young children, then called "Hello New Place." (I can still remember the jingle!). You were already a professor at Stanford University, while I was still making my way as a young post-doc, but as far as you were concerned, we were intellectual equals, and I was expected to hold my own in debate and discussion, and I did my best to fulfill this role

I would suppose, Elliot, (and I feel I should continue to address you in the present), that we were probably in agreement about 80-90% with respects to points and concepts in psychology, the arts, education, curriculum, teaching. But it's not much fun, and it's certainly not instructive to always agree with one another, nodding each other's heads reciprocally. And so we discussed a lot the best approach to arts education, you as a devotee of disciplined based arts education, I as one who feels that, with children, arts should be approached more through immersive, "making" activities, saving the "disciplines" of history, aesthetics, and criticism until a later point. You were partial to the idea

that problem solving across the disciplinary terrain probably took rather similar forms, while I believe that each discipline, and perhaps even each sub-discipline, has its characteristic analytic approach and the resemblances are likely to be superficial rather than deep.

But by far our biggest area of discussion was featured in a public forum. For a few consecutive years, as you note in your essay, we held an open debate at the American Educational Research Association on the provocative title "Should a Novel be Acceptable as a Dissertation?" The debate topic was a good one because we held strong and quite contrary view on this topic. From your perspective, insight into education can come from any number of genres and vantage points; and if a novelist, or a social scientist with a novelistic flair, could write an effective thesis, of course that person merited a doctorate.

I saw it quite differently. For me, a scholar is an individual who has developed skills in one or more disciplines. The purpose of the doctorate in education is to display those disciplinary skills, one hopes in the course of discovering or demonstrating an important educational phenomenon. What bothered me, and what continues to bother me, is that the criteria by which we judge a work of art is so different from the criteria by which we judge a scholarly work. And it seemed to me all too possible that an important insight could be conveyed in a work of literature that was execrable, while a very appealing novel could contain all sights of educational points and insights which were misleading or downright wrong. I tend to agree with Picasso who pointed out that "all art lies, and the purpose of art is to get one to believe those lies."

Journalistic accuracy compels me to report that of the perhaps 1500 individuals who came to these debates annually, about 1498 agreed with Elliot (I did not take a poll!). I suspect that the poll would be quite similar today. Neither Elliot nor I will be able to continue the debate, and then it will be up to our students or grand-students or grand-readers to decide whether the debate is worth continuing and, if so, which side has merits.

In your essay, Elliot, you take a very broad view of my work, looking for its characteristics over the long run. I am honored that you took the trouble to do this, and am flattered by the kind conclusions that you reached. Your essay did point up what I think is a powerful fault line which helps to define that 20% or so of ideological terrain where we find

ourselves on different sides. Put succinctly, I like to create categories and draw rather sharp lines between them: intelligence X vs intelligence Y, the seven levers of mind changing, the key characteristics of creators, leaders, saints, and sinners, and art vs science. You are much more sensitive to the connections, the blurred lines, the relationships that can obtain between or across seemingly separate categories. And so, whereas I deem a novel and a dissertation as apples and oranges, you instead contemplate a (possibly new) genre broad enough to encompass both. And when I see a new ability or skill emerging, you are much more likely to point to its predecessors earlier in development and its connections to other forms of representation in other symbol systems.

Alas, I can no longer have your response to these remarks. I hope, and I have some confidence, that the invaluable intellectual give-and-take that we enjoyed for decades will continue. It meant so much to me that, however sharp the debate, you would always be happy to go out afterwards for a drink or a meal.

Re-Questing Quest for Mind: An Essay in Honor of Howard Gardner

David Henry Feldman

To help commemorate Howard Gardner's 70th, I decided to re-read one of his earliest books, *The Quest for Mind: Piaget, Levi-Strauss and the Structuralist Movement* published in 1972. Howard was about 30 when *Quest* was published, but it was not his first book. It was, however, the first book with the word "mind" in the title to be followed by several others, including the famous *Frames of Mind: The Theory of Multiple Intelligences* about a decade later (Gardner, 1983).

I believe I read *Quest* the year it was published or perhaps a year later. I knew who Howard was in part because, although we were the same age, Howard had already become a well-known scholar in the fields of cognitive development, creativity, and education, among others. A film that I used in an introductory developmental psychology course listed Howard as one of its contributors, and I picked out the middle aged professor I thought must be Howard in the film. I barely noticed the scrawny young graduate student whom I discovered, after meeting him a few years later, was Howard.

Quest had immediate impact on my research and my teaching. I had never heard of Levi-Strauss before reading *Quest*, and Piaget, while of intense interest to me, was only beginning to become central in my thinking. The treatment of Piaget in *Quest* had such clarity, depth, range, and subtlety that it provided a coherent frame (!) within which to try to comprehend Piaget's monumental contributions. It had certainly not occurred to me that Piaget and Levi-Strauss were both part of a larger movement that Howard labeled "structuralist," and that the social sciences might have been in the throes of a revolution largely of their creation.

I was impressed in *Quest* (again) with the qualities that were to reappear in Howard's later books: a magisterial command of difficult material across a diversity of disciplines, a widely informed, sophisticated, and literate approach, a tendency to be deeply respectful

but not fawning in praise of great men, a willingness to critique even those great figures' work, and, throughout, a light touch.

As I learned much later (Feldman, 2003), there is indeed a pattern to how Howard goes about the process of writing a new book, which he apparently had already perfected when he wrote *Quest.* Howard describes himself as being as much a writer as a scholar, and sees himself as someone whose goals include helping to organize, distill, integrate, and then communicate what is going on in areas of scholarship, theory, policy and practice that interest him. He sees his role as an attentive and thoughtful scribe, helping the wider community grasp and appreciate the importance and implications of some of the major developments in thought, research, and practice that have occurred. His ability to identify new trends and issues in developmental science is unmatched among leading scholars, particularly his ability to anticipate what will be cutting edge research areas well before they emerge. Howard's interest in the brain is perhaps the most striking example. He went to the Veterans Administration Hospital in Boston to learn about the brain in the 1960s, more than a decade before "the decade of the brain," and has sustained that interest ever since.

The overarching frame of *Quest* was another major issue in the field, the structuralist movement in the social sciences. Howard saw the potential of a structuralist approach to social and psychological questions through the work of its two most prominent advocates: Levi-Strauss and Piaget, and he wanted to review and assess the potential impact of their work. Howard saw the potential for a fundamental shift from laboratory, experimental, controlled studies to more observational, holistic, and theory driven research, no less scientific but a very different form of science.

That the structuralist movement was revolutionary was obvious to Howard; whether or not it would become the central paradigm of the social sciences was the question that *Quest* tried to answer. Howard seemed to think it would. *Quest* never quite comes out and says so directly, but it is clear that Howard has enormous admiration for both Levi-Strauss and Piaget, that he appreciated the scope, depth, and significance of the work, and expected it to increase in visibility, influence, and ultimate hegemony over the social science agenda. On this point he was only partially correct; unlike brain research, structuralism

has not taken the center of the field and held it. As Nora Newcombe (2011) has recently written:

He [Piaget] was wrong about many things—the viability of structuralism, the leanness of starting points, the lack of a need for close study of input and mechanism. (p. 158)

On the other hand, some of the major features of Piaget's and Levi-Strauss' approaches to research and theory have become integral to the field, even if not identified or labeled as such. But that is a topic for another essay; for this one we can say that Howard, as he virtually always does, had his finger directly on the pulse of the field. He understood how important the contributions of his heroes would be to the future of their fields. Structuralism may not have become the main paradigm for the social sciences, but constructivism of one sort or another (Eisenberg, 2011) has emerged as an essential element in developmental science, and contextualism has become a major force in the field as well; these are features central to the structuralism of both Piaget and Levi-Strauss.

Specific Surprises

In the remaining pages, I will turn to a few more specific ways in which, on second (or is it third or fourth?) reading, *Quest* surprised me or brought me up short. There are many of these, but I will limit myself to just five:

1. Introduced the idea of end-states for what Howard would later call intelligences;
2. Highlighted the importance of music as a potential portal into, and potential source of explanation for, cognitive and cultural development;
3. Helped energize cultural psychology (e.g. Cole, Gay, Glick, & Sharp, 1971; Cole, 1996);
4. Anticipated my efforts to revise Piaget's stages into two phases;
5. Anticipated "cultural genetic epistemology," the study of domains of knowledge and skill, and even noted a goal of Levi-Strauss' that presaged one of its central claims.[1]

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[1] Howard also came up with the name "cultural genetic epistemology" but not in *Quest.* He was the outside reviewer for my promotion case at Tufts in 1982 and used the term to describe Nonuniversal Theory before it was called Nonuniversal Theory.

End States

Here is how Howard introduces his idea of end states as a conceptual organization for comparing Piaget and Levi-Strauss, in a section of *Quest* on "modes and vectors:"

I have long felt that convergence of structuralist methods would be greatly facilitated if an area could be found in which units could be isolated and a clear end state propounded.... One can outline with some precision the end-state of artistic development, the kinds of skills and capacities a talented artist or performer—or connoisseur—must have. There should be stages en route to this end-state, for example, appreciation of the concept of representation.... Piagetian methods could be brought to bear in devising tasks for children of different ages and in assessing their degree of comprehension and achievement. (p. 209)

Eight years later, end states of just this sort appeared in *Beyond Universals in Cognitive Development* (Feldman, 1980), along with the "stages" described in Howard's book. Three years after that, "end-states" were one of eight criteria for determining the existence of an intelligence. *Beyond Universals* introduced the theory of nonuniversal domains, one of whose central claims was that such domains can be organized into a sequence of cognitive developmental levels somewhat analogous to those of Piaget's stages. I provided no citation of *Quest* as the source of this idea in *Beyond Universals*. Worse than that, when Howard and I worked on Spectrum in 1981 and 1982, I thought it was *my* idea to organize early childhood curriculum by domains based in part on clearly existing end-states. And later when I saw *Frames of Mind* in manuscript form, I was miffed that Howard did not cite *Beyond Universals* as the source of this idea! As it turns out, this is only one of several examples in *Quest* of my appropriation of Howard's ideas, believing that it was my own invention.

Music

On the very next page (p. 210) in *Quest* Howard points to music as a particularly promising realm for the study of cognitive development in structural terms:

Indeed, the intense curiosity with which both men exhibit toward the "mysteries of musical creation" suggest that this domain would be a

particularly promising one to investigate, one that might perhaps even lead to a synthesis of the structural and developmental approaches.

In 1986 I published my work (along with Lynn Goldsmith) on child prodigies, using a framework that I called co-incidence (Feldman, with Goldsmith, 1986). Having re-read *Quest* I now see that framework as very much a structuralist one in the Levi-Strauss mode. It tried to coordinate several of the vectors of activity that must be considered even to begin to comprehend the reality of the prodigy phenomenon. Again, I had absolutely no recollection (or citation!) of the clear source of inspiration for this application of Levi-Strauss as presented by Howard.

Furthermore, as it turned out, three of the six boys studied in *Nature's Gambit* became intensely involved in music. Only one of the three had been identified as a music prodigy (of the other two, one was a writer and the other an omnibus prodigy). At the end of the book I marvel at how powerful music must be and how promising it is as a focus of research. Here I did cite Levi-Strauss (but not Howard); "Claude Levi-Strauss has written that all of the scientific disciplines must try to find an explanation for the mystery and magic of music" (p. 249). Note that I use the word "mystery" in much the same context as it was used in *Quest,* and for the same purposes.

"Primitive Thought"

Howard published *Quest* within a year of Cole, Gay, Glick and Sharp's influential 1971 book, *The Cultural Context of Learning and Thinking,* on reasoning among the Kpelle of Liberia. In rereading *Quest* I was struck by its compelling account of Levi-Strauss' work in *The Savage Mind* (1966).

He advances his argument in two ways: by citing impressive instances of conceptual or scientific reasoning on the part of primitive persons, and by showing that the thought processes of contemporary civilized man display many modes of perception or reasoning which are unhesitatingly labeled as primitive when they are encountered in other societies. (p. 137)

I remember being stunned at the power of the Cole et al.'s work and realizing almost immediately that it would help catalyze a shift in cultural psychology. I had no awareness that the same ideas had been pursued in anthropology years earlier by Levi-Strauss, even though I had

probably read Howard's book at about the same time. This of course does not diminish the quality and impact of the work by Cole and his colleagues (Cole, et al., 1971). However, it does show once again how my own mind selectively focused on one work's argument, to the virtual exclusion of the same theme in *Quest.*

Phases and Stages

Another surprise is more subtle, but important to mention. As some of you may know, I recently (Feldman, 2004) proposed that Piaget's traditional stages be revised into two halves each: the first half a kind of dutiful construction phase, the second half a more playful extension and elaboration phase. The toughest of the stages to render into this framework was Formal Operations, mainly because of its focus on formal logic and hypothetico-deductive reasoning. I suggested that a marker for the shift from the first to the second half of the stage may be seen in the activity of first- and second-year college students, and occasionally earlier, in the all night sessions where philosophical, political, and sexual issues are discussed with passion and delight. The first half of the stage, as Piaget had proposed, was indeed about getting the structures in place for the later exhaustive analyses using formal logical tools.

What I failed to remember is that Piaget (and Howard!) had also described these qualities of later adolescence. Although not formally organized into a sequence from one to the other, the content of these observations was exactly what I had in mind for the second phase (ages 16-20 or so) of Formal Operations. Here is an example from *Quest* of Howard's description of this aspect of Piaget's final stage of cognitive development:

For the first time, the teenager is comfortable dealing with hypothetical possibilities and reasoning about contrary-to-fact. He becomes a dreamer, interminably considering the possibilities of his life; he begins to understand various philosophical theories and speculations. Piaget attributes the idealism and revolutionary tendencies of many adolescents to their initial encounters with the exciting world of pure thought. (Quest, pp. 103-104)

My purpose in proposing revisions to Piaget's stages was to try to show that, with a few changes, they remain our best account of the broad sweep of cognitive developmental change. For the last of the

stages, I felt that the revision may have taken more liberties with their original models than the others. I now see that the revision of Formal Operations into phases is a very good fit with the original: only the sequence from the earlier preoccupation with logic to the later effluence of systems-like ideas and ideals needed changing. I would have been reminded of this if I had picked up my copy of *Quest* while I was working on that paper.

Cultural Genetic Epistemology: The Study of Knowledge Domains

I have saved the most surprising and humbling of the insights in *Quest* for last. Howard and I may be the only ones who know that, as a consulting scholar on my promotion committee at Tufts, Howard supported my case by claiming that I may have started a new sub-discipline which he labeled "cultural genetic epistemology." By this label he meant that the work I had done (Feldman, 1980) in what we now call Nonuniversal Theory focused scholarly attention on bodies of knowledge and skill as important objects of study. I later used Howard's label for the title of a talk and in a paper written for Piaget's journal (Feldman, 1988); I believe I cited him in a footnote as the source of the title.

Still later (much later), I used the label again as part of the title of another paper, this one announcing the start of a research program on "cultural knowledge domains" as developmental entities (Feldman, 2011), again giving Howard credit for coming up with the label "cultural genetic epistemology." This work was presented at the annual meeting of the Jean Piaget Society that year.

What was so surprising about reading *Quest* again was that the precise rationale for this newer work had been laid out in *Quest.* The rationale was that cultural knowledge domains could be productively studied as developmental entities using insights, methods, theories, and constructs derived from the study of individual cognitive development. In other words, cultural knowledge domains would shift from being used in the study of individual expertise to becoming a source of new knowledge and understanding of culture, history, change, and the process through which individuals move from novice to expert in various fields.

The direct catalyst for my own thinking about cultural knowledge domains as objects of study came from work that Lynn Goldsmith had done on prodigies many years ago (Feldman, with Goldsmith, 1986). In trying to comprehend how a child could possibly reach the highest levels

of mastery of a very demanding field of endeavor like chess, classical composition, or fiction writing at an astonishingly young age, I thought about the child and the domain as both being on developmental trajectories. The child is on an individual developmental trajectory that will be constrained by the number of years he or she is active and able to work within the domain. The domain is itself on a developmental trajectory from its origins through its history to the present, and is itself changing. The two, child and domain, are moving through time, space, and development together.

The child prodigy is likely to be moving at a more rapid rate than the domain, given his or her extreme talent and passion for mastering the domain. But the domain is likely to be changing as well, and may even go through Kuhnian (Kuhn, 1962) style shifts during the relevant period when a child is actively developing in that domain. How the child and the domain are developing, and the impact of one on the other, is an important vector of potential explanation for the child prodigy phenomenon. Our colleague Mihaly Csikszentmihalyi expanded our vision with his systems framework for the study of creativity (Csikszentmihalyi, 1988). His work clarified a third relevant dimension in regard to the prodigy, namely "the field," which evaluates and supports potential domain-related work. In the work on prodigies and expertise, my colleagues and I had tended to focus our efforts on individuals: cases, studies of expertise development. Even after Csikszentmihalyi, our work did not focus on the domains themselves and certainly not on domains as developmental entities. Only in recent years when I taught Nonuniversal Theory did I introduce it to my students as the study of development *in* domains and the study of development *of* domains. I did this to convey the idea that domains develop, but I had little data on which to base this claim.

In my more recent work, I am beginning to examine cultural knowledge domains as objects of developmental study. In earlier work I had certainly mentioned domains as relevant to exploring why for example, prodigies appear in some fields but not others. Surely domains must have "signatures" that render them susceptible to the emerging talents of prodigies to be. And in the earlier research on domains testing claims from Nonuniversal Theory, domain analysis (as it was called) is one of the first orders of business. But domain analysis to date has been pretty much limited to trying to see if a sequence of levels of expertise

from novice to master can be identified. In our more recent work, we have begun asking questions about the origins of new domains, the ways in which domains transform and develop, the patterns of stability and instability in domain history, and the mediating qualities that are characteristic of each domain, a topic also of interest to Howard.

In starting my recent project I was completely unaware that Howard had introduced the same rationale for studying cultural knowledge domains and had even carried out a preliminary developmental analysis of a domain as a way of illustrating some of the principles of structural analysis. Here is how Howard introduced that work in *Quest*:

While a purely structural analysis ordinarily assumes that all relevant factors are present in some form though the period and across the domain being investigated, a developmental analysis is predicated on the assumption that higher levels of organization may evolve which could not have been predicted simply from knowledge of earlier events. The history of scientific disciplines has not been subjected to extensive developmental analysis (although the writings of Piaget, Foucault, Kuhn, and certain other historians of science do contain hints of such an approach). Nonetheless, in the belief that it will at least provide some insight into its methodology, and with the hope that it will complement our structural analysis of the French tradition, I will attempt below a developmental analysis of the history of modern social-scientific thought. (p. 26)

For the next several pages, Howard analyzes social science as a developmental domain, even producing an illustration of its stages, as shown in Table 1 below from p. 41 of *Quest*:

A Developmental Analysis of Twentieth-Century Social Science

	Anthropology	**Psychology**
Stage 1 **(1900-1920)**	Empirical approach: Malinowski, Boas Philosophical approach: Durkheim	Empirical approach: Watson (behaviorist) Philosophical approach: Wundt (introspectionist)
Transitional Phase **(1920-1935)**	Mauss and Radcliffe-Brown Linguists as Catalyst Phenomenology as Negative Example	Wertheimer, Köhler, and Freud
Stage 2 **(1935-present)**	Structural approach Lévi-Strauss	Structural approach Piaget

To be sure, there are a number of differences between Howard's *Quest* and the work that my colleagues and I have begun within the last few years. I will not go into those differences here; suffice it to remind the reader that *Quest* was published in *1972* and that I first read it no more than a year after it was published. A lot has happened in the 40 years since *Quest* was published, but the seeds of the work that I am now doing without question were planted a long time ago. It is astonishing to me that Howard had not only conceptualized the basis for the study of cultural knowledge domains before 1972, but that he had begun to

create a methodology for doing research in that new area. I remained consciously unaware of the work he had done until Ellen asked me to contribute to Howard's festschrift.

There are many other delightful and remarkable and surprising things in *Quest*, but I will end here with the cultural genetic epistemology example because it reveals how prescient Howard's mind was and how uncannily he anticipated the many ways in which our fields have changed. He might have helped bring about these changes even more if he had continued the work he started in *Quest*, but of course but that wouldn't be Howard. As he has said about himself, Howard's delight is to take on very large challenges, to try to comprehend, analyze, and prescribe where a field must go, share some suggestions about how to proceed … and move on. He has done this in project after project. *Quest* was simply one in a long series of such efforts, each one resulting in a book that, more often than not, changed the world, if not as dramatically as *Frames of Mind*, then in deep and profound ways that may take decades to develop. So it was with *Quest.*

References

Cole, M., Gay, J., Glick, J., & Sharp, D. (1971). *The cultural context of learning and thinking*. New York: BasicBooks.

Csikszentmihalyi, M. (1988). Society, culture, and person: A systems view of creativity. In R. Sternberg (Ed.), *The nature of creativity* (pp. 325-339). New York: Cambridge University Press.

Eisenberg, N. (Ed.). (2011). Article and commentaries: What is neoconstructivism? In *Child Development Perspectives, 5*(3), 157-172.

Feldman, D.H., with Goldsmith, L. (1986). *Nature's gambit: Child prodigies and the development of human potential.* New York: BasicBooks.

Feldman, D.H. (1980). *Beyond universals in cognitive development*. Norwood, NJ: Ablex.

Feldman, D.H. (1988). Universal to unique: Toward a cultural genetic epistemology. *Archives de Psychology, 56*, 271-279.

Feldman, D.H. (2003). The creation of multiple intelligences theory: A study in high level thinking. In V. John-Steiner & K. Sawyer (Eds.), *Development and creativity* (pp. 139-185). New York: Oxford University Press.

Feldman, D.H. (2004). Piaget's stages: The unfinished symphony of cognitive development. *New Ideas in Psychology, 22*(3),175-231.

Feldman, D.H. (2011). Cultural genetic epistemology: The growth and development of knowledge domains. Presented at the Annual Meeting of the Jean Piaget Society, Berkeley, CA (June 2).

Gardner, H. (1972). *Quest for mind: Piaget, Levi-Strauss and the structuralist movement.* New York: Vintage Books.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: BasicBooks.

Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Levi-Strauss, C. (1966). *The savage mind.* Chicago: University Press.

Newcombe, N. (2011). What is neoconstructivism? In N. Eisenberg (Ed.), *Child Development Perspectives,* 5(3),157-160.

Howard's Response to David Henry Feldman

If one can talk about parallel careers, ours come as close to that geometric formulation as any that I know. We were born within a year of one another and we both became interested in psychology and education (and suspicious of efforts to approach those topics in overly scientific); soon felt a bond to the main stream of developmental psychology as embodied in the writings of Jean Piaget, Lev Vygotsky, Jerome Bruner, and a few other seminal figures. Dating back now decades, our own overlapping interests focused on developmental theory in the post-Piagetian era, the nature of giftedness and creativity, and how education can be developmentally informed.

There were interesting parallels as well in our personal lives. We went through painful divorces, our sons became close friends, and we both applied for the same job in the period of 1970-1971: a professorship in developmental psychology at Yale. You received the offer and took it, while I went on to a far less regular path of post-doctoral work in neuroscience at the Boston Veterans Administration Medical Center. I have often wondered how different our lives would have been, had I received and accepted the offer from Yale….or, for that matter, if you had spent twenty years working in an aphasia research center!

Since our backgrounds and interests were surprisingly similar, it is not surprising that we ended up working together on major projects. The two most salient for me were Project Spectrum, a serious empirical effort to develop sensible measures of different profiles of intelligences in young children (Festschrift contributors Mara Krechevky Jie-Qi Chen, and Julie Viens were also involved in Spectrum) and a major committee of the Social Science Research Council, headed by you. The committee was dedicated to the understanding of various kinds of gifts through the lens of developmental psychology. (The committee itself underwent numerous changes in name, reflecting a constant shift in membership and orientation and Zeitgeist).

In your contribution, you nicely acknowledge me as the source of some of your ideas. I can more than return the compliment. You were the first person to discern, in the early drafts of Frames of Mind that the book was likely to be seen as a major critique of the standard theory of intelligence; you helped me both to strengthen that point and to respond

to those who were within the 'inner circle' of classical intelligence. In our joint work with Mihaly Csikszentmihalyil you contributed the immensely important notion of 'domains of expertise;' a necessary complement to the spheres of intellect that I was delineating. Your articulation of 'domains' has influenced my work ever since. And while we both remain developmentalists to the core, you were among the first to point out that 'development in different domains' does not have to occur in lockstop fashion; each domain may, and perhaps does, have its own developmental trajectory.

But let me say a bit more about 'insight' and 'influence.' It may well be that The Quest for Mind contained the seeds of ideas that you built upon, either soon thereafter or much later, either with credit or without. I don't know how it is in math or physics, but I am confident in stating that this is the norm across the social sciences. This pattern was brilliantly exhibited by Robert Merton in his classic On the Shoulder of Giants: A Shandean Postscript. In Merton's work, a quotation universally attributed to Isaac Newton is traced all the way back to classical times.

It's great to believe that one has stated something first (the closest thing that we come to a 'discovery' in the social sciences.) But almost always this is delusional. What is important is the way in which the idea is developed, tested, refined, absorbed into the 'general wisdom' (as is the case with Merton's insight), or, less happily, dropped as useless or anachronistic. I have no hesitation in stating, on the record, that the ideas in Beyond Universals and your subsequent papers and essays are David Feldman's. The most that I will accept is a modest 'assist' with respect to some of the claims and formulations.

As I pointed out in my comments on Bill Damon and Anne Colby's essay, this is not a time where 'developmental conceptualization' in psychology flourishes; the 'hot' areas are brain studies of cognition and clever "one shot" social psychological experiments. But there is a deep and permanent truth to the developmental perspective; and you, perhaps more even than the rest of us, have kept the faith. Students and scholars in the future will be in your debt.

Tiziana Filippini

"2013" what a year! We both will reach significant moments in our life.

70 and 60 are quite particular numbers for a man's and a woman's life. At that time it will be more than 30 years since we got to know each other in Reggio, almost half of my life!

Ellen, Carlina, and a lot of other pedagogistas and teachers studied the encounter between you and Loris Malaguzzi. At the beginning it was not easy to understand how your ideas could empower our research. It seemed like you were not so friendly with our idea of connecting, making relationships in order not to slice the child as traditional education was doing.

The passion for your work, the ethic of your thoughts, the strong commitment to understand, the intellectual honesty, and the loyalty towards our experience that you share with Malaguzzi helped to build a strong sense of esteem, the desire to exchange ideas, to know your opinion, to look for your questions, to see you as an important reference point for how to keep moving in our experience. Even the mayor chose you as a good friend of the city.

Meanwhile I was lucky to be able to be quite often in Cambridge and so to spend time with you and Ellen outside work occasions. I have enjoyed getting to know you personally and professionally.

I really hope that we can "double the time" of our friendship. Maurizio and Elisa join me in saying:

Tanti, Tantissimi auguri di buon compleanno, perché gli anni futuri possano incontrare le tue visioni e i tuoi desideri.

Tiziana

Howard's Response to Tiziana Filippini

I have a welter of memories of my first trip to Reggio Emiliia, over thirty years ago. No memory is more vivid than that of you, Tiziana, barely having completed your higher education, coming to pick Ellen and me up at the airport and serving as our introducer to the wonderful environment in which you and your colleagues live and do good work. You were our tie, our link, to a then mysterious world, and helped to demystify it, both by virtue of your own explanations and through your detailed and patient introductions to Loris, Carlina, Amelia, Vea, Sergio, and other members of the 'core group.' (It should be said that you had 'by far' the best command at that time of English—and our Italian was pitiful). Over that period you have also been the most constant visitor to Cambridge and Boston, not only bringing your unique skills as a pedagogista and as a Registered Diplomat of Emilia Romagna, but becoming a good and valued friend, whom we cherish.

Long may that friendship endure! Across the seas! And across the generations!

Howard Gardner:
The Definition of a "Good Worker"

Wendy Fischman

An Opportunity

Writing a tribute to Howard Gardner is not easy. This is perhaps the hardest writing challenge I have faced in the fifteen years that I've worked with him. In part, I know that this piece will fall somewhere between other works written by accomplished scholars, influential colleagues, and impressive peers. I also know that this is one of the few pieces of writing that Howard will not have reviewed. He always has helpful suggestions and edits, and I've been spoiled over the years. Most people don't have Howard Gardner reading their work before it becomes public. How lucky am I? I have given a lot of thought to what to write, how best to celebrate his work. Though many people can write volumes about his academic and practical contributions, I'd like to focus on what I believe is just as important: Howard as mentor of professionalism and responsibility.

The opportunity to work closely with Howard and to be mentored by him is a real gift. In direct and indirect ways, I've learned so much: how to carry out and manage social science research, write about it, and develop practical applications based on our studies. In short, Howard has given me a graduate education and professional training at the same time. Through this work, I've traveled to places I never thought I would go (including Texarkana, Buffalo in the middle of January, Germany, and most recently, India). One of the most memorable trips was not somewhere exotic, but to New York City, to meet two individuals from the Gates Foundation (who had promised funding, which never panned out). The meeting was not worth the trip, but walking through the MOMA with Howard when we had an hour to spare was a treat. Always interesting and provocative, I've learned more from Howard's thinking and writing than from my own formal schooling (don't tell my grandparents!). My vocabulary, which now includes "festschrift," has been expanded, and I have become more aware of the power of words. This is one of the qualities that I most admire about Howard. His ability to find just the right word, to communicate perfectly a sentiment and a feeling with such

ease and speed, is truly incredible. Complex concepts become accessible and understandable. His use of words—and play on words—is also entertaining. Sometimes I save the titles of emails because they make me smile: "Sundry on a Sunday," "No Noise from Noyes," "Tales from Wales."

Learning from Howard does not always come from the written word or hands-on training in the office. Because "wasted time" does not exist in his world, teaching and learning can happen any time and any place, even in the car. Oddly enough, I spent a lot of time "on the road" with Howard over a three month period one year, when we co-taught a course at Colby College in Maine. Every other week, we drove six hours in one day (three hours up and three hours back). As the weeks went on, I became, in his words, "driver extraordinaire." I hope he'll remember me for more than my driving! Not surprisingly, these car rides became opportunities for work—we always had productive conversations (while he lay across the backseat of my large SUV resting his ailing back). Three hours can go by quickly when you use it wisely: during this time we would plan the day's course, upcoming sessions, and would talk about new ideas about how to advance our research. Indeed, many papers, projects, and assignments came out of those car rides.

I could go on for pages about these kinds of "Howardisms." Though some are funny and humorous and others stress inducing, I want to focus on what I believe is one of his greatest contributions—his model of "good work," the concept we have studied for the past fifteen years.

The Goods: Excellence, Ethics, and Engagement

The GoodWork Project is a large-scale research study, which set out to investigate how leading individuals carry out work that is at once excellent (high quality), ethical (socially responsible), and engaging (personally meaningful).[1] Over the last 15 years, I've worked on and managed various aspects of this study, mainly the research of young individuals, starting with kids as young as ten years-old to budding professionals (similar to the age I was when I started working for Howard, age 26). Though I can relate to their stage and some of its challenges, my ability to carry out "good work" has never compromised.

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[1] Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet.* New York: BasicBooks.

This was not the case for many of the young professionals we studied. Over and over again, we heard stories about how individuals working in many different fields and professions encounter difficult situations that test their capacity to carry out "good work."

Alignment is a key finding of our study—"good work" is easier to carry out when the stakeholders of a particular profession or domain are in agreement or "on the same page" about the purpose of their work. Young, fledgling professionals face these challenges with only minimal support and guidance. Both veteran professionals and young professionals alike, lament the loss of "deep" mentorship. As I reflect on Howard and what I have learned from him, the most important takeaway for me is his approach—the *how* of what he does—and his exemplary model of the "goods."

Excellence

Over the course of the GoodWork study, we observed the demise of many professions and institutions. Collapse was often precipitated by the shift in focus of many professionals in the United States from "domain mission" to the "bottom line." In the middle of the 1990s, as profit became a primary goal for nearly every profession, the nature of work changed for many individuals. For example, journalists could only report on stories that would ultimately sell newspapers, doctors were forced to shorten visits to squeeze in as many patients as possible, actors confronted the "disneyfication" of theater. Many professionals told us about how they either had to adapt to a new set of values and approaches or leave their job, and possibly the profession altogether.

In contrast, for Howard, there is no such thing as compromise on excellence or high quality work. He does not let others dictate the value of work, including powerful authority figures and those with enticing opportunities and funding sources. Though Howard could not carry out research without money, the market does not drive him. As an academic, a scholar, and a researcher, he looks for funding sources to support the work in which he is interested, rather than change the scope of work to fit available funding. Howard would rather pass on the money than change the nature of work. He is always truthful with funders—he clearly communicates what can and can't be done, and gives honest reports about what has (and rarely, if at all, has not) been accomplished in a grant.

These kinds of approaches provide an important model for the rest of us on the team. He has taught me how to carry out high-quality research, even when time is precious: We analyze data according to rigorous methods so that we can rely on the validity of our findings, and so that our reports are more than just anecdotes (and when they are, we say so up front). We check sources and citations. We triple-check that we have permission to quote a participant (first by paperwork, then by direct communication). Written works are read many times over (and by more than one individual) to check facts and to eliminate errors. Even emails are reviewed with a "fine-toothed comb"; it never looks professional to send someone an email with an editorial mistake in it, even if it is an informal communication.

We treat others with respect. We acknowledge and respond to emails and phone calls quickly (even if we can't answer a particular question right away). We confirm receipt and offer a timeline of when we will be back in touch. We never leave people "hanging." We accomplish tasks when we say we will do them, and often send them off earlier than promised. We credit other people for their work. When research assistants and students have played an important role in a particular project, they are appropriately recognized. Howard is especially generous with giving other individuals the opportunity to author papers and books. He graciously shares the public stage.

Howard's exemplary treatment of others includes those with whom he works most closely. Though he has high standards and expectations (and can sometimes work at unreasonable speeds), he frequently communicates appreciation and believes that people should be fairly compensated for the high quality of their work. Though the Office of Human Resources does not always agree with his requests, Howard has spent countless hours "going to bat" for raises and promotions. Even with Howard's frugality, he honors and rewards the excellent work of others (and doesn't take "no" for an answer!).

Ethics

It is easy to see the many ways in which excellence and ethics are interconnected. Excellent work cannot be carried out without care for others. On the GoodWork Project, we define ethics in terms of "responsibility"—to self, to others, to work, to domain, and to society. Ideally, individual workers will focus not only on the impact their work

can have for themselves and for others, but also for their institutions, domains, and the larger society. As Howard explains,[2] ethics is more than respect for others. Developing an ethical mindset is orienting the self as a "citizen" and shaping work to fulfill a responsibility to make the world a better place.

The development of the GoodWork Project (originally called Humane Creativity) comes from this kind of "ethical orientation." In collaboration with William Damon and Mihaly Csikszentmihalyi, Howard was interested in studying and shaping a world defined by "good work." In other words, at the time the project was conceived, Howard wanted to do more than contribute important findings to the fields of education and psychology, he wanted to *help others* fulfill their professional and personal responsibilities.

Howard's "citizenship" plays out in many ways. Unlike many in his position, Howard is almost always accessible to those who have "good questions," questions that go beyond the typical and straightforward "Q&A's." Regardless of where he is in the world (literally), he responds to requests and questions about his work and the importance of the work to society. He spends significant time writing people back because he not only wants to help someone find an answer but also contribute to shared, public knowledge. Many people are surprised to get a response directly from Howard, but he does not see this as "extraordinary." Anyone is Howard's student (even some of those individuals who show up on Facebook).

Howard also works hard for the betterment of Harvard University—its administration, faculty, and students. He works on countless committees, and if he's on one, he goes to nearly every meeting and takes the work seriously. When he feels that his own ability to carry out "good work" is compromised, he addresses and confronts the situation. Though he does not always like to "blow the whistle," he will, loud and clear, if he feels that in doing so, leadership and culture will change. Not surprisingly, people listen, because Howard does not often take the role of the "squeaky wheel": He waits for the appropriate time to speak up. More recently, perhaps based on the GoodWork Project, Howard has

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[2] Gardner, H. (2006). *Five minds for the future.* Boston, MA: Harvard Business School Press.

worked on a few different initiatives to help make Harvard a reflective community, an institution that helps to develop caring citizens. Specifically, he has worked with undergraduate and graduate students who are interested in developing clubs focused on ethical practices in the professions, he helped to establish the Freshman Reflection Sessions, and has outlined a proposal for a "Harvard Commons."

In terms of his responsibility to society, I am not sure I will ever work as closely with someone that is as informed as Howard. His knowledge of other countries and their cultures and political systems is unparalleled. He mourns the loss of accurate and truthful journalism that used to promote an informed citizenry. He worries about the perils of the Internet and works to help individuals develop ethical habits on-line. Though he often is self-deprecating about his own technological skills, he is on the forefront of this field and works to make even the viral world a safe place for us all.

Engagement

Engagement is the third defining quality of "good work." Over the course of our research, we added this concept to our original definition because we had heard from so many individuals that in order to carry out work that is excellent and ethical, it needed to be personally meaningful. Interestingly, "engagement" has become increasingly important to us, and in many ways, has become what others who learn about our research find most relevant. Schools almost always focus on the "excellence," sometimes focus on "ethics," but almost never spend time on "engagement." Far too often, individuals admit that they go through school and the first part of their careers without thinking carefully about the kind of work that might be meaningful. As we have learned, without engagement, it's nearly impossible to do work in a responsible manner.

To describe engagement in terms of Howard's work seems trivial; Howard embodies his work. Because he enjoys his work, his time is always "well spent."

From Howard I have learned that time is valuable and should be used wisely. He reviews and produces more work than I thought humanly possible—he writes, processes, and reads faster than any other human being I have ever known. In fact, I often think about when to send something to Howard—if I need a break from a particular report or

paper, I will sometimes purposely wait to send it, for I know that I'll get it back in less than 24 hours. He always says he'll get feedback within a few days or a week, but it almost always comes back too soon!

Not surprisingly, Howard runs exceptionally efficient meetings. Our management team meetings are a good example. Nearly every Tuesday when he is in Cambridge (and sometimes by phone when he is not), with a diet coke and a sesame bagel in-hand, we go through his alphabetized list of tasks and cover discussions about short-term and long-term goals. Within an hour (hardly ever more unless we plan in advance) we make it through the list (and more) without skimming over anything important. If conversation about any particular item becomes repetitive, he tells us to stop over processing; "we all get the point." If we have a question, we call or go get the person right away. Tasks are talked about according to time: "this should take you no longer than an hour," or "this is a ten-minute job, not a day-long job." He scribbles notes on his list or any scrap of paper he finds in his shirt pocket, with handwriting that I still have a hard time reading. Within minutes of getting back to his office, half of his to-dos are already taken care of, making the rest of us look slow. Every worker should see how much work can be accomplished in an hour.

Though much of Howard's work entails time alone with a book or computer (or even pen and paper), he relishes the relationships and "good collaborations," that result from the work. He seems to enjoy the teams of which he is a part, especially when they become "learning organizations" (the board at MOMA, the Freshman Reflection initiative, the GoodWork venture, to name just a few). To be sure, Howard seems almost always to take a leadership role, and to take on the majority of work in a collaboration, and I hope that this comes from the enjoyment he derives. (I'm sure this is not *always* the case.) But as we have learned in our study of collaboration, these are important attributes to a successful partnership and collaboration—leadership, selflessness, and a focus on larger purposes. Challenges inherent in collaboration become surmountable if the purpose of the shared work moves beyond individual and organizational needs. Ironically, the only problem with Howard's style and approach is that is it spoiling. Collaboration with others that do not share his organizational skills, focus, respect, fairness, accessibility, and sense of responsibility for high quality work is less palpable and sometimes, impossible.

Personal Note

I started to work with Howard in 1997 when I was 26 years old. I had already worked at Project Zero for eighteen months, and before that, I worked at a non-profit organization specializing in school reform. In college, I had interned at an educational policy group in Chicago and knew that this was the kind of work I wanted to pursue. As a history major, I was most interested in learning about people's stories—how their backgrounds, personal attributes, and the twists and turns of life brought them to a particular situation. Really what I was interested in, without being able to articulate it, were the implications for education that could be discovered through the study of psychology, sociology, anthropology, and history, and the GoodWork Project allowed me to think about just these issues. (Interestingly, Howard studied Social Relations at Harvard College, a major that combined psychology, sociology, and anthropology; in addition, he is a voracious reader of history.)

But more than the interesting project I have been a part of, working with Howard has shaped me as a professional, a parent, and a citizen. Over the nearly fifteen years I have worked with Howard, I got married and had four children. I could never have predicted that I would have been able to work while raising a family. Before I started to work with Howard, the person I did not know intimidated me. I questioned how could I meet the needs of someone who was so prolific, with such high standards, and at the same time maintain a personal life. I quickly learned that Howard did not take family for granted. In the hospital, after experiencing a strange medical issue that same year, Howard was the first person to call my room. He was also the first person to call after I got home with my oldest children (twins). The same with the third, and then the fourth. I always joke that I am one of Howard's favorites because I have twins—which meant only one maternity leave. When I told Howard that I was pregnant with twins over email, he wrote back a congratulatory note, and added that he always appreciated my productivity and efficiency. I wish I had saved that email! In fact, after my first children were born, some family members and friends thought I was crazy for going back to work. They did not know Howard.

As my children have grown (Jake and TK 12, Molly 9, Corey 5) my professional and personal lines have blurred. Teaching my kids about GoodWork and finding ways to expose them to it has become a personal

mission. We often talk about doing work according to excellence, ethics, and engagement. My oldest boys, who are obsessed with sports, can discern a "good" player: it's not always the individual who possesses the most skill, but the person who is a good role model and does his/her best to support the team. We chose their school based on its mission: "excellence with humanity." I am less concerned about the kind of college they will attend and more about the kind of people they will become. Though being a "good" person is part of my own upbringing, our research has shown how important it is to provide young people with the opportunities to practice and talk about "good work." As we all know too well, pressure and competition can easily take over.

As rewarding as the study of GoodWork has been, the opportunity to do it with Howard's guidance and mentorship, has been the best part, and as the cliché goes, the "opportunity of a lifetime." A year ago, in an annual review (never a favorite activity of Howard's), Howard asked me the dreaded question: "What comes next?" I replied frankly that I could not imagine another position comparable to what I have now. He was surprised. I explained that without a doctorate (or even a masters), I can't lead my own research, I have to work for someone, and who could that be? After working with Howard, there is no one else. Howard has been a real mentor, someone that I admire not only for the work he does, but *how* he does it. If we could bottle it up and share it, we would no longer need to study or write about GoodWork.

Howard's Response to Wendy Fischman

Thank you for your exceedingly kind and generous words about me. You have been a terrific colleague and friend for two decades and it is hard for me even to imagine continuing our work without your intelligent and steady presence at the helm (and often on the wheel!). I am tempted to request that you remain on "permanent global retainer!"

But, as they say, in politics, it is important to set the record straight. Before you came to work with us on the Good Project, you already had a solid education in the Boston area and at Northwestern, and you had done a stint at the Northeast Educational Laboratory. Most important, I cannot claim the prescience to have invited you to join Project Zero. That stroke of genius was executed by Jessica Davis, who immediately saw your talents and your potential. Your impressive work ethic and your inherent modesty often draw attention to the high quality of your work, rather than to you as a Big Personality with Big Ideas. Again, I want to set the record straight. It was your work, conceived and guided by you, which led to the single most important change in the Good Project over a twenty year period. While the rest of us had been interviewing seasoned professionals across different career treks, you took the lead in carrying out analogous interviews with much younger subjects; those in the process of learning music or journalism or the martial arts (and no doubt other young persons' passions and pursuits).

This work, which culminated in your senior authored book Making Good, caused a sea of change in our research. And that was because you (and your co-authors Becca Solomon and Deborah Greenspan) demonstrated that the seeds for "compromised work" were being sown quite early in life. It's not that young workers don't know what good work is; it's not that some of them don't aspire to be good workers—some do. Rather, as you carefully demonstrated in the path-breaking book, too many young people feel that they cannot afford to do good work, at the time, because they will then be bested by peers who are more than willing to cut corners. On this dispensation, Good Work becomes something for later, once one has achieved fame, power, and lots of disposable income….then, if then…..

This groundbreaking work led us, as a group, to the following conclusion. We need to devote efforts to familiarizing young people with

the choices that they will soon make, if they are not already making them, with respect to the manner in which they will pursue work—whatever line of work they decide to follow. And, in a story much too long to relate here (but see www.thegoodproject.org), this insight catalyzed the creation of various kinds of Good Work toolkits, classes, workshops; indeed, any kind of material or vehicle that would help young people understand that Good Work is not just for other young people, and not just for tomorrow—it is for all of us and it needs to start today.

In this "counter tribute" to you, I want to mention your wonderful family: you and Ben have set up a milieu in which good work is modeled and encouraged. The way that we thank our own mentors and role models is by the examples that we set for those who come after us—be they children, beginning researchers, or just those who have a legitimate question or issue on which they'd appreciate some input or feedback.

Joel L. Fleishman

Dear Howard,

Your perpetually youthful outlook on life makes it virtually impossible for me to think of you as now being 70 years old. However, when I cast my eyes over your remarkable body of infinitely influential scholarly work, indeed work which is certain to endure, in my heart I know that you are probably one hundred years old in a 70 year-old frame.

I wish I were professionally competent in any of your professional fields to contribute an essay to your festschrift, an option which Ellen graciously offered to me, but I am not. Therefore I am saluting you with this brief but deeply felt letter of gratitude for your wide-ranging contributions to knowledge about the human mind, how it learns, and how to enable it to learn more effectively.

You are a remarkable visionary who identifies many of the most central issues and challenges facing humankind today. You are, hands down, one of the most perceptive observers and problem-solvers of life, work, play, and learning today.

You are a key leader of the largest, most productive, and most influential collaborative worldwide group of scholars continuously focusing on the processes of learning, a group which, hardly to my surprise, has attracted perhaps the largest number of philanthropic foundations to any single concerted effort of any kind in contemporary history. You created that evolving body of scholars as a natural, enduring collaborative nationally and internationally dedicated to discovering knowledge relevant to improving learning. You led them to move beyond research qua research to applying the research findings, empirically supported, in actively improving the schools that educate children. By identifying the Reggio Emilia model of education and, both personally and through your Project Zero colleagues, making its practices and results common knowledge in the world of education and beyond through the summer institutes which you established, you have enabled its methods of teaching and learning to achieve significant momentum in the world of education.

The GoodWork Project itself, which you first envisioned, launched and continue to run, exemplifies the fecundity, profundity, and critical focus of your scholarly mind on the crucial question of "what constitutes excellent professional performance, grounded in ethics and good professional citizenship, in a wide range of radically differing professions and callings." In striving to define and exemplify by the "good work" of particular human leaders, informed by exhaustive interviews of highly regarded practitioners, you have begun to crystallize—and provide answers to—one of the most central questions facing society in an age in which rampant, pernicious, pervasive subjectivism and relativism threaten to undermine all values cherished by civilization and honored by history, as well as indeed the possibility of objectively identified "good" in any sense itself!

Even before crystallizing the GoodWork Project, you became and still are one of the world's most highly-regarded scholar-researcher-thinkers on better and worse ways of learning and teaching, and your scholarship led you to an entirely new paradigm of the different forms of human intelligence and the critical social importance of distinguishing in non-invidious ways among them.

You have a restless mind but not so restless as to be unable to concentrate on particular questions in great depth. The numerous books you have authored and co-authored constitute powerful evidence of your capacity to focus and dig deeply into every question of concern to you—and society.

For you, your work IS your play, so it is hardly surprising that you have now recognized "good play" as an appropriate, indeed urgent, follow-on to "good work."

As you know, the Atlantic Philanthropies was among the earliest large foundations to support your undertakings with general operating funds, and it was Angela Covert who made the decision at Atlantic to recognize your achievements and your promise to society. While neither of us is still at Atlantic, the donor and staff of that generous foundation continue to be enormously proud of the wisdom of its decision to help you achieve your vision, and so are Angela and I.

May God bless you with many more years of more productive and influential research and teaching like that which is already benefiting society so powerfully!

With enormous admiration and affection, fondly,

Howard's Response to Joel L. Fleishman

A hypothesis: there are few individuals in the world today who have not directly or indirectly benefited from the many good works in which you, Joel, have been connected over the decades—as a teacher, administrator, board member, formal or informal adviser, friend, and, in the context in which I first came to know you, as the President of the then anonymous Atlantic Philanthropies. You have a strong, lively, vibrant personality, which endears you to the countless persons whose paths you have crossed or vice versa—nothing particularly 'anonymous' about you! And because of your endearing traits, you have one of the largest networks of friends of anyone that I know. What an inspiring combination: Knowing so many, doing so much good!

I cannot claim to be a psychiatrist, and there are hundreds of people who know you more intimately than I do, but I think I know a part of the 'secret' of Joel Fleishman. You have been placed on earth in order to help make the world a better place. Accordingly, you are determined to use just about every waking minute—(I claim no expertise on your hours of sleep, be they three or ten a night) to help the causes in which you believe and the individuals whom you think can help or support those causes. You are Jewish and it is possible to see this as part of Tikkun Olum, but all one has to do is to read your amazing annual letters, with their rhapsodic poetry, in order to realize that your religion is more cosmic than narrowly sectarian. Indeed, your sentiments can be seen in some form across all of the great religious orders, as well as in sects like Buddhism, Hinduism, or even humanism, that seek to discover what is good in people, to nurture it, and to work tirelessly—and realistically, though optimistically—for a better world.

Joel, you've been on this course ever since anyone of us has known you…with a smile, a grin, a glass of wine, if not a teabag. But the real sign of your influence are the many hundreds of individuals who have taken a leaf from your example and have gone on to lead a more generous and a more compassionate existence; a life (in the terms of our work) that features good persons, good citizens, and good workers. And unlike so much philanthropies, whose results peter out once the money stops coming, I truly believe that your personal and monetary philanthropy has a long half-life, and that if we were to return to the

planet in fifty years, we could see many bright colors signaling the enduring Fleishman palette.

Aging? Never Mind

Nancy S. Foldi

Getting a job as a research assistant with Howard Gardner and Edgar Zurif in 1975 was no small feat. I made my way up to their small shared office on the 14th floor of the Veterans Administration Hospital and in my polite, albeit intimidated interview voice, I addressed the guy nearest to the door: "Dr. Gardner?" He startled, shuffled papers on his desk, looked at me and said: "No, I'm Zurif, he's Gardner. Good start." That was the first interaction of what was to be a four-day interview. A first morning was devoted to their review of my respectable neurolinguistic but minimal psychology education. The following day, I was to accompany Howard on bedside rounds in the neurobehavioral unit, led by an august group of already-known or to-be-famous neuropsychologists, neurologists, and speech pathologists. Howard peppered me with questions about patients: What did I think about the left neglect of the patient, whose left hand was stuck in the spokes of his wheelchair? What did I think about the patient's transcortical motor aphasia and about how he repeated some words but not others? Did I really believe in agnosia? I had actually never seen focal brain damaged patients before, and my answers surely didn't contribute to science let alone my job interview. For the third day, my assignment (already earmarked for me at the end of the first day) was to prepare an oral review of a submitted paper on Visual Communication Therapy in aphasic patients, although Howard and Edgar neglected to tell me that it already had been extensively reviewed by a journal and accepted. What influence I was to have was beyond me. Meetings with others researchers and team members ensued, with me always being watched and grilled. By the end of the fourth day, while I was contemplating some revisions of the daily Pesach plagues, they posed some final questions about how I would contribute to their research. At the end we segued into pragmatically correct social chit-chat and I was accompanied to the elevator, flanked by Howard on one side and Edgar on the other. Howard pushed the envelope: " 'Foldi,' that's an interesting name. Is it Italian?" "No" I said, "it used to be Földi with an umlaut on the 'O'." He paused for that extra comedic moment and looked at me. I paused, and with a resigned shrug explained: "Földi is Hungarian for 'Feldman'." Howard

broke into a huge grin "Well, that gives it away!" And with that shared moment in the art of Jewish-European timing, I knew I got the job.

Since then, Howard has served as my boss, dissertation advisor, and mentor, and has been the wise influence on my professional path. I am ever grateful to have been influenced by him both in terms of what and how I think about neuropsychology and development. This festschrift is devoted to a special milestone in Howard's life, and I can't help but consider how Gardnerian theories apply not only to development, pedagogy, international negotiations, ethics, and good works, but also to aging. As it happens, my own academic and clinical work led me to study normal aging and neurodegenerative diseases. Given the tremendous influence Howard has had on the study of development, I am struck how relatively little literature directly addresses how aging interacts with his developmental principles. So, I thought it appropriate to venture into how his theories could apply to cognitive aging.

Aging has to be understood in the service of development, both at behavioral and neural levels. Of course, multiple intelligences (Gardner, 1983), by virtue of their dissociation of function, are inherent principles of cognitive aging, because some functions change with age while others are more resilient. Other life-long processes, such as synthetic thinking (Gardner, 2008), are qualities that hopefully ameliorate our own success into longevity. I will consider two questions. How does an intelligence age, and what components drive synthesis throughout life? I address the first the question using issues of semantic retrieval, and then consider efficiency of working memory capacity as one way to view synthesis. I'm not sure whether Howard ever intended these ideas for cohorts of octo- and nonagenarians, but it's a worthwhile endeavor.

Prior to addressing these two questions, a big caveat that is well-known in the experimental life-span and aging literature should be addressed. Any comparison of behavior at different life points is fraught with complications. The upside of a developing brain compared to an older one is that it still has time to continue to change structure, neurochemistry, and interconnectivity. The upside of longer life is the benefit of behavioral and neural transformations that have come with experience. This cohort effect—the fact that individuals at different ages have such different experience and performance—can be addressed by experimentalists by choosing cross-sectional versus longitudinal versus

cohort sequential sampling designs. I am struck, however, that even these may not be sufficient in today's world. Take processing speed of attention in adolescence and late life that we have addressed as part of larger studies in my lab. The 18-year-old freshman, who is asked to respond to a computerized visual detection task, has lived her whole life with computers, while the 65-year old, who recalls a Charlie Chaplin mascot and annoying noises of connecting modems, didn't acquire his computer skills until early midlife. We found the expected faster response times in the young group, but even this simple finding challenged a basic tenet of neurobiology. In particular, response latencies to a visual stimulus less than 100 milliseconds are commonly recognized as 'anticipatory responses', because the physiological limit of neuronal transmission rates from ocular exposure to subcortical detection to cortical decision to motor response is around 100 msec. These trials are traditionally discarded from a data set. However, while anticipatory responses accounted for 5.8 percent of an older group in their 70s, our Psychology 101 group from Queens College had 62 percent such 'anticipatory responses.' One conclusion may be that our freshmen are very antsy, but another more sobering explanation has to be that the accepted physiologic 100ms cut-off should be revisited. I called this 'Nintendo effect' a wake-up call—any attempt to compare development during early and late life requires thought not only of when during the life span and in what era a task was conducted, but also that experiences of these next generations provide opportunities that may impact development of underlying neuronal substrates in ways we never considered.

With this in mind, I'll address those two aging issues. First, does linguistic intelligence age? Language is an intelligence that is considered a more preserved 'crystallized' function (Horn & Cattell, 1967) that should thus deflect effects of aging. However, semantic retrieval needs to be considered on its own (e.g., see Meinzer et al., 2009). Naming and word retrieval are indispensable acts of language intelligence: the first word is a milestone in infant development and word retrieval skills are preserved in healthy aging. As we know, failure of word retrieval at either end of life is a hallmark of disease, such as learning disability or Alzheimer's disease. Again, it's unfair to compare word retrieval of a 4th grader to that of a retiree: the former still lacks lexical items, experience to draw on, neural volume, and interconnectivity to brain regions all of which are involved in mediating semantic networks. In contrast,

although those events have transpired during maturation of the older adult, the formerly über-verbal retiree now contends with longer word retrieval search times. Perhaps a rephrased question should be: how does the neural representation of verbal intelligence in early life relate to that of late life? One answer lies in the involvement of hemispheric lateralization for language. Lateralization is still emerging and differentiating in childhood until critical periods of early adolescence when semantic networks appear more stable. But, in late life, dedifferentiation reappears in the form of asymmetry reduction (see Cabeza, 2002) and there is new or renewed reliance on contralateral or other brain regions. This dedifferentiation changes the efficiency of word retrieval. One proposal to explain this phenomenon in late life has been that there is compensation of a focal decline thus engendering recruitment of other brain regions. The greater bilateral neural involvement in late and early life do not necessarily have to be the same mechanism, but the comparative issue is that more brain resources are drafted into the behavior of word retrieval during these periods of development. This is just one way to look at common aspects of an intelligence across the lifespan: not only does it age, but our role is to understand how to investigate common or different underlying mechanisms of the process.

Another Gardnerian concept is that of synthesis, the ability to connect and incorporate disparate learned material into novel concepts. Successful synthesizing is a skill used throughout life. It also demands neural substrates and psychological skill-sets of attention and executive function, two domains that are exceptionally vulnerable in early and late life. One manifestation of attention and executive vulnerability is that working memory and individual reaction time heterogeneity present as U-shaped functions across the life span (see Hultsch, Strauss, Hunter, & MacDonald, 2008). Attentional processing speed in healthy early and late life is characterized by larger intraindividual inconsistencies that affect latency and accuracy. This dispersion of attentional speed can also be a harbinger of bad news, with, for instance, a greater likelihood of developing Mild Cognitive Impairment (Levinoff, Saumier, & Chertkow, 2005), or in childhood ADHD (e.g., see Castellanos & Tannock, 2002). Executive skills increase in early life and are susceptible to decline in late life, and these functions mediate tasks involving working memory and integration. The neural changes underlying such executive skills are precisely those frontal system regions that are the last to develop and

first to decline. For example, white matter of frontal regions is the last to myelinate in early life and earliest to lose integrity in late life (Kochunov et al., 2012). Thus, in normal development, the two skill sets critical for synthesis are precisely those that are less efficient at both ends of life. Investigating how synthesis occurs during these periods, and how we should measure synthesis while staying true to the mechanisms of these two building blocks is the challenge. The concept of synthesis becomes an example of a critical area that needs investigation at both ends of development.

Howard's contributions to the mind have nurtured our own minds and the inquiry into a person's education, ethics, and esthetics. We have all benefitted from his remarkable career. And those immeasurable constructs of his insight, curiosity, and humor have each led him to this important milestone. His future work will, of course, know no bounds.

References

Castellanos, F. X., & Tannock, R. (2002). Neuroscience of attention-deficit/hyperactivity disorder: the search for endophenotypes. *Nat Rev Neurosci,* 3(8), 617-628. doi: 10.1038/nrn896nrn896 [pii].

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (2008). *Five minds for the future*. Boston, Massachusetts: Harvard Business Press.

Horn, J. L., & Cattell, R. B. (1967). Age differences in fluid and crystallized intelligence. *Acta Psychologica, 26,* 107-129.

Hultsch, D. F., Strauss, E., Hunter, M. A., & MacDonald, S. W. (2008). Intraindividual variability, cognition and aging. *The handbook of aging and cognition* (3rd Edition ed., pp. 491-556). New York, NY: Psychology Press.

Kochunov, P., Williamson, D. E., Lancaster, J., Fox, P., Cornell, J., Blangero, J., & Glahn, D. C. (2012). Fractional anisotropy of water diffusion in cerebral white matter across the lifespan. [Research Support, N.I.H., Extramural]. *Neurobiol Aging, 33*(1), 9-20. doi: 10.1016/ j.neurobiolaging. 2010.01.014

Levinoff, E. J., Saumier, D., & Chertkow, H. (2005). Focused attention deficits in patients with Alzheimer's disease and mild cognitive impairment. *Brain Cogn,* 57(2), 127-130.

Meinzer, M., Flaisch, T., Wilser, L., Eulitz, C., Rockstroh, B., Conway, T., Gonzalez-Rothi, L., Crosson, B. (2009). Neural signatures of semantic and phonemic fluency in young and old adults. [Research Support, N.I.H., Extramural Research Support, Non-U.S. Gov't]. J Cogn *Neurosci, 21*(10), 2007-2018. doi: 10.1162/jocn.2009.21219s

Howard's Response to Nancy S. Foldi

From the very first days when we met, close to thirty years ago, it was clear to me that you were an unusual person, with a remarkable suite of interests and knowledge (even beyond your enigmatic last name!). And to be frank, it was not quite clear to me whether you would continue in research, in teaching, in work on language, or in some of your enticing areas of interest, such as music, or trips to the Alps. You had so many options! And in looking at your wide network of friends, with all of whom you would share stories, gossip, and emit raucous laughs, I have to admit that I did not soon get a better idea of "whither Nancy?"

In retrospect, I now realize that much of this uncertainty was my problem—a kind of presumptuous, misplaced paternity. After all, it was not up to you to satisfy me by becoming the next Edgar Zurif, or Edith Kaplan, or Jean Gleason, or Renee Fleming, or member of the Trapp Family. Nancy Foldi was and remains the best person to decide on how to put together your life.

And that you have done in impressive form. Like the best students, you have taken what you can from the various role models at the Boston VA Hospital (several of your colleagues represented here in this Festschrift), relocated to New York, picked up the ambiance of Queens College, enjoyed the culture and the populations of the world's greatest city and (of special pleasure to me) continued some of the lines of neuropsychological work that we were beginning to explore at the VA three decades ago. I had not thought much about what happens to the intelligences, or to synthesizing powers, as one ages, but as every reader of these lines can already anticipate, this seventy-year-old is now getting a first-hand look at this set of questions. No doubt, I will sooner or later be a serviceable subject for one of your studies.

Nancy: A good life, a well synthesized life, and I am honored to have been—and to continue to be—part of it.

Peter Galison

Dear Howard,

You are known best, I am sure, for your contributions to the theory of multiple intelligences, and rightly so. These reflections of yours have echoed far and wide, from school curricula to accounts of learning, testing, and development. But I see these reflections of yours differently—I see them as an example of a deep ethical engagement. True, for some critics, the issue of a single or multiple intelligence is one of predictive efficacity. Should this test or that, with one, or two, or four parameters best predict performance? But this hopelessly misses the—or *your*—point, because at root, I see you not as an analyst of quantitative testing, but as an Aristotelian ethicist—with sympathy for the imperfect, practical, and habitual cultivation of right actions. You leave the Platonic educational morals to others—those who believe if they look hard enough they will find the just right hard and fast test or rule.

Whether your work has alighted on the intelligence of children—or on Freud, Picasso, Einstein, Stravinsky, or Gandhi, the emphasis remains on the variety of our human way of grasping things. Instantiated values interest you—not abstract systems of interlocking rules or ideologies. Your work is, more than anything else, a celebration of the diversity of human accomplishment in an all-too-messy, all-too-real world.

Every six months or so, year in, year out, one of us asks the other to take a long walk. Sometimes the topic is local, an incident involving colleagues or students. At other times, the discussion turns to institutional conflict, or a disruption in national or even international politics. But whatever the topic, it is never a game, never a merely intellectual puzzle. I have never heard you worry about what our institutions (universities, museums, governments) should do to bolster their public relations, not once heard you bemoan the lack of better "communication." No, what drives your concerns always amounts to this question: How should we, individually and collectively, act in ways consistent with our values? How do we handle decisions in the face of ambivalence, in the real world where we rarely find saints battling villains? Some might be daunted by the recognition of this complexity—and retreat to idealized cases or absolute principles. Not you. More than

anyone I know, you put your shoulder to the ethical wheel just when the situations we face seem most turbulent and least definite. I admire this.

This is a long-winded way of saying happy birthday, Howard. I am glad to be your friend,

Peter

Howard's Response to Peter Galison

Whatever you can say critically about it, Harvard University is not a backwater. There is no dearth of interested, talented people across its Cambridge and Boston campuses. Yet even in this exalted atmosphere, certain people stand out, and Peter, you are indubitably one of them. I am fortunate enough to live around the corner from you and your family and so we have the opportunity for both formal and informal gatherings on Meadow Lane or Fresh Pond Lane. And every time I am with you, I learn from you, not only from your vast, almost encyclopedic knowledge of scholarship, but from your equally keen insight into people, and your ability to deal with them, even to disagree with them while remaining on good terms with them. You are an Exemplary Citizen of the university, the academy, and the wider world of knowledge and practice. And you are always challenging yourself (and those with whom you work), creating documentaries, massive open online courses, and even a remarkable collaborative work "The Refusal of Time" with William Kentridge, one of the singular artists of our era.

I am intrigued and edified by your overview of my work. You see it less as an empirical investigation of one or another claim about cognition, or a series of books (brain damage, one year, leadership the next), but more as work undergirded by a few powerful themes (our friend Gerry Holton would call them themata)—such as celebrating diversity in its various forms, and seeking to confront difficult ethical challenges. One of my goals, as a participant in this Festschrift, was to search for those themes—and so I owe you thanks for these intriguing leads to the search in which I've been engaged.

As a friend, you have so often helped me, on matters large and small, that I know I can never repay you. I try by expressions of gratitude, and also by passing on what I've learned from you to those who work with me. One of my favorite lessons came when I approached you for advice about a difficult conversation that I was scheduled to have with a leader at Harvard. "Peter," I whined, "I don't like this strategizing. I just like to go in, say what is on my mind, get a reaction, and then be done with it." You looked at me for a moment and then said "Howard, don't you understand? (This leader) spends 24 hours a day, 7 days a week strategizing." It was if the scales fell from my eyes and I think I can safely say, that they have remained safely tucked beneath my feet ever since.

Amelia Gambetti

Dear Howard,

I was thinking in which way I could wish you Happy Birthday when I opened *La Repubblica* newspaper and I found the first part of your interview about your latest book.

As well as it is always a great pleasure to listen to you, it is also a great pleasure to read what you say, even if I think the Italian translation of your words takes away from you the many shades of your so unique personality.

I decided then to write something that belongs to the history of our relationship.

When I send wishes for a birthday, usually there are memories of the "guest of honor" that come back to me. The ones I have about you are all pleasant, warm, and full of sincere affection.

Going back to the time when we were getting to know each other better and better, I remember when we were together part of the CNN video. After the video was out I remember I met you, and the first thing I said was how much I was honored to be in a video with you, and in a fraction of a second you almost anticipated me, telling me exactly the same thing.

I still think that this episode tells a lot to me about your personality: you are a Very Important Person, so well recognized all around the world, but you have a natural capacity to be very much a friendly, easy-going, real person, always open to dialogue and sharing.

I deeply appreciate your capability to listen to others and in terms of myself, this capacity has given to me the courage and the freedom to speak up in all the meetings we attended together, because you listen, I think, and you don't judge and you welcome different points of view, using your open mind.

I think that it is not by chance that the first book of yours that I read was *To Open Minds*. I read it when I was in Amherst in 1992, when my experience in North America began. I remember how much your book

helped me to make connections, to understand different contexts, and to read between the lines of my thinking, too.

I would like to thank you very much for the contribution you have given to the development of my personal and professional life since the first time we met early in the 1980s.

I hope you do not mind if I feel a part of the many friends you have and with this profound feeling of friendship and gratitude, I wish you a very Happy Birthday.

Amelia Gambetti

Howard's Response to Amelia Gambetti

Ever since my first trip to Reggio Emilia, over thirty years ago, you've been an important teacher of mine—not only enlightening me about the remarkable methods at Reggio, but also helping me to negotiate my way (as a naïve American) in a very different cultural setting. You have done this mostly by gentle example, but you have not hesitated at times to make a remark or point out an action that needed my attention. (And I can report that the remarks did get my attention!). For this I will always be grateful, though it is up to others to judge whether I was able to act appropriately upon them.

We also spent considerable time together in a unique context: the Model Early Learning Center of the Washington, D.C. Capital Children's Museum. There, as you'll recall, museum director and friend Ann Lewin hoped to establish a powerful example—an international model—of how a Reggio Emilia educational approach could be realized in an urban American setting. I know that everyone learned a lot from that multi-year experiment, and as we sometimes say, echoing actor Clint Eastwood 'the good, the bad, the ugly.' And while I never visited your preschool demonstration project in St. Louis, I know that you also tried to 'transplant' Reggio to that soil, and, I believe, to other sites in other non-Italian cities as well.

I learned a great deal from watching you in these sites, and in effecting a comparison between our two societies. (I may have been better known in some circles, but you were definitely the teacher!). American rhythms are so different from Italian rhythms—as different as the rhythms of an Antonioni film from those of a Woody Allen or a Steven Spielberg film. We Americans want the 'formula' to become Reggio; preferably, two tablets and a glass of water, to be wolfed down each morning. No doubt there are searches elsewhere for 'quick fixes,' but there is much more of an understanding in the Old World (what Donald Rumsfield disdainfully termed 'Old Europe') that the nurturing of children, like the nurturing of wine or olives, takes considerable time and careful cultivation. For me, my over thirty years of visits to Reggio Emilia are a marvelous lifelong gift, and if I have succeeded in conveying any of its genius to my impatient but eager American colleagues, I will feel that I have accomplished something... and thank you, Amelia, for your masterful teaching and modeling.

Nathan Glazer

I was aware of Howard Gardner, the amazing range and quantity of his work, before I met him, and became particularly aware when the prospect of his joining the faculty of the Graduate School of Education was raised at a faculty meeting. I myself was an unlikely member of that faculty: a sociologist and an urbanist, I had come to the Graduate School of Education when some positions related to what was then called "the urban crisis" were funded at Harvard by the Ford Foundation. One allocated to the Graduate School of Education was offered to me, and I accepted. As an outsider to the field of professional academic training in teaching and administration, my judgments were looser, less disciplinary, and less narrowly professional than those of many of my colleagues. So, when the issue of Howard Gardner, also then something of an outsider to the field of professional academic education, joining the school came up, my first reaction was, of course, look at all the books he's written!

Howard Gardner did not know me personally at the time that he joined the faculty, but he reached out to get in touch, the only faculty member as I recall who ever did, which is one indication of why Howard has so many and such varied friends. I recall he noted that I wrote reviews for the *Times Literary Supplement,* something that I doubt other colleagues in the Graduate School of Education would have been aware of. Perhaps he was also aware that I was co-editing, with Irving Kristol, *The Public Interest*. Leafing through some of Howard's books, I noticed he had quoted with appreciation in one of them Irving Kristol's remarks on the role of *The Public Interest* in acting as an intermediary between professional social science academic work on public policy and the journalists who make the educated public aware of this work. Not that Howard has had need for any such intermediary: with his remarkable energy and productivity, and with books and articles on many levels of technicality, he acts as his own intermediary. And so we became friends.

Howard's great achievement in education (there are so many in so many fields one feels one is being restrictive in focusing on just one) has been "multiple intelligences," perhaps the most influential idea to be introduced in education in the second half of the 20th century. The first formulation of the idea was presented in 1983 in *Frames of Mind*. Trying to catch up with the enormous scale of research and discussion and

action around MI, I see a number of new editions with new introductions, a new formulation in *Intelligence Reframed* (1999), with 45 pages of references to books and articles and people and institutions dealing with MI, published interchanges between Howard and his critics in *Howard Gardner Under Fire* (2006), and I am sure there is much else that I am not aware of.

MI connects to something about which I have at least opinions (as who does not?)—the conflict between what we may crudely call "traditional" and "progressive" orientations in education, and something which may be thought to divide Howard and me. Someone who has propounded and continued to work on the theory of multiple intelligences has to be, willy nilly, ranged on the "progressive" side of that slippery dichotomy. If one goes beyond the traditional linguistic, mathematical, and spatial foci of intelligence tests, to raise up, to a position of equality perhaps, other capacities alongside them, how could one not be considered a critic of the traditional? (I know, and could quote, a good number of passages in which Howard eschews some of the more literal-minded applications of MI, and some of the further reaches of progressivism, but for the moment let us consider Howard a "progressive" in education, as he indeed is in many respects.)

I note that both multiple intelligences and cultural literacy, an opposite but also influential idea, were introduced in the same year, 1983, the former in *Frames of Mind*, and the latter in an article by E. D. Hirsch in *The American Scholar*. Despite my appreciation for John Dewey and my admiration of Howard, I also admire E. D. Hirsch's contribution of the idea of cultural literacy to the discussion of how to reform education. Thus I cannot avoid being pushed to the "traditional" side of that divide, perhaps one who would be skeptical about the expansion of the traditional idea of intelligence and applying it to work in schools.

I was sure Howard had commented on Hirsch in his numerous writings, but making a casual check of the index of his recent *Truth, Beauty, and Goodness Reframed*, which seemed like a likely candidate for a comment on Hirsch, I find no Hirsch. But I do note "Damien Hirst" in the index.

Howard's comments on Hirst, noted by accident, should not be passed by if we ponder his role in that "progressive-traditional" spectrum in education. These comments are exceedingly interesting for a member

of the Museum of Modern Art's board. Howard writes: "If artist Damien Hirst's website consistently attracts attention and his art commands record-breaking prices, can we therefore conclude that his works—perhaps most notoriously a dead shark floating in formaldehyde—must be beautiful or that beauty no longer matters?" Or again, regarding beauty: "What sense do we make of a century that began with Marcel Duchamps's urinal and ended with Damien Hirst's shark?" Does one not get a hint here of skepticism, even disapproval, of distancing from the common received wisdom of the advanced art world, a slight move toward the traditional?

Despite this hint of conservatism, at least in one respect, can we possibly reconcile, or bring closer Howard's multiple intelligences and Hirsch's argument for cultural literacy as a basis for reading intelligently and even for education generally?

Howard has elsewhere been very explicit about Hirsch's cultural literacy, and leaves no doubt where he stands. He writes in *The Disciplined Mind,* in 1991, his most explicit book on what we could call curriculum, "not only is this ['cultural literacy' and the 'core knowledge' program and schools which it has inspired] an idle pursuit, but it conveys a view of learning that is at best superficial and at worst anti-intellectual. If this book is a sustained dialectic—read 'disagreement'—with any contemporary educational thinker, that thinker is the noted literary analyst and educator E. D. Hirsch."

Hmm. The reconciliation will not be so simple a task. But let me try. First, note that the curriculum that Howard proposes as an example of the deep understanding he favors as against superficial overviews is to concentrate on only three topics, Darwin's evolution, Mozart's music, specifically The Marriage of Figaro (and even more specifically one trio for three voices in it), and the Holocaust—all great and important topics, and indeed no education could be considered even partially complete if it did not include two of the three. But note too that Howard is not exclusive in insisting on these topics. Each could be replaced by many others in a satisfactory pursuit of deep understanding of truth (science), beauty (art), and good and evil (history): "There is nothing sacrosanct about this trio. Another book, another day, could focus on relativity, revolutions, and the ragas of Southern India." (And he specifically suggests as alternatives to evolution the study of Newtonian mechanics and plate tectonics, as an alternative to Mozart the study of Michelangelo,

Rembrandt, Shakespeare, or George Eliot, as an alternative to the Holocaust the study of American slavery.)

Note too that Howard is never explicit as to when in a 12-year education these topics should be undertaken, nor how much time should be devoted to them. If they take even as long as a semester, a standard education could permit another two dozen such triplets to be engaged. And when we think of two dozen extended investigations of topics in science, in the arts, in history, how far short are we from the ambitions of cultural literacy and core knowledge, whose central point is after all that we understand what we read only if we have a sufficient grounding in our common culture to grasp the references that all but the simplest pieces of reading assume?

Indeed, as Howard proceeds in this most interesting book, we may note a softening of his original judgment of cultural literacy and core knowledge. One of Howard's virtues is how much he knows about education in other parts of the world, how many schools he has visited and studied in other countries and cultures—China, Japan, Singapore, Italy, and on and on, and that does extend one's horizons of what a good education can be—even to the point of tolerance of core knowledge schools. Describing the variety of schools one can find in America that he would consider good in some respect, he refers to schools that adopt a core curriculum, "perhaps one inspired by E.D. Hirsch…. The curriculum for each age proceeds from that of earlier grades, thus avoiding unnecessary repetition and gaping holes. Especially for those disadvantaged students who do not acquire literacy in the dominant culture at home, such a prescribed curriculum helps to provide a level playing field and ensure that future citizens enjoy a common knowledge base."

Not a bad idea, as he writes further: "Indeed, in its own way the core curriculum reflects enduring American values …. Particularly in a diverse society, the aim of producing a single polity … constitutes a deep and enduring value, dating back to Horace Mann's common school of the 1840s."

And I cannot resist noting that Howard is annoyed at the fact that American schools tell the story of the Pilgrims at every Thanksgiving with "unjustifiable redundancy," and that Massachusetts students are told the same things about the Wampanoag Indians again and again,

something that, whatever its faults, core knowledge with its prescribed sequence obviates.

We are not all of one piece, neither Howard nor Hirsch. And we are all sometimes hoisted by our own petard, Hirsch by the unachievable effort to list in an encyclopedia all the references the literate reader should know, Howard by some uses of multiple intelligences. Howard at one point writes: "'Progressives' [his quotation marks] may fear that, in my talk about truth and standards, I have left their folds. 'Traditionalists' may welcome these 'confessions of middle age'.... I hope this book stimulates partisans of both stripes to examine and reexamine their unexamined assumptions."

And so it will, for those who read it. And at another point:

I believe that nearly all youngsters should strive to achieve the major disciplinary competences; in that sense, I am a traditionalist. Where I become a progressive is in the means toward mastery. I believe that any topic can be taught in numerous ways; and, correlatively, that students should have many ways to show their understanding.

Who could disagree? How well that speaks of Howard's sophistication and understanding. And so traditionalists and progressives can find it possible to shake hands in a common effort that transcends slogans and simple-mindedness.

Note: Howard never tried to build a curriculum on the nontraditional intelligences. Rather, when he came to a curriculum, he was quite traditional, building it on the disciplines. In *Truth, Beauty and Goodness,* "truth" is fully traditional—there is truth, and even Goodness is largely traditional, and if he is able to cotton to contemporary art, which abandons as far as one can see craft and discipline in favor of ideas, it would seem to be largely Ellen's influence—he still balks at Damien Hirst, as I do. So I can go along with Howard at least two-thirds of the way, and that is certainly enough for compatibility.

Howard's Response to Nathan Glazer

You, Nat, may not have heard of me before we found ourselves together (somewhat improbably) on the faculty of the Harvard Graduate School of Education, but you were certainly a legend to me and my small cohort of intellectually-oriented friends. We knew, and many of us had virtually memorized The Lonely Crowd; and while David Riesman's name was the first on the list, we knew that the book would never have achieved the shape and timeliness that it did without your contribution, Nat. I was also aware of your significant collaboration with Daniel Patrick Moynihan on that continuing vital and still timely work Beyond the Melting Pot, as well as your countless well-argued and artfully composed essays in a plethora of publications, ranging from Commentary to The New York Review of Books, to the London Review of Books (which I had forgotten) to the Public Interest, where you shared an editorial leadership position with your once close colleague Irving Kristol. Even if I had not yet heard the clever title "Arguing the world," I already had an intuition about the world of ideas that you had so long inhabited with colleagues like Dan Bell, Irving Howe, and Irving Kristol.

Nat, you are and have been part of the intellectual history of our time. Everyone knows your work and your achievements. That you may be less of a household word than Riesman was, or than Moynihan remains, is due, in my view, to two entirely praiseworthy attributes. First of all, you are essentially a modest person; you do not insist on credit for anything and everything that you have touched. Second, you have the remarkable capacity to change your mind about things. In this country, you are far more likely to gain notoriety (at least temporarily) if you identify strongly with the left or the right, the religious or the atheistic, the middlebrow or the highbrow, and can, accordingly, always be called on by the press to give a predictable, and predictably acid quote. When you appear to shift your allegiances, this throws the pundits into confusion and they are less likely to contact you and less likely to 'quote' you or to 'portray' you. Perhaps the major exception in our world of education is Diane Ravitch, who was for a while quite a neo-conservative but who in recent years has shifted allegiance to a progressive position (with which I am in much sympathy). Some days I'd love to know the whole story behind this.

When I was a young aspiring intellectual (at an age where you were already publishing, while I was just reading and dreaming), my hero was Edmund Wilson. Wilson was no doubt a hero for many reasons (probably some not fully deserved) but for one that I cherish—his positions were typically not predictable. "EW" called them as he saw them. And that is why I admire a small group of you who honor me in this Festschrift—Tom Carothers, Alan Wolfe, and You—because I can't anticipate what you are going to say, and even when I disagree, I learn from what you have said or written.

As portrayed in the film *Arguing in the World*, you love controversy as much as the next New York Intellectual. But ultimately you are interested in reconciliation when that is possible. And that is why, I believe, in your essay, here you raise the question of whether there might be a reconciliation between those with whom I have joined a real argument; in this case, literary theorist and educator E.D. Hirsch. I have to admit that to a certain extent, my controversy with Hirsch is polemical; if he did not exist, I would have to invent him. I also have to admit that part of his analysis is unimpeachable—one's ability to comprehend what one has read is severely stunted if one does not have a sufficient cultural literacy.

But as someone deeply involved in educational reform, I am conscious of the ways in which well-intentioned interventions can go wrong. (Here I align myself with the Diane Ravitch of recent years). If you want teachers to be highly professionalized, as I do, then the notion of learning lists of words and definitions, tends toward de-professionalization, and, as such, plays into the worst aspects of American teaching and American educational reform.

As of this writing, and somewhat to my surprise, I find myself as a quiet supporter of a "common core" in American education. I support this effort because I think that the first versions have merit and that the US can no longer afford (in any sense) to have 25 or 50 separate curricula. My hesitations: l) The country expects Massachusetts-type performance (high) with Mississippi-level (pitifully low) budgets; 2) Unless teachers are well prepared and 'buy in' to the concept, we will soon find a regression to the mean of mediocre standards and mediocre performances.

Speaking more broadly about education in our time, I could certainly see an individual with progressive credentials making use of

some of Hirsch's ideas, just as I would hope that a Hirsch-certified teacher might find useful some of my writings and ideas. Education works better when it is a 'both-and' rather than 'either-or.' And I would like to think that you, Nat, like my own teacher Roger Brown, in the end are likely to embrace a 'both-and' stance.

Lynn T. Goldsmith

On a sunny spring day in 1979, I pushed open the heavy glass doors at the entrance of the Minneapolis Institute of Arts, negotiated the complex series of levels and corridors that eventually took me to the administrative offices, and met Howard Gardner. He was tall and lanky—a Giacometti with glasses and tousled hair. He pursed his lips while he thought and spoke with enthusiasm and authority. I was a first year graduate student at the Institute of Child Development; Howard wasn't all that far into his career himself (which meant he'd only written two or three books and was still working at the VA Hospital in Boston).

Howard had taken a consulting "gig" at the Minneapolis Institute of Art and needed an RA *in situ*. I was working for his graduate school friend, Michael Maratsos, doing psycholinguistics research (or perhaps more accurately, suffering through psycholinguistics research). Michael, knowing that my heart lay less in the world of children's understanding of the passive voice and more in squishy realms of human endeavor like the arts, suggested that I might find Howard's project interesting. I did, and spent the next year or so working with Howard on a study of visitors' use of different types of didactic information.

The work was both timely and original—just another hallmark of Howard's worth throughout his career—and it was great fun to be a part of it. But what I really remember from that time were things I learned about Howard himself. I learned, for example, that he was color-blind, ate his cereal with orange juice instead of milk, and added OJ shots to his glasses of Coke as well. I also learned that he was passionate about his children (who numbered only two at that point), had no time to suffer fools (gladly or otherwise), and was a generous and loyal friend.

Since those days of typewriters and correction fluid, I've known Howard more as a friend than a colleague, although our professional lives have intersected as well. Over those 40-odd years, not much has changed. He's still lanky and his hair tousled (and his hairline is pretty much in the same place it was back then). His work continues to be groundbreaking and prodigious. His mind ranges far and wide. He's passionate about his family. He's kind to his friends. And he still eats weird stuff.

And I'm glad to be friends with him and with Ellen.

Howard's Response to Lynn T. Goldsmith

Four decades go by quickly, Lynn. We are scholars in the same general field, friends, parents, baby sitters, and now the parents of married sons (who are best of friends). We have seen many things go by at warp speed. Yet here we still are, and it's worth a moment of repose and a hearty "Hallelujah!"

When we first met, you were a graduate student at the Institute for Child Development at the University of Minnesota in Minneapolis. As noted, I had a stint as an adviser to the Minneapolis Institute of Arts during a two year interval when the Institute was completely redoing its galleries and instituting the then revolutionary technology of acoustic guides. (How I got this two year position is a story for another day). As a young developmental psychologist, I asked colleagues in the Minneapolis area if there if there were students who might help me with this enterprise, and I was fortunate that they recommended you.

Two salient memories from that period: First of all, I gained a feeling for what it would be like to be part of a graduate program where there is "connectedness" among students and faculty, a conviction that they were engaged in the same larger enterprise. Like a family. This milieu at the Institute of Child Development could not have been more different from Harvard, where each of the greats (and they were CERTAIN that they WERE greats) had his own shop (they were all HE), and you were actually forbidden to work with the scholar on the fifteenth floor if you wanted to work with the scholar on the 12th, the 11th, the 5th, or the basement (I am not making this up). Of course not all happy families are totally happily—I'm sure that there were fault lines at the ICD—but this was my initial exposure to a 'real department.'

The other memory: You and I (mostly you!) actually carried out an empirical research study and it yielded a surprising result. In a word, and contrary to what I would have predicted, audience members were more interested in learning about stylistic and aesthetic aspects of works of art than they were interested in learning more about the biography of the artist and associated historical facts. I was somewhat disappointed that our colleagues at the MIA did not find this result of much interest; you might say that they were not into empiricism. But I have found this to be an important and surprising finding and have made use of it ever

since. Indeed, in this era of ‘ever smarter’ devices, where dates and facts are so readily available, this audience interest in aspects that one might term ‘genuinely aesthetic’ seems more important than ever.

Different Intelligences, Different Technologies, Different People

Loren Graham

One of the aspects of Howard's work that has always intrigued me is that he causes me to think in a different way. He is famous for his types of intelligences, and I have sometimes categorized people in his terms. In recent years I have watched how different people react to the new types of consumer electronics, such as laptops, iPods, and iPads. It has occurred to me that people can be classified as "logocentric," "auralcentric," or "videocentric." People who are logocentric, who love most of all to work with words, prefer a laptop or a regular computer with full keyboard. Although almost no one uses the term "word processor" any more, these people are processing words, and unless it is easy for them to type, they are not happy. People who are auralcentric, who want above all else to hear good music while they travel or work, are likely to prefer an iPod, with its great library of songs in a very small object. And those who are videocentric, who love bright and clear colors and the ability to manipulate objects in space, are likely to prefer an iPad in their travels, or another larger Apple product with the same capabilities in their offices. Of course, no one is a pure type, but these differences do result in priorities as people make choices, and these priorities point toward different electronic gadgets.

These three types of people and their electronic preferences can be related to Howard's types of intelligences. A logocentric person is close to his "linguistic" intelligence, a videocentric person is close to his "spatial" or maybe even "body-kinesthetic" types, and an auralcentric person can be related to his "musical intelligence."

Once one gets started down this line of thought it can lead one further, perhaps a little speculatively, but hopefully interestingly. What kind of electronics does a person with strong "interpersonal" intelligence want? Maybe it is a kind of software rather than hardware that begins to win favor: social networks and text-messaging. The differences among people on this question can be rather stark: I am strongly logocentric and was an early adopter—more than 30 years ago—of personal computers with word-processing capabilities. But to this day I have never joined a

social network and do not do text-messaging, finding normal emails perfectly satisfactory for my communication needs. Does that mean that I rank well on Howard's "linguistic" intelligence but low on his "interpersonal" intelligence? I will let other people decide.

But what kind of electronic device does a person with strong "logical-mathematical" intelligence prefer? There may be some surprises here. I remember one time I went to the information technology services department of MIT when I had a problem with my laptop. There, in a place often called the "nerd shop," I complained that I could not get my laptop to perform a certain operation. The man who greeted me looked at me closely and asked, to my surprise, "What kind of an MIT faculty member are you? What is your department?" I replied that I was a historian. He was visibly relieved and said, "Thank God! I was afraid that you might be a mathematician or theoretical physicist who thinks that computer problems can be solved logically and analytically. The only person better for me than a historian would be a teacher of the French language."

"Why," I asked, "do you like teachers of French?"

"Because they know that you do not ask why a certain irregular French verb is the way it is. They know that you just have to accept it as it is, learn its characteristics, and not ask questions. Now when I tell an MIT mathematician or a theoretical physicist what to do with their computers to solve their problems they are likely to ask 'Why? What is the logic here?' That drives me crazy. I want to tell them 'You do what I tell you to do and your problem will be solved. Don't ask why.' A teacher of French can accept that very well. A mathematician or physicist goes away disgruntled, feeling that his intelligence has been insulted."

A little-known fact is that the departments of physics and mathematics at MIT accepted personal computers more slowly than the departments in the humanities. The humanities teachers saw computers as a way to write; the physicists and mathematicians were at first less convinced that personal computers (as opposed to large mainframe computers) were important to their work.

What kind of electronics does a person with "naturalist intelligence" prefer? Maybe none at all. I know a person who is a superb gardener, who loves to work with plants and be outdoors, and considers computers contrary intrusions. She uses computers for email and

writing, but would be perfectly happy if they had never come along and she was getting by with postal mail and typewriters (yes, I know, that is a type of technology also).

To sum up, Howard Gardner helps me in my speculations about people, whether either they or he approves of these speculations.

Howard's Response to Loren Graham

Patricia and Loren Graham Pat and Loren, you are among our oldest and most cherished friends. We see each other often during the year but always look forward to our annual brunch, in one or another Cambridge watering hall (unfortunately most of these dining places do not survive for a decade). There is never an agenda for this brunch, but never a dearth of things to talk about, laugh about, and sometimes shed a tear. Indeed, I think we leave the brunch knowing that we could have gone on for many more hours… and that next year's brunch will be equally nourishing in every sense.

But you've been kind enough to write two essays and I'd like to comment briefly on each.

Loren Graham While Pat has gone the way of leading and inspiring important institutions, you remain someone who leads and inspires by the quality of your ideas, your scholarship, and your writing. Even forty years ago, you were recognized as the Leading American Scholar of Soviet Science. (I know because we had the same publisher, and Knopf mistakenly sent me forty copies of your "Science and Philosophy in the Soviet Union"). And you could have rested well on those laurels.

But almost every year, you come out with a book, and the breadth of your titles and expertise is staggering; ranging from arcane areas of mathematics pursued by spiritually-oriented thinkers in Russia and France a century ago to mysteries that occurred near your summer home on Grand Island in Michigan. Last year when we met, you were publishing a book about why Russia produced so many wonderful ideas in different domains but had rarely succeeded in bringing them to scale or profit. This year when we met, you were trying to figure out which aspects of Lysenko's long discredited theory of inheritance of acquired characteristics might nonetheless have a shard of validity. And now, for this Festschrift, you put forth your own theory of the relationship between individual personal and psychological predilections, on the one hand, and attractions to different forms of digital technology and different ways to use them on the other. And then you present some fascinating and surprising 'data' about the attitudes toward computers held by members of different departments at MIT.

As the so-called “father of multiple intelligences,” I could feel that you were impinging on my territory. But of course I am honored that you’d begun to think about the relations between the person, the preferred medium, and how that medium is likely to be used and I expect to learn from you….if indeed, you don’t succeed in actually devising yet a new field of study, which you can rightly call your own.

Loren, I look forward eagerly to the next surprise!

Patricia Albjerg Graham

Many people write about Howard Gardner's profound scholarly contributions. I have done so in the past and expect to do so again. We all have much to say about the breadth and depth of his ideas expressed eloquently in books, articles, lectures, and more informal communications. I am confident that there will be many examples of such appreciative commentary in this festschrift.

But I want to comment on something else: Howard's professional citizenship. I initially encountered Howard in the early 1970s at the Harvard Graduate School of Education where he often spent the afternoons at a mysteriously named office of Project Zero. He was gangly, hair often mussed, tie loosened and shirt tail evident, extremely articulate on many subjects, and seemed almost a caricature of the brightest doctoral student anyone had ever met. He spent his mornings at the VA Hospital studying brains of disabled individuals and mused with philosopher Nelson Goodman in the afternoon. Who was this character?

A decade later the Harvard Graduate School of Education was able to resume tenure appointments after a hiatus of more than a decade. It had no tenured faculty in cognitive or developmental psychology, a serious lapse for a school of education, and the Senior Faculty recognized the need to appoint two professors in this specialty. Howard was still circulating through the offices of Project Zero, had now received a MacArthur Fellowship, had written a book that received a great deal of deserved attention, *Frames of Mind,* but he had never taught regularly or participated as a member of a faculty. No one doubted his intellect, but some wondered about his pedagogical skills, his commitment to students, to an institution, to the deliberative duties of senior faculty members in a professional school.

Of course, Howard was appointed to the professorship, and, of course, his scholarship flourished, and, of course, his life was filled with many obligations stemming from his increasingly well-known ideas. That was not surprising. But what for me has always been most remarkable was Howard's unfaltering commitment to his professorial duties. He worked closely with many students, including writing with some. He taught large classes without complaint. He participated actively in the life

of the School of Education, including thoughtful, informed discussions in the Senior Faculty, as one might have expected, but also in the events that were optional for professors. As one of the best known faculty members, he was often asked to speak to alumni, potential donors, and others, and Howard regularly agreed to do so and then prepared for the event and gave an excellent talk and mingled with the crowd afterwards. In short, he gave of himself fully to support the School of Education. For a person who was as busy as he was with many professional obligations and four children, this was remarkable. If we had had a "good citizen" prize at the School of Education, I would have nominated Howard for it.

As Howard matured (his hair was less often mussed and his shirt was tucked in), Howard's scholarly work in some sense followed his own evolving good citizenship. Unlike many whose ideas are broadly discussed and sometimes implemented inaccurately, Howard paid attention to how his work was used and worked with those utilizing his ideas and, with both tact and commitment, clarified what were, in fact, his ideas and what were not. He showed genuine responsibility for what he had thought and written even when it was uncomfortable to do so.

Over the last 20 years Howard increasingly became interested in individuals and the differences they made in the world. Following a sabbatical in 1994-95 at the Center for Advanced Study in the Behavioral Sciences at Stanford, Howard began a collaboration with Mike Csikszentmihalyi and Bill Damon on what became their GoodWork Project. It has always seemed to me that this project, defined as work which is excellent, engaging, and ethical, has allowed Howard to integrate his compelling intellectual interests with his commitment to what I have termed his good citizenship. Such integration is not common. I admire that combination very much and believe Howard exemplifies it magnificently.

Howard's Response to Patricia Albjerg Graham

Patricia and Loren Graham Pat and Loren, you are among our oldest and most cherished friends. We see each other often during the year but always look forward to our annual brunch, in one or another Cambridge watering hall (unfortunately most of these dining places do not survive for a decade). There is never an agenda for this brunch, but never a dearth of things to talk about, laugh about, and sometimes shed a tear. Indeed, I think we leave the brunch knowing that we could have gone on for many more hours… and that next year's brunch will be equally nourishing in every sense.

But you've been kind enough to write two essays and I'd like to comment briefly on each.

Pat Graham When I was coming of age, there were essentially no women role models in positions of authority. If Margaret Chase Smith was a United States Senator, it was because she was taking her husband's place. And so it should not have been a surprise—though to most of us it was—that you were the first female dean at Harvard University in 350 years. Quite a weight on your shoulders, I would imagine. Except that you have been used to being the first 'this' and the 'first' that for so long that it has almost become part of your name, your calling card. (Oh, that's Pat Graham, you remember, she was the first….)

Being first is one thing, doing an exemplary job is more demanding and more important. From all that I know, you have been an exemplary board member, board head, president of a foundation, professor, head of countless search committees, and for what I know for sure, you have been a terrific dean of the Harvard Graduate School of Education. Your impressive achievement is important not only because you established that 'women could do it' but because many of the policies and practices that you installed, now a generation ago, have become standard operation procedure, their origins known only to a few graybeards like myself.

Pat, when it comes to personal debts, I owe you so many that it would embarrass both of us for me to issue even a partial list. Suffice it to say, I have been the recipient of many honors—some no doubt deserved more than others—and when one looks at their provenance, "all roads lead to Pat Graham." (Of course, this must mean you have

exquisite taste! :) More seriously, I am tremendously indebted to the support that you have given me in so many corners of academe and scholarship and the wider world. I believe that the only way to repay you is to try to shed some of the light on contemporaries and younger individuals whom I think are meritorious. And when I think about how you might have gone about doing that, my batting average goes way up! You are an original in all ways, and countless of us have benefited from your unique accomplishments and example.

Patricia Greenfield

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Dear Howard,

It is hard to believe that you will be 70 years old in the middle of this year! It seems like just yesterday that you were a graduate student at the Center for Cognitive Studies, and I was a new Research Fellow, both of us mentored by Jerome Bruner. We both show the marks of our common education, an interdisciplinary B.A. and Ph.D. in Social Relations at Harvard, with a Ph.D. in social psychology (because a Ph.D. in developmental psychology did not yet exist). And in different ways, we both have built on the common intellectual roots furnished by Jerry Bruner.

I can recall being incredibly impressed that you co-authored a textbook as a grad student (Grossack & Gardner, *Man and Men: Social Psychology as Social Science, 1970*). And now it is not even worthy of a place on your unbelievably impressive CV!

Your work—notably the concept of multiple intelligences—has clearly made a difference around the world (witness translations of *Frames of Mind: The Theory of Multiple Intelligences* into 15 languages!). It was so interesting to learn that you are a "rock star" in China and how the concept of multiple intelligences has both made contact with contemporary Chinese education reform and been integrated into a family-centered world view.

You have been an institution builder, with a 40-year run with Project Zero. You have been a prolific researcher. You have been a public intellectual—witness your bestsellers, many media interviews, and honorary degrees. Not to mention your selection by *Foreign Policy* and *Prospect* magazines as one of 100 most influential public intellectuals in

the world!

It is interesting to find intellectual roots of your work in both creativity and media in your piece written immediately after graduate school for David Olson's 1974 book, *Media and Symbols: The Forms of Expression, Communication, and Education,* a book that I still have and use. Your piece was called "Symbol Systems: A Philosophical, Psychological, and Educational Investigation." Its emphasis on notationality manifests the influence of Bruner's work on representation in both cognitive development and education; at the same time the chapter augurs your future work on the development of creativity in the arts and your lifelong interest in arts education. What is in some ways most amazing is that this chapter, published the year after your Ph.D., draws on a considerable body of your own published empirical work during graduate school, on children's sensitivity to artistic styles in painting (*Child Development,* 1970), literature (*Journal of Experimental Education,* 1971), and music (*Merrill-Palmer Quarterly,* 1973), plus a review article of your own research (*Human Development,* 1972)!

Your chapter for David Olson's book *Media and Symbols* focused more on symbols than media. Yet the media germ was there, and decades later your focus shifted to media. In truth, I followed you into this area in the 1980s, focusing more on media and less on symbols. And now you are my colleague in the area of children and media! You have hit on an important topic that definitely rings a bell in our time of Facebook and Instagram—young people's application of morals and moral development to the domain of interactive technologies.

One of the most amazing things about your career is how early you thought it necessary to learn about the brain. I doubt that any of us realized how useful and important your postdoc at the Boston University Aphasia Research Center would turn out to be. In fact, I can remember thinking that this seemed kind of a dead-end move right after graduate school! Now I honestly think that your ability to relate multiple intelligences to the brain is the secret to much of its success in the world of education. Once the psychological significance of the brain was rediscovered, with the help of fMRI, in the 1990s, your 1983 *Frames of Mind: The Theory of Multiple Intelligences,* was already on the stage. The brain is another area in which I followed your lead—with my own theoretical, empirical, and institution-building efforts, starting many years after your postdoc.

I also followed you into the area of creativity, where I have taken a cross-cultural and historical approach, while you have taken a developmental and educational approach. Last but not least, I followed you into the world of museums: I am very grateful that you blurbed my book, *Weaving Generations Together: Evolving Creativity among the Maya of Chiapas,* which subsequently served as the catalogue for a museum exhibition. I am equally grateful for your generosity in writing a preface to my sister Terry Marks-Tarlow's curriculum book on creativity and its educational development.

I hope to keep following you for many years to come! Happy Birthday!! I look forward to celebrating with you in September.

Warm wishes,

Patty

Howard's Response to Patricia Greenfield

Patricia, (since you were Patty Marks, fifty years ago, I still need to hesitate a second before addressing you by your chosen name).

From any historian's point of view, we are children of the same historical era—Harvard graduates in the early 1960s, Harvard graduate students in the late 1960s, early parents rearing our children in the somewhat rarefied (but nonetheless seductive) world of Shady Hill School, and intellectual students of our wonderful, in many ways larger-than-life mentor Jerry Bruner. (We also benefited from the broad sweep of 'social relations,' a field that, for all its sins, really sought to encompass all of the human sciences and to expose us to powerful intellects from across the several disciplines).

Of course, for you as a woman, Patricia, each of these constitutes somewhat more of a challenge than it did for me. Indeed, as a young man, and not yet a father or a spouse, (though an older brother), I was mostly unaware of the challenges facing a talented woman in a male chauvinistic environment. But you were completely fearless, far more so than I—venturing to Senegal to document the cognitive capacities of the Wolof children, then travelling to Mexico, to study the weaving practices of Zinecantec women and to document how those skills were passed on to their offspring. If there were a difference in our intellectual leanings, I would put it this way: I was somewhat more interested in educational and historical issues, whereas you had more of the anthropological bug, wanting to visit exotic places, often by yourself (perhaps in the spirit of Margaret Mead) and document what had not been documented before. Only when I began to work with brain damaged adults at the Boston Veterans Administration Medical Center did I have any sense of what it was like to 'see something for the first time' and to try to describe it to others… a poor man's Oliver Sacks, so to speak.

In your essay, you kindly credit me for leading you into some areas of study, but I see it quite the other way around. At a time when I was arguing that linguistic and motoric capacities were quite different systems (in my terms 'intelligences') you were far more open to the possible evolutionary and operational links and cross-currents between apparently different human modular systems. At a time when I was dubious that young persons could gain educational value from various

kinds of video or digital games, you were agnostic on the topic and that turned out to have a much more insightful perspective.

My remarks to David Feldman (a "fellow traveler" of our generation) may be relevant in this regard. Almost all ideas in the social sciences have already been in the air—sometimes going back a century, sometimes even to classical times. Perhaps Freud was a genuine original, but there are not a lot of "Freuds" across the social sciences. What happens: An idea that has been mentioned, or was in the air, gets picked up and taken more seriously by someone and that is when we make advances. I suspect that there is also a personality factor; many of our colleagues are very pleased to take credit for an idea, and always to put their name FIRST in a list of authors, even if their actual contribution has been modest. I feel fortunate in having friends like you, and Sherry Turkle, and David Feldman, who generously give credit to others, even when much of the credit could properly go to them.

As scholarly children of Jerry Bruner, it is not surprising that we have each investigated many fields, and the connections among them may be clearer to us than to those few who try to connect the dots. But you stand out from all of us—Brunerians as well as non-Brunerians—in your commitment to revisit the weavers of Mexico and in following what happens to them as weavers, as artists, as family members, and as citizens, over the generations. This is a unique body of information, gleaned over time by your sharp eyes and your sharp wits, and its value, already appreciated, will only gain over time. And so, unlike most of the Bruner offspring, you have succeeded in being both a Fox and a Hedgehog, and we are all proud of you.

On Taking Subversive Metaphors Seriously: Culture and the Construction of Civic Engagement

Helen Haste

Subversive Metaphors

I have always been intrigued by the game 'scissors:paper:stone.' It is a game about tools, and it is a game about transformation. Each 'tool' has a quite different function: the stone grinds, the paper wraps, the scissors cut, all actions that 'conquer' the object. But the point of the game is that the power of each tool is entirely determined by with which other tool it is juxtaposed.

This is a trope for contextualised and relative meaning. It also demonstrates the framing power of metaphors. It is one of the *subversive epistemological metaphors* through which I will explore how social and cultural processes frame and facilitate civic engagement, the theme of this chapter. I argue that we cannot explain civic engagement solely as an individual process. It can best be explained through a dynamic transaction between individuals making sense within their own cognitive space, negotiating and constructing meaning in face-to-face dialogue, and both these drawing on cultural narratives which provide both explanation and justification.

Metaphors force us to rethink; they shake up our assumptions. They make the strange familiar, but they also make the familiar strange. They enable us to adapt to new ideas and practices within our field, and they enable us to respond creatively to developments from outside our field. Jerome Bruner, for example, lamented that the 'cognitive revolution', whose goal was to bring mental states back into psychology, slipped rapidly back into a mechanistic metaphor not very dissimilar to those which underpinned the rejected behaviorist paradigm (Bruner, 1990). He argued for a metaphor where meaning is negotiated through active social interactions with others; this along with other developments of the 'dialogic self' is one of the foundations of cultural psychology. The computational metaphor of mind which Bruner criticised did indeed fuel

many other developments in cognitive psychology, as Howard has documented (Gardner, 1985).

Some examples from outside the field come from new communication technologies. Traditional top-down models of information transmission are challenged by bottom-up, or lateral, models of information negotiation. Also, new technologies make explicit that there may be pluralistic, not only single, outcomes and solutions. Furthermore these are not static but can and will be remixed. These are a profound challenge to the common linear metaphors of problem-solving as the pursuit of 'right' answers, and to the long-established metaphor of knowledge as processed and bequeathed by an elite authority. These are subversive metaphors because they shift the balance of power. They also undermine many of the assumptions about knowledge which underpin much research on problem-solving, teaching, and assessment.

We have already seen the practical, political, and social consequences of new technologies: mass organisation and mobilisation, both within the system (the Obama election campaign) and outside it in numerous uprisings and protest actions globally. We have seen the rapid empowerment of previously silent voices through blogging and other social media. These are not just new pathways to power; they are profoundly different ways of looking at knowledge. Unfortunately, as many have noted, education is lagging behind these transformations of practice and of epistemology.

I will consider two categories of subversive epistemological metaphors; relating to systems and relating to the nature of the human. Metaphors of *systems* are about structures and functions. The scissors-paper-stone metaphor is a system metaphor about transformational relationships between entities. The natural sciences offer us many metaphorical challenges to conventional wisdom. In engineering and mathematical control theory we find two contrasting metaphors with very different implications; are solutions open, with many possible outcomes, or are they closed, with a single linear endpoint? 'Commonsense' tends to seek the linear, closed solution, the 'one right answer,' yet many problems in both the physical and social realm are open and pluralistic. Challenges from other sciences include the nature of convergence; what happens when two entities come together? Quantum physics gives us very different metaphors than school chemistry (Close, 2011). Chaos theory upset many of our assumptions about causality. Evolution

metaphors, from Darwin to Dawkins' selfish gene, transformed not only science and social science but lay discourses. Examples are legion.

The second category of metaphors concerns *the nature of the human*: Active or passive? Isolated or social? An entity with fixed traits and attributes or dynamically adaptive to context? Each of these implies different kinds of explanations and different methodologies. What are the attributes seen as essential for cultural competence? What are the conduits for connections between the individual and the environment—as we see, new technologies provide new tools and therefore new ways of experiencing the world. How do the traditional Enlightenment binaries, between self and other, emotion and cognition, survive contemporary research—indeed, how well does the metaphor of 'binary' and dualism itself survive (Haste, 1994)? Such subversive challenges to conventional thought inform how we think about the relationship between individuals and between the individual and culture.

A Note on Howard

Howard's career has been illuminated by taking seriously subversive epistemological metaphors. I first met him and Ellen in 1981, a couple of years before *Frames of Mind* was published (Gardner, 1983). I interviewed him in 1984 about the ideas behind the book (Haste, 1985). While he has engaged with other subversive metaphors since then, in this interview, as in the book, he crystallised some of the ways in which thinking differently led him to his innovative ideas. Elsewhere (e.g. Gardner, 2006, 2011) he has also written about how his experiences as a musically talented teenager prompted him to challenge the dominant model of cognition as a mirror of natural science thinking, and cognitive development as progression towards thinking increasingly like a problem-solving scientist—despite his allegiance to Piaget. He has always argued for the importance of a metaphor of knowledge that derives at least as much from the arts, and this was a major factor in developing Project Zero.

On re-reading the 1985 interview, I find three particular subversive metaphors. The first is that he took seriously the premise behind the work of the 19th century phrenologist, Franz Gall; the idea that the mind is modular and that the different functions are independent of one another, not subsets of a general function. Howard's work on neuropsychology and on gifted individuals led him to conclude, "in fact

we have different mental faculties and they don't have much to do with one another" (p.48). This differed from Thurstone's 'primary mental abilities' which although distinct, are all within the purview of problem-solving. (In fact, in the interview Howard admitted to never having read Thurstone before he wrote *Frames of Mind*.) This was a profound epistemological shift, not only in thinking about mental functions and in particular the traditional concept of intelligence, but also the methodologies needed to investigate them.

Embedded within this is a second subversive metaphor; that not only is mental functioning *pluralistic not unitary*, but that there are multiple possible paths, dimensions and outcomes. This is a wider issue than a number of intelligences; it is a challenge to the general propensity in psychology to seek single solutions and singular models. Howard notes also in the interview how important it has been to his thinking to draw on other disciplines, and therefore other epistemological approaches, such as biology, history and anthropology. At the time he was writing *Frames of Mind*, this was much less frequent among psychologists.

A third subversive metaphor that emerged in the interview concerned culture. At the time, as he noted, almost no one apart from anthropologists was taking culture seriously. He said in the interview, "if you want to understand the use of mind, you have to pay a lot of attention to the media and the symbol systems with which people work, because so much of what one does grows out of the deployment of those particular kinds of cultural inventions" (p.49). He saw the function of an intelligence as enabling a person to function successfully in the culture, and that an intelligence itself is functional *for* the culture; it "revolves around facets of culture where being able to solve problems or create products is of consequence. Having a particular intelligence will help the *culture* solve problems" (p.53). I will return later to subversive metaphors in Howard's work.

Reframing Civic Engagement and Why We Need Subversive Metaphors

What is civic engagement, and what do we need to know in order to understand it and its antecedents? What are the processes involved in an individual becoming, and being, civically engaged or in being disempowered or alienated? Civic engagement is being re-thought as

'New Civics'; this expands the definition of civic participation beyond the narrow scope of voting-related behaviour and beyond the premise that the primary route to civic action is knowledge of political institutions.[1] Social movements, community engagement and unconventional action such as protest are increasingly included in the purview of civic participation. Young people are considerably more motivated by single issues than by party politics, and many are active in improving and sustaining their community for the benefit of the less privileged. The explosion of new technology has radically transformed what civic action is possible for young people and the less powerful of all ages. What unites all these components of civic participation is the capacity to feel, and take, responsibility for a public purpose with the goal of effecting positive change. Civically active individuals feel personal involvement and have confidence that they can be effective.

The goals of new civic education are to empower young people to be able to do this. A wider definition of civic action requires a wider range of civic learning. What kind of experiences, motives and identity will energise action? What social and institutional environments foster or inhibit motives, beliefs, and involvement? How do some social, cultural or national norms promote active citizenship while others promote alienation and impotence? What enables people to feel that they can be effective agents in their particular settings and communities? These questions apply equally to civic situations as diverse as recycling, intervening to stop classroom bullying, or organising a protest event.

In civic engagement public and private, social and individual, intersect. Explaining civic engagement in terms of family or individual characteristics, for example, locates it as a primarily personal attribute, missing the point that it is a highly contextualised social activity. Equally limited are explanations that derive causal arguments about motivation from demographic variation without spelling out the processes involved. Individuals develop the potential for civic engagement through access to available cultural narratives, explanations, and norms, and everyday interactions with others through which these are negotiated and appropriated. While civic action may be initiated by private moral

[1] These ideas underpin the Spencer Foundation's initiative supporting research and training in New Civics.

conviction, contemporary and local social and cultural channels tend to forefront specific issues, and what are perceived as normative means for effecting change depend on the immediate civic environment. This is not a linear, but an iterative, relationship; it is based on continual feedback. It is an open not a closed system. It is a transactional and dynamic interaction between the individual, the immediate social and institutional environment, and the wider cultural context. People are active, not passive. They seek meaning, understanding, and the means to be effective actors. The individual acts upon experience and information. These processes are facilitated within the social and cultural environment through interaction with the community, institutions, adults, and peers.

The assumption that agents actively make sense of their experience with the world has been around for many decades, alongside the concept of the 'dialogic self' (Hermans, 2001). An active agent constructs meaning and makes interpretations in collaboration with others, and through such co-construction also negotiates individual identity and subjectivity. Culture is not a static background to thought and dialogue but is dynamically interwoven with every linguistic action and indeed with the frames within which cognition happens. Cultural psychology and discursive critical psychology have given us a vocabulary and a framework for these concepts. Yet in large areas of psychology and of education, there is still an isolated, asocial creature who is passively molded by external 'socializing' forces towards a set of fixed traits, habits, values, and behaviors. Despite new technologies' challenge to one of the dominant tenets of Western thought, that there is one ideal solution or outcome to be pursued by linear thinking, there remains a curious reluctance to embrace an agenda designed for pluralistic options or outcomes rather than single closure, or to delve into problem-solving models that are not linked to some kind of 'right' answer.

Challenging Metaphors: Systems

One 'subversive epistemological metaphor' of systems that powerfully challenges problem-solving as a closed solution with linear progression to unitary task completion comes from control theory in mathematics and engineering (Gosling, 1994). Control theory distinguishes two models, the *open-loop:closed-solution* model (OLCS) and the *closed-loop:open-solution* model (CLOS). In the former, OLCS, there is a single 'loop'; the action of resolution terminates the task or problem—

for example firing at a target. Either there is one possible solution, or, if there is more than one possible outcome, the action of one of them precludes all others. In the latter, CLOS, there are first, numerous possible solutions which do not necessarily exclude each other. Second, iterative feedback is inherent. Exploring a solution produces information that modifies the next steps of the task: there is constant readjustment of the solving process. OLCS does not generate new problems and solutions, it produces closure, whereas CLOS leads to further developments of the task. A major psychological point is that there are many more instances of CLOS situations in life in general, as well as in civic engagement, than there are OLCS situations. It is also salient perhaps that OLCS is consistent with linear thinking and a low tolerance of ambiguity and uncertainty, whereas CLOS opens up options and requires the ability to manage multiple options and uncertainty.

Applied in the civic context, a linear problem-solving model also assumes that ideology is unitary, consisting of fixed beliefs or trait-like attitudes. Hence, a question about 'why do people vote for X?' becomes a search for the antecedent conditions which predict the closed-solution single outcome of voting for X. A CLOS model in contrast opens up many parallel processes. There are multiple possible responses to the stimulus (for example an image, an event, a situation, a person), and the individual progresses through feedback and a series of iterative loops, for example in their position *vis-à-vis* others in dialogue, and among several versions of their own position. Michael Billig's work on ideologies, and especially on how people talk about the British royal family, demonstrates that people move easily, even in the same utterance, between different discourses either deliberatively to counter others' contributions, or to make explicit the coexisting positions within their internal dialogue (Billig, 1995, 1998; Billig et al., 1988). This behavior makes considerable sense, both psychologically and epistemologically, within a CLOS system of constant feedback and modification where multiple solutions coexist and people are not prodded to find a single linear outcome. It is also consistent with the changing perspectives implied in the scissors:paper:stone game metaphor.

Challenging Metaphors: The Human

Subversive epistemological metaphors of human relationship with the environment, and self-other relations, particularly challenge the common assumption that the individual exists in social isolation,

connecting to the external world only through the senses. A useful metaphor is *the human being as tool-user*, which comes from the Vygotskian perspective that meaning derives from utilizing tools or symbols as mediators with the environment (Gillespie & Zittoun, 2010; Haste, 2012; Sannino, 2011; Tappan, 2005, 2006; Vygotsky, 1978; Wertsch, 1998). How we generate meaning depends upon our experience with the tool or symbol; the tool-user is both constrained and liberated by the mediating object. The tool-user is an agent, actively engaging with experience, praxis, and mediation, and interacting with others in utilizing and also transmitting skills. The tool-user draws upon culturally available and culturally legitimized tools and resources, including metaphors. Because there are many available tools and forms of mediation this provides many possible outcomes.

Metaphors *reflect* contemporary tools and themselves *become tools* for framing meaning and communication. The clockwork metaphor dominated models of the universe when clockwork technology first developed (Merchant, 1980). Gerd Gigerenzer argued that scientists whose computers worked well generated a computational metaphor of mind; those whose technology support was less efficient found other metaphors (Gigerenzer, 2000). Our capacity to perform fMRI scanning has dramatically altered the kinds of research questions that psychology addresses (Beaulieu, 2000; Theodoridis & Nelson, 2012). Our everyday interactions with familiar objects, artifacts and tools frame and change our implicit models of how things work, and both constrain and facilitate our social practices. Any new technology initially is incorporated into existing social practices; only through use do we become aware of the potential for new practices. The entire landscape of communication and information retrieval was transformed by portable technologies; formerly located on a fixed place, our communication tools are now personal prostheses, with 24/7 access, anywhere.

In the context of civic engagement, our 'tools' include specific routes to action provided by our political system—such as voting, petitions, blogging (a new tool). But our tools also include the models and metaphors of prevailing power relations. Frequently, a nation's schools mirror aspects of civic structure as a way of preparing young people for leadership and decision-making—and for followership. In the US, for example, school life and leadership rely heavily on popularity and gaining the trust of peers; this reflects many aspects of US populist democracy.

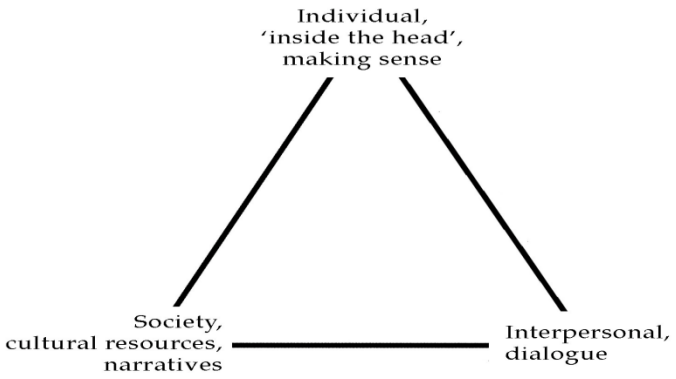
In many contemporary Chinese schools, class monitors and a small committee of students serve as the class management body for minor organizational and disciplinary functions. The Western emphasis on the 'democratic classroom' as fostering civic awareness and civic skills reflects belief both in the power of practice and that a democratic school environment is a microcosm of a democratic society.

The dialogical self is another subversive epistemological metaphor about human functioning. It is subversive in part because it counters the Enlightenment heritage of an autonomous, individualistic, asocial self (Cresswell & Baerveldt, 2011; Hermans, 2001). According to the dialogical self, the individual is active in collaboration; identity and meaning are co-constructed with others in tandem with the individual's own construction. This rests on Bakhtin's concept of polyphony; in any situation, many voices and many perspectives are manifested (Bakhtin, 1986). 'Finding a voice' requires interpreting those multiple perspectives, negotiating meaning and effective communication between our intended voice and our expectations of what others will understand. The very experience of polyphony forces us to recognize multiple perspectives, multiple meanings and to learn how to manage these. Jurgen Habermas (1992) describes these tensions between the ego's autonomy and the dialogic self:

The ego, which seems to me to be given in my self-consciousness as that is purely my own, cannot be maintained by me solely through my own power, as it were me alone—it does not 'belong' to me. Rather, this ego always remains an intersubjective core because the process of individuation from which it emerges runs through the network of linguistically mediated interactions. (p 170)

The Triangle: Where and How Metaphor Works

These subversive metaphors in different ways contribute to seeing the individual as an active agent, iteratively negotiating meaning, identity, and credibility within many social contexts. This takes place in three domains; the domain of available cultural, societal and historical discourses, narratives, and explanations; the domain of dialogic interaction through conversation, persuasion, argumentation, and also scaffolding; and the domain of individual cognitive processes, identities, and subjectivity:



This is not hierarchical nor are the domains nested; all three operate in concert and the relationship between each of the three points of the triangle is iterative and bidirectional. The individual derives meaning actively *from* dialogue and *from* media sources but also contributes through dialogue to the negotiation of meaning. The individual accesses culture directly through media, through familiar narratives and metaphors, and through taken for granted normative explanations and assumptions (Billig,1995). In dialogue with others, the individual simultaneously draws on his or her own constructs and alludes to presumed common cultural ground. The purpose of the dialogue may be finding consensus, acquiring new knowledge or understanding, or serving individual goals of persuading, defending, or establishing one's credibility. It is a constantly iterative process of managing the feedback loops and being alert to alternative ways forward. It is *closed-loop:open-solution* not *open-loop:closed-solution*: OLCS would be a monologue, with the goal of getting the audience to make an act that provided closure (such as a vote).

Dialogue is also the crucible for social and cultural change. Culture is sustained, normalized, reproduced and disseminated through ordinary conversation. In times of change, new discourses are generated through dialogue. There are numerous examples of how dominant cultural narratives sustain cultural identities and intergroup conflict; *inter alia*, Daniel Bar-Tal, Philip Hammack, Sami Adwan, Daniel Bar On and Eyal Naveh have explored how Israeli and Palestinian narratives of history and place play out in the construction of meaning and identity and how these are sustained in day-to-day dialogue (Adwan, Bar On, & Naveh, 2011; Bar-Tal, 2000; Hammack, 2010, 2011).

New ideas may enter culture from individual innovation: through dialogue they become appropriated, often in simplified form, into ordinary language and metaphors. They become part of consensual explanations and so also part of individual meaning-making. Sometimes this is top-down, and resisted. Laws to ensure health and safety imposed by government are often met at the time with a rhetoric of intrusion on personal liberty (for example inoculation, seat belt wearing, gun controls, and public smoking). Their acceptance requires new discourses of public responsibility or serving the greater good, within which the individual actor may become agent of the new norms (Castro, 2012).

Serge Moscovici classically showed how psychoanalytic concepts entered French culture and became normal lay metaphors for talking about many aspects of personhood (Moscovici, 1972). Michel Foucault demonstrated how conceptions of madness changed from the medieval idea of possession to a medical model of illness treated by a variety of drugs, to a condition that could be addressed by non-pharmaceutical interventions (Foucault et al., 2006). A more recent transition is the cultural meaning, and valence, of homosexuality, from pathological deviance sustained by 'expert' discourse, through gay rights activism and an emerging discourse of sexual and lifestyle freedom of choice, to scientific evidence for genetics which supports a rights discourse based on diversity. Rights discourses continue to fuel progress towards legalizing same-sex marriage and normalizing gay family life.

Grassroots dialogue reframes power relationships and their legitimacy. Rights movements particularly exemplify this. Empowerment requires challenge first to the 'expert' discourses that sustain norms and institutions. For example, feminist scholars 40 years ago attacked the 'scientific' explanations of differential ability that justified discrimination. In parallel, this challenged the dominant cultural stories of sex difference. The women's movement also, like other rights movements, saw the need for new cultural discourses to raise awareness of, and resist, tacit discrimination in everyday life. Gender politics are particularly sensitive because they touch the most intimate life zones. New narratives of sexual pleasure, control over one's body and health, entitlement not to be objectified, and the denial of ability deficits reframed gender relations in all domains of life. In many social movements, such dialogic interactions, in 'cells' or 'consciousness-raising groups', serve both as the fount of reframed discourses and of personal

empowerment through redefining identity. Here we see an iconic example of the interweaving and coexistence of individual, dialogic, and cultural meaning-making and change.

A not dissimilar process occurred with green awareness. Barely 40 years ago, environmental concern was marginalized. Yet for two decades, care of the environment has been a major government platform and a central topic of social awareness education. How did this happen? The initial impetus, many argue, came from an individual's contribution to cultural narrative; Rachel Carson's *Silent Spring'* published in 1962. This stimulated conversation and reframing amongst people already sensitive to ecological issues. A rhetoric developed of 'save the planet,' of stewardship and therefore individual *moral* responsibility. Over the following years emerged in parallel, pressures on governments to change energy policies, and exploration of how everyday practice could reduce energy use (Harré, Brockmeier, & Mühlhausler, 1999). New cultural narratives of responsibility empowered recycling programs, first initiated by enthusiasts and then institutionalized through laws. The concrete images of degradation of the world's beauty and the loss of species made it easy to comprehend, and rapidly even young children could grasp both the consequences of rain forest loss and the connection with their parents' shopping habits. Citizens, even very small ones, *owned* their newfound narratives and were empowered by them.

Dialogue and Culture in Practice

Let us explore two examples: one, the reconstruction of cultural and historical narratives in a moment of social transformation, and the other, a dialogue in which different civic and moral values are being negotiated.

In 1994, at the time Mandela become South Africa's President, Salie Abrahams, then a doctoral student at HGSE, interviewed a number of young people in a township in South Africa who were voting for the first time (Abrahams, 1995; Haste & Abrahams, 2008). They were all, according to apartheid rules, 'black' or 'colored' and their families disenfranchised prior to that point. The interviews are full of hope about

their own futures and also of new-found civic efficacy.[2] They each expressed very similar versions of a new cultural narrative which echoed Mandela's message but which also translated into their own new identities. Here are extracts from the interview with JJ, an 18-year-old boy from a Sotho family. These contain cultural narratives explaining the history behind apartheid, the collective historical identity which he himself shares, the future agenda for his own group, and the discourses around unity for the future.

JJ 1: Jan Van Riebeeck [founder of Cape Town] came here and took everything he could take, they had no respect for us. They wanted everything that he saw, the land, the diamonds, the rivers, the mountain and the sea. They were gluttons and wanted to (eat up) everything. They not only took everything but they broke us up into splinters and made us powerless, because if we had remained one, we would have defeated them….

They were extremely greedy but also extremely clever in a bad way. That is why they divided us up from the start, that was so …shrewd.

Here are two narratives; one emphasises the personal vices of the colonists, and the other is a narrative of imperialist practice: divide and rule.

JJ 2: Apartheid was a big tragedy. We lost our land and lost our lives. We even lost our dignity and I even hated myself and my skin, why am I black, why did I have to suffer like this, why must I feel like a piece of dirt walking around here, we got nothing and they got everything. But, as I grew up, I learnt that I was somebody, I could be proud of myself. I am black and I know we will rule this land. That made me walk tall and feel proud.

In this extract we see the new narrative of pride defined by the contrast with the pre-existing narrative of shared identity of oppression.

JJ 3: [White people did] nothing, and then a few of them would [say] sorry, but just a few of them. We don't want their sorry, we want justice….Why did they not stand up when we were hurting? We can do

[2] Over a decade later, Salie and I interviewed about half of them again, and sadly, none of their career hopes had been realized, mainly due to lack of funds for training.

the same to the whites if we want to. We can also make them suffer. But no, we must show them that we are better and that we are just and we need unity and that we see them also as people, human beings and not like dogs, like the way they saw us. That is what we have to teach these whites, that we are all human beings, all equal.

SA: You must teach them?

JJ: Yes, that is our duty.

In this extract there are four interwoven narratives. One reiterates past oppression. A second distinguishes those white people who did not endorse apartheid but failed to stand up for the oppressed groups, so their moral failure is lack of courage. A third narrative is about unity, humanity which transcends race and prescribes equality. A fourth is a significant new narrative, reflecting Mandela's influence, that empowers the former oppressed groups by giving them the moral responsibility to educate the whites in humanity.

SA: You talk about whites…what do you see yourself as?

JJ 4: The answer is South African! If I say I am black then the other person will say he is white and then we start racism again and all the divisions and then we have apartheid. That is why I say that I am a human being and a South African to stop that racism. Black and white was started by apartheid and that will keep us apart. But if we want to unite then we must get rid of that colored, white and black. …

We are all human beings, all equal. We can't start that again, it will be too cruel for the blacks to do it, we have suffered too much to do that to someone else. I sometimes think we should oppress them, but that will not fix anything, we have had too much anger in South Africa.

This extract first elaborates the narrative of humanity and unity through both the transcendence of race under the category 'human' and argument that labelling *per se* is divisive and undermines this. Second it elaborates the narrative of moral responsibility for re-education.

The second example is dialogue, negotiation between different discourses. The respondents are adolescents in a town in eastern China,

part of a project investigating young Chinese people's understanding of civic and moral issues.[3] In a focus group they were presented with the story of Chen Yi Hua, a teenager who organized a protest and a petition against his town spending a large amount of money renovating the subway system. The protest was widely reported in the media.

Extract 1: Eighth Grade Students

AF: It is not a good idea to do what he did.

Coordinator: Why?

AF: He should have talked to people who are in charge of this. What he did was probably illegal.

KY: Is it illegal?

AF: He was protesting and making trouble.

KY: Government officials spend so much money. I think less than one third of the money can be really used on that so-called renovation project. It is probably not necessary to change everything. They only need to repair some places. I think what Chen did was good.

…

AF: His protesting doesn't look good, not good for the image of the city.

KY: If he didn't protest, who would help him? The government only help themselves.

AF: You protest, you may be taken by the police. What can you say about it? You are protesting and making trouble.

KY: It is the most effective way. I don't know whether it is the best. His parents may worry about him. If he succeeds, some people make try to hurt him. But even he does it in other ways like writing a letter, he will be ignored.

These 8th grade students invoke four main discourses; each of them appears to be responding to the other by adding a further dimension at

[3] This study, currently in progress, is funded by the Harvard China Fund; it is conducted by Xu Zhao, Robert Selman, Helen Haste, and Sang Biao.

each interchange to strengthen their argument. It is a dialogue in which two people are actually invoking parallel and different discourses in argument with each other, starting from different premises. AF draws first on an appeal to authority, then to legality. He then moves to the negative image of the city that the protest will create. Finally, in this extract he cites possible negative personal consequences for Chen.

KY in contrast begins with a judgment about government expenditure and sees Chen's actions as an appropriate response. This becomes elaborated as the need for a public response and Chen's protest as a way of getting support; this is further elaborated by dismissing less activist responses as ineffective.

Extract 2: Eleventh Grade students

SY: He is brave.

M: I think he should do it in another way. After all, how to say it?…

SW: He is not powerful enough.

M: Yes, he is not powerful enough. He can voice his opinion to the government and let the government do a survey of public opinions. It is important to do so. I think the subway company changed their plan for good reasons…. They need to take into consideration both the need of city development, and also the need of its residents. To incorporate both aspects, they need to do a survey of public opinions.

TY: I think he should use the media…. I think what Chen did is admirable. He is just a student, not an adult. It is easier for adolescents to be impulsive. He should unite others, for example, select some representatives from the 300 people who signed, and seek help from the media and government departments, etc.

….

TY: Let's not see Chen as an adult. He is only a student. If he can ponder all factors to decide whether to do it, why were his teachers and parents concerned about him? I think he was impulsive. For example, the subway company may take revenge.

SW: Personally, I think—I am a little radical myself—any person will look impulsive in the eyes of the older generation or those who are

conservative. We can do nothing if we are afraid all the time. We should be brave and try.

Coordinator: Do we think it would be good for China if more people do what Chen did?

M: No. If everybody is like him, there won't be any social order.

…

TY: Seek help from the People's Congress.

SY: Use the internet.

SW: I think using public opinion is a good idea, though sometimes it has negative impact. But it is useful in general.... The internet is not a very good idea, because some irresponsible people would say anything.

The 11th grade students focus more on systemic discourses. M draws on the social order and therefore, the need to work within the system, in this case public opinion surveys; the 'problem' for M is a conflict between the interests of two groups. TY moves between acknowledging both Chen's youth and powerlessness, and invoking methods for recruiting a wider base of public opinion in order to make his legitimate protest more successful. SY and SW also both endorse Chen's courage and, like TY, advocate using the media.

Taken as a whole, these two extracts provide a range of cultural stories about social order and the appropriate channels for change, which illuminate contemporary Chinese culture as well as dialogic processes of debate.

Civic Engagement as a Cultural Process

How might we see civic engagement within this cultural picture of pluralistic and open-ended outcomes and the active negotiation of meaning? Civic engagement is not primarily about partisanship or voting; these occupy only a part of civic responsibility which for most people includes ongoing commitment to the community, to helping others and in some cases, to making one's voice heard on social issues—local or national. Civic engagement is about interpreting and evaluating a social or political situation, in the context of beliefs and values (for example about social justice or social order) that stir moral concern. Second, it is about whom the individual perceives as effective agents or

channels for exercising that responsibility. Engagement may require no more than active monitoring, perceiving oneself as aware and informed. However if the individual feels motivated to take action this requires personal efficacy; does he or she subjectively have the skills to take any action? Is he or she connected to others who would support and cooperate in action? Does he or she feel a personal responsibility to take action, or just a conviction that 'someone' should do something?

Framing civic engagement in terms of voting behavior and conventional political action defines as 'political' only those areas of action and cognition that relate to the exercise of power, public opinion and voting. It separates the public and private domains and political from moral. In widening the definition of 'political' and 'civic,' history has played a part. The narrow picture of mainstream political activity in a stable society was challenged by the wave of unconventional protest activity in the1960s; increasingly scholars and politicians alike needed to take this as serious political activity. Research discourse began to treat protesters as political agents rather than as deviant, irresponsible, or pathological (Sigel & Hoskins, 1981). The massive geopolitical changes around 1990 also dented received wisdom about the universal nature of democracy, as emergent states redefined this in terms of their own identity and history rather than borrowing from Western European or U.S. models. The following period of social upheaval engaged large numbers of citizens, especially the young, in constructing a new system and new or reconstructed cultural stories (Andrews, 2007; Haste, 2004; van Hoorn et al., 2000).

In parallel came challenges to the conventional Left-Right spectrum based on fixed ideologies, coherent clusters of beliefs along a continuum, linked to political parties. As Anthony Giddens and others have argued, many recent social movements including environmentalism and feminism cross the traditional left and right boundaries and manifest different narratives of 'liberation' or 'emancipation' (Adam et al., 2000; Giddens, 1994). Second, critical social psychologists argue that rather than reflecting static internal belief states, ideologies are used discursively and rhetorically; we draw on different ideological positions to serve different dialogic needs in different contexts (e.g., Billig, 1995; Henriques et al., 1998; Subasic, 2012). Third, Robert Putnam further pushed the conventional boundaries of the political by asserting that involvement in community is a significant source of social capital,

maintaining civic society. Further, as a locus for civic engagement it is an important route to political commitment. This challenges the conventional view that helping others is not 'political' because it is not tied to parties, or to overtly political institutions, or to ideological positions (Putnam, 2000).

A broader view of civic engagement is supported by data. For example, in a study of over 1000 British young people, we found five constellations, derived from exploratory factor analysis of beliefs about good citizenship and current and expected future civic actions (Haste & Hogan, 2006, 2012; Haste, 2005, 2010). The five factors are *active monitoring*, which reflects paying attention to current affairs and discussing them with others, but is not associated with current civic action; *conventional participation* which is about voting and conventional forms of lobbying; *making one's voice heard*, associated with less conventional actions; *joining organizations*, a general propensity to attach oneself to organized groups, and *helping in the community* which comprised a range of activities supporting the underprivileged and also included green concerns.

The Core Processes

I argue that there are four processes involved in civic engagement within the epistemological framework of the triangle of individual agency and meaning making, contextualised within dialogic activity and within a cultural context. The four processes are *identity, narrative, positioning, and efficacy* (Haste, 2004). In any specific situation all are operating, in parallel and in concert.

Identity can be defined as a self-organizing open system, in which a 'self' that is distinct from the social context while in continual dialogue with it, is actively negotiated (Cresswell & Baerveldt, 2011; Salvatore & Valsiner, 2010). Identity and selfhood include personal agency and maintaining a sense of self integrity, matching up one's self-image against perceived expectations and feedback. How one defines oneself includes a core sense of 'I am the kind of person who believes such and such.' While we have core beliefs, which ones are salient in any context is fluid. Subjective experience, and the values and beliefs that trigger affective responses are evoked in dialogue and argumentation. Core beliefs are in constant iterative negotiation with others, whether face to face, remembered, or imagined. Identity is therefore group-dependent

though not group-determined; we negotiate relevant information about and from our salient groups, we choose which beliefs to invoke in argument or which ingroup and outgroup status we reference at any point. Identity is not defined by a unitary set of beliefs and actions but by managing a portfolio of possible selves, according to the context.

This is also culture-dependent. It takes place within the culturally available repertoire of narratives, explanations, and discourses that are deemed relevant in the situation. These parameters inform what individuals perceive as civic responsibility, what values and beliefs they see as salient to their sense of self, what groups and categories of person they perceive as defining both their ingroup and outgroup, and the extent to which they feel that they personally have the abilities and skills to take any civic action. We saw in the extracts from JJ's interview how his identity was framed by the cultural stories under apartheid and how the new cultural stories gave him a new identity with new moral responsibilities.

Efficacy is the sense that one can pursue one's values and goals, be able to be effective and to have the necessary skills. Civic engagement requires empowerment, the belief that one can, or one's social group can, participate effectively in the civic process. Widening the scope of the civic domain broadens the potential for action and also the likely preconditions that foster empowerment, for these may differ for different kinds of engagement. Consistent with the metaphor of open-ended solutions and iterative feedback, there is a much wider span of potential routes to change and action. Research demonstrates that past experience, in the family, in organizations, in school, contributes to a sense of empowerment as well as to the belief that such empowerment is normative (Sherrod, Torney-Purta, & Flanagan, 2010; Youniss, McClellan & Yates,1997). Activities designed initially to provide help to the underprivileged may lead to a wider understanding of power relations and also, motivation to disturb those powers (Levinson, 2012; Yates & Youniss, 1999). However, empowerment (and its absence) also comes from identifying with social groups who are perceived to have (or to lack) power, who are part of the institutions of power, or who are prevented institutionally from having power. One of the first steps in enfranchisement and empowerment of disadvantaged groups is to change their self-perception and to provide them with avenues through which power becomes possible. We see this clearly in JJ's interview. We

also see, in the Chinese interactions, tension between different discourses of efficacy and its absence—due to youth, the power of the police and the state, and the power of public opinion.

The relationship between trust and empowerment is complex. Some writers express concern that absence of trust leads to alienation and lack of motivation both for taking civic responsibility and conforming to morally responsible behavior. However data indicate that low trust in the government and public institutions can be a positive factor in engagement. Studies of social movements consistently show that activists combine a low trust in the government with a high level of personal efficacy. In our data, the factor *making one's voice heard*, the one most associated with protest, was accompanied by lower trust in the government (Haste & Hogan, 2006, 2012). Type of affect is also important in activism. Social activists tend to experience anger; in contrast, people who feel disempowered tend to fear, despair, and helplessness. Those who feared nuclear annihilation during the Cold War frequently expressed impotence (Haste, 1989). In the absence of empowerment, lack of trust may paralyse.

Narratives, first, are a cultural resource of the information, justification, and explanations that legitimize current conditions. They give coherence, a causal relationship between past and present, and a projection of possible futures that may either perpetuate or change those conditions. They support, or not, the empowerment of groups or categories of people so in times of social change, such narratives are powerful; they facilitate a new order and new entitlements. As Hammack (2010) argues, "[t]hrough a process of *narrative engagement* individuals construct life stories that both appropriate and repudiate aspects of a master narrative of social identity" (p. 509). We see this in JJ's interview. We also see how the various discourses invoked by the Chinese adolescents reflect available narratives about social order and the mechanisms and routes for making one's voice heard.

Second, narratives frame what is credible; there is always more than one narrative about the past and the present, but how many are deemed legitimate? The dominant group writes authoritative histories which enter into the canon (Carretero, 2011). Subordinate groups have their own stories which their members learn; even though denigrated, ridiculed, and suppressed by the dominant group they are recognised as the voice of the marginalised (Adwan et al., 2011; Bar-Tal, 2000;

Hammack, 2010, 2011). They retell past events and redescribe institutions, explain and legitimate changes; JJ illustrates these processes very clearly. Under periods of oppression, groups maintain a parallel and hidden narrative of their history (and of their future liberation) which is passed informally through generations and becomes salient when change is possible (Wertsch, 1998). The narratives that sustain identity and efficacy valorise the qualities required of those who will be the future empowerers. These are the heroes, modelled on versions of past figures but cast to meet the demands of the current world (Reicher & Hopkins, 2001).

Narratives are a source of *positioning.* Positioning, deriving from the work of Hollway, Harré, and van Langenhove, is a discursive process (Harré & van Langenhove, 1991; Henriques et al., 1998). It is an act by which an individual manipulates power relations and entitlement between self and other, in direct dialogue or in reported speech. At the level of culture, groups and persons are positioned by narratives which prevail in everyday talk, in the media and in official discourses. For example, A positions B by requesting or demanding that B do something, which assumes a relationship of power, or entitlement. B may resist the request and therefore the positioning, and so re-positions A as not entitled, or as bullying or insensitive. Cultural narratives provide the infrastructure for such positioning including also the rhetorical resources for countering positioning (Hall, 1997). In the classic paper by Davies and Harré that describes positioning, the Caring Male positioned the Sick Female in a narrative in which she was his responsibility; her response was to draw, angrily, on the feminist narrative of Self-sufficient Female being patronized by Chauvinist Male (Davies & Harré, 1990). This disjunction reflected the contemporary tensions between cultural narratives about gender.

It is through a third process of positioning that much rhetorical ingroup versus outgroup boundary negotiation takes place. In the above example, B may give an account of the incident to C, positioning themselves as righteous victims in the account, and A as the 'villain.' This also positions C as presumed to share B's values. C will therefore be expected to see the situation as B sees it, so validating it as a shared or normative discourse. Locating 'we' and 'they' in the dialogue, positioning groups or belief systems as 'ours' or 'other' legitimates or delegitimates, accords, or removes responsibility, and in all this, affirms the identities

of the interlocutors. Stereotypes of 'Other' groups can be understood as justificatory narratives, which position the Other, and position oneself and one's own group. Stereotypes work because they rest on a shared narrative. As Hammack argues, personal narratives 'reveal the *positions* of subjects within a matrix of power relations and the *internalization of discourses*' so making transparent the process of person-culture co-construction.

National and group identities are framed both by the narratives which validate the ingroup, and by the narratives of those outgroups in contrast with whom ingroup identity is positioned (Bar-Tal, 2000; Hammack, 2010, 2011). The outgroup may be antithetical because they lack the positive attributes that define the ingroup and are therefore 'inferior'. Or they may be a potentially powerful threat to those attributes, against whom the ingroup must bolster effective defenses. Vilifying the Other does not only justify aggression towards them; it affirms by negation, one's ingroup's qualities. Paul Nesbitt-Larking and Catarina Kinnvall argue that in a climate of perceived threat, post 9/11, we see increased 'securitization'; closing down of pluralism, and increasing attention to race, immigration, and national identity (Nesbitt-Larking & Kinnvall, 2012). Positioning narratives that affirm the positive and exceptional attributes of the nation are a common element of socializing youth into national and group identity (Donoghue, 2012).

In JJ's interview we see several examples of positioning. First, he positions the founders of the Cape Colony as morally egregious and by so doing, positions the non-white population as victims of an immoral tradition. This positioning is developed through arguing that in consequence the victims are deprived of dignity. However, this is presented as a counterpoint to the re-positioning of identity through the recent social changes. In the third extract he differentiates those whites who are pro-apartheid from those who are apologetic, but then further positions these latter as lacking in commitment. He then engages in the interesting argumentation; whether non-whites should position whites now as victims, in retribution, or whether to position non-whites as morally superior because they can take a comprehensively humanistic view. Finally, in this extract he extends the positioning of moral superiority to moral *obligation*; non-whites *must teach* the whites to be humanistic—so elegantly positioning the whites not only as morally

deficient but now, also as less powerful because they are placed in the role of students.

In the fourth extract he repeats some of the argumentation about retribution, but also positions himself as a 'human being' and 'South African' explicitly to counter the positioning that he sees in apartheid, that arose from the labels. These extracts are a quite transparent representation of the processes involved in reconstructing cultural narratives in a period of rapid social change, the appropriation of these into individual identity and developing the implications for action that follow from that appropriation. The way that JJ expresses moral responsibility for such action suggests that he has gained subjective efficacy, and that this is in collaboration with his self-identified ingroup: 'we,' the non-white population.

Conclusion

This chapter has several goals. Overall, I want to develop a theoretical model, grounded in cultural psychology, which enables us to see the total system involved in civic engagement and to recognize its dynamic and transactional nature. This has educational implications that I cannot explore here because of space, but in summary, the implications are that designing civic education needs to include students' access to the narratives and discourses around their own history and socio-political systems, how these compare with other nations (and periods), and most important to facilitate a critical perspective on all of these, which enables them to recognize how and why they were constructed and the functions they serve in the present. Students need to understand how positioning can be the basis for inequality, both in interpersonal interaction and through legitimation by narratives, as well as being able deliberatively to alter their own and others positioning behavior. They need to be critically aware of how repositioning can empower (or disempower) and recognize how this has been done historically in times of socio-political change; they need to know how to do this in the context of their own experience. Through this process they also need to become aware that there are numerous possible, open-ended outcomes, not only one solution; they need support to escape from linear, closed-solution ways of thinking.

The education context (whether school-based or other) needs to provide the scaffolding for efficacy. This includes experiences which

provide the skills for practicing efficacy, including organizational, technological, and communication skills, but it also includes the opportunities for reflection that enable reframing, seeking, and finding new narratives and new ways for positioning. This requires *access* to groups and environments in which various kinds of efficacy are normative as well as providing practice, and it requires policies that set up such access as part of the educational program. However, there is also a place for making explicit existing communities and helping young people to become active in those communities in fostering empowerment, for example through participating in building self-help groups (Warren & Mapp, 2011). This follows the agenda of Paolo Freire, *inter alia* (Freire,1970).

Finally, as we have seen, identity brings together much of the above. Fostering a personal identity which gives the individual ownership of these processes provides both reflective engagement and the sense of personal responsibility to enact it. The core element of moral and civic responsibility, as I noted, is that perceiving a problem provokes the individual at very least to feel he or she must press someone to do something about it; ultimately, full moral responsibility provokes the sense that the individual has no choice but to become involved themselves. Not everyone however has the skills to do this; at very least a civically empowered person should be actively monitoring their civic environment.

I have argued throughout that we need subversive epistemological metaphors to enable the conceptual shifts that change how we frame thinking about the relationship between elements and variables (such as seeking causality versus exploring processes), about how we think of the 'human,' and about what dimensions need to be included in building models (for example focusing not only on the individual but on dialogue and on culture). These therefore are challenges, or stimulants, to theory and to epistemology—how we should frame questions and so design research, as well as what are our underlying theoretical assumptions. This informs my efforts to create a model which takes into account all three points of the triangle. I hope I have also shown that looking at civic engagement within such a model, rather than focusing on only one point, shifts the lenses just as much as does the scissors:paper:stone game.

To return to Howard: I have focused mainly on his early work because it is there that he most extensively utilized subversive

metaphors in generating new ideas, though he has of course continued to do so. A particular later example is his work on *The Unschooled Mind* (Gardner, 1991). His highly innovative insight was that we remain, in effect, five years old in our 'lay' thinking despite intensive education even in a closely related field–- as he points out, people with doctorates in physics can make simple Aristotelian errors in 'everyday' physics examples. The implications of this insight for education are in fact huge, and as yet seem little recognized in pedagogy. Nor has the field progressed very far in considering these implications despite Howard's own rich suggestions for possible developments.

Howard's early insights into the significance of culture in multiple intelligences, that cultural competence required specific forms of the intelligences as well as validating different ones, were enhanced by his visits, with Ellen, to China where he came fully to appreciate how profoundly different could be cultural assumptions and implicit models of development and therefore of education (Gardner, 1989). These insights later informed his appreciation of the power of cultural norms (for example, of honesty) in scaffolding (or not) individual ethical behavior.

In Howard's recent book, *Truth, Beauty, and Goodness Reframed,* he explores two metaphors derived from very different books (Gardner, 2011). One is 'subversive,' the other is not, but their juxtaposition as 'strong and powerful bedfellows' provokes the tension through which he explores the condition of the classical virtues in 21st century culture. Henry Adams' 1904 metaphor of a Gothic cathedral gave him a way to conceptualize (with 'a nostalgic utopian eye') order and virtue in the early 19th century world.

David Shields' 2010 book is an eclectic cultural commentary created through a montage of quotations from others; it is a product of and a metaphor for digitalization and 'creation' through remixing and restructuring; where lies truth, where lies originality, when all the components have a previous existence with a different purpose? Remixing, of course, does not depend on modern technology—it has flourished at least from *The Waste Land* to *The Donkey Show* and has a far more venerable history.

The juxtaposition is for Howard an exploration of his own ambivalence about postmodernism. As he notes, all civilizations have

policed their boundaries of truth, beauty, and goodness yet at the same time coexisting civilizations have different versions, or standards, of each. This at very least requires a cultural perspective even if not a postmodern lens in which the primary questions are about the social construction of meaning. Perhaps even more salient is how *within* a civilization over time, resistance, reconstruction, and re-evaluation challenge the boundaries and innovate, so redefining the virtues and their expression. The fear of 'loss' of virtue which stalks concerns about postmodernist relativism omits the fact that new generations of artists, critics and consumers continuously, in a healthy society, find new ways to make robust (and policeable) the new expressions of the virtues. It is perhaps neither the moral, nor aesthetic, responsibility of senior citizens to pontificate on this process; at best we can be wise commentators, observers with a sense of history and global culture. As Howard notes, as we ponder Damien Hirst and rap artists, *inter alia,* we need to remember how Monet and Stravinsky were first received.

Howard is explicit in *Truth, Beauty, and Goodness Reframed* about his own growth of awareness of the significance of cultural variation and also of the richness that a postmodern perspective, with its attention to how meaning is socially generated, can bring to social science. He sees some of his earlier work as limited by being too Eurocentric, and lacking in a global lens, but also perhaps more significantly, lacking the kinds of questions about *how* a particular expression of a virtue becomes enshrined in a culture.

The GoodWork Project, in which many these ideas are being developed, is the area where Howard is also currently making contributions to fundamental questions around civic engagement, including the role of new technologies. I have not chosen to explore this in this chapter, but it is an example of mature career reflection and consolidation, where constructive subversion can and does still flourish.

References

Abrahams, S. (1995). *Moral reasoning in context; the construction of the adolescent moral world under apartheid*. Unpublished doctoral dissertation, Harvard Graduate School of Education.

Adam, B., Beck, U., & van Loon, J. (2000). (Eds.), *The risk society; Critical issues for social theory.* London: Sage.

Adwan, S., Bar-On, D., & Naveh, E. (2011). *Side by side: Parallel histories of Israel-Palestine.* New York: The New Press.

Andrews, M. (2007) *Shaping history; narratives of social change*. Cambridge: Cambridge University Press.

Bakhtin, M.M. (1986). *Speech genres and other late essays.* Austin: University of Texas Press.

Bar-Tal, D. (2000). *Shared beliefs in a society*. London: Sage.

Beaulieu, A. (2000). *The space inside the skull: Digital representations, brain mapping and cognitive neuroscience in the decade of the brain.* Doctoral thesis, University of Amsterdam.

Billig, M., Condor, S., Edwards, D., Gane, M., Middleton, D., & Radley, A.R. (1988). *Ideological dilemmas*. London: Sage Publications.

Billig, M. (1995). *Arguing and thinking: A rhetorical approach to social psychology, revised edition*. Cambridge: Cambridge University Press.

Billig, M. (1998). *Talking of the Royal Family: Second edition with new introduction*. London: Routledge.

Bruner, J.S. (1990). *Acts of meaning.* Cambridge, MA: Harvard University Press.

Carretero, M. (2011). *Constructing patriotism: Teaching history and memories in global worlds.* Charlotte, NC: Information Age Publishing.

Carson, R. (1962). *Silent spring.* New York: Houghton Mifflin.

Castro, P. (2012). Legal innovation for social change: Exploring change and resistance to different types of sustainability laws. *Political Psychology, 33*(1), 105-122.

Close, F. (2011). *The infinity puzzle; quantum field theory and the hunt for an orderly universe.* New York: BasicBooks.

Cresswell, J., & Baerveldt, C. (2011). Bakhtin's realism and embodiment: Towards a revision of the dialogical self. *Culture & Psychology, 17*(2), 263-277.

Davies, B., & Harré, R. (1990). Positioning: The discursive production of selves. *Journal for the Theory of Social Behavior, 20*(1), 43-63.

Donoghue, D. (2012). Introduction: On the American narrative. *Daedalus,* Winter, 5-10.

Foucault, M., Khalfa, J., & Murphy, J. (2006). *The history of madness.* London: Routledge.

Freire, P. (1970). *Pedagogy of the oppressed.* New York: Continuum, 1970.

Gardner, H. (1983). *Frames of mind*: *The theory of multiple intelligences*. New York: BasicBooks.

Gardner, H. (1987). *The mind's new science: A history of the cognitive revolution*. New York: BasicBooks.

Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach.* New York: BasicBooks.

Gardner, H. (1991). *To open minds*. New York: BasicBooks.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the twenty-first century.* New York: BasicBooks.

Giddens, A. (1994). *Beyond left and right: The future of radical politics*. Cambridge: Polity.

Gigerenzer, G. (2000). *Adaptive thinking : Rationality in the real world.* Oxford: Oxford University Press.

Gillespie, A., & Zittoun, T. (2010). Using resources: Conceptualizing the mediation and reflective use of tools and signs. *Culture & Psychology, 16*(1), 37-62.

Gosling, W. (1994). *Helmsmen and heroes.* London: Weidenfeld & Nicolson.

Habermas, J. (1992). *Postmetaphysical thinking.* Trans. W.M. Hohengarten. Cambridge, MA: MIT Press.

Hall, S. (1997). *Representation: Cultural representations and signifying practices*. London: Sage.

Hammack, P. (2010). The cultural psychology of Palestinian youth: A narrative approach. *Culture & Psychology, 16(*4),507-538.

Hammack, P. (2011). *Narrative and the politics of identity: The cultural psychology of Israeli and Palestinian youth.* New York: Oxford University Press.

Harré. R., & Van Langenhove, L. (1991). Varieties of positioning. *Journal for the Theory of Social Behavior, 21*(4), 393-407.

Harré, R., Brockmeier, J., & Mühlhäusler, P. (1999). *Greenspeak: A study of environmental discourse.* Thousand Oaks, CA: Sage.

Haste, H. (1985). The varieties of intelligence: An interview with Howard Gardner. *New Ideas in Psychology, 3*(1), 47-65.

Haste, H. (1989). Everybody's scared but life goes on: Coping, defence and action in the face of nuclear threat. *Journal of Adolescence, 12,* 11–26.

Haste, H. (1994). *The sexual metaphor.* Cambridge, MA: Harvard University Press.

Haste, H. (2004). Constructing the citizen. *Political Psychology, 25*(3), 413–440.

Haste, H. (2005). *My voice, my vote, my community: A study of young people's action and inaction.* Croydon: Nestlé Trust, Nestlé Social Research Programme Report 4.

Haste, H. (2010). Citizenship education; A critical look at a contested field. In L. Sherrod, J. Torney-Purta, & C. Flanagan (Eds.), *Handbook of research on civic engagement in youth.* New York: John Wiley, pp.161-192.

Haste, H. (2012). Culture, tools and subjectivity: The (re) construction of self. In T. Magioglou (Ed.), *Culture and political psychology.* Charlotte, N.C.: Information Age Publishers.

Haste, H., & Hogan, A. (2006). Beyond conventional civic participation, beyond the moral-political divide: Young people and contemporary debates about citizenship. *Journal of Moral Education, 35*(4), 473-493.

Haste, H., & Abrahams, S. (2008). Morality, culture and the dialogic self: Taking cultural pluralism seriously. *Journal of Moral Education, 37(*3), 357-374.

Haste, H., & Hogan, A. (2012). The future shapes the present; scenarios, metaphors and civic action. In M. Carretero (Ed.), *History education and the construction of identities*. Charlotte, NC: Information Age Publishing, pp.311-326.

Henriques, J., Urwin, C., Hollway, W., Venn, C., & Walkerdine, V. (1998). *Changing the subject: Psychology, social regulation and subjectivity*, London: Routledge.

Hermans, H.J.M. (2001) The dialogical self; towards a theory of personal and cultural positioning. *Culture & Psychology, 7*(3), 243-282.

van Hoorn, J., Komlosi, A., Suchar E., & Samelson, D. (2000). *Adolescent development and rapid social change: Perspectives from Eastern Europe.* Albany, NY: SUNY University Press.

Levinson, M. (2012). *No citizen left behind.* Cambridge, MA: Harvard University Press.

Merchant, C. (1980.) *The death of nature.* San Francisco, CA: Harper & Row.

Moscovici, S. (1976). *La psychanalyse, son image, son public*. Paris: Presses Universitaire de France.

Nesbitt-Larking, P., & Kinnvall, C. (2012). The discursive frames of political psychology, *Political Psychology, 33*(1), 45-60.

Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.

Reicher, S., & Hopkins, N. (2001). *Self and nation: Categorization, contestation and mobilization.* Thousand Oaks, CA: Sage.

Salvatore, S., & Valsiner, J. (2010). Between the general and the unique: Overcoming the nomothetic versus ideographic opposition. *Theory & Psychology, 20*(6), 817-834.

Sannino, A. (2011). Activity theory as an activist and interventionist theory, *Theory & Psychology, 21*(5), 571-597.

Sherrod, L., Torney-Purta, J., & Flanagan, C. (Eds.). (2010). *Handbook of research on civic engagement in youth.* New York: John Wiley.

Sigel, R., & Hoskins, M. (1981). *The political involvement of adolescents*. Brunswick, NJ: Rutgers University Press.

Subasic, E., Reynolds, K., Reicher, S.D., & Klandermans, B. (2012). Where to go from here for the psychology of social change? Future directions for theory and practice. *Political Psychology, 33*(1), 61-74.

Tappan, M. (2005). Mediated moralities: Sociocultural approaches to moral development. In Killen, M., & Smetana, J. (Eds.), *Handbook of moral development* (pp. 351-374). Hillsdale, NJ: Lawrence Erlbaum.

Tappan, M. (2006). Moral functioning as mediated action. *Journal of Moral Education, 35*(1), 1-18.

Theodoridis, A., & Nelson, A.J. (2012) Of BOLD claims and excessive fears: A call for caution and patience regarding political neuroscience. *Political Psychology, 33*(1), 27-44.

Vygotsky, L. (1978). *Mind in society.* Cambridge, MA: Harvard University Press.

Warren, M. R., Mapp, K. L., & The Community Organizing and School Reform Project (2011). *A match on dry grass: Community organizing as a catalyst for school reform.* New York: Oxford University Press.

Wertsch, J. (1998). *Mind as action.* Oxford: Oxford University Press.

Yates, M., & Youniss, J. (Eds.) (1999). *Roots of civic identity*. Cambridge: Cambridge University Press.

Youniss, J., Mclellan, J. A., & Yates, M. (1997). What we know about engendering civic identity. *American Behavioral Scientist, 40*, 620–631.

Howard's Response to Helen Haste

When we first met—I think it was in the summer of 1980 at a social event—I don't think either of us had an inkling of the multiple ways in which our lives would be intertwined in the next three decades. After all, you were a British social psychologist teaching at Bath; I was shortly to make the move from fulltime researcher to teaching cognitive and developmental psychology at Harvard. Indeed, would we ever see each other again?

But "the pond" is small, and getting smaller all the time, and within a few years, we came to have multiple personal and professional ties. You did me a special favor by conducting an in-depth interview about my just published *Frames of Mind*; your well placed interview did much to bring "MI theory" to the attention of scholars and educators in the U.K. and elsewhere. But we also found that our interests in many topics—from morality to metaphor to adolescence—were converging. And then, it was our good "Yankee" fortune that you accepted a visiting professorship at the Harvard Graduate School of Education; you have been with us, month in and month out, ever since, introducing us to issues in moral, civic, and youth development. To top it off, for the last few years, you have been the tireless director of our Spencer Fellow program on the "New Civics."

You and I both have wide sweeps of interest and in your essay for this volume, we can see at work your 'synthesizing mind.' You assemble in a single piece your interests and your analytic tools as they have developed over the years.

I like the notion of 'subversive metaphors.' In fact, nearly every term that has emerged from Project Zero—even including its name—has a touch of subversion in it. (I suspect that both of us have more than the average amount of 'subversion' in our mental makeup). And you have taken your lifelong interest in and research on citizenship and conceptualized it in terms of the triad of forces: the individual as he/she makes sense of communal concerns, the interpersonal dialogue that is so crucial for placing oneself vis-a-vis others, and broader cultural resources as they are manifest in narratives, works of art, and other symbolic forms of expression. If we are to understand civic engagement of young persons today—be they in China, South Africa, or the more

familiar Western countries—we need to monitor these nodes and understand how they interact. In the conclusion of your far-ranging essay, you go on to sketch, in broad terms, the possible educational implications of your analysis. These educational implications will occupy both of us in the years to come.

Helen, I take off my hat to you for this *tour de force*. As a bonus, you complement this synthesizing mind with a precise concern with details and data—I see this at work when we serve together on student research committees. So often it is you who locates the telltale finding, or, alternatively, identifies what is missing. In one person you provide two powerful role models for students and colleagues.

Responsibility and Accountability in (a Norwegian) Context

Thomas Hatch

"Congratulations on your Nobel Peace Prize," my Norwegian colleagues kept telling me. While not a dream, it was a surreal experience to have Norwegian after Norwegian offer such warm congratulations the day after President Barack Obama was awarded the Nobel Peace Prize. I had only been in Norway for a month or two of what would be a ten-month stay with my wife and three daughters. I was in Norway to do research on the new accountability policies in "higher-performing" and "lower-performing" countries according to PISA and other international tests. (The higher performing countries I focused on included Finland, Singapore, the Netherlands; the lower performing countries included the United States and, surprisingly to many, Norway). It was not the first moment of cultural dissonance, but one of a series that led me to realize how different perspectives can be even in quite similar societies.

I probably should not have been surprised when these moments of dissonance reminded me of Howard's experiences with his family in China in the 1980s (Gardner, 1989). Ever since my college years, every time I turn to a new subject or area of inquiry I seem to find that Howard has already paved the way. Even though I tried to take as disparate a set of college courses as possible—Neuroscience, Linguistics, Psychology, Semiotics, Philosophy, Art and Aesthetics—almost every syllabus I encountered had a book by Howard on it: *Structuralism*, *Art, Mind, and Brain*, *The Shattered Mind* (and this was even before *Frames of Mind* came out!). When it came time to figure out what to do after college, I wavered, wondering about the benefits of various graduate schools and how to continue to pursue such a varied set of interests. I looked at the books on my shelf, and it seemed obvious: apply to the Harvard Graduate School of Education and try to continue to pursue my interests in human development, education, and creative expression, ideally, working with Howard Gardner.

Fortunately, I arrived at HGSE just after *Frames of Mind* was published, and I was able to work with Howard and colleagues from Project Zero on a range of projects that took me deeper and deeper into

the work of school reform: Project Spectrum—an approach to early childhood curriculum and assessment, the Mather Afterschool Project—in which we helped to develop and run an afterschool program for third through 5th graders; and then the ATLAS Communities Project, in which Project Zero partnered with the Coalition of Essential Schools, the School Development Program, and Education Development Center to design a "pathway" of schools from kindergarten through 12th grade that could be "scaled-up" around the country.

It was just after my work on ATLAS, and about the time that Howard, Bill Damon, and Mihaly Czikszentmihalyi launched the GoodWork Project, that our paths diverged. I continued to work on the "dark side," venturing further into the often depressing issues of school reform. In what I now realize I could have called the "Not-So-Good Work Project," I chronicled the many conflicting pressures and demands that schools face and described the ways in which even the well-intentioned initiatives of school reformers could overwhelm and undermine rather than support a school's improvement efforts. That work led me to delineate the capacities that schools need to develop in order to make improvements and to create the conditions for their own success (Hatch, 2009).

When I went on to explore the capacities that educational systems need in order to support improvements in schools on a larger scale, I had no idea that I would eventually come back to the issues of "good work" and personal and professional responsibility that Howard and his colleagues have continued to investigate. Once I arrived in Norway, however, and started looking more carefully at the relationship between capacity-building and new accountability policies, I began to see building the capacity for individuals, groups, and schools to act responsibly as a critical aspect of the success of very different kinds of educational systems.

Howard and his colleagues have focused their work largely on individuals and how they manage to act responsibly within a sea of shifting personal, organizational, social, and cultural demands and expectations. However, my experiences in Norway have highlighted for me the importance of collective responsibility and the role that educational institutions and systems can play in promoting it. Like Howard's experiences in China, my experiences in another culture also helped me to recognize some of the ways in which efforts to promote

responsibility and accountability are themselves the products of the same economic, social, and geographic forces that shape the systems that those efforts are supposed to change. These realizations were slow in coming. They emerged gradually as I tried to make sense of our children's Norwegian education, studied the new accountability system in Norway, and, eventually, compared what I was seeing in Norway with the approaches to responsibility and accountability in Finland, the Netherlands, and Singapore.

Our Education in Norway

My wife and I first noticed how different the Norwegian educational system was from the U.S. system when Clara, our 4th grader, left for school in Oslo about 8:45 in the morning and returned shortly after 1:30, a mere four and a half hours later. We had so much trouble processing how short Clara's day was that it took us several weeks to realize that she was not getting out of school at the same time as her sister, Hannah, a 6th grader, whose school day ended at 2:30. When my wife called Clara's teacher in September to set up a parent conference, we were invited to come in at 1:30. "What will the children be doing then?" my wife wondered. "They'll be done with school," her teacher responded somewhat incredulously. When we asked Clara about it, we learned that she, like many of her friends, had been spending that hour hanging out on the playground, lingering around an afterschool program (that occasionally shared leftovers from their hot meal with what must have appeared to be a neglected, starving American child), or, occasionally, roasting hot dogs over a fire in a trash can in the parking lot.

Our perception of the difference in instructional time in Norway and the U.S. was also shaped by the fact that, after waiting almost 11 years to get all our children into school, we discovered that Stella, our youngest at age 5, had nowhere to go because compulsory schooling in Norway does not begin until 1st grade. Instead, we had to find a place in an international pre-school because the only other available spots were in an "outdoor" kindergarten. In the outdoor kindergarten we saw, the children spent most of their time in outdoor activities all year-round, in any kind of weather, except for about an hour a day in a hut for lunch and snacks. (Since Stella likes to eat her breakfast in the winter under a table next to the heating vent, we thought the outdoor kindergarten probably wasn't the right idea.)

As the year flew by, we were informed by regular dinner table conversations in which Hannah and Clara told us about woodworking, handwork, eurhythmics, and "ute time" (outside time) so many times, we finally asked them to write down their schedule for us. The resulting list did have time for math, Norwegian, and English but looked nothing like their schedule in the U.S. (which included art once and music twice every six days). We also found that after school about the only things they had to work on were the math worksheets from their U.S. classrooms that we tried to get them to do to "keep up" with their peers back in the States.

The differences in the emphases in Hannah and Clara's Norwegian and U.S. school experiences should have been obvious from the start, but it was not until the dark days of January that things really hit home. By the end of the month, we realized that Clara had spent an entire day, once a week for four weeks in a row, cross-country skiing with her class. She took her skis with her on the subway; walked to school; put on her skis with her classmates, her teacher and a few parents (some of whom had logs strapped to their backs for the lunchtime campfire for roasting more hot dogs); and skied off into the woods, returning to school and going home sometime after lunch.

Perhaps it should also be no surprise that Hannah and Clara had a great time. Not only that, but they learned Norwegian. They learned to cross-country ski. Hannah went on a week-long camping trip with her class and climbed the tallest peak in Scandinavia. Clara made a project out of inviting every girl in her class over to play, and, towards the end of the year, turned to Karen and announced "Mommy, I used to be shy, but I'm not shy anymore." And she isn't. Both she and Hannah returned to the United States and picked up their academic work right where they left off, and Clara is much more outgoing and much more likely to speak up in class. Hannah is trying to read *Harry Potter* in Norwegian.

My research on the Norwegian educational system confirmed the commonality of many of my children's experiences. For example, students in Norway, like other Scandinavian countries, spend about 700 hours with their teachers in middle school while those in the United States spend almost 1100 hours (OECD, 2009). Furthermore, we began to learn that, in addition to what we felt was a limited emphasis on academics in Hannah and Clara's school experience and almost no homework, students in Norway receive no grades—or formal marks of

any kind—up until 8th grade. While some national standardized tests were introduced (with great controversy) in selected grades and subjects in 2004, for the most part students can get to 8th grade with almost no written documentation about whether or not they are performing below, above, or at the same level as their peers. On top of that, almost all elementary students (nearly 95 percent) are enrolled in the regular classroom; there is no tracking by ability; and elementary students cannot "fail" or be held back.

Slowly, as we reflected on these personal experiences and our research, it dawned on us: with less instructional time, less emphasis on academics, less homework, and no one held back, Norwegian students still perform about as well as students in the United States. By the end of our year in Norway, we began telling our friends and colleagues that it is as if the Norwegian educational system is doing about as well as the U.S. system without even trying.

Responsibility in Accountability

Many of the American parents we met in Norway reported that their children had similar experiences in Norwegian schools, and many said their children had also made successful transitions to school or college back in States. Nonetheless, we know that not every child would gain the same benefits from the experiences in Norway that Hannah and Clara did. Furthermore, even with all those benefits and a personal preference for a little more project-based learning and less multiple-choice testing in the United States, we would have liked to have seen a little more focus on academics and accountability in Norway. (Even Hannah admitted that she was bored by having to do what she called "4th grade math" in 6th grade…). Over the course of the year, we also learned that many Norwegians, including some of the parents we got to know, shared some of these concerns.

Worries about the performance of the Norwegian educational system have been widespread since the "PISA shock" that accompanied the publication of the first PISA results in 2001. At that time, scores near the average (while their neighbors in Finland topped the charts) brought concerns about educational performance to the forefront. Those concerns sparked a series of reforms in Norway that focused on two key aspects of the efforts to increase accountability that have spread across the globe: establishing measureable outcomes and developing the instruments

needed to monitor progress towards those outcomes (Verhooest, 2005). Norway created new competence aims and an emphasis in every subject on the development of basic skills, including oral and written expression, reading, numeracy, and the use of digital tools, with reading and writing emphasized from 1st grade. In what have been called the Knowledge Promotion reforms, Norway also established several new mechanisms for monitoring student progress, tracking school performance, and reviewing the extent to which schools and local authorities are fulfilling their statutory obligations. These instruments included national tests in reading, numeracy, and English that were originally proposed for 4th, 7th, and 10th grades; pupil and parent surveys; and the "Tilsyn," which generally translates as an inspection of the municipalities and county governments' (considered the school owners in the Norwegian system) compliance with legal requirements.

While a belief in the need for improvement and for the development of some kind of "quality assurance" scheme with competence aims and some monitoring mechanisms was widely shared across much of the political spectrum in Norway, the implementation of these new reforms was controversial. Much of the controversy focused on a third critical aspect of accountability: the follow-up mechanisms, such as rewards, sanctions, and other incentives that many assume are needed to ensure that individuals actually do achieve the desired goals (Verhooest, 2005). At first, the conservative government in power when the Knowledge Promotion reforms were being designed sought to use the national test results as a means of putting public pressure on schools and motivating schools to make sure their students met the new outcomes. Consistent with the market-based reforms and pressures central to many other accountability initiatives around the world, the conservative government's efforts to introduce greater competition and choice in the education system, publication of this outcome information was expected to lead to positive or negative publicity. In addition to this public pressure, the information on performance was to be used by parents who would advocate for better schools and, if necessary, demand to switch their children to higher-performing schools. Correspondingly, the first tests were carried out in the spring of 2004; school-by-school results were released; and newspapers and media quickly produced rankings and "league-tables" of schools (Norwegian Directorate for Education and Training, 2011; Nusche et al., 2011).

The subsequent outcry, problems in the development of the tests, and the election of a more liberal coalition government in 2005, however, led to a shift in approach that emphasized the use of the tests, surveys, and inspections for formative purposes and to inform improvement efforts, rather than as a means of pressuring schools and school owners to make those improvements (Nusche et al., 2011). In particular, the national tests originally implemented in the spring of 4th and 7th grade were moved to the fall of 5th, 8th, and 9th grade. Those changes were consistent with the arguments of those who felt that the tests should not be used as outcome measures but instead should be used to provide teachers and schools with data to inform subsequent instruction. Furthermore, regulations were passed forbidding education authorities from using the results of the national tests for school rankings. In addition, while the Tilsyn now serves as an annual inspection that can help to identify school owners who are out of compliance with legal regulations, no specific rewards or sanctions have been established nor legal actions pursued to follow-up on the results. In the end, the recent Norwegian policies essentially leave it up to the actors—the educators, schools, and school owners themselves—to ensure that the newly-established outcomes will be achieved.

At first, I was puzzled by what I was learning. From the standpoint of many policymakers in the United States and elsewhere who advocate for increased accountability as a key vehicle for systemic educational improvement, "failing" to establish follow-up mechanisms seems like a critical lapse—a "bad" choice—likely to undermine the strengthening of accountability that the other reforms were supposed to support. The more I learned about Norwegian society and reflected on my own and my children's perspectives, however, the more I could see the Norwegian reforms as a logical extension of policies and practices that have always placed significant emphasis on trust and a collective sense of responsibility for the common good. Thus, the recent Norwegian policies suggest a different way of dealing with the inevitable tensions between two aspects of accountability: answerability and responsibility (Gregory, 2003). Answerability reflects the beliefs that individuals and groups should be accountable for meeting clearly-specified and agreed upon procedures and/or goals. Responsibility reflects the belief that individuals and groups should be held accountable for living up to and upholding norms of conduct and higher purposes that are often ambiguous and difficult to define in advance Harmon, 1995).

While accountability in the United States has become almost synonymous with approaches that embrace answerability, in countries like Norway and Finland there is no equivalent for the English word "accountability," and, instead, responsibility takes center stage. Despite these different emphases, however, these different approaches to accountability are linked in a challenging paradox: if members of an organization are answerable only for reaching certain outcomes, then logic suggests they should not be held responsible if their actions to reach those goals are inconsistent with broader, undefined responsibilities or purposes; conversely, if teachers are behaving in ways that are consistent with the pursuit of larger purposes, it seems unreasonable to hold them accountable if they do not meet all of the specified targets along the way (Harmon, 1995). These tensions between answerability and responsibility are reflected in the usual debates over bureaucratic and professional forms of accountability: establishing answerability and specifying consequences for meeting particular targets can increase efficiency, but can lead many other valued outcomes to be ignored and can undermine the discretion and judgment that may be needed to make many decisions; conversely, trusting individuals—even those who are thoughtful and responsible members of a profession—can increase inconsistencies and inefficiency and does not guarantee that essential goals will be achieved. In other words, both approaches have "side effects" that compromise basic purposes they are designed to fulfill (De Wolf & Janssens, 2007; Ehren & Visscher, 2008; Koretz, 2003).

Too often, answerability and responsibility are seen as two ends of a continuum: either focus on answerability (and undermine responsibility) or focus on responsibility (and ignore answerability). Along with this polarized view, many policies seem to suggest that there is an either/or choice between strengthening the bureaucratic controls that go along with answerability or leave people alone to exercise their professional responsibility. However, simply leaving individuals and groups alone is not the same thing as supporting the development of individual and collective responsibility. Developing responsibility also involves developing the capacity—the investments, resources, abilities, commitments, and relationships—needed to carry out responsibilities effectively.

As Howard and his colleagues argue (Gardner, 2007), to a significant extent support for the development of responsibilities takes

place in the professions, associated disciplines, institutions, and workplaces, and this is the case in Norway as well. The approach to accountability in Norway, however, suggests that the responsibility for promoting responsibility does not have to be left entirely up to the professions. Many of the reform initiatives pursued in Norway since 2005 have been designed specifically to help educators, schools, and school owners to develop the capacity to take responsibility for their roles in meeting the new education goals. In particular, recent national initiatives have included projects that have helped schools pilot new approaches to the development and use of formative assessments; partnerships between teacher training institutions, school owners, unions, and the national government to encourage them to share information and work together to support and strengthen the teaching profession; programs to improve teacher preparation and professional development; new programs for school leaders; and the development of regional partnerships to support school evaluations. Thus, while the initial Norwegian reforms focused on establishing the clear outcomes and monitoring mechanisms to promote answerability, the later reforms have also embraced the critical need to support the development of the kind of professional judgment and knowledge-sharing so essential to responsibility.

While these initiatives can be seen by the Norwegian authorities who designed them as supporting the exercise of personal, professional, and collective responsibility, it is important to note that critics can view the same initiatives as efforts constraining their autonomy: as requiring individuals and schools to spend money on particular training programs, participate in specific kinds of activities, and behave in certain ways (Norwegian Directorate for Education and Training, 2011). Nonetheless, these initiatives have a different emphasis than the accountability policies of the No Child Left Behind (NCLB) legislation in the United States. The emphasis on rewards and consequences in policies like NCLB implies that educators and schools need to be motivated to do things they have been unwilling or unable to do. In contrast, the Norwegian reforms suggest that in order to assure that all students receive a quality education, individuals, groups, and organizations need to be answerable for making sure that students meet specific competence aims, but that those local actors can be trusted to monitor their performance and make adjustments as needed.

What Does it Take to Support Responsibility?

Accountability advocates in the United States and elsewhere may consider the choice in Norway not to ensure follow-up through rewards and sanctions "bad" policy. But just as my children's educational experiences Norway raised questions about what a good education involves, my study of the recent reform policies in Finland, the Netherlands, and Singapore also raises questions about the place of rewards and sanctions in accountability. All three of these countries are considered "high performing" on outcome measures like the PISA tests, but they differ substantially in their approach to rewards and sanctions.

Singapore has established a wide range of explicit performance awards for individuals and organizational units within the educational system. These awards, however, concentrate on providing positive reinforcement rather than on negative consequences or sanctions such as dismissals or school closings. Historically, the Netherlands has trusted schools to respond to the results of school inspections but has recently begun to focus attention on educational outcomes and enforce consequences for schools that persistently fail to achieve at appropriate levels. Finland has not specified particular performance targets or rewards nor are there any sanctions for individuals or schools on the basis of their ability to meet performance targets. Despite these differences in their approach to rewards and sanctions, all three systems provide several key supports that can help foster a common understanding of education goals and can help individuals and schools act responsibly to meet them: all three systems have established an extensive assessment infrastructure; maintain strong and well-regarded teacher education programs, and benefit from relatively strong social networks among those involved in education.

Teachers and schools in Finland, for example, are supported by a well-established approach to formative assessment at all levels of schooling (Sahlberg, 2011). This system includes diagnostic and classroom-based assessments that teachers can use early in children's school careers to identify those who may need some additional help with academics (Graham, & Jahnukainen, 2011). At the other end, in upper secondary schooling, courses are organized into five or six periods during the year with tests at the end of each period. Furthermore, Finland does not use national tests to rank or publicly assess schools, but it does use a national test with a sample of Finnish students to monitor how the

educational system as a whole is performing (in much the same way the National Assessment of Educational Progress does in the United States).

In the Netherlands, schools get information on performance from regular school inspections, and they are also required to collect and use information about student performance on a regular basis (Janssens & de Wolf, 2009). To collect that information, they can take advantage of one or more of a variety of pupil monitoring systems that organizations like the National Institute for Educational Measurement (CITO) has developed. These systems provide feedback on students' progress toward attainment goals in a variety of subjects, and some surveys and assessments are also available to help schools track students' social and emotional development.

Singapore has an elaborate infrastructure for assessments that includes a wide-range of formative and summative tests and exams, surveys, and inspections that schools can use to monitor and improve their performance (Ng, 2010). At the classroom level, for example, teachers and schools regularly draw on these assessment instruments as well as assessments they devise themselves to benchmark students' performances over the course of the year to see how their students are progressing. A number of instruments and routines also create opportunities for principals, schools, and the system as a whole to collect data and get feedback on performance. As part of the School Excellence Model, schools participate in annual self-assessments modeled after approaches such as the Malcolm Baldrige National Quality Awards (Ng, 2010). Each school also receives the results of an inspection from the School Accountability Branch every five years that serves as an external validation of the school self-assessments. Schools may also apply for a wide range of awards designed to recognize excellence in a number of different areas including character development and national education. Detailed evaluation procedures are also used to give feedback to individuals, units, and organizations throughout the educational system. For example, Singapore's Enhanced Performance Management System (EPMS) specifies core competencies for teachers and establishes routines for annual and interim reviews for teachers (Steiner, 2010). Thus, while teachers, principals, and schools receive feedback from the Ministry of Education, teachers, principals, and schools also fill out customer satisfaction surveys that provide the members of the Ministry and the Ministry as a whole with feedback on their performance.

Formal training is also a key means of supporting the development of responsible professionals, and teacher education and support to help teachers develop their abilities to meet their responsibilities are also recognized strengths of each one of these systems. While international comparisons often highlight the fact that Finland and Singapore draw teachers from the top 30 percent of students (Auguste, Kihn, & Miller, 2010), both countries also have extensive and rigorous teacher education experiences. Since 1979, the minimum requirements for all primary and secondary teachers in Finland include obtaining a master's degree and producing a thesis with scientific standards similar to those in any other discipline. Within this system, education for both primary and secondary teachers emphasizes the study of particular subjects and pedagogy and integrates university-based coursework with clinical experiences in related teacher training or field schools. As a result, it takes students, on average, between five and seven and half years to successfully complete the master's degree (Sahlberg, 2012).

Singapore offers both undergraduate and graduate degree programs that cater to students with different educational backgrounds and levels of preparation, but all must meet the same standards and qualifications in order to enter the profession. Furthermore, all of the programs provide a wide range of courses that enable prospective teachers to develop knowledge in relevant subjects that are aligned with related courses in pedagogy and with clinical experiences. In addition to their coursework, teacher preparation in Singapore also helps to reinforce collective commitment to the profession and to the nation. For example, each year, graduates from these programs participate in an investiture ceremony for new teachers, attended by the Minister of Education. As part of that ceremony, new teachers recite *The Teacher's Pledge*, in which they commit to being exemplary in the discharge of their duties and responsibilities. In general, all new teachers also participate in an induction program at their schools that includes in-service courses and the support of a peer "buddy," an experienced teacher mentor, and a supervisor (usually a head of department) (Goodwin, 2012).

Teacher education is also a recognized strength of the Dutch system (Darling-Hammond & Lieberman, 2012; Hammerness & Van Tartwjik, 2012). Preparation options in the Netherlands include the completion of a four-year teacher education program in a university for the applied sciences which qualifies graduates to teach in primary or

lower-secondary schools. Alternatively, graduates of research universities can complete a one-year master's program which qualifies them to teach at the upper secondary level. Both programs emphasize the integration of disciplinary studies, pedagogy, and clinical practice. While teacher education programs throughout the Netherlands develop their own approaches, all are guided by a set of competencies that all teachers are expected to meet and that are reinforced as part of the accreditation process. These competencies include the abilities to create a positive classroom environment, support children's personal development, demonstrate knowledge of their subject, organize curriculum, collaborate with colleagues, collaborate with families, and reflect on their own strengths and weaknesses.

In addition to government-backed support for teacher education, Finland, the Netherlands, and Singapore may benefit from extensive and powerful social networks for developing and sharing expertise for assessment and for developing and distributing the responsibility to support educational performance.[1] For example, in the 1950's, Finland enrolled just 27 percent of 11-year olds in grammar schools, and consistency and quality of schooling varied substantially as some schools were run by the national government, some by municipalities, and some by private operators (Sahlberg, 2011). However, in the 1970's, Finland embarked on significant educational improvement efforts that included the establishment of a national comprehensive system that guaranteed 9 years of publicly supported education for every student. Ultimately, these changes resulted in a common, state-run, school experience for all students. In tandem with these changes, Finland also overhauled teacher preparation and closed many teacher education programs throughout the country. As a consequence, teacher preparation has now been consolidated in just eight different university-based programs. Such consolidation allows for a much more consistent teacher preparation experience. Furthermore, while individual teachers and schools have considerable autonomy and discretion, Finland's schools work in networks which provide a number of opportunities for teachers to collaborate and to share ideas, information, and expertise that can

[1] Although the scale is vastly different, Nakamura (2007) also emphasizes the ways in which colleges in the United States promote the development of responsibility by fostering social ties and communal relationships.

contribute to common practices and consistent performance across schools (Sahlberg, 2011; Schleicher, 2006).

While the Dutch system is highly decentralized, historically, the society has developed in ways that place a high demand on cooperation, tolerance, and working together. The development of Dutch society was supported by neighbors working cooperatively to build and maintain the dikes and canals that drained the land and rendered it suitable for building and for farming. A tradition of consensus-based decision-making also reflects this emphasis on collaboration (Ladd, Fiske, & Ruijs, 2009). Within this context, partnerships across groups and sectors are common including a partnership between representatives of employers and employees who manage policies related to the labor market in education. While the decentralization of the system certainly allows schools to operate relatively independently, roughly 70 percent of students attend schools that are associated with networks that grow out of a common religious or community background or a shared educational philosophy (like the Montessori or Waldorf approach) (Ladd, 2009). Furthermore, with so many functions for curriculum, assessment, professional development, hiring, and management left to the schools themselves, a relatively large network of intermediary support organizations has emerged to help these schools carry out their work. As a further stimulus to discourage schools and networks from becoming isolated, the Dutch Inspectorate visits schools on a regular basis and produces public reports that document what is happening in individual schools and shares information about topics and trends across schools and regions. Aiding in the sharing of information, a large percentage of the country's schools can be reached within a few hours drive of the Inspectorate's headquarters in Utrecht. While some dissatisfaction with the inspection system has contributed to the recent moves to establish sanctions for persistently failing schools, the system does manage to create an unusual set of personal relationships and personal knowledge at the national level. In fact, every year, when roughly two hundred school inspectors hold their annual meeting, you can find in one room at

one time, someone with personal knowledge of almost every school in the country.[2]

In many ways, the education system in Singapore functions like a highly-centralized school district. The Ministry of Education (MOE) funds schools; hires and places teachers and principals (who are government employees); and takes responsibility for establishing goals, writing curriculum, monitoring performance, and making sure results are achieved. MOE also provides the National Institute of Education (NIE) with funding for teacher preparation and research, and regular meetings between members of MOE and NIE facilitates a tight coupling between the two organizations. Thus, extensive formal, bureaucratic relationships along with the detailed specification of individual and school goals and monitoring mechanisms help to create what is often described as an aligned and highly coherent educational system (Ng, 2008, 2010).

At the same time, this formal bureaucracy is undergirded by extensive networks for personal contact and the sharing of information and expertise. On the one hand, those relationships can be seen as a further means of controlling and influencing individual behavior, but, on the other hand, they can help individuals and organizations to work together in the pursuit of common aims. These personal contacts are facilitated by MOE's careful and deliberate rotation of many employees throughout different sectors of the educational system. Thus, after several years at a school, MOE often assigns teachers and principals to work in a different kind of school or at a different level or to do a "rotation" at MOE or NIE before returning to schools. In the process, individuals meet and get to know a variety of people within the system whom they can continue to turn to for assistance and information; and they gain familiarity with nature, demands, and future directions of work in different sectors. This deliberate management of human resources is also reinforced by the fact that the entire education system is designed to enable and encourage the top 17 percent of each class of students to join

[2] The relationships between inspectors and schools, however, may be changing. The Inspectorate is moving to a system of "risk-based" inspections in which schools where potential problems have been identified will be visited more often and other schools less often. As a consequence, it is possible that the inspectors may not have as many opportunities to connect with, learn from, and share information with higher performing schools than they have had in the past.

the civil service.[3] As a part of the civil service and government employment, MOE benefits from personal connections that many of these top-performing students have already formed as they have participated together in top-performing schools (with their own strong alumni networks) and scholarship and study-abroad opportunities before they decide to work in education. Those connections also develop and expand as all teachers and principals go through the preparation programs at NIE together.

As in the Netherlands, Singapore's small size and the accessibility of every school in a matter of an hour or so (depending on traffic) facilitates face-to-face connections and the further development of these personal relationships across schools and across organizations within the education sector. MOE deliberately takes advantages of these opportunities by holding meetings of MOE Directors and other staff in schools and jointly conducting school visits and observations. While these extensive contacts can be seen as an extension of the formal bureaucratic monitoring mechanisms, they also provide opportunities for system administrators to learn first-hand what's happening in schools and to get feedback from the school level.

While it is difficult to assess broad cultural influences, it may be worth noting that the development of formal and informal networks that support education in both Finland and Singapore have taken place in the context of explicit "nation-building" efforts that cut across numerous institutions and sectors of society. Concerns about defense and sovereignty in both Finland and Singapore have helped to fuel these nation-building efforts and to reinforce the purpose and value for individuals to work together and to see education as a crucial communal and collective enterprise with a common purpose (Sahlberg, 2011; Gopinathan, 2007).

While many of the recent Norwegian reforms may help individuals and schools to develop the competence to act responsibly, the comparison to the assessment infrastructure, teacher education, and

[3] While many analyses of Singapore's high educational performance highlight respect for the teaching as a critical factor, teaching is treated as just one aspect of the civil service, and working for the government and participating in the civil service are also highly-valued and respected.

social networks in Finland, the Netherlands, and Singapore suggests how much work may need to be done. Thus, with only limited previous use of large-scale tests and assessments and a demand to develop and implement national tests in a short period of time, the first implementation of the national tests in Norway in 2004 was judged by experts to be inadequate and unreliable (Elstad, Norvedt, & Turmo, 2009). Concerns about the quality of the tests were so serious that some of the initial test results were never released, and the government declared a "pause" in the national testing and no tests were administered in 2006. During the pause, the test makers revised the tests substantially and significantly upgraded their quality according to the expert reviewers. While some argued for a continuation of the "pause," the national tests were re-launched again in 2007, and, in general, are growing in technical sophistication and acceptance (Nusche et al., 2011). The Tilsyn's initial review of local education authorities also revealed that there were very few systems, routines, and procedures in place for communicating data or sharing information on performance among schools, school leaders, school owners, and the central government. In fact, the first report of that first Tilsyn suggested that as many as 70 percent of municipalities surveyed did not fulfill the requirements for the evaluation and follow-up of schools (Elstad, Nortvedt, & Turmo, 2009; Norwegian Directorate for Education and Training, 2006).

Recent Norwegian reforms have included a wide range of efforts to support teachers and strengthen the teaching profession, but have focused explicitly on re-evaluating and improving teacher education. In a striking contrast to the demands for teachers in Finland to get a master's degree and for even primary school teachers to develop specific disciplinary expertise, up until 2010, the vast majority of teachers in Norway got their teacher training as part of an undergraduate or university college degree (Norwegian Directorate for Education and Training, 2011). Furthermore, prior to the re-organization of teacher education in 2010, teachers who completed these programs were qualified to teach at almost any level, in any subject, from 1st grade to 10th grade. With the re-organization, teacher candidates now pursue one of two programs: one qualifying them to teach grades 1-7, and the other qualifying them to teach grades 5-10. There is also a new emphasis on developing relevant subject-matter knowledge at each level. However, even candidates preparing to teach grades 5-10 normally study three different school subjects with only an option to specialize.

The work to develop an assessment and inspection infrastructure and strengthen teacher education in Norway is complicated by the demands of a widely-dispersed population with many geographically isolated regions and small communities. Thus, smaller communities, particularly those with only one school are unlikely to have much if any administrative structure beyond the school leader, and those municipal leaders are unlikely to have much, if any, expertise in education (Norwegian Directorate for Education and Training, 2011; Nusche et al., 2011). Smaller communities may also have a more difficult time getting access to and attracting and retaining teachers. While the number of teachers who do not have a required degree is relatively small (ranging from 4 percent to 12 percent depending on the measure), those teachers are significantly more likely to teach in smaller communities (Norwegian Directorate for Education and Training, 2011). Furthermore, members of those small schools and communities face more significant hurdles in developing the kind of personal relationships and networks that could help them carry out the new policies and responsibilities. In particular, they are likely to have to travel much greater distances to get access to and to get connected with experts and others who can help them to meet their new assessment responsibilities.

While educators in Finland face some of the same geographical conditions as their peers in Norway, the Norwegian authorities have never made the choice that the Finnish authorities did to consolidate control of the educational system or to centralize teacher education in a small number of university-connected programs. Instead, Norway has maintained a host of teacher education programs around the country to serve those communities. While this approach may provide opportunities for more local control and discretion, it may result in a weak network of formal and informal relationships like those that support collective work in the other countries. Furthermore, with the development of the North Sea oil fields and the growth of the Norwegian economy, Norway has been able to sustain this widely dispersed population; and with its somewhat isolated geography, Norway has not faced the same political pressures or the sustained threats to its borders that have contributed to the development of the centralized educational systems in Finland and Singapore.

Conclusion

My experiences in Norway and studies of accountability approaches in higher- and lower-performing countries do not point to one set of factors that might explain educational performance or to one avenue for educational improvements. Instead, they suggest different perspectives and possibilities for managing the tensions between answerability and responsibility that are shaped by cultural and contextual forces. Looking across contexts also suggests that accountability does not have to be synonymous with answerability, and accountability policies do not have to be equated with strengthening the rewards and sanctions for particular kinds of behaviors or particular outcomes. One can be accountable for explicit goals and activities and for aspiring to broader purposes, ideals, and expectations. Accordingly, educational policymakers need to figure out how to build the capacity to balance the strengths and weaknesses of answerability and responsibility and deal with the side-effects that can come with a focus on either one.

In Norway, some of the mechanisms to increase answerability have been put in place, but Norway's reform initiatives have also begun to establish some of the infrastructure and support that may be needed for more active promotion of individual and collective responsibility. To date, even without embracing the rewards and sanctions that can strengthen answerability, there are some signs that educational performance in Norway as measured by the PISA tests is improving. In 2010, when the latest PISA results were released, scores in reading, mathematics, and science all rose, with students' reading scores slightly, though significantly higher than the OECD average (Norwegian Directorate for Education and Training, 2011).

Nonetheless, the Norwegian reforms entail a significant capacity-development effort to make assessment—a previously unimportant aspect of schooling in Norway—a key part of enabling individuals, schools, and municipalities to carry out their responsibilities. While I have argued that the decision not to establish rewards and sanctions is consistent with cultural values and societal practices that emphasize responsibility over answerability, there are other ways in which the new reforms may be out of alignment with other cultural and contextual factors. Alignment refers to the consistency between personal aspirations, the values of the domain, the roles and institutions in the field, and the interests of other stakeholders (Gardner, Csikszentmihalyi,

& Damon, 2001). Even in well-aligned domains, inconsistencies and contradictions are possible, and, in Norway, the new accountability-focused reforms may still create significant conflicts and contradictions for students, parents, educators, school owners, and policymakers themselves. In particular, the efforts to emphasize basic skills in the elementary years may come into conflict with the values and assumptions underlying extensive parental leave policies, a limited emphasis on early education, the attention given to "non-academic" subjects, low levels of homework, and limited instructional time that all suggest that childhood should be protected: children should have a chance to be with their families and their peers and to develop socially, emotionally, physically, and artistically not just academically. Consistent with this perspective, government policies treat learning as a life-long endeavor by placing much more attention on adult education than in countries like the United States and focus attention on the development of academic skills, and preparation for college and careers at the secondary school. At the same time, any efforts to use assessments that might publicly differentiate among students or schools have to contend with the prohibitions against the use of any written marks before the end of 7th grade and the concerns about equity and equal treatment for all reflected in many aspects of the social-welfare system.

Any work to address some of those conflicts and contradictions also has to confront the fact that, even with relatively poor international test scores, many other indicators suggest that the education system is achieving many of the larger goals and purposes of Norwegian society. While Norway has not been a top performer on the PISA and TIMMS tests, there are also numerous indicators that the education system has been successful in other ways. Drop-out rates are relatively low and a high percentage of the population successfully completes upper secondary schooling and many go on to complete tertiary education; adult literacy rates are quite high, and rates of participation in adult learning are also significantly higher than many other countries. Student engagement and student-teacher relations are much better than they are in many other countries, and Norway, like other Scandinavian countries, consistently ranks high on many measures of health and well-being. Furthermore, the emphasis in Norwegian society on social cohesion and equity seem to be accompanied by notable accomplishments. Thus, Norway's schools are much less segregated and more inclusive than those in many other parts of the world, and results across schools and

across socio-economic groups are much more equitable than they are in almost all other developed countries.

At the same time that concerns about economic performance have driven efforts to increase accountability in many countries, Norway's oil-based economy continues to be one of the strongest in the world—despite relatively low international test scores. And Norway has managed to do all of this with a school system without much of an infrastructure for assessment, limited emphasis on teacher education, widely-dispersed social networks, and few if any rewards or consequences for poor performance. In other words, the high-functioning society and relatively successful economy provide reinforcement to resist the very educational "improvements" that so many argue a successful economy requires.

Under these conditions, debates about whether and how to change the educational system in Norway are likely to continue. Those debates, however, will take place within a context that raises fundamental questions about who should be responsible for what. After all, if I can get credit for a Nobel Peace Prize, I can also be held responsible when things do not turn out so well. For that realization, as well as so many others, I have Howard to thank.

References

Auguste, B., Kihn, P., & Miller, P. (2010). Closing the talent gap: Attracting and retaining top third graduates to a career in teaching. New York City: McKinsey & Co.

De Wolf, I., & Janssens, F. (2007). Effects and side effects of inspections and accountability in education: An overview of empirical studies. *Oxford Review of Education, 33*(3), 379-396.

Ehren, M., & Visscher, A. (2008).The relationship between school inspections, school characteristics and school improvement. *British Journal of Educational Studies, 56*(2), 205-227.

Elstad, E., Nordtvedt, G. & Turmo, A. (2009). The Norwegian assessment system. An accountability perspective, *CADMO, 17*(1), 89-103.

Gardner, H. (1989). *To open minds.* New York: BasicBooks.

Gardner, H. (2007). *Responsibility at work: How leading professionals act (or don't act) responsibly.* San Francisco: Jossey-Bass.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good Work: When excellence and ethics meet.* New York: BasicBooks.

Goodwin, A. L. (in press). Quality teachers, Singapore style. In L. Darling-Hammond & A. Lieberman (Eds.), *Teacher education around the world.* San Francisco: Jossey-Bass.

Gopinathan, S. (2007). Globalization, the Singapore developmental state and education policy: A thesis revisited. *Globalization, Sciences, and Education, 5*(1), 53-70.

Graham, L., & Jahnukainen, M. (2011). Wherefore art thou, inclusion? Analysing the development of inclusive education in New South Wales, Alberta and Finland, *Journal of Education Policy, 26*(2), 263-288.

Gregory, R. (2003). Accountability in modern government, In B.G. Peters & J. Pierre, *Handbook of public administration* (pp. 557-568). London: Sage.

Hammerness, K., van Tartwijk, J., & Snoek, M. (in press). Teacher preparation in the Netherlands: Shared visions and common features. In L. Darling-Hammond & A. Lieberman (Eds.), *Teacher education around the world.* San Francisco: Jossey-Bass.

Harmon, M. (1995). *Responsibility as paradox: A critique of rational discourse on government.* London: Sage.

Hatch, T. (2009). *Managing to change: How schools can survive (and sometimes thrive) in turbulent times.* New York: Teachers College Press.

Janssens, F., & de Wolf, I. (2009). Analyzing the assumptions of a policy program: An ex-ante evaluation of educational governance in the Netherlands. *American Journal of Evaluation, 30*, 411-425.

Koretz, D. M. (2003). Using multiple measures to address perverse incentives and score inflation. *Educational Measurement, 22*(2), 18-26.

Ladd, H., Fiske, & E. Ruijs, N. (2009). Parental choice in the Netherlands: Growing concerns about segregation. Paper presented at the National Conference on School Choice, Vanderbilt University.

Ng, P. T. (2010). The evolution and nature of school accountability in the Singapore education system. *Educational Assessment, Evaluation and Accountability, 22,* 275–292.

Ng, P. T. (2008). Educational reform in Singapore: From quantity to quality. *Educational Research for Policy and Practice, 7*(1), 5–15.

OECD (2009). *Education at a glance.* Paris, France: Author.

Norwegian Directorate for Education and Training (2011). *OECD review on evaluation and assessment frameworks for improving school outcomes: Country background report for Norway.* Oslo, Norway: Author.

Nusche, Earl, L., Maxwell, W., & Shewbridge, C. (2011). *OECD reviews of evaluation and assessment in education: Norway.* Paris, France: OECD.

Sahlberg, P. (2011). *Finnish lessons: What can the world learn from educational change in Finland.* New York: Teachers College Press.

Sahlberg, P. (in press). The most wanted: Teachers and teacher education in Finland. In L. Darling-Hammond & A. Lieberman (Eds.), *Teacher education around the world.* San Francisco: Jossey-Bass.

Schleicher, A. (2006). *The economics of knowledge: Why education is key for Europe's success.* Brussels: The Lisbon Council.

Steiner, L. (2010). *Using competency-based evaluation to drive teacher excellence.* Chapel Hill, NC: Public Impact.

Verhoest, K. (2005). The impact of contractualization on control and accountability in government-agency relations: The case of Flanders (Belgium). In G. Drewry, C. Grieve, & T. Tanquerel (Eds.), *Contracts, performance and accountability* (pp. 135-156). EGPA/IOS.

Howard's Response to Thomas Hatch

Three decades go by quickly. It seems like just yesterday that you were beginning your studies in children's intellectual and social development, with a particular interest in the leadership configurations that can be observed in a preschool class. But in the interim you have done so many important things—directing our program of afterschool enrichment, leading the ATLAS seminars on school improvement, having a distinguished multi-year fellowship at the Carnegie Foundation for the Advancement of Teaching, and then, for the last decade, serving as a professor at Teachers College, Columbia University and as co-director of NCREST (National Center for Restructuring Education, Schools, and Teaching). Not to mention your wonderful wife, Karen, and three spirited children. Quite a lot to show for a young man from Cleveland.

I am not sure that it was in either of our 'lifelines' to become players on the field of American school reform. I don't want to put words into your mouth, but I have always been happier looking at successful and informative boutique programs, rather than trying to launch huge ones; I have always been rather skeptical of 'silver bullets' that would magically enhance the quality of education throughout a country. Yet thanks to charismatic educator Ted Sizer, we had the opportunity to join the ATLAS reform movement. And I think it is to both of our credits that we swallowed whatever reservations or skepticisms we might have and, as best we could, put our wheels to the grindstones. I do think that much of value was achieved in the ATLAS reform program. But the national political winds began to pull so strongly in an opposite direction that it was not possible to create a viable counter-example…at least not yet! But it would not astonish me if some day, some years hence, when the beatification of 'no child left behind' has ceased, school reformers might look back at what we tried to do in ATLAS twenty years ago.

I'm delighted that you and your family were able to spend a year in Norway and that this sabbatical allowed you to revisit themes of school reform and also to apply a 'good work' lens. One of the least admirable features of U.S. reform (in any area!) is our belief that we have little or nothing to learn from other places. I was struck when Finnish expert Pasi Sahlberg attributed much of the improvement in Finnish schools to findings from research conducted in the U.S.—research which we did not heed even though it was carried out on our own shores! I have learned

much more about educational possibilities from my site visits in Reggio Emilia, Italy, and in Denmark and Sweden—and while I have not had the chance to visit Norway for any period of time, you have helped us to see what can be learned from that remarkable country.

Of particular interest: unlike its Scandinavian counterparts, the Norway that you visited has not distinguished itself on the ultimate meter for today—scores on international comparisons like the TIMMS and PISA tests. Not even an oil rich country like Norway can afford to turn its back completely on these measures—and so you had the opportunity to observe as Norwegians were examining their own educational goals and their broader value system. You describe well the tension between accountability (or "answerability"), on the one hand, and, in contrast, "a significant emphasis on trust and a collective sense of responsibility for the common good." And then, because of your knowledge of systems that succeed on the canonical measures—Finland, the Netherlands, and Singapore—you have been able to apply a comparative lens to different systems of awards and sanctions.

This work is invaluable, Tom. No country has all the answers to an effective educational system. As the global scene changes, and as our thoughts about educational desiderata also change, what counts as an effective educational system will change as well. Individuals with your broad knowledge and perspective will be indispensable contributors to these ongoing discussions. And let us hope that they will take place in Washington and Albany and New Orleans, as well as Oslo, Amsterdam, or Singapore.

Richard Heffner

Know that my very young friend Howard Gardner is probably the finest, wisest and most uncompromisingly "with it" guest ever to have graced Richard Heffner's Open Mind since its first broadcast in 1956 (when Howard was "barely" out of diapers).

Coming of age, as he is now, I think my most appropriate tribute to this sterling gentleman is to reproduce our on-the-air exchanges ... in the hope, of course, that he will return to delight Open Mind viewers many more times in the future. They wish him a Happy Birthday, too!

Howard's Response to Richard Heffner

It is hard for your countless admirers to believe that you, Dick, are no longer with us. For over fifty years, you were our most reliable chronicler of important, gritty ideas in the United States—and perhaps beyond. In your weekly television program, The Open Mind, you interviewed nearly all of the leading thinkers and thinking leaders in the U.S. and abroad, ranging from Dag Hammarskjold, to Margaret Mead, Arthur Schlesinger, Jr., Martin Luther King, Jr., and Malcolm X. You did not just throw them soft balls. You did your homework, were respectful but probing, and stretched the mind of the interview subject as well as that of your loyal and reflective audience.

Of course, the TV programs were just one slice of your professional life. You also taught at Rutgers for generations, wrote books, and even served for a time as the individual who gives ratings to movies (as you were wont to put it, this was not your finest hour). But I hope that I am not being presumptuous in suggesting that The Open Mind is your crowning achievement.

I was privileged to appear on your program several times over the last few decades. It was always an afternoon of conversation, joking, and good natured dispute, to which I looked forward eagerly. The studio setting may have been modest but the conversation was rich, wide-ranging, and deep. I know of nothing remotely like the many hundreds of interviews on video that you conducted since the 1950s. A few years ago, I was pleased to have been able to play a tiny role in helping to make these interviews available to individuals all over the world. This work will deservedly be your permanent legacy.

The Student Intellectual

Ben W. Heineman, Jr.

I did not know Howard in childhood. I suspect that Wordsworth's words, "The Child is father of the Man," applied to him because, by the accounts of others, he was a precocious intellect with a strong moral compass. Surely the seminal thinkers about human development whom he admired greatly in his college years, Erik Erikson and Jean Piaget, would have endorsed Wordsworth's phrase, although, like me, they could only have guessed that it described Howard.

But I can say that the student intellectual was the father of the public intellectual. My most sustained contact with Howard was in his senior year at Harvard College in 1964-65 and then during the next academic year when we forged a deep bond of friendship as post-graduate students in England. At Harvard, we were part of an extended group of friends at Leverett and Winthrop Houses. As with so many other seniors, our dinners together were marked by intense discussions about the world around us, about the world of ideas and about our plans for the future—and often continued long into the night at someone's room or at some local watering hole. But, our discussions had a distinction with a difference. They included Howard—social relations major, junior *Phi Beta Kappa*, soon to be *summa* graduate of the College and author of the against-the-grain and ironically titled honors thesis, "Gerontopia," about the false promises of aging harmoniously among the denizens of a California retirement community. And Howard was as volcanic as Vesuvius in showering us with ideas. He commanded the attention of our group as his wide-ranging, preternaturally articulate mind singed any thought, on any subject, that was in the path of his red-hot intellect. To mix the metaphors, Howard was, in the words of Marshall McLuhin (whose most recognized work, *Understanding Media: The Extensions of Man,* was published in 1964), a "hot medium."

The intensity of these relationships increased when, in 1965-66, virtually the whole group was in England on some type of scholarship or fellowship. Howard had turned down Kings College, Cambridge to go to LSE and study with Ernest Gellner, professor of philosophy, logic, and scientific method. Other members of the group were there or the University of London or the Slade School of Fine Art or Oxford or

Cambridge. We would often gather in London on week-ends for film or theater or concerts or museums or some combination---and always for intense arguments that would go long into the night. The country mice—those of us from Oxford or Cambridge—would sleep on the floor in flats occupied by our London friends.

This was truly a year of intellectual exploration. Few of us were reading for degrees. For most, it was a time to roam in body and mind across England and Europe. Laurence Olivier as Hamlet or Shylock at the National Theater. Julie Christie in *Darling* or *Dr. Zhivago*. Harold Pinter's *The Homecoming*. Shaw's *Major Barbara*. Wonderful concerts at Royal Festival Hall or ballet at the Royal Opera House at Covent Garden. Student trips to Moscow and back at a cost of 99 pounds. The National Gallery (all the greats) and the National Portrait Gallery (Thomas Gainsborough, Joshua Reynolds, John Singer Sargent). The Tate and its Turners. The beginnings of Swinging London. The flea market on Portobello Road. A UN of cheap student restaurants (mostly Indian, Chinese and Italian). Jean Luc Godard's Alphaville (we argued who was the greater auteur: Godard or Francois Truffaut). The lazy walks through London's matchless parks and gardens. Visits to architectural monuments centuries old. And books, books, books—often the classics of Great Britain from Shakespeare to Austen to Arnold, from Locke to Bentham to Mill, from Macauley to A.J.P. Taylor to Hugh Trevor-Roper, Keynes all by himself. And on … and on… and on.

It was a period of freedom when, unshackled from the courses and grades of our college past and the rigors and responsibilities of our academic or professional future, we could truly debate, critique, speculate, make-up, knock-down, analyze, free associate, dream, imagine—about all the places and books and events and people we were exploring….and about each other. We spent hour upon hour debating everything from the Beatles' latest to the meaning of beauty, truth, and goodness (subjects which Howard has "reframed" in his 2011 book).

Not surprisingly, Howard, most of all, was in his element. This was a group of some accomplishment for our age, but no one was close to Howard in the pyrotechnics of his intellect, the imagination of his thoughts, the creativity of his take on all around us. We were caught between a complex European past and a very contentious American present (with its heated and momentous debates from race relations to Vietnam to limits on power). We were suspended between youth and

adulthood. We were caught between tourist status and a growing sense of being citizens of London and the world. Howard seized on all the contradictions and paradoxes and, like a great jazz musician, would perform inspiring riffs at will. He had, if you will pardon the phrase, multiple intelligences, capable of remarkable comments on the verbal, spatial, logical, inter-personal, or musical way stations on our picaresque journey. Of course, many of us felt that about half of what he said on any one evening was malarkey. But, we were mesmerized nonetheless. Here, indeed, was a person who deserved the word—then not an epithet—of intellectual. We were at an age of uncertainty about so many things. But of one thing we were all certain. Howard's course towards becoming a great public intellectual was set.

After England, the group disbanded—to different careers, different geographies. I left Cambridge and followed Howard's remarkable career and writings from afar. Nearly 40 years after our unforgettable days in London, I returned to Harvard, after retirement, in a modest academic role. My wife, Cris, and I became friends, again, with Howard and, anew, with his wise and talented wife, Ellen.

To me, after nearly four decades, he was the same person with whom I had eaten bad Indian food in London in 1966. The versatile student had, indeed, become the virtuoso scholar, writer, and public intellectual. I was delighted to learn, once more at first hand, that, although I have been wrong about any number of things in my life, I had been right about Howard.

Howard's Response to Ben W. Heineman, Jr.

You have done many impressive things in your life and have worn an incredible number of important hats. But from my admittedly limited vantage point, one role has always stood out is Ben Heineman as journalist, as writer. You have a tremendous curiosity about nearly any topic under the sun, ask questions broadly, sharply, and persistently, and so frequently write about what you have learned in a way that is original and illuminating.

I hope it is OK for me to mention one more feature that is characteristic of your journalistic persona: you would rather ask questions of others than answer them about yourself. I'm not exactly sure for the reasons, and you may not be certain yourself. Nonetheless, as one reads a lot of your writings over the years; indeed, dating back to the time when you edited the Harvard Crimson, it becomes clear which goals, pursuits, ideals, and values are most important to you. (I can't speak to your editorial role in the Yale Law Journal).

You are one of only a handful of contributors to this Festschrift who has known me since college days. It was not foreordained that we would get to know one another in college, because you came from a highly educated family and soon cast your lot with the campus newspaper and the literati. The first from my family to go to college, I spent most of my time taking or auditing courses from across the catalogue and building up a strong academic record. It was fortunate that ties were forged between the "Leverett House" gang, to which you belonged, and the "Winthrop House" group, where I lived. And those ties deepened considerably when we all went together to England (you as a Rhodes Scholar), spent much time together in England, and then made a memorable trip to the Soviet Union. (I'll never forget that on the way back, we drank gobs of orange juice at a Warsaw hotel and racked up a bill of several hundred dollars!).

Between the late 60s and the late 90s, we stayed in loose touch. You were living up to the New Republic's description of you as "possessor of the best resume in America"—assuming responsible roles in the public sector (clerk to Justice Potter Stewart, Assistant Secretary of HEW) and the private sector (ultimately the general counsel for General Electric), while I was pursuing research and writing books in the social sciences.

Only when you slowed down (ever so slightly) and moved partially to Cambridge did we and our spouses get together regularly.

The connections have turned out to be very comfortable gatherings to which Ellen and I look forward eagerly. I think that is not only because we were fortunate in our choice of mates but also because we are still curious about many things and like to learn about and argue about them, with you wearing primarily the mantle of the incisive journalist, and I the garb of the stuffy social scientist. If, as you say, the child is father to the man, I wonder whether these stances could have been predicted when we entered college in 1961.

Since you've sought to draw lines between our personae of fifty years ago and today, I will return the compliment. You have always been fun loving, enjoyed a good laugh, and were not above a prank or two. You have a dizzying amount of friends and hobbies and that also dates back decades. But what stands out for me most is that you have always had the desire to be a good citizen, in whichever community you belong to—from family to nation, and beyond—and to help to move that civic entity in a positive direction. This goal is tough to achieve, and you've certainly had your ups and downs, but you've kept the faith and inspired others to do the same.

Four Howards of My Genesis: Howard Gardner's Legacy on My Life

Lois Hetland

I've known four Howards. First I met Famous Howard. After that, I worked with Project Zero Co-Director Howard. Next, I negotiated with Mentor Howard. And finally I came to know Home Howard. Not that there really are Many Howards. It's the blind men and the elephant story—though the analogy breaks down pretty quickly. I just mean it's the angles—my perspectives. Howard, himself, is, of course, singular.

When I started work at the Shady Hill School in 1983, Howard's children were students in the classes of some of my colleagues. I didn't know any of them then, but I do remember hearing rumors from friends who had Andrew, Jay, and Kerith in their classes that their father was 'famous.' It was around then that *Frames of Mind* came out, so everybody seemed to know who Howard Gardner was. My own first encounter was when I attended a presentation in the Eliot Lyman room at the Harvard Graduate School of Education. It was in the late 80s, so I assume now that it was related to ArtsPROPEL. But at the time, I was just curious about the stated topic: assessment in the arts. It seemed profoundly radical, even a bit offensive. But I remember Howard, at that time with pure black hair cut straight across his forehead, arguing calmly in his characteristically compelling manner that unless the arts took themselves seriously enough to assess what students learned, they would not thrive in schools. This was the first of many times that a single sentence he uttered would haunt me for months, years, and now decades. My current position at the Massachusetts College of Art and Design is leading the faculty in tackling college-wide assessment practices.

Years later, when I shared an office next to Howard's (with Veronica Boix Mansilla) in Larsen Hall, I saw Famous Howard from the perspective of his fans. He was away, and his assistant Lisa Bromer and I were alone in the offices one summer day. I heard a commotion in the hallway and went out to find three middle-aged women talking with Lisa. Yes, this is Howard Gardner's office, she said. No, he isn't here now. Yes, they could leave a note. (As one of them peeked through the door to his

office), “Is that his desk?” Yes, Lisa answered. (Giggles.) “Is that his computer? Oh my God, look, this is the computer where he wrote *Frames of Mind*!” (Stroking the keyboard.) Lisa intoned, well, actually, that’s a new computer that just arrived yesterday. Howard hasn’t seen or touched it. (Crestfallen faces.) But, that is his chair. And he did sit in it when he wrote *Frames of Mind*. (Rising color, intakes of breath.) “Really? Can I, sit in it?” Well, I suppose. “Would you take our picture? We can say, look, here we are, with Howard Gardner’s chair!” It was then that I understood that fame is no blessing.

I did my master’s work at the Graduate School of Education from 1991-1992 and began working then with Project Zero. I missed the 25th anniversary, feeling too much of an outsider to attend. But I became intrigued by the organization during Howard’s course on cognitive and symbolic development. As a result, I took Lyle Davidson’s course in the spring term called Arts, Learning, and Education. Of eight students in that course, at least three, including Veronica Boix Mansilla, worked at Project Zero. When the term ended, I was hooked. The course, in which we read the essentials from Goodman, Perkins, and Gardner, among many others, shaped my views of art education fundamentally, and I knew I needed to work more with Project Zero. Lyle offered me the chance to transcribe interviews from the Lincoln Center project, and, like many graduate students before and after me, I gratefully took it as my crack in the door.

As I returned to teaching at Shady Hill, I asked Lyle what I now know teachers frequently ask and to which they infrequently get a positive response: “Does Project Zero want to work with me in my classroom?” Since Howard knew me from the development course, Lyle advised that I write him, so I did. Howard advised me to read the proposal on Teaching for Understanding, a newish project. No, he didn’t make the decisions, since that was left to the Project Manager, but I should propose something in writing and see what happened. It was the week before school started, when I was supposed to be setting up my classroom and preparing my curriculum. I added to that overload this research and writing task, burning the midnight oil reading about disciplinary understanding and putting together some ideas. The framework didn’t make much sense to me, but I figured that Ongoing Assessment was probably something like portfolios, which is what I really wanted to do. I had learned to sound a little like I knew what I was

talking about, and I cobbled together a proposal of sorts. I figured that was the last of it, since the whole thing seemed an unlikely shot in the dark. But in less than a month, I got a call from a woman named Stone Wiske. They'd like to work with me, to see how an experienced teacher learned and began to use this framework.

I was thrilled. For the next two years, I tried to infuse Teaching for Understanding into my classroom, wrote reflections weekly about my efforts, and attended the occasional meeting. It was at these meetings that I began to know PZ Co-Director Howard, and I continued the practice begun in that first encounter in Eliot Lyman—masticating his asides for extended periods. A few years later, in the exhaustion and turmoil surrounding the first Project Zero Summer Institute, the organization decided not to put on a second Institute. Howard announced that he had an obligation to a funder to continue and would be doing so. My friend, Bonnie James, then head of the lower school at Milton Academy, had invested a considerable amount of her professional development funds to send faculty to that first Institute, and she was horrified not be able to build on her investment. Fueled by her fury, I called Howard and told him that I, too, wanted the Institute to continue, so I would help with the next one. "Great," he said. "You can be the director." I retired from the position a decade later, stronger, as they say, because it didn't kill me. Just barely. I am grateful for his comments in faculty meetings during the Institute every year, where he continues to recognize and appreciate what that sacrifice gave to the Project Zero team.

In 1994, I entered the doctoral program at the Graduate School of Education with Howard as my advisor. As fate would have it, he was in California that year and couldn't protect me from the bedlam of that first year. Luckily, I had Project Zero as a retreat from the doctoral program, and I ended up traveling to Colombia to work on Teaching for Understanding with Patricia Leon's network of schools. By the time Howard returned, I had found some equilibrium and was ready to dig into content with him. I learned so much from him in this role—including a great deal about efficiency: he returned work I had submitted to him within 24 hours, and his comments always identified what needed attention, with no fluff.

I remember working on the proposal for my Qualifying Paper (called the QP), the first big hurdle to the doctorate, undertaken when

course work is completed. Howard needed to review it before it went to the rest of my committee, and I'd been wrestling with it for weeks. Now I was on deadline, and I ran into him in the hall. I told him I was close and wondered if I shouldn't take another three to six hours before I gave it to him. He said, "Don't do that. Give it to me now. And I'll tell you why—I'm going to hate it. I'll hate it if you work another three hours or another week. I hate the QP proposals; I always hate them. So save yourself the effort, and let me hate it now." I'm sure I was startled, but almost instantly, I felt a flood of relief. This was among the kindest things anyone had ever done for me. It was a reprieve. He was going to help me, and I didn't have to figure every single thing out for myself. I handed it to him with gratitude and a sense of liberation. And he didn't hate it. I've told this story to my students on many occasions, to let them know that it's important to begin and to accept help, even when you're sure it's not good enough to be worthy of another's time. As Tina Blythe says her grandmother said, "Some things are so important, they're worth doing badly." And you might be wrong—it might even be good enough.

The segue into knowing Home Howard came on a drive to Veronica Boix Mansilla's house in his first little green Volkswagon bug for what, in my memory, at least, was the first and only informal gathering with Howard and his graduate students. He mentioned an idea he had for a study that he thought might interest me and that could serve as my dissertation. He also thought that his wife Ellen Winner might like to work on some aspect of this project. The idea was to research what was known about transfer of learning from the arts. Ellen and I were both interested in working on this, but we feared that the project might not be big enough for both of us to work on if part of the work was to be my dissertation. We were wrong. Ten meta-analytic reviews later—following almost two years of exhaustive searching supported by about 10 research assistants—Ellen Winner and I co-edited a double special issue in 2000 of the *Journal of Aesthetic Education* called *The Arts and Academic Achievement: What the Evidence Shows.* My dissertation spawned two chapters, and the work stands as the most comprehensive synthesis of arts education research to date. This work continued my tradition with Howard of having one of his thoughts dominate my work for years. It also reified what I had already learned from him about fame not being a blessing—this controversial work brought hate mail, physical maladies from 16 hour days mousing data into spreadsheets, and scholarly criticism. But it set me up in the most rewarding professional

relationship I have ever had, collaborating with Ellen Winner on the research and writing for *Studio Thinking.*

Many things have changed in the ensuing twelve years, but the collaboration with Ellen continues. I spend many summer days at her kitchen or dining room table, scoring drawings, writing, hatching new proposals, and eating peanut butter toast. I have images of Home Howard stretching back across that time—next to his son Ben practicing at the piano (with glorious strains pouring throughout the house); next to Ben at the dining room table during the summer he dedicated to helping him find passion for the life of the mind; more recently, heading out for a walk, a movie, or a visit to his mother with any of his four grown children (along with spouses and grandchildren), who visit frequently on a nearly continuous rotation; eating cereal at the kitchen table while reading three newspapers and occasionally sharing an insight (much to Ellen's consternation at his "always trying to bother us"); wandering through in various (always modest) states of undress; or pulling his suitcase as he heads off or returns from various trips. Often in these brief intervals, he continues to drop the occasional comment on which I chew for months and years at a time.

It's been a privilege to know these Four Howards, and I wonder how many more there are. When I think of the hundreds, probably thousands, of students that he's influenced, and add to those the hundreds of thousands he's informed with his written ideas, I get vertigo and figure there ought to be more Howards just to distribute the load. At this point, it's difficult to say where his influence on my life ends. From lessons on fame, leadership, scholarship, morality, politics, family, and living an intellectually rich life, I can only say that I am on trails he has blazed. And I am deeply grateful. I'm certain the next phase, whatever shape it takes, will be just as profound.

Howard's Response to Lois Hetland

Perhaps, Lois, you had a certain degree of intimidation when you first came to Harvard, and you took some of my (and of others') idle comments too seriously (the era of "Famous Howard"). But you should understand that this slightly tense reaction can proceed in both directions. From my point of view, you had taught at the outstanding school in the area (Shady Hill School) for many years, my children and others from that community were in awe of you, and the work in which we were involved—Teaching for Understanding—had far more need for your classroom expertise than it did for our academic mastery, such as it was. After all, you had actually DONE things with young people, and they had been well received.

Sometimes intimidation is more dual-edged than it might appear to either participant.

I would like to think that you benefited from your time at the Graduate School of Education, Project Zero, the various projects in which you took part, and your role in launching the PZ Summer Institutes… and the various versions of Howard that you encountered along the way. But I am pleased to state for the record that the benefit and the reward were at least as great in the opposite direction. So many of the ideas, practices, and trial balloons that you launched in the last twenty years were on the mark and had great staying power. In fact, so often, I find myself with a group of colleagues and we ask "What does Lois do in this situation?" or "What would Lois do in this situation?" And since my wife Ellen has been your partner in research for fifteen years, I hear the same comments at the breakfast table.

Though I am not a completely disinterested party, let me shout from the rooftops: the work that you and Ellen undertook, in your critiques of unwarranted claims about artistic transfer, and in your constructive demonstration in Studio Thinking of the artistic habits of mind that are acquired, you have played a significant role in changing the national discourse about the arts in education. No small feat!

Just as the fish is sometimes the last to discover it is in water, the creator of ideas may be the last to appreciate how central her ideas have become in many conversations and milieus.

Howard Gardner: Making a Difference for Students

Thomas R. Hoerr

Writing about the impact of Howard Gardner is both an honor and a challenge. I am honored to be asked to contribute to this festschrift and am challenged to capture Howard's significant role and profound impact in a few pages. Howard Gardner's name and contributions are recognized by educators everywhere; his imprint on how we define intelligence and how we understand understanding is strong and pervasive. His interests and areas of research have ranged, but he has always put students at the forefront of his efforts. I have the privilege of writing from experience about Howard. He has been a friend to my school and to me.

I lead the New City School, an independent elementary school of 360 students, age three through grade six, in St. Louis, Missouri. My school flourishes because of Howard's thoughts and inspiration! His work has had an incredible impact upon everyone in our building—students, faculty members, and students' parents; it frames how we view students and their growth and has helped us work as colleagues. For us, Howard's theory of multiple intelligences goes beyond how intelligence is conceptualized; it has become a philosophy of education, with powerful implications for how teachers should teach and how students can learn. New City is an "MI School," and all of us benefit from that framework and focus.

The impact of Howard is no less striking on me, personally. I have been leading schools for more than 30 years, and I am a different and better educator because of my relationship with Howard. I am very appreciative of the time and care which he has given me.

In this essay, I will attempt to capture the effect that Howard's work has had on educators around the world, on New City School, and its impact on me.

Howard's Impact on Education and Educators

From my perspective as a practicing educator, it is impossible to overstate the significance of Howard's work and contribution to educational thought. Given that New City has benefitted enormously from Howard, I must acknowledge my bias, but I also offer support for my claim. Googling "multiple intelligences" yields 1,920,000 links. Further, as evidence that Howard's work transcends the theory of MI, Googling "Howard Gardner" leads to 2,470,000 connections. Of course, Howard would be the first to note that relying on the number of links generated by a search engine has its limitations (after all, "American Idol" shows 89,700,000 links!). Still, the fact that these numbers are so high makes a statement about the interest in and dialogue surrounding Howard's work.

Beyond Google, there are data specific to my school that show the wide scope of Howard's MI reach. The New City School began implementing MI in 1988, and immediately other educators began coming to us to observe how this theory could be used in a school, and to see first-hand the effectiveness of MI. At one point, in the late 1990s, we were averaging visits by 700-plus educators per year. A school in Iceland closed so that their entire faculty could visit with us for a week (with their teachers and administrators enjoying dinner in our families' homes each night). Scores of schools sent teams of teachers and principals to spend a day or three with us, observing in classrooms and talking with our faculty members. Educator visitors have come to New City School from every continent except Antarctica.

Howard's theory resonated across cultures because it values every individual. Instead of refining the pecking order notion of intelligence, MI theory says that there are many ways to solve problems and that all of us have relative strengths and weaknesses. Teachers are about finding ways for students to succeed, so using MI became a logical way to reach every child in the class.

Over 100,000 copies of two books created and published by our faculty about our work with MI were sold, *Celebrating Multiple Intelligences* and *Succeeding with Multiple Intelligences* (the first work was revised and published in 2009 by Jossey-Bass as *Celebrating Every Learner*). We hosted four MI conferences at our school, and each was filled to capacity and attended by educators from around the world. I

traveled to talk about MI and its implementation and wrote a book, *Becoming a Multiple Intelligences School*.

Reading about the earlier enthusiasm for MI, it's fair to ask what happened, why the diminution of momentum in the United States? Was there a flaw in the theory? From my first-hand experience in working with teachers and students, I can unequivocally say *no*. The theory of multiple intelligences is grounded in pragmatic thinking and in research. It stems from and reflects real world problem-solving. While MI is not without its detractors—years ago, in fact, Howard joined a dialogue with one local critic of MI, ultimately silencing him—the chief obstacle to MI's acceptance and implementation since 2001 has been U.S. educational policy. The Bush administration's policy, No Child Left Behind (NCLB), cut off MI at its knees, even as it has flourished in many other parts of the world (Chen, Moran, & Gardner, 2009).

The motivation behind NCLB was sound. Certainly all children can and should learn, and surely there are ways to monitor student growth and to ensure that progress is pervasive among all groups. However, the narrow and heavy-handed approach of NCLB caused principals and teachers to focus only on those skills and content which would appear in standardized tests. The arts—the spatial, musical, and bodily-kinesthetic intelligences became seen as superfluous; the naturalist intelligence was ignored unless it was amenable to multiple-choice questions; giving attention to the interpersonal and intrapersonal intelligences became a chimera. For many educators, MI was seen as a distraction or worse, even counter-productive, because their fate rested only on students' success on tests which focused on the linguistic and logical-mathematical intelligences.

I may overstate the case, but not by much. Schools that did not achieve AYP (Adequate Yearly Progress), as determined by students' performance on standardized tests, were threatened with closure—and still are. Is it any wonder that U.S. educators focused their energies on increasing their students' standardized test results? Invariably, MI became less of a factor in most American schools. It's no wonder that fewer educators came through our doors to visit us.

Fortunately, however, the New City School faculty has been able to maintain our enthusiasm for and involvement with MI. We are an independent school, though our school population is more diverse, by

design, than many suburban and city schools. Our students' resources, including their families' involvement in education, enable them to perform very well on the standardized tests which we choose to give. We don't need to focus all of our energies on the scholastic intelligences to ensure that our students will excel in them. "Choose" is the key word, though; as an independent school in Missouri, we are not required to adhere to the NCLB or AYP guidelines. Thank goodness! What this means is that we have the autonomy to educate in the way that we believe helps students grow and learn to the maximum amount possible. This means that we *choose* to use MI. It is important to note that our autonomy does not vitiate our accountability. Because we are an independent school, each of our families votes with their feet every year when they decide whether or not to enroll their child in our school. If MI were not an effective tool in helping students learn and growour students take standardized tests and must apply to and be accepted by secondary schools after they graduate from New City—they and we would both know it.

Despite the shift in educational culture and the premium that has been placed on standardized test results, our work with MI still generates a significant amount of interest. An MI newsletter which I publish, *Intelligence Connections*, is e-mailed to nearly 1,500 recipients. A few hundred educators still visit us each year (many local universities bring their teacher preparation classes), and I receive e-mail inquiries about MI each week, many from other countries as well as throughout the United States. Within the past few months, for example, I have received questions about MI from educators from Iran, India, Russia, the United Kingdom, China, Portugal, New Zealand, Saudi Arabia, and Egypt.

Typically when I talk about MI with educators from other U.S. schools, they are quick to observe that they wish their situation would allow them to use MI. Unfortunately, as I have noted, most teachers and principals do not have the freedom to choose to use MI. My hope is that this tide will turn in the future, and when that happens, I know that the New City School faculty will again be pleased to learn with and from educators from around the world.

Howard's Impact on New City School

What began in 1988 as a book group reading, *Frames of Mind* led us to frame our school around MI. Over the years, numerous faculty

committees have emanated from this focus: The Talent Committee; the Assessment Committee; the Parent Communication Committee; the MI Book Committee; the Portfolio Committee; and the MI Committee. Since we began our quest, we have never failed to have at least one faculty committee pursuing some aspect of MI.

To a visitor, perhaps the most salient way of seeing the evidence of MI in our school is our MI library. Opened in 2005 (Howard joined us to cut the ribbon and open it to our community), it is the world's first MI library. The library's appearance is striking, with multi-level risers and seating, areas for students to collaborate as well as spaces for them to work alone, giant windows opening up to a view of the tops of trees, fish tanks, an art gallery, and a wet-art area with dry-erase walls. Most important, the library's design offers students ways to use all of their intelligences. A former New City teacher joins us to be our MI Library Coordinator a couple of days each week to create MI Centers, which correspond to classroom themes and lessons. It is the setting for faculty and parent meetings, school-wide tournaments in checkers, chess, and Othello, as well as our Story Time Saturdays, occasions when we open the library for neighborhood preschooler and their parents.

But MI runs throughout every aspect of New City School. It's noted in signage in classrooms which describe the eight intelligences, and it's noted in the materials that we share with prospective parents. The names of the eight intelligences are pervasive in our report cards, and the intelligences are a focus at our spring Portfolio Night. Years ago, in trying to determine how we could better understand students' range of intelligences, we decided to begin the school year with Intake Conferences, parent-teacher meetings in which teachers listened and parents talked. Asking parents about their children is a wonderful way to begin the school year!

Our use of MI has also had a great impact upon our parent education. We quickly learned that it was not sufficient to use MI with our students; we also needed to help their parents understand MI. Thus every year, each grade teaches MI to its students and their parents. By the time our children are in our upper grades, most of their parents can talk easily about MI and how it helps their students learn. Occasionally parents will talk to me about how they, themselves, use MI!

If it's possible to dissect the role of the various intelligences and the ways in which MI is used in our school—and I am not sure that it is!—I argue that it's the identification of the personal intelligences that has had the most significant impact upon our thinking. Even prior to the publication of Daniel Goleman's book, *Emotional Intelligence*, we seized the personal intelligences dichotomy that Howard presented as way to frame how we design curriculum and teach relationships, both self to others and self to self. The first page of our report card is designed around the intrapersonal and interpersonal intelligences. These intelligences have provided the context in which we have pursued the work of Goleman, Carol Dweck, and Angela Duckworth. When I meet with our graduates or their parents and they talk about their time at New City School, I consistently hear that it is our focus on the personal intelligences which has had the biggest positive impact. I also always hear about how they remember "joyful learning" (the phrase is in our school's mission statement) and how our use of MI enables students to learn in ways that are exciting and interesting. "Life-long learning is what everyone seeks," I typically respond, "and it begins with students enjoying learning and wanting to learn. Students must see themselves as learners."

Because MI is not an educational theory or a curriculum, each implementation reflects the values that the educators bring to it. This became evident upon hearing from the authors of *Multiple Intelligences Around the World* and reading their chapters. This means that MI is used somewhat differently in Japan than it is in Ireland or than it is in Ohio. This also means that the MI implementation can evolve; it has the potential to change as different educational needs are identified.

For example, although we have been implementing MI since 1988, we still find new strategies to use MI to increase student learning. A recent innovation is our creation of an "MI Profile," a triangulated view of a student's array of intelligence interests. It depicts the perceptions of students, their parents, and their teachers of students' intelligence preferences (which are not necessarily strengths). Last year we began featuring an MI bulletin board in our hall, one designed for parents to show examples of and artifacts from their children's use of MI away from school. As I write, our Board of Trustees is debating about whether or not to include the term "multiple intelligences" in our mission statement. Candidly, I have resisted its inclusion, arguing that MI is not the goal but

rather the means. For many of our board members, however, MI is so integral to how we learn and our school's identity, that they— current and former parents of New City School students—feel it should be included there.

While Howard's name is synonymous with MI, his touch is felt in schools in other ways too. "Genuine understanding," noted in his book, *The Unschooled Mind*, is also part of our vocabulary. Here again, Howard pushes forward our thinking about what it means to be educated. "Genuine understanding" refers to understanding that is deep, not superficial, and can be demonstrated by a student's ability to provide an answer or solution when situations are new and novel. Similarly, I often talk about how our portfolios should really be "processfolios," a Gardner term, because we want them to show not just what, but also how our students learn.

Howard's Impact on Me

When I first read *Frames of Mind*, I found myself seized by its potential. Howard had changed how we could look at problem-solving and student growth. I immediately did two things: I convened a faculty committee to read the book (the Talent Committee), and I wrote a letter to Dr. Howard Gardner at Harvard University. Of course, I didn't know Howard then and sending a letter to him was a bit like writing something and mailing it to Santa Claus at the North Pole. The letter was filled with hope, and I had no real expectation that it would be answered.

Much to my surprise and pleasure, Howard answered! I can't find the letter he sent (it's no doubt hidden some place where I hid it for safe keeping), but I think he was responding to my question about the role that processing speed might play in intelligence. What struck me most was that he took the time to send a thoughtful answer to someone he'd never met.

During the first few years of our work with MI, I would encounter Howard at educational conferences. Sometimes it would be a conference about MI, and at other times at a conference that was more general, at which Howard was the keynote speaker. His ideas were always crisp and his words evocative. While his message varied, his values were consistent. Howard's commitment to children was paramount; he always focused on what could happen to increase student growth.

Throughout these years, in every setting, Howard was always willing to give me a few extra minutes of his valuable time. Often I would talk to him as he was walking to or from a presentation. Once, in a letter, he asked me to be sure to identify myself when I next saw him, saying, "I'm not good at remembering faces." I appreciated his candor and the fact that he cared enough to want to make the connection. As time passed, we corresponded somewhat regularly. Even after numerous letters had passed between us, I remember appreciating his time and nurturing. His letters were always personal, thoughtful, and stimulating.

As New City School became more and more invested in using MI, Howard became more and more of a guide and a colleague. One time he was in St. Louis to meet with a funder, and I took him to dinner and gave him a ride to the airport. On his next trip, he visited New City School and went into some of our classrooms. Subsequently, we decided to host an MI Conference, and Howard agreed to be our keynote speaker. Of course, the conference was a success! He has spoken at New City School on five different occasions, and each time his presence fills our 260-seat theater, with folding chairs in the aisles to squeeze in more people. During his last visit, when he officially opened our MI library, Howard spent an hour speaking on a local NPR call-in show, and kindly mentioned New City school during the interview. There were far more phone calls than the hour program could handle.

Reading Howard's work is always a treat. He looks at old issues in new ways, and he often identifies new issues. His *Five Minds for The Future*, I am convinced, will be a book that is revisited again and again. Likewise, *Truth, Beauty, and Goodness Reframed: Educating for the Virtues in the Twenty-First Century* will gain momentum over time, I am sure. As he did with *Frames of Mind*, Howard has touched something important and deep within each of us in each of these books.

Talking with Howard is even more intriguing. He asks questions in a way which cause the answers to ripple and resonate even after he has gone. A conversation which he and I had about the difference between the logical-mathematical and naturalist intelligences, for example, pushed my thinking forward and led me to discuss the issue with my teachers. While MI theory is strong and works for kids, I know that Howard's time and encouragement gave me even more energy to bring it to life.

Howard has now visited New City School eight or ten times. It's always a treat to have him join classrooms and ask students what they are doing and learning. By design, the New City School is an informal setting: everyone goes on a first-name basis. Thus I smiled during one of his early visits when he entered a classroom—we had alerted the faculty and students that he was coming—as the children greeted him with waves and "Hi, Howard!" Of course, Howard smiled and said hello back to them.

Howard kindly wrote the foreword to my book, *Becoming a Multiple Intelligences School*, as well as to our faculty's two books, *Celebrating Multiple Intelligences*, and *Succeeding with Multiple Intelligences*, and to our revised volume, *Celebrating Every Learner*. I was given a mini-sabbatical in January 1989, and Howard procured a desk for me at Harvard Project Zero. I was able to sit in on meetings, join discussions, and shovel more snow than I ever thought could fall in one winter. I returned to St. Louis filled with ideas and new-found energy.

Today, almost a quarter of a century after first connecting with Howard, I appreciate how he and his ideas have changed my school and my life. At an obvious level, this reflects the fact that I lead an MI school. Three hundred and sixty students have attended New City School for each of the 25 years that we have implemented MI; that's 9,000 student-years which have benefitted from Howard's work, and I have seen and felt the impact. Each of these children's lives and schooling was different because of Howard.

Of course, each year we have 30-40 faculty members, and each year our 360 students have 720-plus parents. The number of people who have been changed from their work with MI at New City School escalates pretty quickly, and, again, this is just from one small school. Then, when you add the visitors to our school, and e-mails that I receive about MI, and the people who have attended a conference at New City School, the number grows even larger. New City is far from a perfect school, but the people who visit us and learn about our work with MI usually come away with a new sense of what is possible; they think about different ways that schools might be framed to elicit and support student growth. Howard's work on MI helps frame potential, optimism, and hope; his view of intelligence and possibilities speaks to the potential within all of us.

Earlier I noted that I was a better educator because of Howard. Howard's work gave me insights into assumptions about intelligence, and how we could create curriculum to increase students' success. He helped me understand the relationship of assessment to values. He caused me to look beyond percentiles and think differently about student growth. He encouraged me to write about MI, and he treated me as a colleague. And he also taught me about courage.

You see, Howard is also an iconoclast. He follows his mind and his heart, even when it means that he disagrees with his peers and that he confronts the educational establishment. While my faculty and I embraced MI as tool which could lead to student success, for many others MI was a threat to their professional niche or to their personal self-esteem (sometimes to both!). People who tend to define themselves by their high scores on scholastic measures are uncomfortable with a broader definition of intelligence. Because the theory of multiple intelligences is pragmatic and based on real-life problem solving, it doesn't fit as well in a laboratory or on a piece of 8.5 x 11 paper. Howard's work called for change, and that's always threatening.

From both afar and from close, I observed Howard as his theory was attacked and his person was sometimes vilified. Some felt that the theory of multiple intelligences wasn't empirically based, while others felt that it was too generous in identifying talents as intelligence. Howard's work was unsettling to those who viewed intelligence as a single dimension. I saw him respond with patience, skill, and courage. Instead of reacting by striking out, he used his intellect to explain, to refute, and to lead. Howard understood that change does not come easily. He willingly stood toe-to-toe with his adversaries, welcoming their questions and not being provoked by their comments. I admired his poise, his tenacity, and his courage. More than once, thinking about how Howard responds to criticism and, indeed, to being attacked, has helped me when I was in a tough situation.

Howard leads through his intellect, but he also leads by encouraging others, by demonstrating tremendous tenacity, and by being a friend. Few people positively change the trajectory of thousands of educators who touch the future of thousands upon thousands of students, and Howard is one of them. The world is better because of Howard Gardner.

References

Chen, J., Moran, S., Gardner, H. (Eds.). (2009). *Multiple intelligences around the world.* San Francisco, CA: Jossey-Bass.

Faculty of the New City School (1994). *Celebrating multiple intelligences: Teaching for success.* St. Louis, MO: The New City School.

Faculty of the New City School (1996). *Succeeding with multiple intelligences: Teaching through the personal intelligences.* St. Louis, MO: The New City School.

Gardner, H. (2006). *Five minds for the future*. Boston, MA: Harvard Business School Press.

Gardner, H. (1983). *Frames of mind*: *The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1991). *The unschooled mind.* New York: BasicBooks.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the twenty-first century*. New York, NY: BasicBooks.

Hoerr, T. (2000). *Becoming a multiple intelligences school*. Alexandria, VA: ASCD Press.

Hoerr, T., Boggeman, S., Wallach, C., and the New City School (2009). *Celebrating every learner*. San Francisco, CA: Jossey-Bass.

Howard's Response to Thomas R. Hoerr

It was my great good fortune to learn about the New City School in St. Louis and your pioneering role there. I have had the pleasure of following the evolution of the school for over 25 years. You are very generous and often defer to my ideas about many topics, from MI, to publishing, to leadership. But rest assured, the street absolutely runs in two directions. I have learned a great deal both from watching you in action over the years at NCS and from reading your many publications, ranging from snappy newsletters to gritty handbooks.

From my vantage point, it's almost miraculous that the New City School has been able to maintain various facets of MI for a quarter of a century. We live in a society that is incredibly trendy, and most trends prove evanescent (as they probably should). I have no doubt that your stewardship is the major reason for MI's endurance at New City. But I also believe that the many concrete practices, reporting mechanisms, focus on the personal intelligences, and the inspiring "MI Library" have helped MI to endure. Moreover, as we know from the many hundreds who have visited the school over the decades, they often take away promising ideas and practices. Indeed, when I speak to MI fans from other countries, I note how often they cite some kind of connection to NCS.

It's desirable to have an enduring professional relationship, and I'm fortunate to have had my share. But it is a special bonus when two professional colleagues—living half a continent apart—can become good friends as well. We don't see each other that often in the flesh, but I cherish our almost weekly emails, letters, and phone calls. And recently, we've shared an especially precious tie: the experience of recovering from cardiac surgery. Tom, your advice and support has made a tremendous difference to me and to my family.

Intuition in Scientific Research

Gerald Holton

I

Among the powerful insights in Howard Gardner's most recent book, *Truth, Beauty, and Goodness Reframed,* he surveys in detail the mischievous influences of the postmodernity ideologies that have haunted academia for so many decades. Thus, he reminds us that:

the committed postmodernist must knock all disciplines off their pedestals; the postmodernist must arrive at the discouraging conclusion that science is as tenuous as history, that history is as tenuous as science, that any effort to arrive at or nail down scientific or historical truths is a fool's errand. (p.27)

Indeed, most postmodernists' manifestos are merely variations on Friedrich Nietzsche's statement: "There are no facts, only interpretations." With this false image they dismiss what research scientists and science educators tend to honor most as elements of Good Work, those virtues of time-tested methods that result in the advancement of science: experimental skill, mathematical virtuosity, rational planning, cautious hypotheses, rigorous induction and deduction, skepticism about results until they are re-examined, and in the end, eloquent advocacy of one's final results.

All these are essential for gaining an understanding how good work is done. But there operate during the nascent phase of scientific investigation also other ingredients that in fact have been keys to some of the greatest historic breakthroughs. They include the thematic, visual, and metaphorical elements in the thought processes of researchers, long before they reduce their results to traditional types of publication.

Here I shall focus on one additional skill worth bringing out into the open, not least because it too is unaccountable in the version of science promoted by postmodernists, as well as by those who dismiss science as merely "reductionistic" or "mechanistic." In short, I am focusing attention on the still puzzling but crucial role of intuition in the search for new scientific facts, laws, and theories.

Hans Christian Oersted described this skill in the happy phrase "anticipatory consonance with nature." Arthur Schopenhauer identified it as the mark of genius. Enrico Fermi's students and collaborators praised it privately as his "formidable intuition." And Einstein referred to it as an essential "Fingerspitzengefuehl," a feeling at the tips of the quester's fingers; and he memorably wrote: "There is no logical way to the discovery of the elementary laws. There is only the way of intuition, supported by being sympathetically in touch with experience."

Indeed, this element in our kit of tools, though rarely mentioned in science texts, is familiar to historians of science when they study the road taken to solving a difficult problem in science; how the research project was planned in the first place; or what imaginative leap may have been worth risking during the early stage of research. Thus it will help us to examine now some examples of this special element in the tool kit of scientists, chiefly from the work and writings of scientists who excelled in it—specifically Henri Poincaré, Albert Einstein, Werner Heisenberg, and Enrico Fermi—as well as noting persistent problems that merit discussion, such as theories about the sources of intuition. In the final section, we shall encounter the transformation of the classical idea and use of intuition, a change forced on physics by quantum mechanics.

II

One reason for the predominant silence in scientific publications about a beneficent use of intuition was the legacy of positivism or logical empiricism that reigned, for example, in physics in the aftermath of Ernst Mach's influential denunciation of metaphysical traces in our concepts and thought processes, embracing instead sensation-based descriptions as the foundation of good science.

One of Ernst Mach's admirers was Albert Einstein. Indeed, reading Einstein's early papers one can discern the empiricist base, for example, in the fact that his founding paper of 1905 on the Special Theory of Relativity treats the notions of time and space operationally/instrumentally, in terms of sense perceptions during measurements.

Among the many young physicists influenced by Einstein's implicitly empiricist method was Werner Heisenberg. From his autobiography we know that Heisenberg had been captured early by Einstein's work. In his *Gymnasium* years he read and loved Einstein's

newly published popular book on Special and General Relativity (1917), and continued to study Einstein's further work closely. In 1925, Heisenberg published his brilliant breakthrough to quantum mechanics, entitled "On the Quantum Theoretical Interpretation of Kinematic and Mechanical Relations." In the abstract of the paper, Heisenberg already announced his fundamental guiding principle: "This work is an attempt to find foundations for a quantum-theoretical mechanics which is based exclusively on relations between quantities that are in principle measurable." He later confessed that his crucial insight was an echo from the days when he had been struggling with relativity as a university student. His paper was the result of a thoroughly rationalistic thought process, with no indication of non-operationalist speculations.

But Werner Heisenberg was in for a big surprise. Hoping for Einstein's approval for his recent work, he sought him out for a discussion. At that meeting, Heisenberg tried to draw attention that his work had dealt not with unobservable electron orbits inside atoms, but rather with observable radiation. He said to Einstein: "Since it is acceptable to allow into a theory only directly observable magnitudes, I thought it more natural to restrict myself to these, bringing them in, as it were, as representatives of electron orbits."

Einstein responded, "But you don't seriously believe that only observable magnitudes must go into a physical theory?" Heisenberg's report goes on, "In astonishment, I said, 'I thought that it was exactly you who had made this thought the foundation of your relativity theory….' Einstein replied, 'Perhaps I used this sort of philosophy; but it is nevertheless nonsense.'" And then came Einstein's famous sentence: "Only the theory decides what one can observe."[1]

All this must have come to Heisenberg as a scathing attack on what he regarded as his fundamental orientation, derived from reading Einstein's early works, and being guided by them from the start, right through his most recent triumph. Einstein, whose intellectual development away from positivistic instrumentalism had escaped Heisenberg's notice, went on to explain to him at length how complicated any observation is in general, how it involves assumptions about phenomena that in turn are based on theories. For example, one almost

[1] W. Heisenberg, *Der Teil und das Ganze* (Munich: R. Piper & Co., 1969).

unconsciously uses Maxwell's theory when interpreting experimental readings involving a beam of light.

In a letter to me (January 1966), in which Heisenberg first provided this account, he added a rather striking conclusion: While the theory determines what can be observed, the uncertainty principle showed him that the theory also determines what cannot be observed. Ironically, Einstein, through his 1926 conversation, had provided Heisenberg with some genetic material for the creation of his uncertainty principle article of 1927. (We shall return to Heisenberg's role later.)

III

What was it that had changed Einstein's mind, making "nonsense" of his earlier way of thinking about physics? From his several writings on this point, I select two. In his *Autobiographical Notes*, published in 1949 (in the volume edited by P. Schilpp), he remarks that although Ernst Mach's book on the history of mechanics had "exercised a profound influence upon me ... while I was a student," Mach's epistemological position now "appears to me to be essentially untenable. For he did not place in the correct light the essentially constructive and speculative nature of thought and more especially of scientific thought." The state of physics shortly after 1900 had showed him that neither mechanics nor thermodynamics could "claim exact validity." As a result, he came to a fundamental decision which guided his work more and more. "By and by I despaired of the possibility of discovering the true laws by means of constructive efforts based on known facts [i.e. through induction]. The longer and the more despairingly I tried, the more I came to the conviction that only the discovery of a universal formal principle could lead us to assured results. The example I saw before me was thermodynamics." This led him to the discovery of the principle of relativity which, in retrospect, he now saw to have been "from the very beginning ... intuitively clear."

That theme is repeated elsewhere in his *Autobiographical Notes*; for example: the connection of sense experiences with concepts and propositions "is purely intuitive, not itself of a logical nature. The degree of certainty with which this connection, i.e., intuitive combination, can be undertaken, and nothing else, differentiates empty fantasy from 'scientific truth.'... Although the conceptual systems are logically entirely arbitrary, they are bound by the aim to permit the most nearly possible

certain (intuitive) and complete coordination with the totality of sense experiences."[2]

IV

Henri Poincaré, superb mathematician and physicist, being conservative by nature, would also not have mentioned the word "intuition" in his published scientific writings. But as in the case of Einstein, it appears in his popular articles and books. There he allows us to see his striking ideas about the psychology of invention and discovery. Some may be familiar, but they are so startling that they deserve nevertheless to be mentioned.

I refer, first of all, to Poincaré's lecture, "L'invention mathématique," (1908) at the Societé de Psychologie in Paris. The fine mathematician Jacques Hadamard remarked on that lecture that it "throw[s] a resplendent light on relations between the conscious and the unconscious, between the logical and the fortuitous, which lie at the base of the problem [of invention in the mathematical field]."[3] In fact, Poincaré was telling the story about his first great discovery, the theory of fuchsian functions and fuchsian groups. He had attacked the subject for two weeks with a strategy (typical in mathematics) of trying to show that there could not be any such functions. Poincaré reported in his lecture, "One evening, contrary to my custom, I drank black coffee and could not sleep. Ideas rose in crowds; I felt them collide until pairs interlocked, so to speak, making a stable combination." During that sleepless night he found that he could in fact build up one class of those functions, though he did not yet know how to express them in suitable mathematical form.

Poincaré explained in more detail: "Just at this time, I left Caen, where I was living, to go to a geological excursion.... The incidence of the travel made me forget my mathematical work. Having reached Coutance, we entered an omnibus to go someplace or other. At the moment when I put my foot on the step, the idea came to me, without anything in my

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[2] For further discussion, see chapter 2, "Einstein's Model for Constructing a Scientific Theory," in G. Holton, *The Advancement of Science, and its Burdens* (Cambridge, MA: Harvard University Press, 1988).

[3] Jacques Hadamard, *The Psychology of Invention in the Mathematical Field.* (New York: Dover, 1945), p. 12.

former thoughts seeming to have paved the way for it, that the transformations I had used to define the fuchsian functions were identical with those of non-Euclidean geometry. I did not verify the idea; I should not have had time, as, upon taking my seat in the omnibus, I went on with a conversation already commenced, but I felt a perfect certainty. On my return to Caen, for conscience's sake, I verified the results at my leisure."

Poincaré analyzed such intuitions in these terms: "Most striking at first is this appearance of sudden illumination, a manifest sign of long, unconscious prior work. The role of this unconscious work in mathematical invention appears to me incontestable."[…] "It seems, in such cases, that one is present at one's own unconscious work, made particularly perceptible to the overexcited consciousness."

Hadamard collected a number of similar reports, where out of the continuous, subterranean incubation in the subconscious, there appeared, in a discontinuous way, in a rupture of startling intensity, the conscious solution. He mentioned Carl Friedrich Gauss, who spoke of such a rupture as "a sudden flash of lightning," and similar observations by Hermann von Helmholtz, Wilhelm Ostwald, and Paul Langevin—not to forget Mozart, who is reported to have spoken about the source of his musical thoughts as follows: "Whence and how do they come? I do not know—and I have nothing to do with it."

Poincaré himself also expressed puzzlement about the source of his ideas. In the full text of Poincaré's talk of 1908, soon widely read in chapter 3 of his popular book, *Science and Method* (1908), he confessed "I am absolutely incapable even of adding without mistakes, [and] in the same way would be but a poor chess player." But he reported to having "the feeling, the intuition, so to speak, of this order [in which the elements of reasoning are to be placed], so as to perceive at a glance the reasoning as a whole." He celebrated "this intuition of mathematical order that makes us divine hidden harmonies and relations." To be sure, intuitions are by no means always useful; and in any case, after intuition comes labor: "Invention is discernment, choice." But for that, priority must be granted to "our emotional sensibility" in privileging "unconscious phenomena," "beauty," "harmony," and "elegance." Finally Poincaré returned, in this popular account of his theory of discovery and innovation, to their chief sources, which he called "esthetic sensibility." How congenial this must have sounded to the artists among his readers!

A significant portion of his book *Science and Hypothesis* was Part II, consisting of three chapters, devoted to non-Euclidean and multi-dimensional geometries. In those pages there are neither equations nor illustrations, but great feats of trying to clarify things by analogy. To give only one widely noted example: In attempting to make the complex space of higher geometry plausible, Poincaré introduced a difference between geometric space and conceptual or "representative" space. The latter has three manifestations: visual space, tactile space, and motor space. The last of these is the space in which we carry on our movements, leading him to write, in italics, *"Motor space would have as many dimensions as we have muscles."* And that reminds us: Our muscles, our whole body, harbor a wealth of non-rational intuitions—from how to put on a raincoat to the almost superhuman feats of athletes, musicians, and ballet dancers.

V

I now turn to a great physicist who, most who knew him would agree, was the most rational, and least interested in philosophical matters: Enrico Fermi. Yet, as the scientist and philosopher Michael Polanyi (e.g., in his book *Personal Knowledge*) explained, one cannot overlook a scientist's "tacit knowledge," largely resulting from one's lengthy immersion or "in-dwelling" in the subject of research. Polanyi summarized the result in the simple sentence: "We know more than we can tell."

There are many accounts of instances when Fermi was able to dredge up, from hidden resources, answers to questions facing him. Thus, Herbert Anderson recalled that at a crucial moment during the difficult early work in 1939 at Columbia University on the possibility of a chain reaction, "Fermi asked to be left alone for 20 minutes," and emerged with a rough estimate of the effect of resonance absorption by uranium. Anderson reported that the estimate, which proved to be correct, "...was largely intuitive. Fermi was never far wrong in such things...."; and one can imagine the positive effect such talent had on Fermi's group. Elsewhere Fermi was even credited with helping reactor engineers to obtain a rough estimate of data not yet measured, such as nuclear cross-section.

At any rate, in the official speech by Hans Pleijel of the Swedish Academy at the awarding of the Nobel Prize to Fermi in December 1938, that crucial word was also mentioned.

Along with Fermi's significant discoveries, and to a certain extent equivalent, can be placed his experimental skill, his brilliant inventiveness, and his intuition ... which throw new light on the structure of atomic nuclei and open up new horizons for the future development of atomic investigation.

VI

Finally, we return to Werner Heisenberg, because in his work—soon after hearing Einstein, and with the sentence, "Only the theory decides what one can observe," still ringing in his ears—he went on to publish world-shaking papers, including those on the Uncertainty Principle, which turned the concept of intuition in physics in an entirely new direction. And he was the man to do it, from the start. When still at age 20, he had dared to try a quantum-theory project using only half-integers. To his worried friend Wolfgang Pauli, Heisenberg answered with his usual confidence, *"Der Erfolg heiligt die Mittel"*—success sanctifies the means. That, indeed, may have become his life-time motif. When Niels Bohr persuaded young Heisenberg to join him at his Institute in Copenhagen, Bohr confessed to him that originally he had not worked out his atomic models by classical mechanics married to quantum ideas; they had come to him intuitively, as pictures representing events in an atom. This applied especially to the conception of definite electron paths around the nucleus—extrapolations from observing events in everyday life. Similarly, light quanta could be intuitively visualized in terms of energetic bullets or packages. But light also has wave properties. How could both be imagined together? In the past, intuitive visualisability was helpful. But by the early 1920s it had begun to be very difficult.

A key event in solving the puzzle was Heisenberg's paper of 1925 which, as he had explained to Einstein in 1926, had been triggered by following in the old tradition of sense-experienced-based physics. Heisenberg there had totally eliminated the concept of unobservable but "visualisable" electron orbits or any other such "pictures," and replaced them by a mathematical schema, adjusted to reflect the data (e.g., observable frequencies and intensities). He declared that the customary *"Anschauung"*—derived from ordinary space-time conceptions that are in

principle (and to our eyes) continuous—had to be replaced, in thinking about the atomic realm, by a different *"Anschaulichkeit,"* needed in quantum physics. The reality had to shift to mathematical description. As Heisenberg put it later (*Physics and Philosophy,* 1958), "The physicist has to withdraw into the mathematical scheme"; that is where the new *"Anschauung"* reigns. One of Heisenberg's key papers (1927) even bore the title: *"Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik."*

Some readers might be puzzled by these terms, such as *"Anschauung."* That may mean they have escaped reading Immanuel Kant's *Critique of Pure Reason* (Kritik der reinenVernunft)—a book practically all German-speaking (and some other) physicists in the 19th and early 20th centuries were exposed to, if not in school then before (Einstein first read it at 13, Mach at 16…).

Kant, philosopher and admirer of Newton's science, signed the preface of his book on 23 April 1787—and from that day on there grew the conviction that true science could come reliably to one's mind only in terms of intuitively visualizable (experience- and object-related) conceptions. The German dictionary of the early 20th century still defined *"Anschauung"* as "intuitive vision; intuition." Kant himself, in the very first paragraph of his *Critique* (after his Introduction), in the section which begins with the analysis of space and time, delivered his pronouncement on the matter analogous to the crash of cymbals at the beginning of Richard Strauss' "Thus Spake Zarathustra":

In whatever manner and by whatever means a mode of knowledge may relate to objects, Anschauung is that through which it is in immediate relation to them, and from which all thought gains its material. But Anschauung takes place only in so far as the object is given to us. This again is only possible, to humans at least, in so far as the mind is affected in a certain way….

For Heisenberg, to whom the end sanctified the means, Kant could be updated, and the "object" replaced by mathematical schemes. To his colleagues, from Bohr and Max Born down, it took some time to get used to it. Erwin Schrödinger confessed bravely in 1926: "I knew of this [Heisenberg's] theory, of course, but felt discouraged, not to say repelled, by the method of transcendental algebra, which appeared very difficult to use, and by the lack of *Anschaulichkeit."*

Americans seemed to have no such problem. In February 1929, a lecture tour through the U.S.A. brought Heisenberg to Chicago. As usual, he explained to the physicists his new ideas, and found to his surprise that they went over without opposition. He confided (chapter 8, *Physics and Beyond*) to a young American scientist "a strange feeling I had acquired during this lecture tour: while Europeans were generally averse and often overtly hostile to the abstract, nonrepresentational aspects of the new atomic theory," most Americans accepted it "without too many reservations."

His American friend, clearly not beholden to Kant and his *Anschaulichkeit*, explained: "We take a much simpler view." As long as it works, one should not "make the mistake of treating the laws of nature as absolutes.... I can see it happens in nature, and that's that." Heisenberg mused: "I had the distinct impression that my way of thinking was rather alien to him." He could have added: and vice versa.

The episode showed that the new use of intuition had become easy to accept by those not wedded to the older notions. And we can still see that daily in our classrooms, looking at the fresh and open faces of our students, as they sail easily into thought structures that had been initially difficult for their instructor.

Science historians are struggling to understand more fully the mechanisms behind examples of "anticipatory consonance with nature."

Those I have presented here underline, in graphic terms, the need to explore further this large island of fruitful ignorance, as well as our obligation to correct widely held, persistent, but incomplete and false images of scientific investigation.

Howard's Response to Gerald Holton

Ellen and I have been proud to call you and Nina friends for thirty years. But of course I knew about you as a person, a scholar, and an editor for far longer. Indeed, you have probably long since forgotten, but you are a featured professor in the yearbook published when I was graduating from Harvard College in 1965. Now of course the ties stretch in so many directions—your escape from the Nazis in Vienna at about the same time that my family left Nuremberg, and that Ellen's father managed to get out of Prague, your important contributions to the curriculum at Harvard College in the mid-century (as well as Project Physics for younger students), your historic founding editorship of Daedalus, at a time when that publication really mattered, and in my view, the most important—your singular work in physics, the history of science (especially Einstein and his circle), epistemology, and education, where you in effect drafted the most important white paper in the history of American education: "A Nation at Risk."

I know have left out dozens of other accomplishments, but I want to cite Nina's magnificent works in sculpture.

In your essay for the Festschrift you reflect on the fascinating enigma of "scientific intuition." It is striking that even scientists like Einstein, who began with a quite mechanistic view of the establishment of scientific knowledge, end up believing that much of their work arises out of powerful intuitions, which they did not anticipate and cannot really explain. (And, in parallel, it is theories that direct one where to observe, rather than vice versa.) Certainly, as you argue in your essay, this phenomenon cries out for further exploration.

As part of this future research agenda, I would raise a number of questions. First of all, to what extent does the reference to intuition come from a certain means of expression, particularly one as powerful as Kant's "Anschauung" or the later phrase "Vor-Gestalt?" One could look whether this way of explaining discovery was equally prevalent in societies not influenced by Kant.

A second question is about erroneous intuitions. One can have a very strong intuition, and hold onto it vociferously, and yet it turns out to be completely off base. How do we discriminate between valid and invalid intuitions?

To me, the most tantalizing question is whether, in our intuitions, we really consider all possibilities or immediately eliminate nearly all of them. As I understand them, theorists of scientific creation like Donald Campbell and Dean Keith Simonton postulate a lot of tossing out of possibilities in an almost random way. My own intuition (!) is closer to that of Charles Sanders Peirce' abduction; a kind of intelligent guided guessing, in which one initially eliminates numerous implausible explanations. Of course, there is always the risk that one of the explanations that was dismissed turns out to be the correct one.

Thanks as always, Gerry, for raising such a provocative issue. As you see, in one reader, it already launched several lines of speculation.

Laura Horn

It was an honor to be asked to participate in this tribute to Howard and his career. I worked with Howard as a research assistant on the GoodWork Project for four years (2002-2006), immediately after graduating from college. On my first day of work, I attended a staff meeting led by Howard. The researchers informally presented ideas for papers and provided feedback to each other. I was the newest staff member and the youngest person in the room, and I asked a lot of questions. I left the meeting wondering if perhaps I should have held back a little more, especially as it was my first encounter with Howard Gardner, whose ideas have been so influential across multiple domains.

Howard stopped me as I was walking back to my office, contemplating this first meeting. He thanked me for my contributions to the meeting and told me that he appreciated my questions.

For me, this moment was memorable. It represents what I came to appreciate about the way Howard works. Howard creates an atmosphere of shared creativity by noticing and appreciating what each person has to offer, regardless of his or her position. He places importance on the quality of an idea rather than the status of the thinker. He is open to mutual influence, encouraging challenges to his ideas and allowing himself to be transformed by those around him. Beyond the tremendous influence of his written work, Howard's personal style as a mentor creates a productive and collaborative academic environment for those around him. I am extremely grateful to have been part of Howard's community during such a formative stage in my professional and personal development.

Howard's Response to Laura Horn

Over the years, I have had the privilege of working with at least 100 research assistants, most of them just out of college and often contemplating a graduate career in psychology or a related field. From a distance, you were one of those "searcher researchers." But it soon became clear to me, and to the other managers of the GoodWork project, that you were quite special. How so? You immersed yourself more deeply in the materials (in this case the interviews we were conducting and analyzing), asked more penetrating questions, and—most significantly—were not satisfied with glib answers (a trap into which I and others sometimes fall, particularly when the funder's clock is ticking).

It was not always easy to work with you because of the demands you made on others and on yourself. But I want to say—loud and clear!—that it was definitely worth it. A final product with Laura Horn's name on it is a product of quality. I'm especially pleased that we had a chance to work together on two essays about "compromised work," and I am fully confident in saying that the pieces were materially better because of the questions that you raised and the answers that you or we came up with. It's not surprising that we were asked shortly thereafter to give a public presentation at a DC think tank with a political leaning very different from ours—the hosts knew that you, Laura, had something to say.

As an Amherst trustee, I'd like to think that some of these intellectual strengths were honed while you were in college.

You've gone on to work in the clinical area, and your patients will certainly benefit from your empathy and your sagacity. I suspect that your penetrating intellect will continue to survey large spaces and that we'll meet again, on paper, as well as in person, in the years ahead.

What I Learned About Good Work and Goodness from Howard Gardner

Carrie James

In August 2003, I joined Howard's GoodWork Project team at Harvard Project Zero. I was excited to take part in a dynamic research project with a noble mission—to understand and promote "the good" across the professions and beyond. The project had already produced important insights, frameworks, and practical applications, and promised to do more. I felt extremely lucky to have the opportunity to contribute to this effort and to work with, and learn from, interesting colleagues. What I didn't know was how being part of this project—and working with Howard in particular—would change my own approach to work and my thinking about goodness. As I describe below, Howard has influenced my thinking and development as a worker, social scientist, and citizen.

Howard's influence on education, psychology, and other fields has been extensive, largely due to his groundbreaking theory of multiple intelligences (MI). MI theory is powerful for both acknowledging complexity and confronting it by detailing the nature of different forms of intelligence. Howard is less known for his efforts on good work, good play, and good citizenship. However, his accomplishments in delineating the nature of the good are equally powerful, in my view. In this essay, I focus on two related concepts—good work and goodness—that Howard has played a lead role in crystallizing for me.

As a co-founder of the GoodWork Project with Mihaly Csikszentmihalyi and William Damon, Howard played a significant role in articulating the importance of the good work question—what does it mean to do good work in an era of rapid social change, in which market forces are very powerful and few counterforces to the market exist? Simply putting that question on the table, and attracting funding to explore it through empirical research, was important. The GoodWork architects and researchers then created a rich conception of good work, defined by three e's: excellence, engagement, and ethics. In short, good work is of high quality, is engaging to the worker, and is socially

responsible. These markers can be valuable guideposts for individual workers, for institutions and professions, and for the larger society.

Howard's own approach to work—and his pursuit of these three e's—has been an inspiration to me as a worker and social scientist. First, Howard's commitment to rigor and excellence is clear. In everything he does, Howard conveys the importance of doing careful, comprehensive, and thoughtful work that is well-informed by the work of others. He has an incredible capacity for synthesis—drawing ideas from multiple disciplines into a narrative that makes sense to a broad audience. One of the most important features of Howard's work is that it always "adds value." While some social scientists forge successful careers by investigating issues with limited relevance, Howard is always tackling big and important questions, such as the nature of intelligence, creativity, truth, beauty, goodness, and so on. Moreover, when investigating any given topic, Howard commits to contributing new and important insights about it. Working with Howard and reading his work, I've learned that the most significant contributions to social science surface the non-intuitive.

Turning to engagement, observing Howard's work style and approach over nearly a decade, I've learned several valuable things. First, I've come to appreciate the importance of steady focus on a task. Ideally, that steady focus periodically yields "flow" experiences. Regardless, without steady work, productivity can't be achieved. My own approach to intellectual and other kinds of work has benefitted from observing Howard's tremendous work ethic. While I will never achieve Howard's level or productivity, I make progress in trying to follow his example. Second, from Howard, I've learned the importance of thinking hard about, but not over-thinking, issues and decisions. Howard encourages careful and deep thinking about administrative, personnel, or intellectual issues, but also has a good sense of when it's time to move forward with a decision. Third, I admire Howard's capacity to respond to everything that comes across his desk—ranging from the innocent inquiry about the nature of intelligence from a high school student to an invitation from the education ministry of a foreign government. The importance of Howard's responsiveness cannot be understated, in my view. The number of inquiries received by Howard would be mind-boggling to many of us. And many public figures simply ignore inquiries

from non-elites. In responding to everyone, Howard shows what it means to be a responsible public figure.

Last but not least, I've learned perhaps the most about ethics while working with Howard. He takes seriously his ethical responsibilities as a teacher, employer, and principal investigator of multiple grants. Despite his busy scheduled and commitment to productivity, Howard makes time to mentor others, to convey his appreciation for their hard work, and to express caring and concern for them as human beings. One important way in which Howard mentors people is in passing them opportunities, quietly daring them to step up to challenges. While I've sometimes been daunted by the writing or speaking opportunities Howard has sent my way (thinking, "I'm no substitute for Howard Gardner!"), I've ultimately benefitted from taking up these challenges. Howard also routinely encourages me and others to reflect on how both specific opportunities and projects, and our work together as a whole, will contribute to our futures. Moreover, Howard takes a disinterested stance with respect to our futures. He cares about helping his researchers and students achieve their own professional goals. He is also cognizant of, and sensitive to, the importance of our personal lives and the challenges of balancing work with personal and family responsibilities.

Howard has also influenced my sense of what it means to be an ethically responsible social scientist. More specifically, I've been inspired by Howard's commitment to asking questions that are both interesting from a social scientific perspective and important to society. In other words, Howard's intellectual work both furthers knowledge and is aimed at creating positive social impacts. The GoodWork Project's mission to investigate and increase the incidence of excellent, engaging, and ethical work is a primary example. More recently, the project has spawned initiatives focused on "goodness" in digital life and in the civic sphere in which I've been fortunate to take part. Accordingly, the concept of "the good" is featured in much of Howard's recent work, including *Five Minds for the Future* (2010) (the respectful and ethical minds) and *Truth, Beauty, and Goodness Reframed* (2011).

The distinction Howard makes between neighborly morality and the ethics of roles has influenced my thinking and the research we've undertaken together. In our GoodPlay Project, focused on digital ethics, we've explored this distinction in depth. We've recorded the extent to which youth think about known others (moral thinking) and the wider

community or society (ethical thinking). The practical interventions based on this research encourage attention to the 'ethics of roles,' as youth increasingly assume new roles in networked publics on the internet. Moreover, our recent Good Participation project, explores the nature of young people's civic and political engagement with an eye toward how such engagement can be cultivated or increased. I am proud to be part of projects such as these that have meaningful implications for knowledge and for the world, and credit Howard for bringing them into being. Moreover, doing this work inspires me to be more attentive to my ethical responsibilities, including a responsibility to be an informed, engaged citizen who considers issues from a disinterested point of view whenever possible.

In sum, I feel very fortunate to work with Howard—and am reminded of that good fortune almost daily as Howard's office receives requests to collaborate from young students and accomplished scholars alike. Most of these requests come from people who are inspired by Howard's ideas but don't know him personally. What they may not know is how the man behind big ideas such as "good work" and "goodness" strives to live up to them and, in so doing, serves as an inspiration for those who work with him.

References

Gardner, H. (2006). *Five minds for the future.* Boston, MA: Harvard Business School Press.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the twenty-first century.* New York, NY: BasicBooks.

Howard's Response to Carrie James

It's hard to believe that, even though you had already received a doctorate in Sociology from NYU, you actually came to work as a research assistant ten years ago. I pinch myself, asking, "What was Carrie thinking?" and "What were we thinking?" Fortunately our research group is quite flat and very democratic. It soon became clear that you should be leading, rather than assisting, and we worked to make this happen as quickly as possible.

Carrie, your understanding of so many issues and your sensitivity to the human dimension is so impressive that most of us would benefit just by sitting down in your presence, listening, taking good notes, and putting them into action. But you are also a very modest person, not at all eager to seize the spotlight, and sometimes, in the past, you had to be pushed a bit.

I claim no credit for your wonderful and deserved successes on so many fronts, except perhaps that I've helped you to assert yourself a bit more and to make it evident to others how much you know and how subtly you think about a whole raft of issues (including ones no one has thought about before). If our work atmosphere has those characteristics of "good work" that you cite, it is because of the incredible group of individuals who've worked with us over the years, a good number of whom you have brought onto the scene.

Happily, my little task of "nudging" has been accomplished because the relevant world of scholars and practitioners already has come to appreciate your unique and wonderful traits. I will take justifiable pride in watching the next chapters as they unfold.

Japan MI Society

Felicitations from Japan Multiple Intelligences Society

Masao Kamijo, Tomoe Fujimoto, Keiko Ishiwata, David

Left to right: Keiko, David, Masao, Masao's wife, Tomoe

It gives us great pleasure as members of the Japan Multiple Intelligences Society to be able to contribute to this festschrift for Howard Gardner on his 70th birthday. We are indebted to Howard for his contribution to scholarship, and for the impact that it has had on Japan.

In our minds, perhaps the greatest impact has been the creation of the Japan Multiple Intelligences Society. JMIS was established in 2003 by Project Zero Classroom alumni Tomoe Fujimoto, Keiko Ishiwata and Masao Kamijo.

At its inception, Howard Gardner was voted honorary president. In 2003 and 2006, Howard traveled to Japan to give talks at International Christian University, Columbia University Teachers' College, Tokyo University, and the Sony Education Foundation, Sony Corporation, all strong supporters of his work to this day. From then on, JMIS has worked to disseminate Howard's work throughout Japan.

In addition, Japanese educational leaders Prof. Keiko Honda, Prof. Nobutaka Matsumura, and Prof. Toshiaki Sawaguchi have been instrumental in the application MI theory. Prof. Honda incorporates MI theory in the development of learning tools, and Prof. Matsumura has been influenced by MI theory in his work in gifted education. Prof. Sawaguchi has published extensively in child development using principles of MI theory.

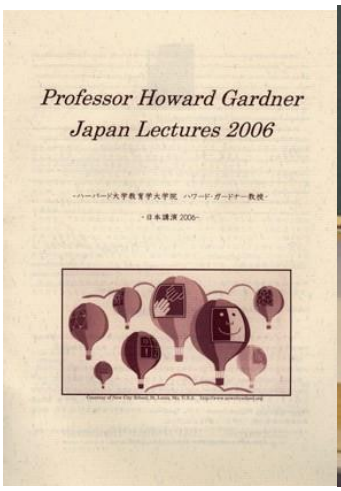
Following this lead, other practitioners have introduced principles of MI in their work. Most notable are science teachers, under the tutelage of Masao Kamijo, at the Sony Education Foundation. Teachers selected from primary and junior high schools throughout Japan by this foundation have been attending PZC for nine consecutive years now, and they have strongly influenced the curricula and instruction at their own schools and in their educational circles.

Howard's work has reached Japanese readers and has influenced the academic community in Japan. Now five of Howard's books have been translated into Japanese, and more are to follow.

Howard continues to be an extremely generous as well as prolific scholar and writer. So many researchers and practitioners in many fields have gleaned such a great deal from Howard's work, which transcends the realm of education and feeds the thought for a wide variety of academic disciplines and professional fields.

We are so fortunate to live at a time when we can take advantage of Howard's thoughts and ideas. We are also fortunate to benefit from Howard's generosity of spirit. He is always quick to respond to communication, and he adds personal touches to all correspondence.

One of our best memories of Howard is his visit to Japan in 2006. It was a hot summer day with the temperature exceeding 90 degrees when the Gardner family arrived in Japan. Howard appeared at the airport wearing a yellow windbreaker. He said that he always wore the windbreaker when he traveled and that he was comfortable with it on. Is this his superstition for a safe trip and return? If so, is this the proof that Gardner is one of creative geniuses that he wrote of in *Creating Minds*? We are glad to know that he didn't wear the windbreaker at the ceremony of the 2011 Prince of Asturias award for Social Sciences, which was presented by Spain's Crown Prince Felipe on October 21, 2011.



Howard's wife, Dr. Ellen Winner, and their youngest son, Ben, were with him in Japan. Howard had often talked about Ben's childhood in the Project Zero Classrooms and related these anecdotes in his publications. Of course, Ben was not such a little boy any more but a tall and sturdy young man. It was hard to visualize little Ben trying to find a way to open a hotel room door in China with a key in his small hand.

The visit to Japan was a great opportunity that allowed us to see Howard not only as a scholar but also as a person. During his visit, we discovered that Howard was an admirer of film director Akira Kurosawa. Akira Kurosawa was meticulous in presenting foods realistically in his films. In Tokyo, there are "Kurosawa" restaurants, which serve his family dishes, his favorite dishes and the dishes presented in his films. Howard showed a keen interest in Kurosawa's restaurants. Even though Howard had a tight schedule, he managed a visit to one restaurant with us as his guests.

Because we got to see another side of Howard when Ellen and Ben were around him, Howard looked more like an ordinary husband and father than a scholar. We felt close to him and yet nonetheless respectful.

In sum, we would like to wish Howard the very best for the future. Our hope is that his work can reach many more people, perhaps through the utilization of new technologies. If his work can be accessible through a variety of media and selected forms of interchange, so many more could benefit from his ideas and cutting edge thinking. Many of Howard's fans who are not bookworms or who are from countries using English as a second language would surely have a greater chance to appreciate his works more deeply in this global era.

Howard's Response to the Japan MI Society

For many foreigners, Japan means flower blossoms, or tea ceremonies, or sumo wrestling, or an admirable though occasionally struggling democratic society in the Far East. But for those of us at Project Zero, especially ones connected to Multiple Intelligences, Japan means "The Multiple Intelligences Society." Tomoe, Keiko, and Masao, you have been the avant-garde; a small but hardy band of Japanese colleagues who find merit in our ideas and have tried in various ways to introduce them into the broader Japanese context.

Those are our professional ties. But your personal kindnesses have become legendary within my family. Each of you, alone or as a group, has always made sure that we are comfortable and that we get to visit fascinating sites, have delicious meals, and make contact with thoughtful colleagues in the world of Sony and of education. And of course you have recorded these encounters in beautiful photographs, even as you have kept us regularly informed about your trips to other sites around the world. I am very moved by the collection of photos and reminiscences that you have contributed to the Festschrift. My family and I will always cherish them.

In no way have I been able to reciprocate, and I apologize for that. I always look forward to your visits to the United States (sometimes a surprise, sometimes planned) and to our chances to catch up with what you have been doing, thinking, and teaching—always something new, interesting, and provocative. Thank you, Tomoe, Keiko, and Masao, for helping to bring American and Japanese educational thought and educational practitioners closer to one another.

Reimagining Dante:
Theater and Transformation Behind Bars

Ron Jenkins

Prologue: Framing the Connections

I was delighted by the invitation to contribute to this volume, because as a theater scholar and practitioner working at a far remove from the realm of cognitive psychology, I rarely have the opportunity to reflect on ways in which my work has been inspired by the good fortune of having had Howard as an adviser in graduate school at Harvard. I cannot pretend to be applying his theory of multiple intelligences with the rigor of a social scientist, but I know that my investigations of theater performances in the villages of Indonesia, the deconsecrated churches of Italy, and behind the walls of prisons in America have all been in some way framed by the mind of Howard Gardner.

As a former professional circus clown newly arrived in Cambridge from two years of theater studies in Bali and Paris, I was unsure how I would fit into an academic environment, but was intrigued that one of my professors directed a research project on the arts called "Project Zero." A few years later, while struggling to write a dissertation under Howard's guidance, I was surprised to learn that he had quoted one of my articles in his book *Frames of Mind*. It was the first time I had been cited in a book, and the unexpected honor made me think that perhaps there was a place for my eccentric vision of theater in the world of academia. Right there in the chapter on bodily-kinesthetic intelligence, at the beginning of the section on "Acting," before the quotes from Stanislavsky and Margaret Mead, were my descriptions of the physical training that prepared individuals to become temple clowns in Bali. Howard commented on the mastery of personal relationships that was also part of the clown training, making me wonder how many more of the "multiple intelligences" described in his book were involved in the development of a Balinese clown—for example, the musical intelligence required to coordinate the songs and dialogue with the shifting rhythms of the gamelan gong orchestra, and the linguistic intelligence required to improvise jokes in multiple languages and deliver a vernacular translation of the Sanskrit-related Hindu texts chanted by the serious characters. Decades later I still return regularly to conduct fieldwork in

Bali, but now the books I write focus on the linguistic acrobatics of the clowns and their relationships to the social, political, and religious networks of village life. My appreciation of the multi-level complexity of their accomplishments has been enriched by my readings of Howard's books, and by my memory of him as a teacher, advisor, and mentor.

The same is true of my work with the Italian actor, writer, and Nobel Laureate Dario Fo. My translations of Fo's texts, stagings of his plays, and essays explicating his technique, are all informed by the invisible frame of Howard's influence. It is my responsibility to communicate to audiences, actors, and readers all of the dimensions of Fo's genius: the musical intelligence embedded in his theatrical rhythms, the bodily-kinesthetic intelligence of his physical performance encoded in the kinetically-charged words of his texts, the spatial intelligence reflected in the drawings he makes that serve as an outline of each play presented before he begins to express it in words, the interpersonal intelligence required to create a bond of intimacy with his audience, and the linguistic intelligence of his comic wordplay. My book on Fo is structured around these multiple dialogues in Fo's performances, i.e. his ongoing simultaneous dialogues with the audience, his body, his seminal drawings, and the language of his text. I cannot blame Howard for all the imperfections in that analysis of Fo's artistry, but whatever value it has can be traced back to my incomplete but appreciative understanding of *Frames of Mind.*

These intellectual debts to Howard are in the background of my work, quietly embedded in the subtext of my thoughts. It would be foolish of me to claim that there is any scientifically precise correlation between his work and mine, but it would be equally naïve to dismiss the hold he has on my artistic and scholarly imagination. And that hold goes deeper than the ideas in his writings. Howard is glued to my psyche by the fierce eccentricity of his methods as I understood them as a student. Even stronger than the sense of validation I felt when he quoted me in his book was the sense of kinship I felt to his intellectual restlessness. In the course of investigating his theories, he wrote about geniuses like Einstein, Picasso, and Martha Graham, but he also wrote about the classrooms of China, brain-damaged veterans, and the "scribbles" of unknown child artists. He was a role model for me when I began to explore the artistic elements of American Sign Language as used by deaf children, the methods of South African street performers protesting

apartheid, and most recently the theatrical voices of men and women in prison. For many admirers, Howard's fame is linked to his remarkable books, theories, and studies of great minds, but I have always been impressed by his dedication to discovering what can be learned from those who might otherwise be ignored. Victims of brain trauma. Scribbling children. Even Howard's first son and daughter made their way into the interludes of his textbook, *Developmental Psychology*, my favorite parts of that volume.

My own recent attempts at listening to marginalized individuals have led me to work in prisons, and that work is the subject of my contribution to this volume. For the last few years, I have been creating theatrical collaborations with incarcerated men and women based on their responses to Dante's "Divine Comedy." This ongoing Dante Project has brought me to prisons in Indonesia and Italy as well as closer to home in New York and Connecticut. The article that follows describes some of the results of these collective investigations of Dante's poem.

Reimagining Dante: Theater and Transformation Behind Bars

"Dante's just like us. I relate. He's trying to make a change, just like us. And he takes chances, does what he has to do. That's what we'll have to do too."

"Everything we are is the result of what we have thought."

"I see Dante and he is learning about making transitions, learning that change is hard. But, it is possible. As you see from Dante, you can go from one lifestyle to another. It's hard, but we can do it. That's what Dante showed me."

"What I liked the most was that he had a hell of an imagination."

"There's a section at the beginning that talks about, "Halfway through the course of my pathetic life I woke up and I found myself in a stupor." And I read that and it jumped out to me, because when he says "woke up" I took that in the sense of him becoming conscious. It's me coming to the realization that I'm coming out of that darkness, that mental death, that sleeping state."

"Only a fool forgets lessons learned through pain and suffering."

“We may never reach perfection, but our goal in life is to always strive and to do the right thing, and continue to climb and go up that ladder until we are basically our best selves, and we can look in the mirror and be satisfied with who we are. You can go down any road you choose, but you still have to face yourself.”

“You gotta love the hell you go through to come out right.”

—Incarcerated performers responding to Dante’s “Divine Comedy”

One of the inhabitants of the ninth circle of hell asks Dante, *“Perche cotanto in noi ti specchi,”* (“Why do you keep looking at us.”). I think Dante gazed into hell so intently because he saw himself there. He saw his personal flaws, along with the flaws of his society. Perhaps films about prison are popular for the same reasons. They show us stories about our own shortcomings and those of our contemporaries, just as Dante depicted his own weaknesses and the corruption of Medieval Italy in his epic poem. But while Hollywood depictions of prison are often based on stereotypes, theater created by people who live in prisons shatters those cliches by probing more deeply into the complexities of injustice, betrayal, love, and forgiveness than is possible in a commercial film. Incarcerated individuals identify with Dante for the same reasons everyone does who takes the time to read “The Divine Comedy.” Dante depicts himself as someone trying to find a way out of hell and into paradise. It is a personal journey that most people can relate to, but spending time in prison makes the trip more urgent.

For several years I have been working on prison theater projects that begin with a reading of Dante’s “Divine Comedy” and end with a performance weaving together fragments of Dante’s text and new writings by incarcerated men and women inspired by Dante. These workshops were held in prisons in New York, Connecticut, and Indonesia, sometimes with help from my students in Wesleyan University’s Service Learning Program.

The informal performances resulting from this work often focus on the theme of transformation. The men and women who volunteer to work on the Dante project are in the process of trying to rehabilitate themselves, and they identify with Dante, the writer and the character in his own poem, as someone who is trying to change his life. Like Dante they have experienced the “dark forest” of fear and misfortune described in the opening canto of “Inferno” and are eager to follow him on a journey

out of hell, through purgatory, to a place beyond prison that would fit their description of paradise. Dante chooses Virgil as his guide, and they each choose their own guides: Joan of Arc, Martin Luther King, Houdini, Mike Tyson, the Virgin Mary, Michael Jackson, Malcom X, and the Greek goddess Athena, among others. Learning that Dante was exiled from his home in Florence and condemned to death if he should ever return, the men and women in prison, separated from their families for years, empathize with his exile.

One of the performances was attended by Erika Tindill, the head of the Parole and Pardons Board of the State of Connecticut. She was impressed by the level of introspection demonstrated by the incarcerated individuals participating in the program, noting that introspection was the first step to rehabilitation and re-integration into society.

Actors trying to make their performances more compelling are always taught to 'raise the stakes.' Actors in prison are by definition living in conditions where the stakes could not be higher. Their lives, dignity, and family relationships are constantly at risk. Consequently, their interpretations of Dante are illuminating in ways that would not occur to performers in other settings. Every time I collaborate with incarcerated performers on "The Divine Comedy," I discover something about the poem that never occurred to me before. Working with formerly incarcerated individuals is equally revelatory. In Italy I read the last canto of the "Inferno" with a man named Luigi, who has spent nineteen years in prison for armed robbery. Although like all Italians Luigi had studied a bit of Dante in school, he did not remember much about "The Divine Comedy," but when I talked to him about the last lines of the 'Inferno,' describing Dante and Virgil as they emerge from hell to see the stars, he understood deeply. It reminded him of how much he had missed seeing the night sky when he was in prison. "I was in a cell that faced a wall with no view of the sky," he recalled. "They let me out every day for an hour of exercise, but it was daytime, and that's not the same. One night I was transferred to another prison. On the way to the van I looked up and saw the stars for the first time in years, and … it felt like I was being reborn." It took a long time for Luigi to finish the last sentence of his story, because he was almost in tears as he recalled the moment. No matter how many times one has read "The Inferno," listening to the last lines of the poem spoken by a formerly incarcerated septuagenarian with a dagger tattoo gives the words a resonance they've never had

before. “E quindi uscimmo a riveder le stelle.” (And then we emerged to see again the stars.)

Dante and Transformation

Incarcerated performers and spectators had no trouble identifying with Dante as an individual. “Dante is us,” said one audience member with great pride before walking out into the prison yard after a performance. “For the rest of the day, I’m going to be Dante.” It was as if Dante were a newly discovered superhero with the power to overcome all obstacles. Little distinction was made between Dante the writer, who had been exiled from his home in Florence, and Dante the character, who traveled from Hell to Heaven with Virgil as his guide. Both Dantes suffered severe hardships and were trying to make the best of bad situations. That was enough to win the respect of the men and women in prison who were also trying to overcome severe hardships.

Dante was a master of self-transformation and that is a skill of value to the incarcerated performers. They were not only interested in transforming themselves into the characters they played in their adaptations of Dante’s poem, but were also motivated to transform themselves into people who would be respected in the world outside of prison. Dante the writer had been convicted of crimes and sent into exile, but he had used his writing to redefine himself as an artist remembered for his poetry, not for his conviction. Dante, the character in the poem, emerged from hell unscathed, continued on to heaven, and went home to tell the world about his journey. These collective accomplishments earned Dante credibility and respect among his incarcerated readers, who also aspired to transcend the stigmatizing label of “convict,” and make their way from hellish hardships to a better place. It also earned Dante their sincere concern. Few readers of the poem ask themselves what will happen to Dante when he returns from Paradise to the mortal world, but people in prison asked that question, knowing that no one goes home from a trip like that unchanged. “You are never the same when you leave,” observed one performer, who knew from experience how prison could transform a person, and wondered how a trip to hell and back would have changed Dante.

The negative transformations often undergone by people in prison can be devastating, but the individuals involved in performing “The Divine Comedy” were hoping to emulate Dante’s positive powers of

transformation. Their determination to move from degrading circumstances to something better was expressed by one of the participants in a monologue inspired by Dante's descriptions of the third circle of hell, reserved for gluttons:

Grit, grime, slime, shit, piss, spit, crime, hate, robbery, murder, rape, abortion, greed, extortion, jealousy, envy, rain, hail, snow, sleet, punishment, gluttony, chaos, defeat, lust, hell, stink, the smell, horrible, terrible, it seems like everything's edible, eat, eat, eat, eat, my stomach hurts, somebody help me burp… pedophile, the pope, cocaine, dope, mud, the blood, I hope there's hope.

After barking out the litany of evils in loud jagged rhymes, the performer speaks the last four words in a whisper, as if they represented the fragile precious contents of Pandora's box after the woes of the world had been released. All that's left in the end is the hope that "there's hope," but it's enough to set the process of transformation into motion. The odds are clearly against positive change, but that didn't stop these incarcerated performers from trying. The prevailing attitude was that if Dante can do it, so could they.

After a few months reading, re-imagining, and performing Dante's epic poem, one performer began noticing multiple levels of self-transformation:

I mean, even my handwriting is different now. See, I'm spacing my words apart now, like the way you do, so it's easier to read. See. And in letters to my mom and dad, I don't know, it's just different. I tell them stuff different now. And I don't mess around with people anymore. I used to get in fights a lot, everybody wants to fight you when you're big like me, but I just got muscle, I just like to stay in shape, that don't mean I want to fight anybody. So now I just go to the gym and work out and eat and go back to my room, and I don't make trouble with nobody because I just got to be good and get out of here, I gotta be good now, because I have dreams now. I want to go to college and be around educated people and be an architect. I already got a plan. When I get out of here I'm going to move in with my mom and stepfather, they got it all set up for me. Away from all that bad stuff. I'm going to college and get out of here.

This individual surely had motivation for change before reading Dante, but it was clear that the performer associated "The Divine Comedy" with the kind of positive transformation linked to achieving

one's dreams. He noted that the encounter with Dante provided "that extra energy to come and express myself. Someone coming here, telling us that we got more in us than being a thug, it's a positivity that we aren't used to."

The incarcerated individuals are referred to throughout this essay not as 'inmates,' 'prisoners,' or 'offenders', but as 'performers'—because "performers" specialize in the art of transformation. These individuals worked hard to master the art of theatrical and imaginative transformation and to consider the application of those skills to the lives they hope to live outside of prison.

Dante became a role model for them, triggering a desire for transformation that is a natural part of the human condition. But perhaps because they were living in conditions that many would consider unnaturally inhuman, many incarcerated individuals were plagued by self-doubts and fears that prevented them from expressing those desires for change—and expressing the will to change is the first step to making change real. One performer said the work with Dante's text switched on a light bulb in his imagination that was extinguished in other prison settings because of the tough exterior it was necessary to adopt for survival. That might explain the desire of the individual who wanted to be Dante for the day in the prison yard: a hope to survive without the usual prison armor that kept people from becoming the people they imagined themselves capable of becoming.

A clue to the identity that the incarcerated performers imagined as their true selves can be seen in their responses to the words emblazoned over the gates to hell in Dante's poem: "Abandon hope, all who enter." They performed the words as they themselves would have rewritten them, and then they performed the words that they would write on the gates to their own souls. The difference between the two signs might be seen as the distance they hoped to traverse in the self-transformations they imagined for themselves after prison. The words on the gates of hell often reflected the conditions of their current circumstances behind bars: "Here behind these gates, the walls, and this razor wire, live the combined rejects of society, a world without freedom." "Here life is, but really is not. Life is something we can see, but not participate in."

The words on the gates of their souls reflected a determination to establish a distance between the gates of hell and their personal

identities. These were souls in the process of transformation: “Caution: area under construction,” wrote one performer. Another wrote, “Carnage and turmoil has ravaged this area for years. Walk with care. All that remains here is fragile and may crumble with the first harsh touch. In need of a peaceful loving touch to help rebuild.”

Other signs indicated that similar identity reconstruction was under way: “This soul was lost and scared. Untill it found purpess 2 move on and 2 keep looking 4 the right place. If you ever come upon this soul listen 2 what he say b/c you will find that what ever he got 2 say can come in handy 2 what ever you is going through. And he also can learn something from you as well.”

One of the signs emphasized the urgency of transformation by pointing out, in gentle rapping rhymes, how little time there was to change in the brief span of a life: “A child at birth, from womb to earth, a brief taste of life, then it’s time for the hearse, shovel the dirt, a few kind words from the Church. Our time will come, but his came first.”

In addition to reading Dante’s poem as a springboard for their own individual transformations, one group of incarcerated performers re-imagined the poem as a series of motivational speeches for teenagers that might convince them to stay in school and not make the mistakes that would lead to drug addiction, imprisonment, or death. Lines from “The Divine Comedy” triggered the performers to give short inspirational speeches based on their own life experiences. The scenario was enacted as if it were being performed for a school auditorium full of impressionable teenagers.

Beginning on a comic note the performers use a few lines from Dante’s original poem to depict the school principal’s efforts to control the students as equivalent to the three-headed demon dog Cerberus trying to maintain order in hell.

“His eyes blaze scarlet, his beard is greasy and black; he has a huge belly and sharp talons for clawing, skinning, and quartering the spirits … Cerberus howls so thunderously that the souls wished they were deaf.”

The principal announces the arrival of the recently incarcerated visitors who are “here to tell you all what it’s like to be in prison and what they wish they knew when they were your age.” The incarcerated

performers imagine themselves as the motivational speakers and talk directly to the audience of incarcerated spectators as if they were the teenagers in the school auditorium. Their advice is peppered with quotes from Dante that match the points they are trying to make. Four performers alternate, speaking a few sentences each, and creating a collage that mixes their life experiences with inspirational advice, and fragments of poetry. They began with the first lines of the poem and, like Dante, engaged the audience by emphasizing that they were going to talk about "the dark forest" in "*our* life's journey" in terms that could save them from a path "not much less bitter than death." "There is no life in prison or if you're dead in a graveyard," announced one performer. "If you're 12-18, going into Junior High School or High School, you're gonna want to listen."

The motivational speakers wanted their audience to ask the questions that the performers were forced to ask themselves in order to change their lives: "So far my life has been unstable. Everything has built up to the point where I have to ask myself: how did I end up here? Where did I go wrong?"

The speakers created a dialogue with the medieval poet. In response to Dante's line, "I can't say how I ended up there, since I was so drowsy when I abandoned the true road," a speaker told of the fuzzy thinking that had led to one of his poor choices. "My friend, José, gave me a call telling me that there was a house with drugs and money in it, so I went to check the house out along with the surroundings. My daughter called me saying that she wanted to play out in the park. I told her that I was very busy and not today."

The speakers tried to encourage their audience to be bold in their dreams of self-transformation: "First off, I feel like anyone can be what they want to be in this world." They also were honest in saying that the transformation would not be easy: "I've been through a lot in life as far as positive and negative. I've been incarcerated, betrayed by loved ones and friends, lost close ones and family, and throughout this hardknock life I still found myself to be loyal, and am still trying to reach my goals."

When describing how some people would try to prevent them from fulfilling their goals, the speakers quoted Dante: "With their heads held high, they will hold down others with heavy weights, oblivious to their shame and tears." Then they tell the audience not to be discouraged: "To

the youth in the inner city of all races. Drugs. Violence. Peer pressure. Being misguided by the wrong people. Kids from broken homes. I'm here to tell you there's a better way." "Do not fall victim to what you see in the streets, because you will lose more than you will gain." "You will gain more by staying focused on school. Be the person you want to be in life and not what some one else wants you to be."

Referring to the fears Dante reveals in the second Canto of the Inferno when he wonders if he is capable of making the journey out of hell to heaven, the speakers identify doubt as an obstacle to be overcome: "What is self doubt? Self doubt is having no confidence in yourself. Doubt is uncertainty of mind. When I was in school I really didn't take it serious. I doubted myself in my school work, so I used fun to fill that doubt in my mind and turned to the streets. I used the street life, money, drugs, and guns to cope. Don't let anything get in your way."

When Virgil urges Dante forward with the words, "Let's keep going, for a long road awaits us," (Canto 4, 22-24) and Dante remembers, "he made me go down into the first circle surrounding the abyss," one of the speakers answers with a personal memory of being forced to overcome fear for his own benefit: "When I was younger I used to hang by the public pool. There was this white dude as a life guard there. I used to like to watch people jump into the deep end and spring back up. "You know how to swim?" lifeguard asked—and then he threw me into the water, he was yellin 'just relax! … Now I know all sort of strokes—backstroke freestyle—whatever."

The speakers were blunt in their warnings of what could happen if those who strayed from "the straight road" did not change their ways. Quoting Dante's line about a prophecy of doom, "I had an evil dream that tore away the veil of the future," (Canto 33, line 25), one of the speakers predicted that those who feared change and returned full circle to their old ways would not survive: "It's doing a 360. The people that try and do a 360 they always get killed. Like their past comes back to haunt them and they get killed."

Although the performers imagine themselves speaking to impressionable teenagers, and are actually performing for an incarcerated audience that has already made their share of bad choices, the advice being conveyed in the motivational speeches is advice the performers are also giving to themselves, advice they wish someone

would have given them when they were younger: “Don’t doubt yourself.” “Go for your goals and dreams.” “Don’t fear nothing, because fear in this life is the first step to doubt.” “Doubt and fear have different meanings and they do the same damage. They destroy lives. Don’t be a victim like I was.” “Learn from your mistakes.” “Life is about experiences. Ups and downs. Do not be a follower and never change the person you are, if so make sure it’s for the better and never for the worst.” “Do not fall victim to what you see in the streets because you will lose more than you will gain.” “You will gain more by staying focused on school. Be the person you want to be in life and not what someone else wants you to be.”

Each of the motivational phrases had a corollary in a situation faced by Dante, a fear overcome, an obstacle surmounted, a temptation transcended, a monster subdued. Where casual readers of the “Inferno” often remember only the scenes of suffering, these incarcerated performers understood the poem on another level. Like Dante, who closely observed the misguided souls in hell, sympathized with many of them, and saw elements of their flaws in himself, the performers in prison used their own journeys through hell as inspiration for self-transformation. They admired Dante’s ability to immerse himself in horror, speak truth to evil, confront the devil in person, and emerge a better person for the experience. Having lived through similar experiences, they hoped to follow Dante’s example. The scenario of motivational speeches they invented to encourage others to do the same reveals the link between Dante’s struggle and their own efforts to transform.

While only one group of performers envisioned a scenario in which they actually portrayed motivational speakers, almost all of the scenarios created in response to Dante’s poem could be seen as embodying the kind of advice the performers wished someone had given to them, or the kind of advice they wished they had listened to more closely when it was given. The following poem, for instance, is a rueful evocation of choices not made:

I don’t know how many
Times I told myself
I should have listened

I should have listened
You know, to that voice inside
Not the loud one
Not the one that pounds
And hammers all hours of the day and night with
Raging fists

Not the one that snakes around
In shadows hissing
Black promises

I don't know how many
Times I told myself
I should have listened

Not to the one
Who shows up wearing
A hideous mask
Mocking and laughing screaming
Stay! Stay with me!

I should have listened
To the other voice
You know, the quiet one
The wise one, the one who knows
Who called out
Leave now.

The poem expresses the thoughts of an individual in the process of transformation, a person who is now listening to the quiet, wise voice inside that was ignored in the past. Other performers spoke more directly about the process of transformation they sensed in themselves after reading Dante. For some expressing the need to change is the first step towards actual transformation, but the prison environment inhibits self-expression of any kind, and many individuals identified with the characters in Canto 33 of the Inferno whose tear ducts had been frozen, denying them the release of expressing their emotions.

their anguish, blocked by a barrier in the eye
turns back inside, increasing their pain. (33, 95-96)

One performer was inspired by this passage to write a song in Spanish, expressing the need to "tear out" the pain that remained buried inside.

Son marcas, Senor, que lleve in mi/ Trato de arranciarlas, olvidar las/ pero ellas siguen

Nadie comprende mi situacion. Nadie comprende mi situacion. Por essos vengo ante ti, Senor.

There are scars, Lord, that I carry inside me./ I tried to tear them out, forget them/ but they would not let go./

Nobody understands my situation. Nobody understands my situation. That is why I come before you, Oh Lord.

Another identified the blockage of emotion with patterns of pride that were difficult to overcome: "The old me was filled with negative patterns. I was the Inferno. I was the King of Fear, Anger, and an Unforgiving Heart. I had some disease. The root of my disease was Pride. I thought I was so strong and so powerful when I had all my possessions, my PMS, Power, Money, Sex. I was all-important, all-powerful."

One performer attributed an initial reluctance to participate in the group with the fear of self-expression. "You know, I came up with all these excuses, all the time, not to do the work. None of these people know me, why do they care, how can I trust them… but then I realized that everybody's got problems, and everyone can relate. For the first time, I realized that. And talking about these issues, well, I had so much built up in me that I needed to get it out. If I hadn't, I would still be bitter. Change comes from within, I learnt that here, because I feel different."

These performers' experiences recall Dante describing the gradual release of a hardened soul as something similar to the opening of a flower in the light of the sun, "Like tiny flowers in the frozen night, bent over and closed tight, straighten on their stems and open themselves to the sun's whitening light; so did I in my weariness feel a great courage surge to my heart…."

The surge of energy that comes with the release of pent-up secrets was the subject of an exhilarating presentation by a performer who wondered how the world might be transformed if all its secrets were released at once: “What if I gathered all the sins, secrets, and crimes of my past, or better yet, what if I gathered everyone’s sins, secrets, and crimes and rolled and compressed them into this magnificent ball of whirling energy and just threw it up into the wide open sky? Would the Spirit of the Wind Catch it with her long fingers and lay it down before the flowing rivers and clover speckled fields to bless it before letting it go? Would she then ask the Sun to christen it with his brilliant light of truth before hurling it up into the universe? Would it explode into a zillion stars when it reached the cosmos, so we could dance barefoot underneath them? Would the explosion roar and grumble like black thunder releasing healing blue rain, baptizing us all so we may be forgiven, so we may sail onward into the mystic? What if we just let it all go? Ya?”

This whirling ball of energy composed of all the world’s “sins, secrets, and crimes” parallels Jorge Luis Borges’ description of “The Divine Comedy” as a painting of the world that depicted all of human history in a single canvas. It also brings to mind Dante’s own description of an all-inclusive book found in heaven that is illuminated by divine light: “In its depth I saw bound together in a single volume, that which in the universe is scattered; substantive events, accidents, and actions, all fused together so that what I speak of is one simple light” (Canto 33, line 86-87).

This incarcerated performer imagines that once the world’s sinful secrets were released, their untapped whirling energy would be christened “with the brilliant light of truth” and unleash a healing rain of forgiveness. It is a startling vision of transformation to encounter behind bars, one that also includes the explosion of “a zillion stars” to match the metaphor of the stars that Dante uses to end each section of his poem. Healing. Forgiving. Divine Blessing. Ecstatic Dancing. And the illumination of Truth. All the result of revealing the world’s secret crimes. It could very well be a description of Dante’s “Divine Comedy and the responses it has inspired since its first appearance in the Middle Ages. Or less grandly, a single reader’s appreciation for the wisdom found in Dante’s poem.

If “The Divine Comedy” can be imagined as a single book that depicts the world’s history of secrets, sin, and crime, then its readers might also be imagined as books, individual volumes with their own surprising histories. In this sense all of the incarcerated performers were writing their own books as they re-imagined themselves in the context of Dante’s book of transformation.

“Sometimes when I was incarcerated,” said one performer, “I would sit in the library and I would look around at all the books and wonder. Different covers. Fiction. Non-fiction. But how many do you think have the same story? It’s like us. We might look different, but what’s the difference between me and the next guy’s story? My cover is ‘prisoner’ but inside—this is me.”

In re-writing Dante’s story, the performers were re-writing their own stories, imagining endings that would defy the label on the book’s cover that read ‘prisoner.’ Better still they could write themselves a book in which they free themselves from that label entirely. “One of the ways I escape from my cell,” said one of the performers, “is with my imagination, with the power of words.”

Escaping prison through writing and performing is not easy. It requires the humility to reveal one’s ignorance and the courage to display one’s heart. One performer likened the experience to skydiving: “It was like jumping out of an airplane with a parachute. I wasn’t sure if it was gonna work, but I jumped anyway.”

Dante’s “Divine Comedy” was the parachute that made the leap possible, enabling the performers’ imaginations to float free before landing safely with their feet on the ground. For all the flights of high poetry, Dante’s epic is so rooted in the reality of everyday life that the incarcerated performers had no trouble connecting his story to theirs:

I identify with Dante. It was like how I’m living, being in prison, going through a lot of trials and tribulations, but having will and determination. Dante, you know he had will and determination. And I so much identify with that, and I think that the rest of us identify with that, because we have that same will and determination.

The ‘will and determination’ to transcend all obstacles is the theme that makes Dante so appealing to incarcerated individuals who rely on that characteristic to survive each day in prison. It is the trait they will

rely on even more heavily when they leave prison and face the daunting challenges of reentry into a society that labels them as 'convicts.' They had that 'will and determination' before reading Dante, but discovering how much they have in common with one of the world's most revered writers helps to inspire the self-confidence needed to sustain their struggle to prevail with dignity against the odds.

The perseverance and drive required to complete Dante's journey from hell to heaven is woven into the 'terza rima' poetic structure of Dante's poem. The first and third line of each stanza rhymes with the second line of the previous stanza, so that every stanza is linked to the one before it by a rhythmic imperative. This rhyming device propels the action of the narrative ahead with a relentless forward motion, like climbing a ladder with the rhymes as the motor that propels the story up the interlocking rungs.

The same relentless drive characterizes the complex rhythms of rap that were used by many performers to reimagine Dante's story as their own. One of the raps captured the unstoppable momentum of the entire journey from hell to heaven in just a few lines.

I traveled a long path, the wrong path, where rain and snow was always the forecast, in case you guessed it, I am the outcast, but these trials and tribulations I gotta outlast. My hand is grasped by a hand that pulls me, a voice whispers in my ear that it behooves me, to move forward, to no longer remain dormant, deep going, cause ur almost out the doorstep. I think I can, I think I can, fuck that, I know I can. I am that I am … free.

The will to change that animates this passage and others inspired by Dante is not limited to metaphor. One performer recounted an incident where remembering Dante's "obstacles" led to a change in habitual behavior that stopped a fight before it began:

I was in my cell talking to my boy about the performance, so I started telling him about Dante and the someone in the next cell shouted "shut up." And I just said "obstacle." "You know," I said, "you are just like something from Dante that stops you from doing what needs to be done," and the person said, "you don't know what the fuck you are talking about." But I just kept talking about Dante, because I wasn't going to let that obstacle stop me.

Hearing these versions of Dante's poetry performed behind bars can be transformative, both for those who are incarcerated and those who are not. In the words of one performer the experience, "helps us to evolve in an environment where it is much easier to devolve." The commitment of these individuals to change their lives might move those who are not incarcerated to recall canto 4 of the Inferno, lines 43-45: "Deep sorrow struck me when I understood, because then I knew that people of great value were suspended in that limbo."

Howard's Response to Ron Jenkins

I have had students from varying backgrounds over the years, but I can't remember anyone who came to the Harvard Graduate School of Education after a stint at Ringling Brothers Circus and additional studies at Bali and Paris, and who has been trained as a professional clown (we have our share of amateur clowns on our campus!).

It was my good fortune that you elected to work with me as your adviser. We had a wonderful time exploring American comedy and its role in politics dating back to Dan Rice (the model for "Uncle Sam") in the 19th century, and Will Rogers in the early 20th century, to figures still known (at least by some) today: Bob Hope and Johnny Carson. Too bad that Jon Stewart and Stephen Colbert were not already on the scene—we would have had a lark trying to place them in the American humoristic-political gallery.

But if your background pre-Harvard was astonishing, your accomplishments since have been breathtaking, indeed unique: primary translator for Dario Fo and Franca Rame (master satirists in Italy), principal introducer of this remarkable couple to America, intensive exchanges with Balinese dance and mime troupes, and from the exotic abroad, an equally great stretch, to reading Dante with inmates in American prisons. Your students at Wesleyan and other schools are indeed fortunate.

At first blush, nothing could seem more remote from one another than prisoners in Italy, Indonesia, and the U.S. on the one hand, and the reading of an Italian poet from the middle ages (whose name is probably known by few Americans and even fewer Indonesians) on the other. Yet you are able to show not only deep interest but surprising and sometimes amazing connections: the lives of Dante and the many souls whom he encountered on his unique pilgrimage across the spheres as they affected the thoughts, examples, self- revelations, and performances of the prisoners whose trust you have earned.

I had never thought about it before, but it is likely the great books of the West might each elicit different connections from those who have been incarcerated. The Bible may convince someone to become a religious person, while Shakespeare may expose and illuminate the incredible psychological variety of human beings. As you portray it,

Dante is read by the prisoners as one who is deeply involved in the issue of transformation and life change. Since that is certainly an aspiration of many in prison, and certainly those who would immerse themselves in this difficult writing of an earlier era, Dante emerges as an ideal text, especially in your capable hands. Perhaps one day you might consider the Odyssey or Gulliver's Travels!

It would be hyperbole—though perhaps permissible in a Festschrift—to tie your wide gamut of interests to the different intelligences that I've written about. But I'd like to think that you were searching for a very broad canvas on which to carry out your artistry and your scholarship, that colleagues at Harvard saw that you needed and deserved that space, that we gave it to you, and that you certainly made the most of it. In that sense, in your reference to "intellectual restlessness" (which I understand so well), we are both acolytes of Jerry Bruner.

I hope that the lesson remains alive today; our colleges and universities should always welcome individuals of talent and broad vision.

Alex S. Jones

During the worst period of my life, Howard—and Ellen—were stalwart, loving and the most generous of friends. It was the time of my wife's illness, and she and I were bolstered by their gigantic capacity for kindness. Howard is such an accomplished man that his many achievements may sometimes create a glare in which his humanity gets obscured. Never to me, nor to the ones who know and love him, though. He would wince at the notion, but his is a big, big soul. Perhaps more to his taste, I shall simply say he is a mensch. Happy Birthday, Howard.

Howard's Response to Alex S. Jones

Around the university there are all kinds of human relations. Ellen and I felt very close to you and your wife Susan—in so many ways larger than life—and were devastated to learn of her cancer. We felt fortunate to be part of a huge network of support, spanning the country and beyond, that could embrace you and Susan during the tragic months of her illness, rejoice when there were promising medical developments, and perhaps provide a modicum of solace when she died.

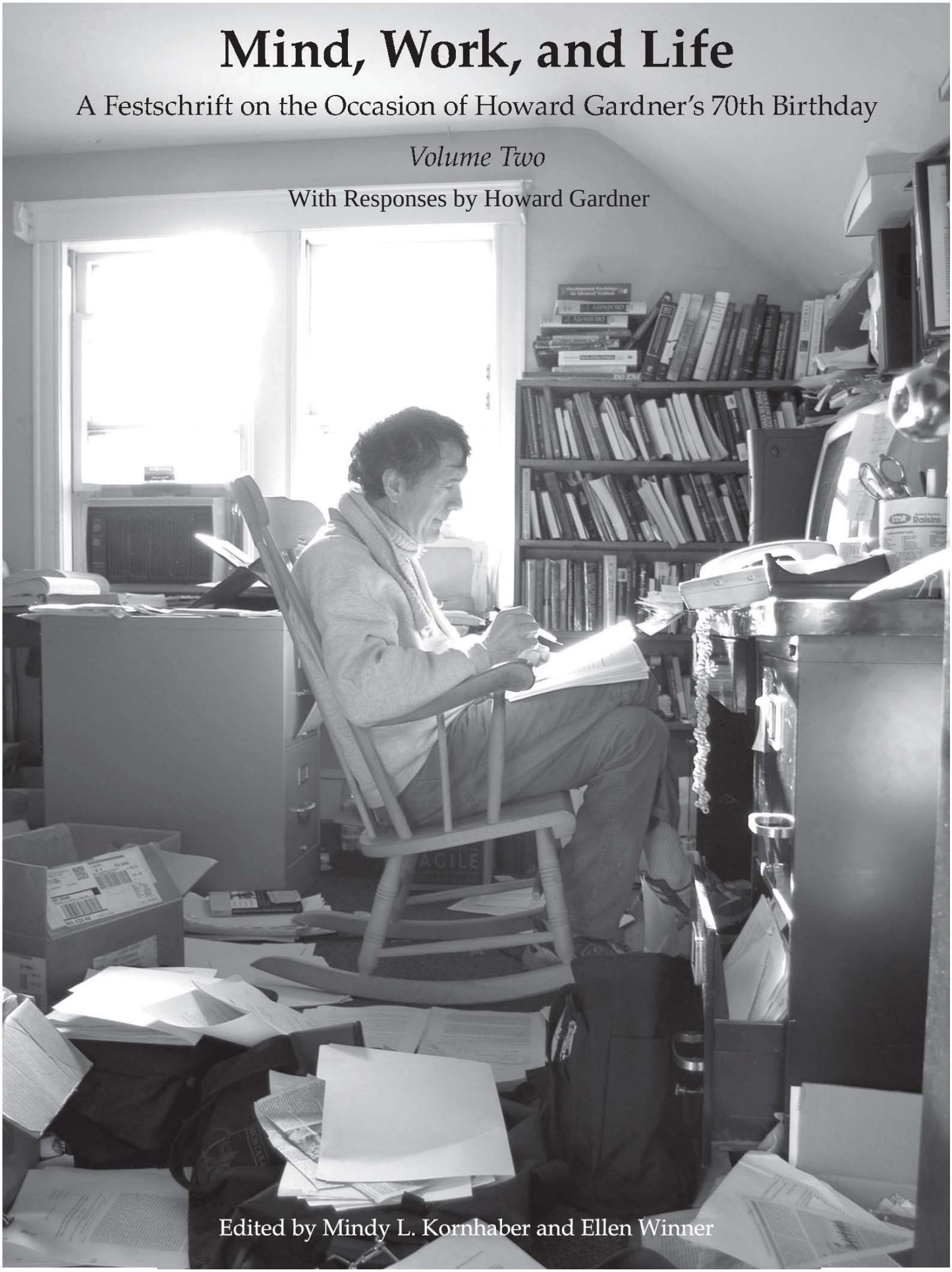
When you came to Harvard (with Susan), you were Pulitzer Prize winning journalists, best known for *The Trust*, your authoritative history of the *New York Times*. I think it is fair to say that you were not certain how you would handle the twin tasks of being a professor, on the one hand, and the manager of a highly visible research center on the other, with the ever-looming presence of Walter Shorenstein, the funder-with-multiple-agendas, and Marvin Kalb, the eminent original director. It's a singular achievement that you've made the Center your own, and indeed a healthier and more vibrant place to gather, discuss, argue, and produce significant work. A center on press, politics, and public policy is desperately needed at this time. We are blessed to have the best one, under your skilled direction, at Harvard.

Mind, Work, and Life

A Festschrift on the Occasion of Howard Gardner's 70th Birthday

Volume Two

With Responses by Howard Gardner



Edited by Mindy L. Kornhaber and Ellen Winner

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How Howard Gardner and Madonna are Alike: A Very, Very Scientific Exploration

Shira Lee Katz

To Howard Gardner
With admiration and respect on the occasion of his 70th birthday

Introduction

When Howard's office was located on the second floor of Larsen Hall at Harvard, eager admirers would attempt to sneak past the security guard on the ground floor to obtain his autograph. These salivating enthusiasts were not hormone-driven adolescents or celebrity chasers. Rather, they were teachers, academics, and thinkers from around the globe who wanted to meet the King of Education—the man whose theory of multiple intelligences had altered how we teach and conceive of education today. These attempts to bypass the security guard, along with the masses of fan mail that weighed down his assistants' inboxes, always seemed a little bit freaky to me. When invited to write this essay, however, I reflected on how these devotees might be onto something. Quite simply put, Howard is a rock star.

Howard would not like this comparison. He is too distrustful of pop culture and anything frivolous. In reality, he is probably more like a great former president such as Bill Clinton, since he is wicked smart and has nothing to prove anymore. But I shall make my case as Howard always encouraged his students to do. In this essay, I argue that Howard is like a rockstar—Madonna, for argument sake—because he is: 1) Influential, 2) Disciplined, 3) Ever-evolving, 4) Unafraid to be iconoclastic, and 5) Invested in do-gooder causes.

Methodology

This rigorous study is rooted in qualitative and quantitative research with a massive sample size of 1, counting me. Data were analyzed using no proven technique whatsoever.

Findings

Howard is Influential. Time Magazine declared Madonna one of the most influential women of the 21st century in 2010. Like Madonna, Howard has influenced people throughout the world. As proof, there is a Wikipedia entry about him. While you can write your own entry these days, it is safe to say that Howard did not write his own. His reach is vast and varied, from graduate students and colleagues in his own "backyard" at Harvard, to young children in far-flung countries whose education has been shaped by his theories.

Like many influential people, Howard does not catalyze this change by waving his hands in the air. He does not do it by yelling louder or more emphatically. Many people of Howard's stature bulldoze others to make their point. Howard does not resort to this technique, because he does not need to. Howard instead changes minds with lawyer-like counter-arguments for our arguments and counter-arguments for our counter-arguments. No doubt, Howard's point-of-view is often so compelling because it is informed by the most up-to-date news, research, and public thought that he has seemingly pumped into his veins directly from NPR, *The New York Times,* and other like sources.

I discuss Howard's influence in the abstract, when I in fact have my own stories to tell. Personally, Howard was an incredibly influential mentor to me. He was my doctoral adviser and his GoodPlay Project team is now collaborating with my team at non-profit, Common Sense Media. In both of these contexts, I have noticed Howard's strong ethical core. He treats his staff, collaborators, and students with respect. He proactively deals with tough ethical decisions that many people in his position would willfully ignore. He would never take credit for his students' work, and in fact passes on many "first author" opportunities that have been offered to him. In one particular instance that stands out in my mind, he encouraged me to stand up for an educator who was not being paid enough for his work with an established and well-heeled organization. Howard's ethical way of being is one reason why many people worldwide view him as a role model.

Howard is Disciplined. As of 2001, Madonna had sold more than 300 million records and was the highest-selling woman artist, according to the *Guinness Book of World Records*. People like Madonna and Howard

are prolific not just because they are talented, but because they work their tuchuses off. Howard's work routines are mesmerizing. The morning is reading and writing. I don't mean reading emails and writing texts. I mean solid, concentrated time on task. Yet he still manages to return emails within hours if not minutes, which is very damaging to the ego of someone whose attention can be easily diverted by a pop-up ad for an online shoe store. He also appears to defy all studies of multi-tasking, which suggest that engaging in multiple activities at once may lead to the decreased quality of each individual task.

The only seeming sign of disarray in Howard's life—besides his hair when it's windblown—are the piles of paper that sit atop the motley crew of rocking chairs in his office. I think it certain that you would find these papers filed logically and methodically by category if you looked closely, but it is fun to fantasize about the alternative. These morning work sessions have led to the publication of 25 books and hundreds of articles. The afternoon is peppered with meetings, teaching, and talks. These meetings run like clockwork because Howard and his assistants are like a well-oiled machine.

What is remarkable to me is that Howard is so dependable given the fact that he is so prolific, so busy, so out of town. Many of his emails begin with the words, "as promised." These words epitomize Howard. As Howard's doctoral student, I was stunned by how fast Howard offered feedback to me—oftentimes earlier than he promised. Doctoral students often have to play ninja mind games with their advisers to get timely feedback, and I am grateful to Howard that I did not have to worry about that. He returned both my qualifying paper and dissertation within two weeks with conceptual critique and detailed line edits. In fact, even before I started on my dissertation, he said: "Remember that the best dissertation is a done dissertation." Howard was clearly speaking from personal experience, because he gets the job done … always on time.

It is hard to imagine a deadline that Howard has not met or an email he has not returned. Perhaps we have his German Jewish parents to thank for instilling in him a strong work ethic or for a special mix of DNA that bred fastidiousness and conscientiousness.

Howard is Ever-Evolving. From "Material Girl" to buff humanitarian mother, Madonna is known for reinventing herself again and again.

These reinventions are not forced, I believe, but in reaction to the *zeitgeist* and driven by personal interest. Howard is similar. His work and interests have ranged from creativity to intelligence to his current work with digital ethics, among other topics. A theme that crosscuts Howard's endeavors is that they are leading edge. He has been interested in unexplored territories—ones for which there are more questions than answers.

This almost primal curiosity was evident as I collected data for and wrote my dissertation on the factors that inspire New Music composers as they create. I was always surprised by how many questions Howard asked. "How will you get busy composers to agree to be interviewed? What is the best way to prime them for the interview? How do you explain that statement when juxtaposed with the previous one?" This constant stream of questioning cycled through my head throughout the process and helped me evolve my argument.

Howard's curiosity translates into innovative ideas, new theories, new terms. Howard's theory of multiple intelligences was a challenge to the then one-dimensional notion of intelligence measured by IQ tests. He and his collaborators coined the term GoodWork, and his GoodPlay team at Project Zero has conducted seminal research on digital ethics. My colleagues who are working with members of his GoodPlay Project often feel that we are in uncharted territory. Howard refers to the internet as the "wild, wild west," and this is often how our groups feel as we conduct research on the behavior, morals, and ethics of young people who are heavy media users. What is remarkable about Howard is that he tolerates the unknown, even relishes it, because it symbolizes a territory to explore and questions to ask and be answered.

Howard is a Little Controversial. Part of the burden of introducing new models, new ideas, new art, is that it spurs reaction. In her "Like a Prayer" video, Madonna danced in front of a burning cross while kissing an African American saint. While it is highly unlikely that we will see Dr. Gardner engaged in this particular type of controversy, all you need to know is that there's a book called *Howard Gardner Under Fire*. This book is part of a series in which thoughtful critics pen responses to the work of a major scholar. To be considered for this series is an honor, of course, because it means that others actually care about what you have to say.

Howard's ideas make waves because they challenge established norms. His theory of multiple intelligences fundamentally challenged the notion of intelligence as being one-dimensional. His study on the ethics of work is edgy as well, because he and his team challenge the notion that intelligence and talent are enough to make "great" workers. His current interest in the ethics of the online world is fresh as well, since there are few codified guidelines online about what constitutes appropriate and inappropriate behavior. The high school digital literacy and citizenship curriculum that we are currently developing in fact hinges on a framework identified by his GoodPlay project. This framework lays out ethical "fault lines," or areas that are particularly fraught for young people who are heavily participating in online communities and with other digital media tools.

Part of what makes Howard terrific is that he offers new ideas without apology. He is brutally honest, sometimes acerbic, and does not suffer fools well. His loyalty to truth and to sound ideas takes precedence over political diplomacy, and this is one of the reasons I hold him in esteem. It is easier to tell a student that their kernel of an idea is brilliant than to say, "back to the drawing board." It is simpler to pass an almost-baked dissertation than ask for a re-edit. But Howard does not let these things go. I can assure you. He is a truth seeker and a pusher. He is like your dad or mom. He presses you to the edge of your zone of proximal development. At the heart of Howard's provocative arguments or his high standards with his students is a desire for truth seeking. He prefers sound arguments and innovative ideas over what is popular, and I commend him for this.

Howard is Invested in Do-Gooder Causes. As with many celebrities, Madonna became more invested in humanitarian causes in her later years. While I don't see Howard on a mission in Malawi anytime soon, I might argue that he was on a humanitarian mission by accepting me to be his student! Seriously, though, I have mentioned several examples of Howard's good character. He treats his staff and students with respect. He strives to be a good mentor, and builds in ample opportunities for students to come into the fold of academia.

I also appreciate that Howard rewards people for being dependable and trustworthy. Many "smart" people get breaks because of their intellect. They are often given extensions or are allowed to make excuses

as to why they need more time to work. Howard does not allow this game to be played. He seems to value dependability and sheer time-on-task over raw brilliance. There is something about this practice that seems just to me, and I think fairness is at the core of who Howard is and what he believes. He would make an excellent judge, for example, because he would not be swayed by what is popular and would instead be guided by ethics.

The research that Howard conducts has more recently centered on ethics. He believes young people need some level of scaffolding and guidance as they navigate the world, and this new outlook is evident in the interventions and curricular materials that our teams are working to create. As aforementioned, he has studied the intersection of work and ethics, and now online life and ethics. I can tell many of his interactions with students of the younger generations are intended to stir their ideas and pique their curiosity. He offers provocative prompts to these mentees and elicits their answers not only as a step towards helping them reach clarity of thought, but also as a way to push the next generation to be innovative, thoughtful, and ethical.

Conclusion and Discussion

In this essay, I made the case that Howard is like a rock star because he is: 1) Influential, 2) Disciplined, 3) Ever-evolving, 4) Unafraid to be iconoclastic, and 5) Invested in do-gooder causes.

It should not be overlooked that Howard is treated like a rock star among educators and others. In one sense, the attention that Howard has received because of his theory of multiple intelligences must have been flattering and gratifying. But there are downsides to being thrown into the spotlight like this. People like J.D. Salinger handled fame by holing up off the grid, for instance. There are countless acclaimed academics and celebrities who have not managed to remain as gracious amidst the growing attention. But Howard manages to handle it, well, like a rock star.

Howard has maintained a sense of obligation and caring—to the educators who have tried to creep by the education school security guard, to his doctoral students who just want to be done with their dissertations, and to his colleagues and staff who work so closely with him. Perhaps it is in part Howard's sense of obligation to all types of

people from different areas of life that makes his work so universally appealing—just like Madonna's music. What is clear is that Howard's superstar status has not tainted him. He remains ethical and truth-seeking, witty and sharp-tongued. And he has handled the attention with grace. Rock on, Howard Gardner!

Howard's Response to Shira Lee Katz

At the Harvard Graduate School of Education, many of our students have either started some kind of an educational enterprise, or hope that they will do so soon, either in the U.S., abroad, or in both loci. With some regularity, because of Project Zero's interest in the arts, I am approached by students who want to pursue doctoral work in the broad area of theater, arts, music, and education. Initially, I am not encouraging: few fellow students will share this interest, if faculty are interested in the arts, it's for "extra credit," and in a sense, you'll have to create your own program. (This statement is less true for master's students who, thanks to decades-long leadership of Jessica Davis and Steve Seidel, have the option of concentrating in "The Arts in Education").

Shira, you were persistent. Moreover, you came with rave reviews from both professional colleagues and personal acquaintances. And so I agreed to supervise your thesis on a daunting topic: how today's composers go about their work, with particular reference to what inspires them and how they navigate the often circuitous route from inspiration to final product.

I won't say that the route was always easy. You were doing pioneering work with only moral support from me. But you persevered, received amazing support from significant composers, and ended up with a thesis that was both original and educational. Thanks to you, we know more about how composers today work.

One of the reasons I don't encourage doctoral work in arts or musical education is because it is not clear what positions will be open thereafter. (In recent years, these have not been growth industries in the United States, alas!). In your case, I did not have to worry. You landed an important job with "Common Sense Media" and have risen steadily in their ranks. It's been a pleasure and honor to collaborate with you and CSM over the past few years. I think we make beautiful music together.

And now turning from music, or at least from the serious art music that you studied and I cherish, what's this about "rock and roll?" It is a little known fact that Mick Jagger and I were students together at the London School of Economics in the middle 1960s. I think it is fair to say

that I had little effect upon him and “the Stones,” and it is up to others if they see any connections between me and the rock stars of the last decades. I do appreciate that your comparison with Madonna foregrounds some traits that I admire—that is not always the case when one thinks about the best-known traits of rock stars. But perhaps in a FESTschrift, we are allowed to celebrate, leaving pathography for another occasion.

Stanley N. Katz

Odd isn't it, how our earliest memories of good friends lodge in our minds, even though we have regular current contact with them? My earliest and apparently most unforgettable image of Howie Gardner—much later, when we resumed our friendship in the 1980s, Howard told me that only his mother and I still called him Howie, and so I stopped—is of the first day the kid from Scranton turned up in my Harvard freshman seminar on the Salem Witch Trials. This would have been in the fall of 1961, when I had been asked at the last minute to teach a seminar when Dean of the Faculty McGeorge Bundy had to withdraw. There were seven Harvard frosh in the seminar, three of whom I am still in regular contact with. And it was one of the brightest and liveliest groups I have ever taught.

The course was my first experiment in teaching history exclusively through documents, and I chose the Witch Trials as a topic since there was a readily available three volume edition of source materials on the Trials. It was not until about 30 years later that Howard explained to me that what I was doing was engaging my students in "active learning." At the time it simply seemed like a better way to get them to understand what historical evidence was, and how to use it to make defensible historical statements. And so I required a great deal of writing, based on the source documents, from each of the students. And I also began what has become my habit of encouraging them to submit multiple drafts of their essays, so that they could get them right. My pedagogical intentions were pretty naïve and minimal at the time. I was really just following my instincts as a beginning teacher—I had just received my Ph.D. in History in June of 1961.

Howard tells me that I devastated him by returning his seminar paper to him and asking him to redo it. Remember that in those days students had to type their papers, and this meant retyping 20 or 30 pages. It must have been unwelcome, but Howard completely rewrote the paper and, of course, I graded it A. There was apparently deep pedagogical meaning in this experience for Howard, since he later wrote about it and praised me for my pedagogy. But the point of the story for me is just the opposite. I have always been interested in teaching history, and I have devoted a lot of my career to experimenting with new

pedagogical methods. But the dirty truth is that I had never read a word of cognitive psychology until, many years later, I began to follow Howard's scholarship, and discovered that I could apply a method to my madness. Howard quite literally (through his writing) taught me how to teach, or at least taught me how to think about what I was doing in a more sophisticated and productive way.

So although like many of you I would still like to lend Howard a comb, I am a teacher who has become his student. I brag a lot about the fact that Howard was my student, and that frequently gets me very favorable attention from folks I'd like to impress. He has not only made me think more rigorously about how my students learn, but he has more recently helped me to understand better how to get them to aspire to do good work. We are both still working on that one, but at the age of 77 I am not giving up on being Howard's student. Thanks, my friend.

Howard's Response to Stanley N. Katz

Except for my family, you have known me longer than anyone else who has contributed to this Festschrift. In 1961, thanks to the generosity (at the time anonymous) of Edwin Land (founder of the Polaroid camera), freshmen at Harvard College had the option of taking a freshman seminar. In contrast to large survey courses, the seminars focused on topics that could be probed deeply over a significant period of time. For reasons that I can't completely explain, I decided to apply for a seminar on "reading documents in American history." You, Stan (I was unaware that you had completed your doctoral study just a few months before), were the leader of the seminar; I can still envision members of the seminar sitting around the table each week.

As you note, we spent our first term trying to grasp the enigmatic Salem Witch Trials. We were given more latitude during the second term. I decided to study the Sacco and Vanzetti affair, a famous case where two Italian immigrants, in the face of ambiguous evidence, were convicted of murder and then executed. I became interested in the role of Harvard, particularly because A. Lawrence Lowell (then President of Harvard) was part of the three-person tribunal that ultimately upheld the death sentence of the alleged anarchists and murderers.

In what I believe was an original thought on my part, I requested an interview about the case with Professor Arthur M. Schlesinger, who had taught history for decades. AMS (as he seemed to have been called by everyone else) was kind and supportive, but not very probing and not very helpful. Forty years later, I did a complete double-take. I was walking down Fifth Avenue in Manhattan, and I saw a man with a bow tie and neatly combed hair walking jauntily toward me. Usually I don't recognize faces, but this time a light bulb flashed. The walker turned out to be Prof. Arthur M Schlesinger, Jr., then a distinguished professor like his father and a public intellectual—a dead ringer for his long-deceased father.

Stan, about that first paper, in the fall of 1961. I worked on the paper diligently and handed it in. You marked it up with various comments and then delivered the "coup de grace"—"Isn't this a first draft?" I don't think that the paper actually was a first draft, but I think

it was a typical high school-style paper (and I don't mean Phillips Exeter High School, either)—spitting back, in so many words, what I had gleaned from the major sources (this, in a pre-Google, pre-Wikipedia day) rather than digesting the sources and putting them together in my own fledgling-but-original way.

I learned the lesson rather quickly and was never again accused of just submitting the conventional wisdom on the subject. Harvard was about voice and originality, not about careful note taking.

I only have this on second hand, but it is from someone to whom we are both close. Apparently, many years ago, you said to him, "Howie will be either a summa or a degenerate." Happily, I did not (at least not knowingly) choose the second option.

Of course, our years together did not end in 1962. On the contrary, we have stayed in touch over the entire succeeding half century. More striking, we find ourselves often in a small minority arguing for rigorous intellectual standards and academic integrity against the forces of expedience or monetization, which loom ever larger in the academy. Still, I don't blame any of my current attitudes on you. Perhaps I taught you a little cognitive psychological terminology (which you did not need), but I suspect that a healthy proportion of my scholarly views and standards were initially modeled for me in that seminar room, well over fifty years ago.

Embodying Multiple Intelligences and Good Work

Mia Keinänen

Surrounded by the ever expanding evening light of the Finnish 'white nights' in May 2010, I waited for Howard's train to arrive to my then hometown of Helsinki from St. Petersburg. I had no idea what compartment he was in, so I stood at the top of the platform so that I could take in all of the railcars at once. Very quickly, however, I realized that spotting him would not be a problem. In true form, Howard was the very first passenger to disembark from the first compartment of the very first car, stepping onto the platform directly in front of me. It was with a smile and some comfort that I thought: "He hasn't changed a bit."

"How was the trip?" I asked. "Excellent." he responded. "It was very smooth and I read three books on my Kindle." Kindle!, I thought, my mind rushing to the fall of 1997 when, in his Art, Mind, and Brain class, Howard announced that we should NOT, under any circumstances, email him; that he "didn't do email," a declaration that seemed to ring with such a disparaging tone. Instead, if we wanted to communicate, we should present his assistant with a handwritten note.

Now, as his former doctoral student was still reading those antiquated relics we call "books," it was Howard who was Kindling up a storm! This was the quintessential Howard: intellectually voracious, intrepid traveler, a man of so many firsts…. In taking on the next challenge (be it a Kindle or intellectual frontier), he truly hadn't changed a bit.

Since I graduated from Harvard in 2003 it has seemed that one project or another always brings us back in contact. Howard's week in Helsinki was a busy one. And, all along the circuitous route of our travel, Howard and I had a chance to talk not only shop, but about family, world events, politics, and life. It was during this trip that I realized how our student/advisor relationship had slowly developed into that of both a friend and colleague. And, this was something for which I was (and am) very grateful.

I must admit, when I first entered Howard's Art, Mind, and Brain class as a master's student, I had no idea who he was. Later, I realized that my ignorance was an asset, since I was all but unencumbered by the insecurity and intimidation such academic star-power can bring. But, it didn't take long for me to learn about the significance of both his work and reputation, and this soon left me voicing my thoughts only in the relatively safe sections that were not taught by him. However, my reserve was soon transformed once again into an excitement sparked by Howard's lightening fast mind and wit as he delivered the content that resonated so profoundly. For me being a professional dancer (i.e., not an academician or scholar), Howard's lectures on Art, Mind, and Brain, simply said, blew my art, mind, and brain. And, for the very first time I knew that I'd found something of an intellectual home, both inside myself and within his particular corner of the Harvard Graduate School of Education. Well, you can imagine my excitement upon learning that such respect was, on a certain level, mutual when his feedback on my final paper included that he would "support my doctoral application should I choose to apply."

Apply, I did. And so it was that I began my work as one of Howard's doctoral students. The research, writing and meetings took place in a no-nonsense and rather terse atmosphere. You see, Howard had a reputation for being something of an impatient workhorse who was difficult to approach (communicating by way of passing of handwritten notes to his assistant did not help the matter). Indeed, according to reputation, Howard did not nurse or coddle. He did not placate, and he did not micromanage. Instead, his ground rules were very simple: work independently, when you need advice, ask, and, above all, produce. In short, the tenor of my new workplace suited my Scandinavian demeanor perfectly. (As a Finn, I am fond of cold, well-organized things.)

Over time, Howard and I got to know one another, and I found that such impressions of him were far from the truth. In working with him on projects based at Harvard Project Zero and as a teaching fellow for a couple of his classes, I slowly realized that it was I who exercised a more biting sarcasm; I who was less forgiving and more critical of students' lapses or struggles. I learned that, beneath it all, it was Howard who was the warm and fuzzy one and, again and again, I was impressed with his compassion.

When I asked for advice myself, Howard delivered it faster and more to the point than any other professor I knew. Indeed, once he adapted to email, his answers often came within two seconds. More importantly, though, in time I learned that however seemingly curt his response, his feedback was always insightful and fair, suggesting in both tone and manner what it means to pursue one's work with a sense of personal strength and conviction. This is something that will serve me a lifetime.

Howard's theories on learning, multiple intelligences and GoodWork have and will change thousands of lives. But in some very real sense it is Howard being Howard—multiple intelligences and GoodWork embodied and transformed into an undeniable wisdom—that I hold and respect as his greatest asset and gift. Yes Howard holds his students to rigorous standards and expectations. But I believe Howard ultimately teaches by the work ethic and standards he himself exemplifies. As impressive to me as his insights, papers, books, and lectures are the memories I have of the lively dinner conversations punctuated by his keen sense of humor and thoroughly sarcastic wit; all of the dance, music and art he both appreciates and supports; all of the travel and open intellectual exchange that has resulted in such a wide range of colleagues and friends; his continued pursuit and sharing of knowledge and seeking the truth, and, of course, the breadth and closeness of his family, including his children and grandchildren. What is a theory worth if it's not ultimately applied?

For all of my study and collaboration with Howard, it is this overarching lesson and legacy that I pursue in my own work. Suffice it to say, it is in terms of a fair and open receptivity to new ideas, an honest cultivation of my many intellectual and artistic interests, a furthering of the work ethic that Howard has helped instill, and the continued mindfulness of what it means to possess and practice multiple intelligences and GoodWork for a rich and rounded life that I continue what I began at Harvard.

My doctoral thesis was on mentoring. Howard has been, and is, one of the most important mentors of my life. This I could not have fully understood or appreciated while being one of his students. Instead, only experience and time have afforded me the perspective on how significantly and clearly his work and teaching have changed my life. It

has made me think that perhaps with mentoring, like with creativity, you can only tell whether the relationship or the innovation is meaningful or not with time. With judgments of creativity, only time shows whether the new innovation is adapted to and changes the domain; similarly, with mentoring, only time shows whether the lessons of mentoring are adapted to and change the lives of the mentees. I missed this point in my thesis. But with the perspective of time, I see that Howard has profoundly affected my ambitions and my goals, and the fruits of his mentoring are still ripening.

Howard's email responses still come seconds after my messages are sent. It was of no surprise that once he surrendered to the evil improprieties of the PC, he became the quickest on the draw. This, too, I work diligently to emulate.

Howard, on the occasion of your 70th birthday, my family and I congratulate you. And I thank you for teaching so far beyond the traditional scope. May your intellectual acuity, rigor and energy translate into many more groundbreaking insights and adventure-filled years. And may you always be rightfully assigned the first seat in the first compartment on that train we call life.

Howard's Response to Mia Keinänen

Even though Finland has cast a large and impressive shadow on the educational and economic worlds in our time, we do not have a lot of students from Finland at our school (and of course the population of Finland is less than that of many American states and a few of our cities). Rarely, if ever, do we have a Finnish student who is a professional level dancer, conversant with the digital media, and capable of speaking many different languages.

That's you, Mia. As with some other students who come lugging an unusual barrel of interests, I worried initially about whether you would be able to carve a niche at Harvard. That worry was completely unwarranted! Your talents, your warm personality, your spectrum of skills, and most important, your own sense of direction made you one of the easiest and most comfortable doctoral students in memory.

I would say "where so many students saw problems, you saw solutions." And if you did see problems, you were skilled at keeping them from me and dissolving them deftly.

You wrote a fine and original thesis on mentoring in the arts. Whereas in many art forms (e.g. classical ballet) the mentoring is largely from one generation to the next (vertical), there are other forms (e.g. modern dance) where the mentoring occurs in a largely horizontal manner (among peers). This is an important concept. It may signal the way mentoring will increasingly occur in the future. Yet we lack the concepts and guideposts for effective horizontal mentoring (for instance, not all peer relations are constructive). Also, we need to understand what might be lost in the absence of vertical mentoring.

Post-Harvard, it is clear to me that individuals from many institutions in many countries have wanted to work with you on issues of movement, dance, expression, learning, and cognition. I've been pleased to be instructed by you on these concepts and their inter-relationships. I am not in the least surprised at the opportunities that are offered to you. You embody in yourself an ensemble of mentoring roles: a one-person horizontal mentor to peers in many disciplines, a flipped vertical mentor, where I serve as your elderly mentee, and from what I've been able to

observe, an outstanding vertical mentor as well to your two lovely daughters.

George Klein

When Howard first told me about his plans for *Creating Minds,* I was quite shocked. Has not everything already been written about Einstein, Picasso, Freud, Stravinsky, Elliot, and Graham? I did not say this to Howard, because he is so gentle and soft when he criticizes you, so polite and considerate that you would hate to hurt his feelings. But very secretly, deep in my heart, I said to myself that he must be out of his mind.

But then…

The essays started coming, with miraculous speed. All of them had a fresh outlook. They were amusing and profound at the same time, they were informative but also surprising. There was so much you did not know and would have never learned. It was exciting reading, there was never a dull moment and you were longing to see what was on the next page.

But there was also something more. The essays were both praising and critical of their great subjects, but they were neither hagiographic nor destructive. Howard saw the clay feet whenever they were there, but found no reason to demolish greatness when greatness was there. This was very different from e.g. Paul Johnson, and his brilliant and also highly readable book, *The Intellectuals.* Johnson also builds up his equally great subjects but only to tear them down to shambles in the second half of each essay. He castigates their pettiness, he mocks their vanity, he unveils their pretentions, he attacks their lack of sincerity, not to speak about all the mud they have accumulated in their personal relations. All or much of what Johnson writes may be true, but it is depressing for us, ordinary mortals, who need some individuals to look up to.

The utopias of earlier epochs and particularly the two great totalitarian systems of the 20th century are dead and (hopefully) safely buried. What does this leave us with? Cheap entertainment, popcorn and Coca-Cola machines? What can we look up to? Where do we find role models? Having been amply convinced that humans can be much worse than wolves to other humans, what is there to support the belief (or the

pious wish) that, to paraphrase the national hymn of Poland, humanity is not yet lost?

For all his critical sophistication, Howard has always been looking for the good, the true, and the beautiful, to quote the title of his latest book. His interests range over the entire cultural and educational panorama. His concerns and worries are more restricted, but they are very profound. To describe his main concerns, erosion is the most important word: erosion of the political and economic system, erosion of trust in the leadership or in human beings in general, erosion of education, erosion of respect for the greatest treasures of our species, the true, the good, and the beautiful. Howard can dissect these ills with the precision of a zoologist who dissects a frog. Does he have any remedy?

He has no miraculous drug but he has some suggestions.

Here, we differ somewhat. Having spent my childhood and adolescence in Central Europe, I am deeply skeptical about the ability of society to counteract its own cultural erosion. Not so Howard. Although originally of European extraction, Howard is a true American in his belief in the possibilities of dialogue and discourse, the potential of consultation and incipient action. In fact, Howard has been relentless in his search for ways out from the postmodern calamity of cultural erosion that pops up its ugly head everywhere. I can only wish more power to Howard and his GoodWork!

Howard's Response to George Klein

America is a very large, spread out, and profane country. It is probably a fair statement that your name is not well known here; as it is in Sweden, Israel, and in much of Europe and of the Far East. As a middle class Jewish youth, you grew up in Hungary during World War II and barely escaped with your life, making it to Sweden (along with your future wife Eva) in time to undertake medical studies. You are a major scientist, one of the founders of tumor biology, and a significant contributor to several scientific literatures, along with Eva. You are equally known in literary circles for your magnificent essays about art, music, science, politics, morality and man's immorality to his fellow man, and certain larger-than-life personalities whom you have succeeded in capturing in English, one of your many languages.

I came to know you through our mutual friend, also by birth Hungarian: Mihaly Csikszentmihalyi. You've brought much attention to his concept of flow, which you believe provides key insights on your own motivations in work and life. Since first meeting over twenty years ago, you and I have carried on an extensive correspondence, probably up to one hundred letters, touching on nearly every conceivable topic (well, perhaps not soccer or rap music!). (I suspect that you have at least a score of correspondences of that scope, I have a far smaller number.) A leitmotif of our correspondence has been the possibility for transformations in human nature and human behavior; and, in particular, changes in a positive direction.

For the record, we probably take the predictable roles. You, as a survivor of the Holocaust and observer of so much human cruelty, hold very little possibility for significant human change. In the American context, I am generally seen as a pessimist, but I come off in our correspondence as the person who believes in the possibilities of "good work, good citizenship, good persons"… and who has actually worked on a "good work toolkit!"

I suspect that in reality our positions are not that far apart. Without wanting to put words in your mouth, I think that we are both deeply pessimistic about human nature (Kant famously said, "Out of the crooked timber of humanity, no straight thing can be made"). Yet we

elect to lead our lives as optimists—carrying on our work in medicine and mental health, admiring people who do stand out positively, and trying to encourage a love of work and life ("Lieben und Arbeiten" as Freud put it) among those who work with us.

The Psychology of Leading Responsibly: Liberating Leadership

Hans Henrik Knoop

Abstract

During my involvement in the GoodWork Project it became increasingly clear to me how much psychology has to offer in understanding and furthering good leadership, both via our own work and that of others. For instance, it is now understood how individuals function relatively well when allowed to act voluntarily and function relatively badly when acting against their will, revealing that voluntariness appears to be a precondition for much of the best in life—including building a competitive force and social coherence. In psychology, the terms "inner motivation" or "autonomous motivation" are often used to describe voluntariness. Leadership that workers are subjected to is by definition rarely an expression of workers' free will, yet it has become increasingly clear that successful leadership is strongly dependent on workers' ability to quickly transform extrinsic demands into voluntariness. Voluntariness as regards leadership must thus be considered an active, volitional choice on behalf of the worker, which moreover requires the workers' experience of meaning, sound reason, ethical integrity, and mutual respect in order to become possible at all. Furthermore, it is well documented that efficiency and quality of work are dependent upon allowing individuals sufficient possibilities for full immersion in the given work processes—that is, making it possible for them to invest all their psychic energy and attention in a given activity. Thus, it is critical that leadership become pedagogical—that is, it should promote well-being, learning, and creativity. Finally, it now seems clear that the quality of social relations is causally related to academic achievement as to fulfillment in life more generally. This essay, strongly inspired by the GoodWork Project, suggests how voluntariness, immersion, and meaningful sociality can be united in future work-life, and it outlines barriers to be overcome if we are to succeed in this mission.

Shelters, Windmills, and Misunderstandings

The well-known Chinese proverb, "When the winds of change blow, some people build walls and others build windmills," sounds clear and convincing to most people. It is simple and uses strong visual metaphors. The problem is, however, that humans most often do not face such simple choices. To be sure, some things in life are a question of either-or. For instance, we need to swim if we are not to sink, and we do need to freeze or run when facing a polar bear. It is also correct that at a given moment a teacher either likes to teach or does not like to teach. Yet, sinking, freezing, or demotivation are obviously phenomena that in themselves do not provide much reason to live. An interesting life requires in its very essence the exact opposite: that one does take action, does remain engaged, does swim, does fight, does care. Bearing this in mind, however, it is important to realize how the essence, the very nature of activity, engagement, and willpower, is not a matter of choosing between stability (walls) and dynamic movement (windmills) but is instead a question of combining stability and dynamics—which, of course, on closer inspection, everyone knows. Already more than half a century ago, the psychologist Abraham Maslow taught the whole world that people need safety, security, and quiet just as they need movement, learning, and creative change. With their small hands, facial expressions, and movements, all children tell their parents that they need peace, love, and comfort just as they need a childhood full of adventure and noise. Any sports coach knows that stable rules and goals are prerequisites for a match sufficiently creative and unpredictable for the players to want to stay in the game. Any teacher knows that it is impossible to succeed in teaching if the pupils do not feel sufficiently safe to dare to open themselves up to new impressions and insights. All leaders know that their success stands or falls with the trust their workers have in them. Workers also experience first-hand the dynamic influence the leader has on their work—meaning that workers personally experience leadership as indeed liberating, both in the sense that they can better relax and focus in the absence of fear and in the sense that they are being stimulated into high performance by the meaningful perspective provided by the leader.

In short, good leadership frees workers, who sense their improved freedoms directly and immediately. Put another way, if a leader makes demands on a worker, that leader's success will depend on whether the

worker can and will transform the leader's (extrinsically motivating) demands into her own voluntary (intrinsically motivating) action. If the leader does not provide meaningful and reasonable grounding for her decision/demands, the worker's task will be difficult, if not impossible. Should the leadership mishap nevertheless occur, not only will the worker suffer; so will the leader who will have acquired an underperforming worker—an employee who is not capable of doing what she is supposed to—not fully anyway. (Note how this may sound totalitarian at first blush though, of course, oncloser inspection it is clearly a hymn to freedom.) Perhaps this is why the management thinker, Peter Drucker, instructed a whole generation of leaders with the words, "Accept the fact that you have to treat virtually everyone as a volunteer." Thus, top-down-meaning and bottom-up-engagement are obviously two complementary sides of well-functioning human leadership and organizations. There will be numerous domains in human life where it will be outright damaging to think as dichotomously as suggested by the revered proverb on walls and the windmills—just as any workplace is guaranteed to fail if structured in a way that favors leaders at the expense of workers, or vice versa.

Top-down Control and Brutal Competition

Educational systems all over the world are going through drastic increases in extrinsic control by means of a decentralized economy, leading to greater market-driven competition between institutions and between countries. At the same time, we face more centralized control over curricular content and more top-down administrative accountability. Often these approaches are also based on the assumption that both workers and leaders have their own a hidden agenda. The dominating organizational paradigm, New Public Management, is built partly on the assumption that employees want to sub-optimize, and therefore it is impossible to have full confidence in them, and they must be controlled.

Along these lines, it is becoming more difficult for workers to elect their own leadership—a first among equals, so to speak, and thus acquire this classic form of leadership legitimacy. Today, employment of leaders in both the private and the public sector is almost always a top-down process—that is: a process through which people at higher levels decide what is important at lower levels. Of course, on first blush it may

appear perfectly natural to structure leadership in this way because it closely resembles the pecking order of nature—with the alpha-male at the top and the less dominant individuals stratified downwards. It may also appear natural from the point of ordinary understandings of leadership, where leadership by definition implies the right of the leader to hire and fire, as a *sine qua non* of elementary leadership practice. Thus, for many leaders, hiring and firing per definition must be implemented top-down—yet, on closer inspection this obviously does not have to be. In principle, human beings are free to choose their own form of government, which, to be sure, still is happening to a degree. Our parliamentary representative democracy remains defined by populations indeed choosing their own highest leaders; just as associations elect their own boards at general assemblies and employees vote for their union representatives—bottom-up.

Whether democratic elections like these ultimately promote a more positive view of leadership than the more somber picture sketched above remains a very open question. For many voters must be quite unsure whom they are voting for, as few of the voters have actually met the politicians, let alone know them well enough to be able to make informed judgments of them. Moreover, few have sufficient insight into any complex subject matter to be able to determine which of the experts debating actually have the best arguments—a case made even more difficult by the fact that no political debater is willing to say something unpopular to his or her own (potential) voters. This leads most politicians to postulate positions in the center of the political spectrum as evidenced by their appeal to the broad masses where they believe "the voters are." Finally, going from bad to worse, because much of what is promised before an election is not kept after, politicians are under permanent suspicion of trying to cheat the people they are there to serve, making it quite difficult for a democratic citizen to really identify with the democratic system.

Even in my home country of Demark, which boasts of the highest level of social trust and lowest level of corruption among leaders, trust in politicians recently reached a historical low point during a general election (*Mandag Morgen,* 2011). How can we trust our highest democratic leaders when they themselves accuse one another of untrustworthiness to a degree that no family and no friendship could

sustain? Our top political leaders talk denigratingly about opponents, as if they forgot (or never learned) that the core reason for having democracy is that we do not agree on everything, that disagreement is the raw material of democracy, the golden dignifying resource for informed democratic debate among people of differing interests. Had we no disagreement, democracy would not really be necessary and a benign king or dictator would suffice to keep society rolling. Democracy exists to handle our disagreement in a civilized way. So heaven knows how we, as a people, have come to accept the joke of an election process where even 12 year olds regard the top political leaders as infantile. Unfortunately, there is no evidence for any other heaven than the one we create for ourselves on this planet, so for the time being the answers to such precarious questions rest with us.

A simple answer regarding the root of the problem may be that democratic debates are much more about the attempt to dominate than represent others through political and economic power. Our spin-doctors camouflage this because the naked truth does not stand the light of day. Another possible answer may be that things have become too complex to grasp, and that politicians have consequently lost their sense of direction. Degenerate communication thus reflects their disorientation.

But perhaps there is a more uplifting explanation to lean upon. Maybe the core of the matter is that we are all simply relatively ignorant about what is going on in the world, just as scientists are ignorant about much of the deepest ontology of this world, let alone explanations for why this world is here at all. As biologist J. B. S. Haldane (1927) famously wrote: “My own suspicion is that the universe is not only queerer than we suppose, but queerer than we can suppose.”

Or as physicist Richard Feynman said about his own domain of expertise: “I think I can safely say that nobody understands Quantum Mechanics.”

Should such basic, shared ignorance really exist, we should feel less distrust. Ironically, the awareness of our ignorance should strengthen the bonds among us! Moreover, such awareness should further common curiosity and appreciation of human diversity and interdependence in daily life and in society. Perhaps this will help to bring about a change so that political power becomes meaningful,

economic power becomes fairer, and civil influence becomes more real. Perhaps this will lead to a greater synergy across the domains of politics (stick/coercion), business (carrot/extrinsic motivation) and civil society (soft power/conviction).

But this desired society of voluntariness, diversity, creativity, and solidarity must confront an almost wholly opposite, dominating global model of growth, where a few thousand individuals *de facto* run the world, where "market forces" have been replaced by "the very few ultra-rich forces," who via their unfathomable wealth speak with "very loud voices." As Bill Gates, the world's richest man and founder and head of Microsoft, has put it, when there is strong solidarity among a very small group of members in the upper tier of society, a celebrity-focused media world focusing only on successful people at the top rather than the people on the street, along with unions struggling to get members, we face what the sociologist Richard Sennett (1998) termed "corrosion of character," a mental meltdown of personal integrity.

Psychology, particularly the area of positive psychology, should now come to play a far more preventive role in the broader society. For it is still far easier to prevent than to treat, and the problems outlined above, however confusing, are actually preventable. But to prevent them, governments must provide their citizens with fairly equal opportunities to live good lives and make all people equal under the law. For, along with health and other related sciences, psychology has clearly documented how individuals who are allowed autonomy and large degrees of freedom, who are granted real responsibilities and influence, who experience meaning and perspective in daily life, and who are socially well-related, will learn better, perform better, work harder, be more creative, and spontaneously assume more responsibility for others and society at large. This means that psychology, even without massive funding, gradually has become able to speak with quite "a loud voice," too—not via raw political power, not via money, but via the convincing contribution of evidence to support design of workplaces and societies so that people can thrive. Psychology makes it possible to understand soft power better. In particular, the positive psychology movement, inspired by seminal work on human thriving and strengths by Mihaly Csikszentmihalyi, William Damon, and Howard Gardner, now talks to the heart of everyone by stressing how crucial it is for us to be active,

take initiative, assume responsibility, engage ourselves, find meaning in social relations and make meaning through our creative and disciplined efforts. These are all qualities that risk being destroyed by brutal top-down-low-trust management. In brief, psychology now contributes strong evidence for the importance of recognizing that all living organisms, including humans, grow bottom-up and that all governance (top-down) that does not inspire growth (bottom-up) is doomed to fail, because it makes for disengaged citizens and apathetic workers, completely unable to compete, let alone act, responsibly.

A Few Words about Denmark

At the risk of appearing nationalistic and ethnocentric, but with no such intent whatsoever, I want to say a few words about how much of what is proposed above has already come to be in Northern Europe, specifically the Nordic countries, and especially in Denmark. To be sure, the Nordic region is now at risk of suffering severe setbacks due to economic forces made in America (according to economist Joseph Stieglitz [2008]), even as the financial meltdowns in 2008 and 2010 have been dealt with forcefully by Nordic countries and with moderate success. Despite such setbacks, the Nordic region is today widely regarded as a historical success on many key social and cultural parameters that are very much in line with the psychology of strengths and well-being mentioned above. As the sociologist Ruut Veenhoven (2010), who has summarized more than 5000 studies of happiness and well-being in the World Database of Happiness, writes: "People live happiest in economically well developed nations that are well governed and allow their citizens a lot of freedom, in short, in modern multiple choice societies…."

The Nordic countries are all strong examples of such societies, and on some parameters. Denmark is in a class of its own. Thus, over the last decade Denmark is the most economically egalitarian country in the world (measured by the Gini-index). Denmark is a very anti-authoritarian country with very low distance of power (Hofstede, 1984, 2001), with almost no popular respect for blind obedience, following the political lessons from the Second World War, and with extensive freedoms regarding speech, religion, assembly, artistic expression, etc. Without possessing any raw materials, Denmark has become one of the richest populations in the world. About nine out of ten Danish households are

online at broadband level (Plovsing & Nielsen, 2009), indicating cultural openness and a low level of cultural censorship. Denmark furthermore enjoys the world's lowest level of corruption among leaders, with only 2-3 percent of Danish leaders estimated to be corrupt (Transparency International, 2008) combined with the world's highest degree of social trust between people ever measured (Bjørnskov, 2009). In many surveys since 1970, Danes are noted as the people most satisfied with life (happiest) in the world (Diener, 2009; Veenhoven, 2010), and recently we were found to be the European country that provided people the best chance to flourish (Huppert & So, 2009; Seligman, 2010). Perhaps the Danes are the most privileged people who have ever lived, both materially and subjectively. It is in this wonderful cultural framework that Danish workers and leaders live and work.

And yet, more and more of Danish workers are beginning to call in sick from stress, and more and more are being treated for depression (now from the age of 15, where not too many years ago the onset was not until age 30). Similarly, more and more find it difficult to pause, to relax, to be on real vacation, completely off work. We must enact disciplined procedures in order to relax, and so we practice mindfulness and meditation—something that up until the 70s was just called "taking it easy," because that was, well, not so hard back then, and certainly nothing for which you need a crash course and a coaching session first. Today, young people grow up in such hectic contexts that many have to be trained in relaxation order to be able to calm down. And since the complexity of society, knowledge, and technology continues to grow exponentially, there is no chance for humans to follow quantitatively. Instead, for our lives to be sensible in the midst of this complexity, politically as well as economically and civilly, we have to prioritize quality in life. There must be an attractive future perspective in political visions in order for people to realize them; there must be an attractive economic model for all, if all are to contribute to societies of the future; and there must be sufficient respect for civil society in the future, if it is to make sense to talk about citizens and democratic life at all.

The larger perspectives, higher meanings, and deeper relations are all abstractions, however present these qualities may seem for the individual. They are aspects of life that we picture, theoretical categories we think in, reflect about. They can only be observed indirectly, and they

tend not to evoke emotions unless unfolded in practical examples/practical life. And therefore, they cannot stand alone as ideals either when organizing work or education. Sensory stimuli, aesthetics, the present experience, the now, the complete immersion in daily small activities, the intrinsic joy of living must be given at least as much priority as we give to larger more distant ideals. Because it is in the joy of the moment that life is lived to its optimum, that life is felt directly, enlightening directly and vitalizing/energizing directly. We must feel that we live, and we need to feel that life is worth living while living it. We must feel this is not just an indication of high life quality in itself—it is also an indispensable precondition for believing in oneself when trying to position oneself in the greater whole as it directly confirms that life is indeed of value, and life thus indeed is worth fighting for, no matter what. Good micro experiences of deep immersion in daily life (not to be confused with a life behind walls!) may very well turn out to be the strongest protection, the best immune defense against becoming infected by lack of perspective in the larger sense.

Keeping this in mind, many nevertheless find themselves facing big challenges, for despite the fact that every political program and every business plan of every company is stuffed with golden words, life in many workplaces makes it hard to believe that these words can be taken seriously. For instance, everybody now talks about professional innovation while many are drowning in demands for pointless documentation. Building walls against score sheets. Each and every political leader talks about growth and entrepreneurship, while we observe fewer and fewer private start-ups. We are building walls. Everybody speaks of creativity in school and education, while the educational bureaucracy just keeps expanding, making it still harder for educators to be creative role models. Everyone talks about talent development while narrow-minded nursing of the narrow elite has the side effect that many are blinded to their own talents and consequently leave the race. Good leadership is liberating for those who are subjected to it. However protective walls may be, they are rarely symptoms of good leadership.

Led by Howard

It is hard to grasp that Howard is now 70 years old. Having spent an entire year in the United States as a foreign exchange high school

student in Whittier California in the mid-70s, I have this sense of "70" being basically about Neil Young, Led Zeppelin, Jethro Tull and open landscapes in all directions, on wheels, backpacking *de luxe*. Of course, this may not ring much of a bell, for as Howard wrote in a memo to our research team in 2007: "…Lesley thinks that we do not need permission for anything quoted in the book, except for Jeff's use of lyrics from Pink Floyd (Don't ask me what that is…)." A true teenager of the 1970s may find a comment like this unreliable, if not unbelievable, yet being the father of two adult children myself now, I have come to understand the problem more clearly and painfully. Thus, more often than not I will find myself in their company without recognizing even one single R&B song or rapper-track, and I too have gone from musical self-confidence to … well, let's say something else, for as a true father I trust it to be more than sheer ignorance.

I first met Howard in the summer of 1996 where as a Ph.D. student I had the good fortune to join a one-week research seminar in the little, Swedish coastal town of Ronneby, co-directed by Dr. Gardner himself. And I had a great chance of immersing myself in his thoughts and in the projects he was leading. From the very beginning, I was deeply fascinated by the insights and perspectives of his work. When at the end of the seminar he invited me to collaborate in the Humane Creativity Project, later to be known as the GoodWork Project, I knew that my academic course as well as my perspective on psychology and education would never again be quite the same.

More than one-and-a-half decades have passed since then, and from my academic viewpoint in Denmark as well as from meetings with researchers and friends around the world, I have come to understand still better the profound impact Howard's work has had on the world of educators. His influence on my own thought and actions were always much more than intellectual, though certainly intellectual, too. I shall never forget a lazy afternoon finishing my first stay at Harvard in September 1997 when Howard invited me for a farewell drink in the Casablanca restaurant at Harvard Square. We had completed two great weeks of intense work in the research groups in the Humane Creativity Project and were all committed to continue the collaboration. In the restaurant, Howard and I went through everything one last time, and I remember how thrilled I was to be on board such a great project with

several of my greatest academic heroes. Yet, even more vividly I recall the feeling of sincere gratitude when, after two weeks of theory and hard methodological work, Howard said goodbye with the words "I assume we're friends," to which my reaction was a blend of laughingly assuring him that he could have that in writing if necessary and a feeling of having found an intellectual home abroad unlike any other. A home of stellar thought leadership, truly liberating in every good sense of the word. Ever since, it has been wonderful to have such a friend to look up to and such a colleague at my side.

Thank you, dear Howard, and congratulations on your 70th Birthday, May you have at least as many to come!

Hans Henrik

References

Bjørnskov, C. (2009). Social trust and the growth of schooling. *Economics of Education Review, 28,* 249-257.

Diener, E. et al., (2009). Factors predicting the subjective well-being of nations. *Culture and Well-Being. Social Indicators Research Series, 2009, 38,* 43-70.

Gini-index: http://da.wikipedia.org/wiki/Gini-koefficient

Haldane, J.B.S. (1927). *Possible worlds: And other essays.* Chatto and Windus: London, 1932, reprint, p.286. Emphasis in the original.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations.* Thousand Oaks, CA: Sage Publications.

Huppert, F., & So, T. (2009). What percentage of people in Europe are flourishing and what characterizes them? Paper presented at The Well-being Institute, July, 23, 2009, Cambridge University,

Mandag Morgen. (2011). Retrieved online on June 27th at: www.mm.dk/tillidsvalget

Plovsing, J. & Nielsen, P. B. (2009). *Befolkningens brug af internet.* København: Danmarks Statistik.

Seligman, M. (2011). At Lykkes. København: Mindspace.

Sennett, R. (1998). *The corrosion of character: The personal consequences of work in the new capitalism.* New York: W. W. Norton & Company.

Stieglitz, J. (2008). *Global crisis—Made in America. Spiegel* Online. Retrieved online June 8th 2012 at: www.spiegel.de/international/business/joseph-e-stiglitz-global-crisis-made-in-america-a-590028.html

Transparency International. (2008). Retrieved online at: www.transparency.dk

Veenhoven, R. (2010). Why are the Danes happier than the Dutch? Keynote at 5th European Conference on Positive Psychology. Copenhagen, June 26th.

Howard's Response to Hans Henrik Knoop

It is our good fortune that, early on, you became familiar with what was then the Good Work Project and have, for nearly two decades, been a colleague, friend, and advocate. Each of our lives has gone through many changes during that period. Your loyalty to the key tenets and practices of "the good enterprise" has meant a great deal of all of us involved with that ambitious if somewhat quixotic project. We treasure the photographs, taken from the roof of University Place where the entire team is gathered, all looking a good deal younger, filled with energy, enthusiasm, and a sense that we were engaged in meaningful work.

You may not realize, Hans Henrik, how important your contributions have been to our work. First of all, until you joined our circle, we were entirely American/U.S. centric. If we had to pick one country to broaden our perspective, we could not have done better than to select Denmark; a country successful on terms and metrics hallowed in the west, typically #1 in happiness, and yet with an entirely different ethos and set of values than we are familiar with in Anglo-American circles.

(Telling example: When I was first invited to Denmark by the metal worker unions over 25 years ago, my hosts insisted that I spend some nights in the homes of workers. For most of my colleagues, this would have been a strange request, but as soon as I stayed in a few homes, I got the point. Denmark operates by an entirely different set of domestic practices and values.)

Also, Hans Henrik, you had an intimate familiarity with all sorts of contemporary European writings that we should have known about, but most of us did not. And while we did not all immediately purchase and read the collected works of Ulrich Beck, Jurgen Habermas, and Nicholas Luhmann (just to name a few), you broadened our theoretical base and helped us to understand how our work (on work, on ethics, on consciousness, and on globalization) was connected to major themes that are prominent in European social scientific and philosophical discourse.

Your broad background is well foregrounded in your timely essay for the Festschrift. Almost everyone agrees that, in principle (or at least on paper), leaders should lead largely from behind, setting powerful

positive examples and encouraging the greatest possible empowerment and agency among workers; indeed, among all citizens, all human beings. Yet as you point out, there are very powerful forces, even in the flagship country Denmark, which push powerfully in the opposite direction. (From a Silicon Valley perspective, the leading companies espouse respect for privacy and individuality and yet have a power over all of us—over every detail of our lives—which makes me shudder.)

You point to psychology of the sort that the GoodWork Project and the Positive Psychology movement have foregrounded as a possible source of wisdom with respect to this dilemma. I believe that psychology has a contribution to make. But I would temper with two points: 1) We should pay attention to psychology which examines life over a long arc, rather than just to experiments which may be clever but are often superficial and produce short-lived results; and 2) Psychology is not just another science; it can't simply be assimilated to physics and chemistry. While the laws of physics and chemistry are permanent, the world changes, people and their cultures change, and the social sciences must change along with them. And so we need at least to tweak, if not reinvent, the most relevant psychologies and sociologies and economics for each era.

Most of us in the Good Work enterprise are academics; one might even quip "hopeless academics." You opened our eyes to other kinds of involvements: television programs, experiments in large numbers of schools, and a deep collaboration with a major industrial company, The Danfoss Corporation. While the Danfoss experiment was not as successful as we would have liked, we all gained a great deal from the effort to create environments that encourage learning and good work, and the personal connections forged at that time remain with us.

If we have given you some ideas and concepts with which to work, and the chance to place Denmark in a more international context, those are small contributions compared to what you have given to us.

Howard Gardner, Superhero

Mindy L. Kornhaber

Howard Gardner saved my life. He did so without fuss, like an incognito superhero. Of course, by day, Howard's public record demonstrates awesome powers: some 28 books translated into an equal number of languages, 475 scholarly articles and chapters, hundreds of topical articles, and thousands of keynote addresses. His work has garnered 29 honorary degrees across four continents, the MacArthur Prize, the Grawemeyer Award, the Prince of Asturias Award, and a place among the world's top 100 public intellectuals. His insights have reframed broad swaths of psychology and education, as well as shaped ethics, business, and the emerging digital world.

Even as Howard's scholarship reveals an astonishing power to bend the space-time continuum with his bare hands, his equally singular record of rescuing ordinary mortals remains unsung. Unlike fictional superheroes, Howard doesn't require sartorial reworking or steroid supplements to perform these amazing deeds. They are intrinsic to his being. Howard's creativity, energy, and commitment to good work enable him to transform disciplines as well as lives.

Creativity

I knew nothing of Howard's scholarly or secret powers when I began a master's degree at Harvard in September 1987. I just knew I needed a credential to continue an upward path in higher education administration. My study plan was clear and narrow. I was investing my life savings to get a useful degree, having studied music and creative writing to no profitable end. True, such pursuits left me curious about a course called Creativity taught by someone named Howard Gardner. Fortunately for my utilitarian scheme, Creativity was in conflict with another offering, Nonprofit Management and Control. Then, while waiting to turn in my registration forms, a newly-posted schedule had reshuffled the two. By dint of this cosmic intervention, I encountered Howard's class on my first morning in graduate school.

As Howard introduced himself to the students in Longfellow 100 (now Askwith Hall), unanticipated affinities emerged: a serious

engagement with China, long-term study of music, congenital visual problems, understatement in fashion, and irony-infused humor. As he described the course, I found myself mesmerized by new and intriguing ideas. He intended to emphasize "Big C" Creativity, the sort that shifts the thinking of later generations (Gardner, 1993). To some students' displeasure, he was not focusing on what he termed "little c" creativity—the sort entailed in planning a good dinner party ("as nice as that is," Howard noted). He presented an astonishing notion: Creativity did not inhere solely within an individual's mind. It was contingent on a field of judges and practitioners, and it must operate within one or more specific domains (Csikszentmihalyi, 1988). Creativity also required others' support (Gardner, 1993). If I'd thought before about the nature of creativity, I certainly hadn't thought about it in the ways Howard was describing. Clearly, there was much to learn. Though little of it was relevant, I left this first class enormously excited thanks to Howard's mind-altering super powers.

If memory serves, I may have spoken in Howard's class just once or perhaps not at all. I had not been raised to think of an Ivy education as my natural inheritance or even within the frame of my reality. I was uncomfortable in spaces like Longfellow 100, with its stately pilasters and Palladian windows. I'd attended no-frills public schools in Hicksville (yes, really), New York. There, rewards were garnered for absorbing what teachers said, not for expressing previously unscripted ideas. I marveled at fellow students who spoke with their professors and even addressed them by first name. I kept silent. Nevertheless, Howard possesses the power to penetrate skulls thick with self-doubt. At the end of the course, he commented on my fourth paper, "I've been impressed with your work this semester. If you have a chance, why don't you make an appointment to see me?"

Time

After the semester break, I knocked at Howard's old corner office on the third floor of Longfellow. He glanced from his computer screen to the vertical window bordering the door, unfurled himself from his wooden rocking chair, and gestured me toward another seat. The conversation lasted perhaps 20 minutes—emblematic of Howard's efficient probing. He asked what my plan was. I still planned to be a college administrator. He asked where I had worked and what I had studied. That list began with

my recent position managing an exchange program with Chinese institutions and my bachelor's in music performance. It continued on with studies at Katherine Gibbs secretarial school, stints as a staffer in a development office, writer of rejected stories, volunteer teacher of Chinese immigrants, street musician, assembly line worker, and switchboard operator in a rural wrestling arena. Howard did not flinch. Instead, he reset my course, the first of his life saving deeds for me. "You haven't asked my advice, but here is what I think: You should apply for a doctoral degree."

"How long will it take?"

"About five years."

"Five years!?!"

"Think about it." He rose from his rocking chair and sent me on my way.

I took Howard's advice. (I have since learned it is always wise to do so.) However, as a debt-averse student, who eventually married another grad student and had a daughter along the way, the time to my doctorate far exceeded Howard's estimate. Yet, Howard's deeds on my behalf continued the whole way through. Early on, he offered me work as his research assistant at Project Zero, where he supported, guided, and trained me to do unprecedented feats. Howard's first task required me to secure from Gutman Library all the books by Philip Jackson and Seymour Sarason and synthesize them in a brief written report within one week's time. Howard was seeking to understand more about school processes, perhaps because his theory of multiple intelligences (Gardner, 1983) was just beginning to be implemented. I returned from the library with an armful of volumes and a sense of foreboding. I was a slow and careful reader: How could I sensibly connect the ideas among so many books within just a few days? Yet, a strange force—to stretch oneself beyond one's own perceived limits—had begun to take hold. Suddenly, it became possible to more than double the hours in an ordinary workweek! I submitted the synthesis on time the following Monday morning. Minutes later, Howard popped his head into my office, pronounced my work "very good," and left.

Howard's capacity to induce temporal shifts in others likely stems from his own time-bending power. During my dozen years at Project Zero, there were many discussions of "Howard Time." We wondered whether Howard Time was a multiple of 10, e.g., was the work that Howard could do in an hour equivalent to 10 hours of our own labor? Or was it the next calendrical marker, e.g., what Howard could accomplish in a single hour required ordinary PZers an entire day? Was it he for whom The Book of The Month Club was secretly named? Was Howard Time faster than a speeding bullet? Did it approach the speed of light?

Transformations

Howard's transformational wizardry worked through direct routes and relational ones. He was laser-like in reviewing my work. When my writing was flawed, Howard's rapid and precise critique illuminated the problem. He called an unnecessarily detailed paper a "mastery draft": I had learned enough to write about the topic but had yet to determine what was most salient to convey. The message: prioritize, pare, rewrite.

At the same time, Howard encouraged mutual rethinking. He welcomed debate, and he is, of course, the best possible intellectual sparring partner. In a conversation not long after I started working for him, Howard asserted, "Students don't want to be seen as stupid." I countered, "Students don't want to be seen as smart." We pushed each other's position, eventually coming to see how the other's perspective held merit, given varied conditions (e.g., differing peers, teachers, school communities, definitions of "smart"). Not much earlier, I'd been a secretary. Now a MacArthur Fellow thought I had something useful to say. That change in regard was, and remains, powerfully transformative.

Howard's approach to leadership produces such transformations. Howard encourages everyone to offer ideas, regardless of formal title. At one point, to shed light on apprenticeships and learning outside of school, he invited the custodian of Longfellow Hall to talk about how he'd picked up his job knowledge. At other points, visiting scholars from Australia, Europe, or China held the floor. At all times, Howard expects those around him to contribute their best work.

When my turn as Howard's research assistant ended, I volunteered to continue in that role. Howard assured me, "that would not be good for your development." Instead, he posed a new challenge by suggesting I

join a PZ research project that was soon to be dubbed APPLE (Assessing Projects and Portfolios for Learning). He had recently announced the need for PZ to focus on assessment. Assessment? What did that tedious stuff have to do with creativity, cognition, intelligence, or the arts? Howard's intellectual elevator vision enabled him to see assessment's broad implications before they hit the horizon line.

In Howard Time—less than two years after I started working with him—he asked me to take the lead on an article reconceptualizing intelligence (Kornhaber, Krechevsky, & Gardner, 1990). Out of this came our claim that intelligence could be understood as a function of three dynamic processes: individual proclivities as represented by MI; societal values (reflecting the forces of the field and the domain), and social opportunities. The momentum for this claim came partly from *Frames of Mind* and Howard's Creativity course, in which he underscored the importance of access to rich disciplinary resources. In addition, the social policy classes I was pursuing emphasized that such access was not wholly meritocratic, although assessment might be used to support that impression. Hence assessment, a topic that I first thought must be excessively dull, has remained central to my scholarship for the last 20 years.

Howard's mentorship went beyond research and writing opportunities. He sent me to professional conferences to exchange ideas with leaders in the field of education. In the process, I was metamorphosed from someone who could not raise her hand in Longfellow 100 to someone who occasionally addressed formidable audiences from the lectern of that same hall. Still, he pressed on, offering specific feedback on my presentations. (e.g., "If time runs short don't speak faster and faster; hit the central point.") As a result, I can now debate ideas not only in my own mind or on paper, but on my feet in public spaces with very capable people.

Howard's investment in my growth—and the growth of his other students—stands as an exemplar of faculty advising. Yet, Howard was never my official advisor, because I was not enrolled in his department. This mattered so little that for two years after my initial advisor left Harvard, I did not seek another one. And when Gary Orfield became my advisor, Howard's transformative efforts continued unchanged. For my dissertation, which explored MI's use in assessments aimed at enhancing

equity in gifted education (Kornhaber, 1997), he sent pages of feedback at warp speed. Howard's commitment was evident even at my graduation. He wrote words of congratulations and appreciation for Gary Orfield to read at a ceremony where formal advisors describe the achievements of their graduating doctoral candidates.

Policy

In the late 1980s, when Howard urged PZers to focus on assessment, assessment policy had not been reduced to test-based accountability systems. There were still heady discussions about portfolios, classroom-based assessments, authentic assessments, and systems of school inspection (Linn, Baker, & Dunbard, 1991; Stiggins, 1987; Wiggins, 1989). Some of these approaches were being incorporated into state-level policy, even as momentum was building for states to adopt high-stakes testing (Orfield & Kornhaber, 2001).

Howard argued against test-based accountability. Instead, he called for more individualized and contextualized assessments (Gardner, 1991a, 1999b). To illustrate this idea, he drew on the practice of apprenticeships. Assessment within apprenticeship is timely, motivating, discipline-specific, useful to learners, and sensitive to their developmental needs (Gardner, 1991a). Though apprenticeship systems may seem subjective, they clearly prepare learners to undertake valued activities in the wider world. The apprentice's final evaluation isn't a test score but a masterwork that demonstrates the learner understands how to apply knowledge and skills. The approach, Howard argued, is not a relic of pre-industrial systems; it is still practiced in the arts, athletics, and graduate education (as Howard clearly demonstrated with his own students).

Howard's position was partly grounded in respect for individual differences and the varied ways that individuals can contribute to disciplinary knowledge. Disciplines are dynamic collections of knowledge, skills, representations, and modes of interpretation (Gardner, 1991b, 1999a; Gardner & Boix-Mansilla, 1994). For example, history reaches beyond factual knowledge of people and events. It also entails making sense of original, and not always compatible, sources; exploring and mapping historic sites; dealing with population statistics; interviewing skills, and gaining access to restricted archives. Thus, legitimate

disciplinary work can remain open to learners with diverse intellectual proclivities. Moreover, when students draw on a discipline's varied knowledge, representations, and skills, they are more likely to develop understanding. That is, they can apply their knowledge and skills to new situations and to contexts beyond school (Gardner, 1991b, 1999a).

Howard's critique of test-based assessment was also firmly grounded in cognitive theory. He decried the extent to which standardized testing had taken taken hold partly because it rested on an inadequate theory of learning, namely behaviorism (Gardner, 1991a): Test-based accountability systems provoke excessive drill and dole out rewards for very limited performances.

Accountability policies also rest on an inadequate, but complementary, theory of action, scientific management (Taylor, 1911). Under scientific management, efficiency in industrial processes was achieved by studying the craft knowledge of lathe operators, furnace stokers, and other laborers, explicating the best workers' procedures using time and motion studies, and then standardizing those procedures on other laborers in the same sector. This yielded a fair, 50-50 divide: Labor would labor, managers would think (Taylor, 1911). By the 1920s, behaviorism, scientific management, and standardized testing became the holy trinity of the factory model school (See Callahan, 1962; Cubberly, 1916).

In current discussions of educational accountability, this trinity surfaces in "alignment." Explicate algebra standards, align teaching and learning to these standards, develop tests aligned to the standards, measure teaching and learning with the aligned tests, evaluate test results relative to expectations (e.g., "adequate yearly progress," "growth," "value added"), use test results to punish/reward/improve performance (Koretz, 2005).

This rational model fails in educational practice partly because educators have kept thinking. They have thereby devised ingenious variations on the script to avoid punishments or obtain rewards. For instance, they make the test the object of learning. Thus, the test no longer serves as a sample of algebra (or writing skills, or other tested curricula) (Koretz, 2005, 2008). Instead, it becomes algebra itself. This renders suspect test data interpretations. To illustrate, imagine the

management of a nuclear facility believes that the movement of a gauge's needle into the red zone is the problematic issue, rather than the reactions inside the plant itself. Framed in this way, management tells the workers to push the needle from the red zone into the green zone. Perhaps some cleverer managers order a replacement gauge (new tests) for the workers to install. Either way, the readings now look better, even as the reactions are not improved. It is in this vein that educational policy has proceeded under the high-stakes testing policies that erupted throughout the states in the 1990s and in federal policy under No Child Left Behind. If accountability policies remain tethered to test scores, it is likely that the new Common Core State Standards Initiative will suffer a similar fate.[1]

Costs

Of course, Howard understood the headwinds mitigating against contextualized assessment (Gardner, 1991a/2006). In particular, he noted that some might find contextualized assessment inefficient or costly. He credited this point with "superficial plausibility." Yet, it had already taken millions, or possibly billions, to bring standardized testing to "its current, far-from-perfect state," and millions more might only marginally improve it (Gardner, 1991a/1987, p. 191). Undoubtedly, billions more have been spent since 1991 to address state and federal demands for better tests. Even that expense may pale against some harder-to-measure systemic costs, many of which are central to Howard's concerns. These costs can be seen through the GoodWork Project's strands of engagement, excellence and ethics (Gardner, 2010; Gardner, Csikszentmihalyi, & Damon, 2001).

Opportunities for student engagement in learning have narrowed under high-stakes testing systems. Untested areas are undermined—a consequence present since the start of high-stakes testing systems some 1200 years ago (Yu & Suen, 2005). For example, time for arts instruction

[1] These distortions are not tethered to the test format. Distortion has been found on essay tests (Madaus & Clarke, 2001) and is to be expected whenever a narrow measure determines rewards and punishments (Campbell, 1976). Recent work lauding value-added models by Harvard economist, Raj Chetty and colleagues (Chetty, Friedman, & Rockoff, 2011), fails to consider how these models will (mal)function within the context of an accountability system.

may be eliminated or redirected to support tested subjects (McMurrer, 2007; Mishook & Kornhaber, 2006; Sabol, 2010). Thus, the open, flexible, problem-solving approaches that engagement in the arts encourages (Hetland, Winner, Veenema, & Sheridan, 2007) have been given short shrift.

Educators' ethics are besieged by pressures to produce score gains. These pressures have sometimes narrowed teachers' focus to students whose scores are nearest the passing threshold (Booher-Jennings, 2005; McNeil, Coppola, Radigan, Vasques-Heilig, 2008; Neal & Schanzenberg, 2007). Students far below that score have been dubbed "hopeless cases" (Booher-Jennings, 2005). In addition, there have been hundreds of instances of cheating by educators and administrators across a wide range of school districts (Amrein-Beardsley, Berliner, Rideau, 2010; Nichols & Berliner, 2007). Modifications to accountability systems have not generated a more just society: achievement remains highly unequal and highly correlated with family background (Braun, Chapman, & Vezzu, 2010; Dillon, 2009; Gamoran & Long, 2006).

Excellence in learning and teaching are undermined by compromises in content and instruction. Students' scores commonly show much steeper gains on the high-stakes state tests that students have been trained to take than on other low-stakes assessments of the same content (Braun, Chapman, & Vezzu, 2010; Klein, Hamilton, McCaffrey, & Stecher, 2000; Nichols, Glass, & Berliner, 2006). This demonstrates that students' understanding—their ability to apply test-prepped knowledge in a flexible manner to non-test settings (Gardner, 1991b, 1999a)—is not being developed. At the high school level, gains on the National Assessment of Education Progress have remained very nearly flat for a decade (National Assessment of Educational Progress, 2009). Thus, accountability policies have not produced an uptick for students about to enter the workforce or higher education.

Howard has not been content to criticize accountability policies. He has done the much harder work of proposing workable solutions. Alongside apprenticeships, he has argued that the education system might adopt about a half-dozen, high-quality "educational pathways" (Gardner, 1999a).Each pathway would develop fundamental literacies, while employing separate foci, potentially technology, multiculturalism, a traditional canon, social responsibility, progressive education, or "the

true, the beautiful and the good." Pathways would combine clear, rigorous standards with meaningful parental and community choices in curriculum. They would also allow for what are now being called, under the Common Core State Standards Initiative, "economies of scale" (Common Core State Standards Initiative, Frequently Asked Questions, n.d.; Kornhaber, Griffith, Taylor, *forthcoming*). That is, a limited number of widely adopted pathways would permit shared curriculum materials, assessment, and professional development across districts and states. Howard's proposal ought to appeal to advocates of choice, efficiency, and standards.

I have long thought Howard's pathway approach was ahead of its time. When the next iteration of the one-standard-one-assessment approach falls short, perhaps policymakers will take Howard's advice. It is, as noted, always wise to do so.

Commitments

My scholarship on accountability policy owes much to Howard's emphasis on understanding and his respect for the diversity of learners. Howard's mentorship has also exercised a profound influence on my sense of self. Given the breadth and depth of his commitments to a range of individuals and institutions, and the demands of his own scholarly activities, it is astonishing to think that he could do any more for me. Yet, he has. Howard Gardner saved my life.

After a dozen years of working with Howard and at Project Zero, I moved to the Civil Rights Project at Harvard to explore the influence of accountability policy on educational equity. However, I immediately found myself being courted for a faculty position at Penn State. I did not envision myself juggling a faculty job and parenting a young child. On the other hand, at Harvard I had lived on soft-money. Its tenuous nature was growing problematic given the increasing unpredictability of my marriage. Penn State allowed the possibility of tenure and perhaps thereby greater stability. Eventually my family moved to Pennsylvania, but things grew worse.

Howard was one of the very few people who had any inkling of these difficulties. Though my new job took me 450 miles from Cambridge, he maintained a continuous stream of emails. There were professional and scholarly reasons for this. He had volumes or chapters

to propose, speaking opportunities to pass along, and ideas to share. At the same time, he used these communications to check on my well-being. In December 2002, he intuited a need to call me at home.

"Let me ask you something: Do you feel safe?"

I responded from the basement, where I hoped the conversation would not be overheard. "Not entirely."

The following April, I was scheduled to be on a panel with Howard at the American Educational Research Association Conference. The day before my departure, however, the situation at home became so fraught that I could not get on my flight. I emailed my paper to Howard so that he might draw on it. He wrote back to say he would deliver my paper as well as his own. I still hoped to get to Chicago in time to participate on a Presidential panel. Howard said that if I got there, he would make it a point to see me.

By another cosmic intervention, or perhaps due to the drawn appearances my daughter and I presented at the registration desk, we were given a free upgrade to a suite at the top of the Chicago Fairmount Hotel. Howard arrived there with his daughter, Kerith. After a mostly uneaten dinner he'd ordered for us, Kerith kept my daughter occupied so that Howard could do some strategizing with me. He listened to the counsel I'd gotten from a lawyer the previous week—simply move out—and was horrified. From Howard's family members still living in Pennsylvania, he knew this advice put me at risk for a host of terrible complications. He advised me to get a new lawyer. Fortunately, I again followed Howard's advice.

The new lawyer, who had experience with murdered clients, literally spelled out what I had not quite heard her say the first time: "You are in a potential d-e-a-t-h case." This perilous situation continued for more than three years. In State College, scandal and sunlight had yet to mitigate the functioning of social services, so my daughter confronted threats of foster care. During this time, both my parents became gravely ill and died.

Howard was there at every turn. For years, I saved his voicemail message expressing his hope that the future would hold better things. He asked me to give a series of lectures with him in the U.K., a temporary

reprieve filled with new ideas, great museum visits, and speaking fees to cover legal bills and expert witnesses. When I got tenure in the midst of all this, he and Ellen invited me to a celebratory dinner in Cambridge. It is neither metaphor nor exaggeration to say that Howard's efforts enabled me to survive this time. This essay and public acknowledgment of his role serve as a very partial thank you.

Howard is justly lauded as an unparalleled thinker, productive scholar, and an exceptionally dedicated mentor. His vision, energy, and intellect have had global influence on theory and practice in a range of fields and on generations of students. Yet, Howard's quiet and unsung personal commitments are equally exceptional. Superhero only begins to describe him.

References

Amrein-Beardsley, A., Berliner, D.C., & Rideau, S. (2010). Cheating in the first, second, and third degree: Educators' responses to high-stakes testing. *Education Policy Analysis Archives, 18*(14). Retrieved January 27, 2012 from http://epaa.asu.edu/ojs/article/view/714/841

Booher-Jennings, J. (2005). Below the bubble: 'Educational triage' and the Texas accountability system. *American Educational Research Journal, 42*(2), 231-268.

Braun, H., Chapman, H., & Vezzu, S. (2010). The black-white achievement gap revisited. *Education Policy Analysis Archives, 18*(21). Retrieved January 28, 2012 from http://epaa.asu.edu/ojs/article/view/772

Callahan, R. E. (1962). *Education and the cult of efficiency.* Chicago: University of Chicago Press.

Campbell, D. T. (1976). Assessing the impact of planned social change. Retrieved January 28, 2012 from http://www.eric.ed.gov/ PDFS/ED303512.pdf.

Chetty, R., Friedman, J. N., Rockoff, J. E. (2011). The long-term impact of teachers: Teacher value-added and student outcomes in adulthood. (National Bureau of Economic Research Working Paper No.17699). Cambridge, MA: National Bureau of Economic Research.

Common Core State Standards Initiative, Frequently Asked Questions, n.d.; http://www.corestandards.org/frequently-asked-questions

Csikszentmihalyi, M. (1988). Society, culture and person: A systems view of creativity. In R. Sternberg (Ed.), *The nature of creativity* (pp. 325-339). New York: Cambridge University Press.

Cubberly, E. P. (1916). Editor's Introduction to L. M. Terman, *The measurement of intelligence.* Boston: Houghton Mifflin.

Dillon, S. (2009). 'No Child' law not closing racial gap. *The New York Times.* April 28, 2009, p. A1.

Fredericksen, J. R., & Collins, A. (1989). A systems approach to educational testing. *Educational Researcher, 18*(9), 27-32.

Gamoran, A., & Long, D. A. (2006). Equality of educational opportunity: A 40-year retrospective. Madison, WI: Wisconsin Center for Education Research, University of Wisconsin-Madison.

Gardner, H. (1983) *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1991a/2006). Assessment in context: The alternative to standardized testing. In B. Gifford and M.C. O'Connor (Eds.), *Changing assessments: Alternative views of aptitude, achievement, and instruction* (pp. 239-252). Boston: Kluwer Publishers. Reprinted in Howard Gardner (2006). *The development and education of the mind: The selected works of Howard Gardner.* London, UK: Routledge.

Gardner, H. (1991b). *The unschooled mind: How children think and how schools should think.* New York: BasicBooks.

Gardner, H. (1993). *Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi.* New York: BasicBooks.

Gardner, H. (1999a). *The disciplined mind: What all students should understand.* New York: Simon & Schuster.

Gardner, H. (1999b). *Intelligence reframed: Multiple intelligences for the 21st century.* New York: BasicBooks.

Gardner, H. (Ed.) (2010). *GoodWork: Theory and practice.* http://www.goodworkproject.org/.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the 21st century.* New York: BasicBooks.

Gardner, H., & Boix-Mansilla (1994). Teaching for understanding in the disciplines—and beyond. *Teachers College Record, 96*(2), 198-218.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet.* New York: BasicBooks.

Hetland, L., Winner, E., Veenema, S., & Sheridan, K. (2007). *Studio thinking: The real benefits of visual arts education.* NY: Teachers College Press.

Klein, S. P., Hamilton, L., McCaffrey, D., & Stecher, B. (2000). What do test scores in Texas tell us? *Education Policy Analysis Archives, 8*(49). Available at: http://epaa.asu.edu/ojs/article/view/440.

Koretz, D. (2005). Alignment, high stakes, and the inflation of test scores. In J. Herman & E. Haertel (Ed.), *Uses and misuses of data in accountability testing* (Yearbook of the National Society for the Study of Education) (pp. 99-118). Malden, MA: Blackwell.

Koretz, D. (2008). *Measuring up: What educational testing really tells us.* Cambridge, MA: Harvard University Press.

Kornhaber, M. L. (1997). *Seeking strengths. Equitable identification for gifted education and the theory of multiple intelligences.* Cambridge, MA: Unpublished doctoral dissertation.

Kornhaber, M. L. (2008). Beyond standardization in school accountability. In G.L Sunderman (Ed.), *Holding NCLB accountable: Achieving accountability, equity, and school reform* (pp. 43-55). Thousand Oaks, CA: Corwin.

Kornhaber, M. L., Griffith, K. M., & Tyler, A.C. (in press). It's not education by zip code anymore—But what is it? Conceptions of equity under the Common Core. *Education Policy Analysis Archives.*

Kornhaber, M., Krechevsky, & Gardner, H. (1990). Engaging intelligences. *Educational Psychologist, 25*(3&4), 177-199.

Linn, R. E., Baker, E. L., & Dunbar, B.D. (1991). Complex, performance-based assessment: Expectations and validation criteria. *Educational Researcher, 20*(8), 15-21.

Madaus, G. F. & Clarke, M. (2001). The adverse impact of high-stakes testing on minority students: Evidence from one hundred years of test data. In G. Orfield & M. Kornhaber (Eds.), *Raising standards or raising barriers? Inequality and high-stakes testing in public education.* New York, NY: The Century Foundation Press.

McMurrer, J. (2007). Choices, changes, and challenges: Curriculum and instruction in the NCLB era. Washington, DC: Center on Education Policy.

McNeil, L. M., Coppola, E., Radigan, J., & Vasques-Heilig, J. (2008). Avoidable losses: High-stakes accountability and the dropout crisis. *Education Policy Analysis Archives, 16*(3). Retrieved August 25, 2010 from http://epaa.asu.edu/epaa/v16n3

Mishook, J. & Kornhaber, M. (2006). Arts integration in an era of accountability. *Arts Education Policy Review, 107*(4), 3-11.

National Assessment of Educational Progress (2009). *Grade 12 reading and mathematics 2009 national and pilot state results.* NCES.ed.gov/nationsreportcard/pubs/main2009/201455.asp#section1

National Commission on Excellence in Education (1983). *A nation at risk: The imperative for educational reform.* Washington, DC: U.S. Department of Education.

Neal, D. & Schanzenbach, D. W. (2007). Left behind by design: Proficiency counts and test-based accountability (National Bureau of Economic Research Working Paper No. 13293). Cambridge, MA: National Bureau of Economic Research.

Nichols, S. & Berliner, D. C. (2007). *Collateral damage: How high-stakes testing corrupts America's schools.* Cambridge, MA: Harvard Education Press.

Nichols, S. L., Glass, G. V, & Berliner, D. C. (2006). High-stakes testing and student achievement: Does accountability pressure increase student learning? *Education Policy Analysis Archives,14*(1). Retrieved August 12, 2009 from http://epaa.asu.edu/epaa/v14n1

No Child Left Behind Act of 2001. (2001). Public Law 107-110. http://www2.ed.gov/policy/elsec/leg/esea02/index.html

Orfield, G. & Kornhaber, M. L. (Eds.). (2001). *Raising standards or raising barriers? Inequality and high-stakes testing in public education.* New York, NY: The Century Foundation Press.

Sabol, F. R. (2010). *No child left behind: A study of its impact on arts education.* www.arteducators.org/research/NCLB_Proj_Report_2-10.pdf.

Stiggins, R. J. (1987). Design and development of performance assessments. *Educational Measurement: Issues and Practice, 6*(3), 33-42.

Taylor, F.W. (1911/1967). *The principles of scientific management.* NY: W. W. Norton.

Watson, J.B. (1913). Psychology as the behaviorist views it. *Psychological Review, 20,* 158-177.

Wiggins, G. (1989). A true test: Toward a more authentic and equitable assessment. *Phi Delta Kappan, 70,* 703-713.

Yu, L. & Suen, H. (2005). Historical and contemporary exam-driven education fever in China. *KEDI Journal of Education Policy, 2*(1), 2005.

Howard's Response to Mindy L. Kornhaber

While I am generally known as a decent teacher and mentor, I am also known as one who keeps a certain distance from his students (and even his colleagues). One wisecrack is that two of my students could be having a torrid affair, but unless they decided to sleep with one another under my desk, I would be unlikely to notice their relationship.

You are also a rather private person, not one to make assumptions of friendship easily. Indeed, I first came to know you over twenty years ago when you took one of my lecture-cum-discussion courses and, as far as I can remember (and your memory seems to confirm this), you did not say a single word in class. But your written work was so "on the mark," so penetrating, that I took the unusual step of inviting you in for a conversation.

I don't remember the details of the conversation—you probably do!—but I do remember encouraging you to undertake doctoral work. I am so pleased that you did. It was a life-changing experience for both of us, I believe. Perhaps for the reasons that you point out in your description of that first rather large lecture class together, there were a lot of subterranean common features which drew us together initially.

You were also very clever in the way your pursued doctoral work. Most students align themselves either with human development (where I hang my hat, growing out of developmental psychology), or with educational policy (where you had some background as an administrator and where students aspire to make a difference at the systemic level). You elected to work on "both sides of the street," not only enhancing your education in a way chosen by very few students but also, I suspect, distinguishing yourself in other ways.

But your doctoral work is now but a small part of the relationships that we have developed in the past twenty years—I think of them as quasi-familial. I have come to know you and your daughter Paulina very well, from her infancy to her college years. (In fact, she and I had a race to catch a train in the UK a half a dozen years ago.) You worked for several years at Project Zero (on a variety of projects), took a leadership role in management, and accomplished the unique and unprecedented

goal of securing for us very good space—against the policy of every managerial unit at the University since the days of Cotton Mather.

Of course, at the beginning, we did have a teacher-student relationship, with some knowledge asymmetry, and, alas, some power asymmetry. I hope that was never too burdensome. (Perhaps you were wise not to have me as your designated adviser!) But while you are private person and a quiet person, you are also a person of deep integrity. And so you have said what you think and what you mean and you have said it loudly and clearly. That has been all to the good. It has expanded my own understanding of multiple intelligences, and particularly the ways in which cultures can afford or elicit or discourage different combinations of intelligences. You have made me much more skeptical about grandiose schemes for changing American education, ranging from Race to the Top to the Common Core. And you have been an acute identifier of talents, calling my attention to work and persons about whom I should know. What you may not have realized is how often that talent and knowledge comes from you because you are also a very modest person.

You refer in your essay to some very personal interactions and conversations that you and I and Ellen have had over the years. If those have been helpful to you in any way, Ellen and I are grateful. We only said and did what friends should say and do, and we know that, were the situation reversed, you would do the same.

What you accomplished in the present Festschrift with Ellen is magnificent and unique. It may never be equaled by anyone, and it serves as a model of what Freud counseled: Love and Work.

Developing the Capacity for Peer Feedback: A Missing Link?

Mara Krechevsky

I have long been struck by Howard Gardner's ability to listen. In the almost 30 years I have known Howard, he has never failed to listen closely to those around him. From three-year-old children sharing thoughts about their paintings to migrant parents struggling with an unresponsive school system to world-renowned scholars expounding theory, Howard pays close attention to people's words and the meaning behind them. This may be one reason for Howard's deep affinity for the municipal preschools and infant-toddler centers in Reggio Emilia, Italy. In this extraordinary system of 33 schools and centers, teachers embrace a *pedagogy of listening*, which veteran Reggio educator Carlina Rinaldi deems the premise for any learning relationship.

Howard introduced me to the Reggio schools in the mid 1980s. At the time, I was working on a research project at Project Zero called Project Spectrum, a ten-year initiative to apply multiple intelligences theory in early childhood education (Chen, Krechevsky, and Viens, 1998). The Project Zero and Reggio perspectives on teaching and learning share a number of similarities, including an emphasis on the arts as serious cognitive activity, attention to the many different ways individuals make sense of the world around them, a deep respect for the discipline of teaching, a performance-based view of understanding, and a commitment to supporting high-quality student work. In 1996 when Howard asked me if I wanted to lead a collaboration with Reggio educators, I jumped at the chance.

On the day I was to give Howard a draft of the grant to fund the collaboration (later called the *Making Learning Visible* (MLV) Project), I went into labor with my first child. On the way to the hospital that evening, my husband drove me to Cambridge to drop off the grant at Howard's house. Howard predicted I'd be sent back home within a few hours. He was wrong. It was an auspicious beginning to a collaboration that has done more to challenge my assumptions, values, and beliefs

about teaching and learning (and parenting) than any other project in my 28 years at Project Zero.

From 1997–2000, the MLV research team investigated the dynamics of group learning and the role of documentation in supporting and making learning visible in the Reggio classrooms (Project Zero & Reggio Children, 2001). Since then, Project Zero researchers[1] have worked with preschool through high school teachers and teacher educators in the U.S. to support the creation of learning groups in classrooms and staffrooms. We define a learning group as *a collection of persons who are emotionally, intellectually, and esthetically engaged in solving problems, creating products, and making meaning in which each person learns autonomously and through the ways of learning of others.* This definition draws on Howard's 1983 definition of an intelligence as the ability to solve problems or fashion products that are valued in one or more cultures, with an added emphasis on learning from and with others.

The ultimate goal of MLV is to support children's and adults' individual and group learning through the use of documentation as a way to see how and what children learn. We define documentation as *the practice of observing, recording, interpreting, and sharing the processes and products of learning in different media in order to deepen learning.* (For more information about the project, visit the MLV Website: http://www.mlvpz.org/).

In the following essay, I draw on this work to explore what I have come to see as a missing link in early childhood education: the opportunity for children to give feedback to other children about their ideas and work—especially work in progress. Indeed, the field of education in general has overlooked the vast potential for supporting student learning through children sharing work in progress and giving each other feedback. Across subject matter, grade levels, and professions, learning how to give and receive feedback is a critical step in building individual or collective knowledge.

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[1] Other members of the Making Learning Visible research team include Carolyn DeCristofano, Ben Mardell, Melissa Rivard, Steve Seidel, Janet Stork, Terri Turner, and Daniel Wilson.

Creating a culture of feedback in the classroom does not happen automatically; it requires adult modeling, shared language, conversation protocols, and a great deal of practice. It also benefits from making learning and learners visible. I ground my reflections in a visual essay about creating a culture of dialogue in the kindergarten classroom of Melissa Tonachel, an MLV teacher at the Devotion School in Brookline, Massachusetts. I suggest at least four key elements to support the development of children's abilities to give and receive feedback: a view of children as capable and competent, seeing teachers as learners and learners as teachers, intentional choreography and facilitation of small-group learning, and making learning visible through documentation. I also offer some initial thoughts about how to assess such a culture.

Peer Feedback: A Missing Link?

If skills of collaboration and negotiation are deemed to be important in a given society, then school is perhaps one of the places where they can most easily be explored, developed, and practiced. (Vea Vecchi, 2001a, p.178)

Even the most progressive of early childhood educators often respond with surprise to the idea of asking children to comment on the work of their peers. Given a moment's reflection, they almost always react favorably. Yet the move is not one they have previously considered. Why? For one thing, caring teachers—especially in early childhood—may harbor a desire to protect children from evaluative exchanges. Giving and receiving feedback on work or ideas can also make adults uncomfortable. Facilitating peer feedback is neither a practice nor a curricular focus in most teacher education programs. In addition, many early childhood teachers make primarily positive comments about children's work out of a desire to help children develop the confidence to try new things and feel pride in their work.

In an era of high-stakes testing and standards-based curriculum, teachers are hard pressed to make time for activities not clearly linked to items on the test. Current early childhood assessments generally overlook child-child interactions around *learning*. While assessments such as the Classroom Assessment Scoring System (CLASS) (Pianta et al., 2008), the Revised Early Childhood Environment Rating Scale (ECERS-R) (Harms et al., 2005), and the Early Language and Literacy

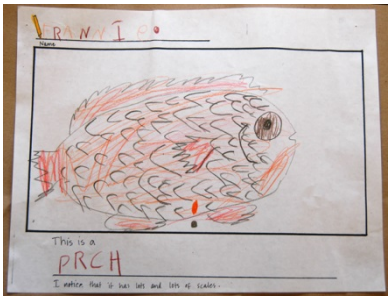
Classroom Observation Toolkit (ELLCO) (Smith & Dickinson, 2002) look at teacher-child interactions, they mostly skip over children learning from and with each other. The CLASS emphasizes teacher-child interactions—even dimensions like quality of feedback and concept development refer primarily to adult-child interactions. The ECERS-R includes an interaction subscale, but four of the five items relate to aspects of child-staff interactions like supervision, discipline, and positive affect. Although the fifth item looks at interaction among children, it mostly addresses social behaviors like cooperation and sharing. Even the ELLCO largely ignores facilitation of child-child talk.

Despite a large body of research that suggests cognition is best viewed as distributed (Lave & Wenger, 1991; Rogoff et al., 2001; Salomon, 1993), and despite current political support for developing 21st century skills such as communication and collaboration (http://www.p21.org), pervasive images of thinking and learning as individual acts are so deeply ingrained that it is easy to overlook practices that—once pointed out—seem obvious. In a transmission model of education, teacher-student interactions are the locus for student learning. Indeed, a low teacher-student ratio is something many parents seek when searching for a school or center for their child. As Vea Vecchi's quote at the beginning of this section suggests, schools are a laboratory for democratic life—an arena for not just transmitting, but also building knowledge, culture, and norms regarding the exchange of ideas. Many school mission statements call for developing collaborative learners and responsible citizens able to participate in an increasingly globalized world. Yet these statements tend to remain abstract and unconnected to classroom life. Creating communities of learners who are interested in understanding other minds and willing to participate in the events around them would go a long way toward fulfilling these missions and connecting the curriculum to the social dimension of learning. Consider the following studies of ocean life and insects carried out by Melissa Tonachel's kindergarten class.

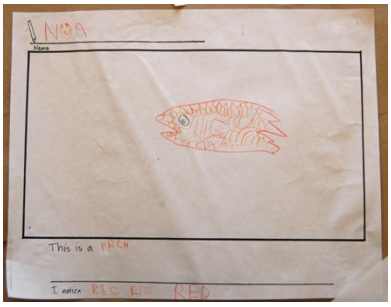
Creating A Culture Of Dialogue

(Documentation and narrative by Melissa Tonachel (2006), formatted by Melissa Rivard, downloaded January 13, 2012 from http://www.mlvpz.org/documentation/page15da.html)

1. Perch drawing



As part of our study of ocean life, each child made an observational or "scientific" drawing of an ocean perch given to us by Mr. Wulf, the local fishmonger. I noticed in working with small groups that even though the children had developed a good vocabulary of fish body parts, they needed many reminders to look at the fish. I continuously pointed out details to include in their drawings. In fact, some children approached the table with the fish on it and immediately began drawing from their previous knowledge base and imaginations, not even looking at the fish. Although the drawings they produced looked impressive to colleagues, I knew that I wanted them to be able to do this more successfully without my pushing them along at every pencil mark.



I had a hunch that with practice the children could help each other—could be, in fact, much more effective than I could in my attempts to prompt each student. It would require me guiding their observations and their comments toward collaboration, not competitive comparison, so that they could build a habit of positive critique. I did not want to hear them say, "I like this drawing." **I wanted them to develop a shared vocabulary that would help them provoke each other toward more satisfying representational experiences.**

We gathered for a group meeting to look at the drawings. **Asking the right questions was essential.**

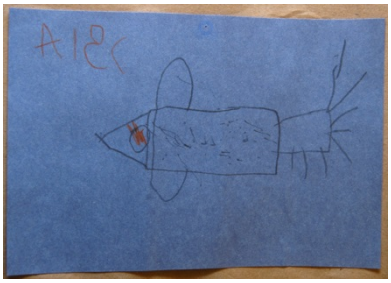
What do you notice in a drawing that reminds you of exactly how the fish looked?

What details did someone include that are very important?

Is there something in someone else's drawing that you wish you had included in your own?

The conversation was lively, highly respectful and productive. Children spoke carefully to describe various aspects of the fish drawings and how they related to what they remembered the real fish to look like. Not having a photograph of the fish there, children were not comparing drawings to the real thing, but were using the drawings to bring the fish forward in their minds; **they used each other's documentation to revisit the experience of studying the fish.** As one child remembered, *"It was hard to draw with this hand because I was holding my nose with this one."* This exercise made their efforts more relevant: drawing a fish wasn't just a task the teacher required; it moved the children toward exciting new understandings.

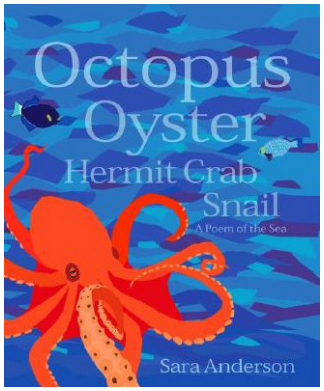
2. Squid Drawing



Children then set off to make another drawing, this time of a squid. **They used the immediate experience of examining and talking about their fish drawings to approach their drawings of the squid.** Although a teacher was seated at the table with them, the children were already using a new vocabulary of observation and discussing with each other their ideas about drawing the squid. **The teacher had already become a less potent force for prompting attention to detail as the children took on this role with each other,** talking aloud about their observations as they worked.

In subsequent preparation for parent-child-teacher conferences, many children chose their squid drawings as examples of their "best work."

3. Underwater Collage



Inspired by the illustrations in a book called *Octopus Oyster Hermit Crab Snail,* children worked on paper collage pictures of underwater life. After several days, some children had finished their work; some had just gotten started. Because the collage seemed to be a difficult task for many children, **I wanted them to share some ideas with each other** about how they went about making the various shapes in the pictures.

I gathered the whole group together at morning meeting to look at the finished pictures spread on the floor. We remembered looking at their work in this way before, and **I suggested that one reason their earlier squid drawings were so satisfying was that they had shared their ideas about the fish drawings beforehand.** I told them that, similarly, we would be looking at their ocean collage pictures to make observations and ask questions about how the artists worked. This might help children who were still working with ideas about how to proceed. After this discussion, **some children who had previously considered their work "finished" decided to go back and work some more in order to try new techniques.**

Emily: How did Evelyn make the octopus?

Evelyn: I drew it then I cut it out, and I glued it on the side where the pencil was so you don't see the pencil.

Ms. Tonachel: When Myasia used a pencil and then cut it out, she decided that she wanted the pencil lines to show. I see pencil lines on lots of pictures. Evelyn thought, If I flip it over, the pencil lines won't show.

Myasia: And that's what I did! 'cause there were pencil lines on there, so actually when I was not listening, I put it on the wrong side and that looks like I didn't draw any lines.

Juliette: How did Myasia make the seaweed?

Myasia: This one, I only cutted it out, and then the other one, I only used a pencil, then I cutted it out.

Ebony: I want to know how Myasia made that long, skinny shape.

Myasia: I made it because I wanted an eel. First, I drawed the picture on the paper, the white piece of paper, then I cut it out.

Ms. Tonachel: So, Evelyn just used scissors, and Myasia used a pencil first and then used scissors.

Myasia: Yeah.

Emily: I wonder how Alison made that clownfish.

Alison: How I made the clownfish? The clownfish that I made was that I cut out the orange fish out of orange paper and then I cut out some white stripes, and then I glued the white stripes onto the orange fish, then I glued the orange fish onto the paper. And then I decided to make the bubbles another day that were light blue.

Winston: Or another way you could do it is you could cut the face, cut that [section], cut that [section], and then you could leave them so white paper could—you could use the white paper as the white stripes.

4. Bulletin Board

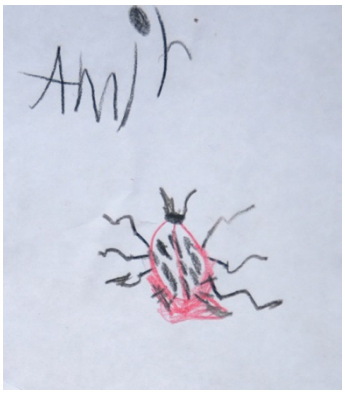
At this point, I prepared a bulletin board for parents, colleagues and other students. Our class took a "field trip" to the space just outside our classroom to see what other people would be seeing of the children's work. I shared some thoughts about how they had been helping each other to work, and they asked me to read aloud every bit of text. Each child was represented by one picture. Along with being pleased to see

their work displayed, they saw the connections from one piece to another.

They begin to understand each discrete effort as a piece of a larger body of developing, community work—their individual contributions to the whole.

5. Ladybugs

Some weeks later, we had some live ladybugs captive in our classroom as part of a study on insects. We had opportunities to observe the insects over a span of days, and we had a whole group discussion about what we were noticing about them. Children worked in small groups to observe, discuss and draw the ladybugs. During this time, teachers recorded children's discoveries about the ladybugs. We continued to observe the ladybugs closely, including during their release into a nearby garden.



Once the drawings were posted on a bulletin board, we met in small groups to look at them. We still had a few dead ladybugs and magnifiers to use for reference. First, the group looked at all the drawings posted on the wall and then turned their attention to their own, individual drawings. Children were invited to make observations about their own work; other group members then suggested possibilities for improving the drawings. These comments often referenced their own work or that of other children. **I suspect that this conversation would have been very risky had we not already built important experiences of and vocabulary for looking at each other's work.**

One group's conversation follows:

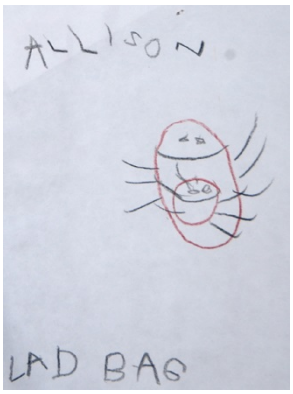
Ms. Tonachel: Let's look at one picture at a time. The artist will talk first and then other people can say what they think. **Is there anything you'd like to change about your drawing to make it look even more like a real ladybug?**

Amir: I want to put some red in the place where the dots are and then put a black line in the middle.

Allison: Make the legs straight.

Amir: I made it that way because I noticed the legs have a lot of joints and the antennas.

Winston: Make the dots more darker.



Amir: I saw one of them had lighter dots.

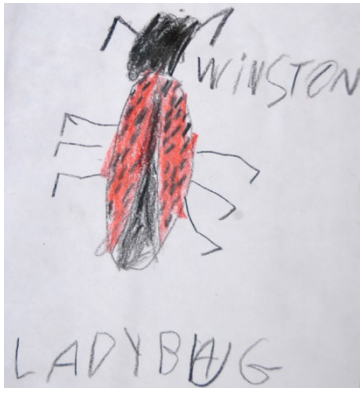
Allison: [I would change] nothing.

Amir: A black line in the middle.

Alison K.: Maybe you could color the head black because look at these—the head is black.

Allison: Okay.

Evelyn: Maybe you should add some antennas so it would look more like a real ladybug because the real ladybugs had them.



Allison: Okay.

Winston: I got all the details.

Alison K.: These [real ones] look really round and yours looks skinny, so maybe change it to round.

Allison: Maybe color the tips clear.

Winston: I can't color it clear.

Allison: Maybe keep it a little bit white.

Winston: Maybe the antennas should go straight up.

Evelyn: I thought I should put some white over it to try to make new ones, because they look kind of lopsided.

Allison: I think you should do the same thing.

Amir: On the antennas I think you shouldn't put any dots.

Winston: I think you should put a little wing.

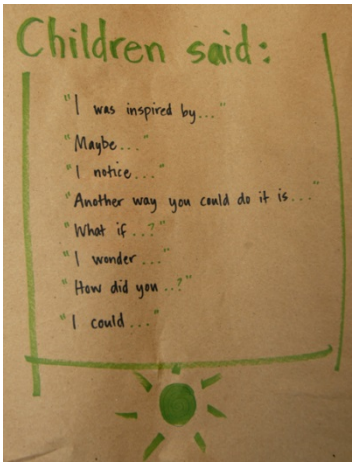
Evelyn: I didn't want to, like you didn't want to.

Alison K.: I could change it to erase these antennas because I can't really see them. The reason why one is all black is because it's the bottom, the backside.

Amir: You should connect those two legs.

Alison K.: I don't want to **take that advice because I couldn't really see them.**

6. Reflections About Critique



What shared language emerges?

I was inspired by...

I notice...

Another way you could do it is...

I wonder...

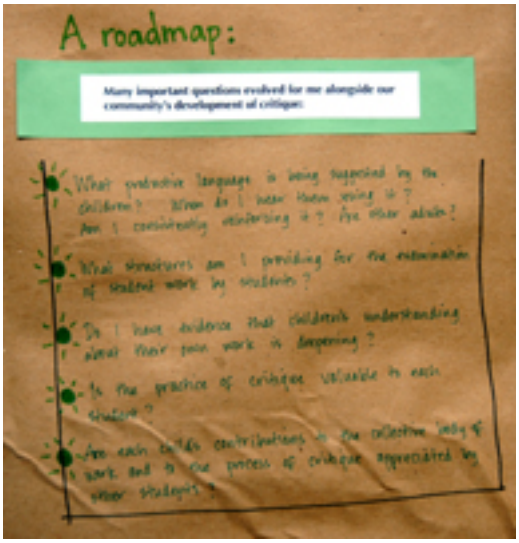
Maybe...

How did you...

What if...

It seemed important to begin establishing this culture of dialogue explicitly and intensely, to keep the conversation constant, and to consistently reinforce the vocabulary we were developing together. When

children were painting at the easel side by side and I noticed similarities in their approach, color, or subject, I would comment, *"It looks like you are being inspired by each other to use similar shapes in your paintings. Are you talking with each other about what you are doing as you paint?"*



Some Further Thoughts about Critique

Critique gives both the artist (writer, block builder, mathematician) and the observer something else to go on, a suggestion for a new turn in thinking and action. If we are successful at changing the lens of comparison, subjectivity, and favoritism through new language and attitudes—if we make clear that every child's every effort has value towards learning—then children are encouraged to develop a habit of expansiveness in their thinking.

This idea that "copying"—being inspired by someone else's work—is a positive learning tool can be an uncomfortable one. Parents, too, in looking at their children's products, need to know that in a culture of collaboration, sharing ideas, working from each other's beginnings and offering suggestions are welcome parts of any individual's learning. We can all ask children, "Where did that idea come from? How did you learn to do that?" thereby encouraging children to reference their own past experiences and the contributions of others to their own thinking and discovery.

When children are engaged in looking carefully at each other's work, their ideas expand. They regard other people's work as a resource,

and so discover new paths of thought to pursue, new techniques and strategies to try. They enter another realm of imagination; that is, through the ideas of others and through the very effort of expressing their ideas about another's work they imagine and explore unfamiliar ways of expressing themselves.

Developing the Capacity for Peer Feedback: Four Considerations

While there are many ways that Melissa Tonachel fosters children's capacities to give and receive feedback, I will highlight four that I see as critical for creating a culture of dialogue: 1) an image of children as capable and competent; 2) a view of both children and adults as teachers and learners; 3) intentional choreography and facilitation of small-group learning; and 4) making learning visible through documentation. I also offer preliminary thoughts regarding assessing a culture of dialogue.

An Image of Children as Capable and Competent

In a 2003 op-ed piece about Head Start written for the *Boston Globe*, Howard talks about two factors that influence any early childhood program: assumptions about the mind of the child and beliefs about the kind of society in which we want to live. In order for teachers to support children learning from each other, they need to believe that children are capable of providing useful feedback and that such exchange is critical to children's learning. Loris Malaguzzi, founder of the Reggio approach, described young children as intelligent builders of images with ambitious desires and requests. Children are not viewed as isolated and egocentric, but as "rich in potential, strong, powerful, competent, and, most of all, connected to adults *and other children*" (1993, p.10, emphasis added). The extraordinary quality of work coming out of the Reggio schools, from creating a working amusement park for birds to designing the new curtain for the city theater, is compelling testimony to the power of children's minds *if* they are seen as capable and provided with suitable support.

There is much talk nowadays about getting young children ready—ready to learn, ready for kindergarten, ready to become productive members of society. Yet research demonstrates that infants enter the world equipped with innate capacities to learn about the world around them (Gopnik, 1999; 2010). Carlina Rinaldi views children as citizens from birth; she describes a 10-month-old as a researcher with a

hypothesis. Melissa Tonachel considers her students scientists, artists, and researchers. She has high expectations both for how they learn from one another and for the quality of their finished products. Even though Melissa's colleagues are impressed by the children's fish drawings, Melissa is not satisfied by the children's learning *process*. She suspects children can support each other's work better than she, but she also knows facilitating this kind of exchange will require developing language that can shift competitive to more collaborative kinds of discussion. Melissa words her questions carefully to draw children's attention to the strengths in their classmates' work ("What details did someone include that are very important?") and to use them to inform critique of their own work ("Is there something in someone else's drawing that you wish you had included in your own?").

Melissa involves her students in choosing which work is most important to share on the bulletin boards outside their classroom, how to display the work, and what questions to pose for viewer feedback. Reggio educators believe that children generate their own individual and collective standards that the group will help individuals to achieve. Consider the following interview of five- and six-year-old children in a Reggio classroom (Project Zero & Reggio Children, 2001, pp.323, 325–26):

Angela: I like working in groups, because it's faster…. We can decide on things together. In a group you can do things together, so it's more fun for us and for everyone else.

Teacher: How do you decide on things?

Anna C: You've got to agree first, and to do that you have to talk and talk until finally you decide.

Athina: When you agree on something, you can do something that's even nicer.

Anna C: Because your brain works better. Because your ideas, when you say them out loud, they keep coming together, and when all the ideas come together you get a gigantic idea! You can think better in a group.

Teacher: In your opinion, do you always think better in a group?

Anna: Sometimes no. Sometimes it's better to do things by yourself. For example, I'm learning how to jump rope. When I practice I have to think really carefully about the jump and the rope. No one can be around or else I get confused and I do it wrong.

…

Francesco: If there are a lot of you, you don't know what's going on, but if there are only five of you, like us [he includes the teacher], you can really think. If I don't have any more ideas about something, someone else does…

Andrea: And that way the one who doesn't have any more ideas gets another one that goes on top…

Luca: And another one on that one, and another one on that one…

Andrea: And then all the ideas go together.

Teacher: Ideas go together?

Luca: They go together like when you're building. You hear them come out of our mouths and they go here [he points to the middle of the table] and they hook up to Francesco's and Nicola's

Nicola: But ideas don't have any glue.

Andrea: It's like…something you have inside of you.

Francesco: For example, when you're with a group you feel like you don't know some things, because you're not an expert, and someone else helps you and that way you learn stuff, like building walls, and the thing you learned sticks inside and it never comes off because it sticks to the other ideas you've already got.

These children exhibit sophisticated understandings of how groups learn. They have ideas about when it is better to learn in a group, how features like size and expertise influence the success of a group, and the possible pitfalls of a group. They even seem to develop a constructivist theory of learning. These understandings are supported in part by adults stepping back and trusting children's abilities to learn in a group and by making children's learning visible. Reggio teachers assume children are capable unless proven otherwise. In the infant-toddler centers, teachers

proactively communicate their expectations that children learn from and with each other. Teachers encourage infants to bring along their friends, even before they are mobile enough to do so. As we shall see, when teachers spend time observing and listening to children, documenting their actions and words, they develop greater trust in children's capabilities.

Teachers as Learners and Learners as Teachers

When adults themselves experience powerful group learning, they are more likely to foster it in students. Melissa is part of an adult study group that meets monthly to look at student work and reflect on practice with colleagues. Each member of the study group identifies a question about children's learning to investigate. Melissa's research questions include, "How might a process of looking at others' work contribute to a child's own thinking and learning?" and "How might we develop a classroom culture where children and teachers talk openly and productively about student work?"

The veteran school reformer Debbie Meier says that we often think of teaching as *telling* and learning as *listening*, when we should think of teaching as *listening* and learning as *telling*. Melissa sees herself and the children as partners in learning; she facilitates children teaching each other, rather than only offering answers herself. Melissa makes her own thinking visible to the children by sharing her observations of their process; she looks to them for help in solving problems. When children experience difficulty drawing the underwater collage, Melissa asks them to share their ideas with each other. Melissa's role includes recording children's discoveries, facilitating their learning through careful word choice, and highlighting moments when they share ideas or inspire the work of a classmate.

If teachers want children to engage in critique, they need to model it as adults. Teachers can model giving and receiving feedback if there is another adult in the room, or share drafts and revisions based on feedback they have received. The study group teachers sometimes shared other teachers' comments back with the students themselves. Melissa models what it is like to be a learner by posing questions such as, "How did you…?" "I wonder…" and "What if…?" After visiting other teachers' classrooms, she shares her observations and asks children for their

opinions. She also asks children what they think is important to share at conference presentations.

Teachers can also seek input from students into the very problems that perplex them as adults. How should small groups be formed? What do students think is working well in the class and what could be changed? How should group projects be evaluated? Teachers can also invite parents into the classroom *at the beginning of* or *during* the learning process (rather than just at the end) to provide information or share their perspectives on challenging issues or work in progress.

One obstacle to children seeing themselves as teachers is that they do not see what happens in small groups in the absence of an adult as learning. When Brenda Boyd, an MLV teacher at the Wickliffe School in Ohio, reviewed a recording she had made of her 3rd graders' discussions about learning in small groups, she realized that students were mimicking her words rather than answering questions for themselves. They seemed to think learning happened only when a teacher was present. Brenda encouraged students to create their own knowledge and share their thinking with one another. Brenda's colleague Maureen Reedy asked her 5th grade students the following questions during a unit on ecosystems (emphasis added):

- What is important *for others* to know about what we have learned about our ecosystem?
- How can we share what we learned about our ecosystem *with others*?
- How does your model *help others* deepen their understanding of the subject?

Questions like these help students see themselves as part of a larger community and consider the learning of others along with their own.

Intentional Choreography and Facilitation of Small-Group Learning

By their very nature, small groups in the classroom face many challenges: the tasks need to be clear and purposeful, group members need to listen to each other, and teachers need to trust that students can work their way through moments of confusion. Even when they ask students to form learning groups, teachers find it hard to step back and

give students ownership of their learning. One MLV teacher, upon viewing a video of her lesson, was surprised to see she had spent 80 percent of what had been planned as a small-group activity instructing the whole group. Creating a culture of dialogue entails setting up practices and structures that facilitate respectful and thoughtful feedback in a safe environment where everyone feels like they have something to contribute. Developing a shared language, using conversation protocols, choreographing individual and group learning, and being strategic about small group formation are vital to building this culture.

Melissa Tonachel tells the parents in her class, "Your child's education is not an individual pursuit." She reviews almost every task and activity to consider whether children might work together more productively than on their own. When children ask to work together, she rarely says no. Melissa and her colleagues frequently ask themselves, "How are we bringing what this child (or children) is learning to the group?" While the emphasis in U.S. classrooms on individual achievement often leads to individual assignments and assessment, Melissa finds she gets to know individual children more fully when they work with others. In Reggio classrooms, student reflections on their own work often take place in the presence of peers. Supporting this kind of exchange breaks down the privacy that typically characterizes learning and assessment, and makes children's thinking visible so it can be revisited and deepened. While many teachers hesitate to ask students to share and compare their work for fear of furthering competition or conformity, understanding is often fostered by such comparison.

Melissa begins the school year by developing a common language:

Among the first goals I set for the school year…was to establish a community where "she's copying me" and "he took my idea" did not exist. In other words, I started with language. I started saying, "You have the same idea as she does!" "That must be an important idea—I notice lots of people are thinking about it." "That idea begins like his, but then you changed it." …We have explicit conversations about where ideas come from, how they change, and how we get good ideas from each other. As Elisa said, "Sometimes somebody looks at what somebody else is doing, and they like it so much that they want to do the same thing." In this way, children still feel connected to the ideas they sprout, but they

release ownership of them, allowing their ideas to grow, to be transformed, reconsidered, and ultimately to become part of the group understanding. Being this careful about the language of ideas also widens the space for and acceptance of different ideas…" (Tonachel, May 23, 2005 reflection)

Melissa carefully considers her own word choice. She talks to the class about offering opinions as possibilities, rather than directives, and posts relevant vocabulary on the wall as a reference. By using a language of *thinking*—words such as *theory, evidence*, and *interpretation*—Melissa helps to foster a culture of dialogue that is focused on *learning*, rather than simply on completion of work (Marshall 1987; 1988; Ritchhart, 2002).

Group discussion can be fostered in a variety of ways. Reggio educators often refer children's questions to other children, rather than answering themselves. According to Reggio *atelierista* Vea Vecchi, "We try to engage other children in thinking about the problems raised, not by suggesting models or solutions, but by identifying occasions that could more forcefully highlight the problems that the children are investigating on their own" (Project Zero and Reggio Children, 2001b, p.190). Cognitive conflict can be more constructive among children when the developmental distance is closer (Vygotsky, 1978) and the relationships of authority are not as prominent. Children also share their reflections *during* the learning process, not just at the end. Small groups regularly report on what they are learning to the rest of the class.

Protocols, thinking routines, and rubrics are useful ways to focus conversation and foster children's and adults' thinking skills and dispositions. Protocols provide a predictable and safe context in which to offer feedback and open up work to inquiry (MacDonald et al., 2007; www.schoolreforminitiative.org/protocols). Thinking routines are short, easy-to-use strategies designed to become part of classroom life and deepen thinking (Ritchhart et al., 2011; http://www.visiblethinkingpz.org/). Instead of judging work ("I like it." "It's good."), children are engaged in observing, describing, thinking, and wondering. Other useful practices include beginning with quiet time for noticing or thinking; asking—and sometimes preparing—the artist or author to speak first and then remain silent until the end of the discussion (when they get the last word); and asking a friend to stand

with the presenter. Norms and rubrics (explicit, agreed-upon dimensions to assess student learning) can also help promote critique. An especially helpful norm (not just for children!) is: "You don't have to follow the advice."

In many elementary classrooms, children work independently alongside their peers, perhaps having social conversations, but not necessarily making meaning or solving problems together. Attending to the choreography of individual and group learning is key to creating a culture of dialogue. After children make their individual fish drawings, Melissa asks them to share and comment on the drawings in the whole group. With the underwater collage, Melissa asks children to share their ideas with each other *before* the pictures are completed, leading some children to go back and revise their drawings. When Melissa takes children to see the bulletin board in progress outside her room, children identify connections among pieces and begin to regard their individual work as contributing to a larger whole. Finally, after the whole group discussion about insects, children work and meet in small groups to comment on individual drawings. Melissa makes it a point to check both that the critique process is valuable for each child and that each child's contributions are appreciated by others. Children learn not just about the challenges of observation and representation, but also about the process of learning from and with each other.

Finally, the composition of the group can also influence children's ability to give and receive feedback. Small groups foster more complex interactions. The size should enable the flow of conversation; hence groups should rarely be larger than four or five. Other considerations when forming small groups include children's competencies and interests, friendship, gender, and ethnicity, social status in the classroom, time spent together, using artifacts or documentation to ground the conversation, and children's own suggestions.

Making Learning Visible through Documentation

From the start of the MLV Project, Howard encouraged the research team to identify indicators that groups were supporting and demonstrating understanding. Based on over 30 years of observing and documenting young children's learning, Reggio educators identified indicators such as: *Children and adults feel like they are contributing to a*

larger more meaningful whole and *the discoveries of individual children become part of the thinking of the learning group* (Project Zero and Reggio Children, 2001). By far, the indicator that provoked the greatest disbelief and envy among MLV teachers was what we called *VII.c.* VII.c. states, *Children express a feeling of continuous growth and awareness that their theories are provisional, and they take pleasure in seeing them modified, developed, and advanced*. How could Reggio preschoolers see their theories as provisional—and feel pleasure when they are modified—when most older students (not to mention Harvard professors) find this an enormous challenge?

The ability to listen is at the heart of this indicator and an essential foundation for the exchange and modification of ideas. Yet many MLV teachers described their students as poor listeners. Brenda Boyd's 3rd graders thought listening meant following directions. Lindy Johnson, an English teacher in an inner city high school, said that while her students could name many elements of a good discussion, *listening* was not one of them. She characterized her students' views as closer to "I don't like you so I don't need to listen to you." Lindy's social studies colleague Heather Moore Wood described most of her students' discussions as, "This is my opinion, that's your opinion," rather than a genuine exchange of ideas with the possibility of modification. Heather and Lindy also suspected that many students had so little confidence in their own ideas, it was difficult to engage in a healthy dialogue. Finding ways to help students listen to each other became a focus for Lindy and Heather's inquiry. They began a regular practice of asking their students, "What did you learn from another person's comments or writing today?"

Of course, teachers need to be good listeners too. Students tend to respond thoughtfully when their teachers demonstrate they are listening. Knowing someone is listening, students often take greater care to formulate their thoughts and to listen in return. Fourth grade MLV teacher Amanda VanVleck comments, "I was a classic 'rephraser' before MLV—'what you are saying is…' Now I take what is actually said and try to assume nothing about what was meant. I use questioning to get at meaning when I am not clear about [students'] understanding—'How would you share your thinking with someone who wasn't here?'" Documentation—taking notes, recording children's words, taking

pictures, videotaping, collecting student work (or any record of student thinking)—is a particularly effective way to demonstrate listening.

Reggio educators often ask children if they want to listen to their previous conversations or revisit earlier drawings before continuing to work on a task. Melissa defines documentation as making children's work available for re-examination. When children's work and ideas are documented and made visible by bringing their work back to them in small groups, sharing their words back with them, or posting work in relation to other work that inspired it or is connected to it in some way, children have a chance to revisit their thinking, compare perspectives, hear what others think, and deepen and extend their learning. As education moves away from a transmission model of knowledge to focus more on inquiry, documenting children's learning becomes a key tool for the learning of both teachers and children. (A side benefit of documenting is that in order to document, teachers often need to let students take the lead.)

Documentation also shapes future learning. Cindy Gildersleeve, a 3rd-4th grade teacher at the Wickliffe School, observes, "Before, I listened to children but always felt my best teaching occurred when I was interacting with or instructing students. Now I believe my best teaching occurs after I have listened carefully to conversations the children have, reflected on these conversations, and used my reflections to guide my interactions with students." Highlighting collaborative learning conveys an image of learning as social. Sharing documentation back with children allows them to see how they can learn from and with others and reinforces their identity as a learning group. Photographs of effective strategies or significant moments create a memory and a reference point for the group—especially for children with special rights[2] who can hold onto a new possibility or retrace their steps to repeat a successful strategy. In Melissa's classroom, children expressed great satisfaction in their experiences of collaborative thinking. As one child commented, "Now there are three 'inspirements'! He was inspired by me and then he was inspired by him!" Children seemed to rejoice in the feeling of collective creation and understanding.

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[2] Reggio educators refer to children with special *needs* as children with special *rights*.

Documentation makes public a conversation about what we value. Expressing and explaining one's own ideas, and listening to and responding to the ideas of others, are critical not only to students' academic and future success, but also to establishing a democratic culture in and outside the classroom. How can this culture be assessed?

Assessing a Culture of Dialogue

Howard has often pushed me to confront the question of assessment when I write about the ideas behind *Making Learning Visible*. If what we value is what we measure, how can we modify our assessment system to include the learning process? Vea Vecchi (1996, p.156) comments:

We feel it is necessary, once again, to deny the assertion that learning, and how we learn, is a process that cannot be seen, that cannot be activated and observed, leaving the school with the sole task of eliciting learning and then verifying it after the fact. What we are interested in is precisely an attempt to see this process and to understand how the construction of doing, thinking, and knowing takes place, as well as what sort of influences or modifications can occur in these processes.

Test scores address individual achievement, but have little or nothing to say about the processes or contexts of learning for individuals or the group. Documentation leads to greater awareness of the factors that influence student achievement and test scores, and it generates hypotheses about how children learn and how teachers can support that learning. How might a culture of dialogue be assessed? Relevant criteria (cf., Krechevsky et al., 2012) might include questions like:

- Who is doing the talking and what is being discussed (big ideas, work that reflects thinking over time, etc.)?
- Are children encouraged to look at one another's work? Do they share and compare work, examining the thinking of others?
- Is the purpose of the conversation to share what children already know or to build new knowledge? Do children teach other children? Is there a shared goal?
- What is the quality of children's interactions? Do children listen to each other? Do their comments build on each other? How do they solve problems and deal with conflict? How do they offer and receive critique?

- Do children provide feedback and explain ideas?
- Are they open to multiple perspectives and solutions?
- How do children structure their sentences?
- Are their words rich and expressive?
- Do children's statements refer only to themselves or are they more de-contextualized?

Other indicators might include:

- The *role of the teacher*: Does schoolwork involve solving problem and creating products, rather than a series of discrete tasks? Do teachers invite others into their classrooms (perhaps through documentation) to get other perspectives and share ideas? Do they use the documentation of some students to teach other students? Do adults wait before intervening? Is there a balance of individual, small-, and large-group learning? How are small groups formed? Rather than serving as the sole or primary sources of information, do teachers encourage students to enlist the cognitive and emotional support of their peers?
- The *classroom environment*: Are there images of the learning process—children's and adults' thinking, the ideas or issues under investigation, individual and group efforts to develop understanding—as well as learning products on the walls or in the room? Are there uninterrupted blocks of time?
- The *use of structures* like protocols, thinking routines, rubrics for giving feedback, and providing silent looking and/or thinking time.

Underlying all of the above is whether children exhibit the *desire* to communicate. Are there compelling—even irresistible—opportunities to think and communicate? Do children use language that reflects thinking and emotion (*idea, theory, opinion, inspire*)? Are there expressions of curiosity, wonder, excitement, joy, and laughter? All of these features entail a close look at the learning process as well as product. They involve assessment practices that depend on teachers' observation and analytic skills.

Concluding Note

One problem with writing this essay is that Howard hasn't been able to give me feedback. Over the years, I have frequently heard his

voice in my head. Am I focusing on the learning? What is my evidence? Do I really need two adjectives?

I focused this essay on developing children's capacity to learn from and with each other because I see it as a missing piece in most educational settings. In *Five Minds for the Future* (2009), Howard calls for the development of a *respectful* mind—one that recognizes that the world is made up of people who look and think differently from each other. Beyond tolerating difference, people need to understand each other. Communicating ideas, listening respectfully to different perspectives, and developing shared understanding are key not just to learning across subject areas and disciplines, they are also fundamental to participating in a democratic society. Much of innovation today emerges from a combination of minds, tools, and media operating across space and time.

As my colleague Steve Seidel says, creating a space in which people can offer, receive, and modify ideas becomes the very thing that teachers and students are working on. Nurturing the group as a learning environment promotes not only the achievement of the individual, but the capacity of the group to solve problems and make products that no individual, alone, would be able to achieve. Documentation supports this democratic culture by bringing into schools and communities children's and adults' voices that often go unheard.

References

Chen, J., Krechevsky, M., & Viens, J. (1998). *Building on children's strengths: The experience of Project Spectrum.* New York: Teachers College Press.

Gardner, H. (2009). *Five minds for the future.* Boston, MA: Harvard Business School Press.

Gopnik, A. (2009). *The philosophical baby: What children's minds tell us about truth, love, and the meaning of life.* New York: Farrar, Strauss, and Giroux.

Gopnik, A., Meltzoff, A., & Kuhl, P. (2009). *The scientist in the crib: What early learning tells us about the mind.* New York: William and Morrow.

Harms, T., Clifford, R., & Cryer, D. (2005). *Early childhood environment rating scale (ECERS-R) (rev. ed.).* New York: Teachers College Press.

Krechevsky, M., Mardell, B., Filippini, T., & Gardner, H. (2012). Creating powerful learning experiences in early childhood: Lessons from good teaching. In B. Falk (Ed.), *Defending childhood: Keeping the promise of early education*. New York: Teachers College Press, pp.192-217.

Lave, J., & Wenger, E. (1991). *Situated learning. Legitimate peripheral participation*. Cambridge: University of Cambridge Press.

MacDonald, J., Mohr, N., Dichter, A., & McDonald, E. (2007). *The power of protocols: An educator's guide to better practice.* New York: Teachers College Press.

Malaguzzi, L. (1993, November). For an education based on relationships. *Young Children, 49*(1), 9–12.

Marshall, H. H. (1987). Building a learning orientation. *Theory into Practice, 26*, 8–14.

Marshall, H. H. (1988). In pursuit of learning-oriented classrooms. *Teaching and Teacher Education, 4*(2), 85–98.

Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2008). *Classroom assessment scoring system (CLASS).* Baltimore, MD: Paul H. Brookes.

Project Zero & Reggio Children. (2001). *Making learning visible: Children as individual and group learners.* Reggio Emilia, Italy: Reggio Children.

Ritchhart, R. (2002). *Intellectual character: What it is, why it matters, and how to get it.* San Francisco, CA: Jossey-Bass.

Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners.* San Francisco: Jossey-Bass.

Rogoff, B., Turkanis, C.G., & Bartlett, L. (Eds.) (2001). *Learning together: Children and adults in a school community*. New York: Oxford University Press.

Salomon, G. (Ed.) (1993). *Distributed cognitions: Psychological and educational considerations.* Cambridge, England, Cambridge University Press.

Smith, M. W., & Dickinson, D. K. (2002). *User's guide to the Early Language and Literacy Classroom Observation (ELLCO) toolkit.* Baltimore, MD: Brookes.

Vecchi, V. (2001a). The curiosity to understand. In Project Zero & Reggio Children, *Making learning visible: Children as individual and group learners* (pp.158–212). Reggio Emilia, Italy: Reggio Children, p.178.

Vecchi, V. (2001b). The curiosity to understand. In Project Zero & Reggio Children, *Making learning visible: Children as individual and group learners* (pp.158–212). Reggio Emilia, Italy: Reggio Children, p.190.

Vecchi, V. (1996). Birth of two horses. In Municipality of Reggio Emilia Infant-Toddler Centers and Preschools, *The Hundred Languages of Children Catalog.* Reggio Emilia, Italy: Reggio Children, p.156.

Vygotsky, L. (1978). *Mind in society: The development of psychological processes.* Cambridge, MA : Harvard University Press.

Howard's Response to Mara Krechevsky

It's become almost a cliché for both of us, when we are in public, to mention that your first "assignment" at Project Zero was reading the galleys of Frames of Mind (published in 1983). If it is any consolation to you, my first job, as an unpaid research assistant at Project Zero, was to read the galleys of Nelson Goodman's Languages of Art, published in 1968. So perhaps there is a subterranean tradition at work here.

Amazing at it is to consider, we've worked together for thirty years—often side by side, sometimes (as in the case of the ten year project with the schools of Reggio Emilia) an ocean apart. We've worked on so many projects, with different locations, constituencies, topics, results, and even names (!) that it would take a small monograph to summarize them all. In the course of this mutual adventuring, you've become an expert in the full range of projects and activities associated with Project Zero—and I suspect that, if the historical documents were to disappear, you could do a highly credible job of reconstructing at least the last thirty years, if not before.

To top it off, when it comes to writing limericks about the "characters" who have passed through the dozen or so different physical abodes of Project Zero (the various loci of HPZ over the years would make a good board game!), no one can compare with you. The collection of limericks that you gave me at the Festschrift are among my cherished possessions—perhaps a century from now, Christies or Sotheby's (or their successors, Google-Auction) will consider them to be collectors' items.

I consider myself at least average in self–insight (I'm a psychologist, though that may lower my score), but you've described an aspect of myself which has not been particularly salient for me: that I am a good listener. I thank you for this unexpected and therefore especially appreciated compliment.

But come to think of it, from a different angle, I have developed an analogous idea. As anyone who knows me personally appreciates, I have very poor eyesight. I am color blind (very), lack depth perception, am near sighted (which needs to be corrected with lenses), and perhaps most dramatically, I am prosopagnosic (I don't recognize faces—and so when I

go to Formaggio, the local quality good-and-flower store in the neighborhood, I always need to be prepared to identify your sister Hallie).

Maybe as a compensation for poor visual capacities, I depend a lot on sounds—on language and also on music. And perhaps more than other persons, I depend more on listening than on looking or watching.

But in your essay, you do far more than simply extol the value of listening well. (I love Debbie Meier's quip that we teachers should think of ourselves as listeners.) You give us a deep sense of what is involved in listening, and listening well, among even the youngest children: what helps such youngsters to listen, what they pick up when listening, and how good listening can help them to cooperate and collaborate—as you put it, what kinds of feedback are desirable and helpful. These are all issues that deserve probing, and that is what you've done in a graceful way.

Nor will anyone who has read your essay ever forget the ladybug with its wings and antennae. It takes its place alongside other Reggio-inspired memorable pictorial collections—shoes, birdhouses, and the lions on either side of City Hall.

Of course, there is nothing inherently privileged about listening as opposed to looking or feeling. Ideally, we should do all of them regularly, synergistically, and with ever greater depth and connection. And that may be the lesson of the schools at Reggio. We should make use of all the languages—and sensory systems and intelligences—that children can invent or pick up. Perhaps my contribution to the Reggio canvas is that individuals differ in which of these capacities are more easily nurtured, and perhaps in my case, as you gently suggest, it is listening.

Ellen Condliffe Lagemann

Dear Howard,

Since you are a psychologist and I am a historian, our collaborations have largely been centered outside our research interests, in organizations like the National Academy of Education and in our many mutual friends. In consequence, there is not a logical essay I could contribute to this volume, but I did not want to be absent from the celebration of your work and career.

The first time we met was over dinner with Jerry Bruner at Casablanca in Cambridge. I can't remember why I was in Cambridge or how that dinner came to be, but my memory is that we had a fun conversation and subsequently overlapped more and more, initially mostly on National Academy of Education business.

In those years, I felt keenly, as I think you did, that the Academy was an important voice for high quality research in education and that it was therefore worth devoting considerable time and energy to ensuring its continuing vitality. Of course, meetings of the Spencer Post-Doc Selection Committee or full meetings of the Academy were also often fun occasions. I remember one dinner in particular during which you and I were waxing eloquent about Bill Clinton's charisma and sex appeal to the embarrassment of several of our colleagues, who actually moved to the other end of the table. But dinners like that usually followed long days of serious discussion about the merits of different research proposals. Even though I did not always agree with your judgments, I always found your rationales to be thoughtful, principled, and fair.

My admiration for your work for NAE led me to urge my colleagues on the Spencer board to ask you to join us. Once again, you and I did not always agree in our respective views about grant proposals or program direction, but I was always impressed by the seriousness you brought to our work and the degree to which your recommendations were based on deeply held (often research-based) beliefs and ideas.

As I have thought about it, your work for the Academy and for Spencer is of a piece with your citizenship more generally, at Harvard as well as in the many other professional communities of which you are a

member. You believe in the power of examples and, in my view, have been exemplary in acting purposively in support of at least four key ideas:

First, that excellence (whether in a research proposal or in an abstract quality like truth or beauty) can and must be defended through the articulation of its most essential characteristics;

Second, that high standards are neither elitist nor anti-democratic and should not be so construed (or misconstrued);

Third, that creativity and intelligence come in multiple forms, though character is not so pluralistic, always being a compound of integrity, honesty, and courage;

And finally, that loyalty—to important ideas and institutions, to core values, causes, and commitments, and to people one loves and admires—is the ultimate mark of a good person.

What I have most admired about your career is your capacity to maintain a continuity of conviction built around these ideas across so many different projects and research topics. Whether it was the ATLAS Project or GoodWork, you have continually found timely and important issues to pursue and have done so with great energy and insightfulness—and to the benefit of all of us who have heard about or read your work.

Finally, I cannot close without mentioning Kerith. Thanks to your introduction many years ago, Kerith has become a treasured and much-loved friend. We got to know one another because you were worried about her being on her own in NYC and since then, I have witnessed many demonstrations of your care and concern as a parent. She is lucky to have you as her father, and I am lucky to have you both as friends.

So, in closing, I salute you, as an exemplary scholar, citizen, father, and friend and wish you a Happy 70th Birthday—with the promise of many more productive and satisfying years still to come.

Ellen

Howard's Response to Ellen Condliffe Lagemann

Long before we met in person, I was well aware of your written work. I knew you as a scholar of education and philanthropy and as one of the handful of talented historians of education trained by the dean of the field, Larry Cremin. As you note, the fates then brought us together very intensively for a decade—as officers of the National Academy of Education (well, you were the president), as members of the committee that evaluated postdoctoral applications, as members of the Board of the Spencer Foundation (well, again you were the president), and most prominently, as colleagues at the Harvard Graduate School of Education (well, you were the dean and my boss). And to top it off, we were neighbors in Cambridge and you were for five years an invaluable and indispensable mentor to my daughter Kerith, who has gone on to a quite distinguished career as an educational administrator.

It's not difficult to appreciate that our relationships were somewhat asymmetrical. You were almost always in the leader role, while I was in the role of kibitzer (which I enjoy, though it sometimes drives others a bit batty). It's therefore appropriate for me to say that while we did not always agree on matters, you took what I said seriously, and I always took your thoughts and advice seriously as well. I felt an air of mutual respect and learning. We have a good many shared ideas about how education should be carried out and the many ways in which it might better live up to its life-altering potential. I suspect that the historical era (the 1960s) and the scholastic aura in which you were nurtured (that of Larry Cremin and his students) had a big impact on you. My own teachers, also often influenced by Larry Cremin, had a similar impact.

You've famously written that in the struggle (played out on 120th Street in Manhattan) in America between John Dewey and Edward Thorndike, Thorndike won. That was certainly true thirty years ago and it remains true today. But there are organizations, like Project Zero and Bard College, and people, like you and me, who continue the good fight. In this context, it is useful to remember Zhou En-lai's response when asked whether the French Revolution had been a success. He mused a while and then said, "Well, it's probably too soon to tell."

Howard Gardner: My Sibling

Sara Lawrence-Lightfoot

Howard, you hold a special and singular place in my life and consciousness… how to describe it? Of all of my colleagues and friends at Harvard and beyond, there is no one who feels more like a sibling to me than you. For the 40 years we have known one another, there has been a bond—a sibling bond of trust, mutual respect, admiration, and deep affection—that has made it possible for us to speak openly about what we believe, challenge each other's views and perspectives, reveal our hurts and confusions, trade confidences, come to each other for advice and counsel, and share our family stories; crossing the personal/professional boundaries with ease and alacrity, taking advantage of a kind of symmetry between us that liberates us from masking our hard work, our occasional victories and our amazing luck. And like siblings, we have measured ourselves against each other; occasionally feeling the competitive edge of a long running soft-rivalry that we successfully mask, but that spurs us on to better heights, deeper and more rigorous work. Hoping not to press this sibling metaphor too far, and risking the possibility that you do not feel this way at all in reference to me… let me name some of our sibling connections.

We are siblings not only in our four-decades-long tenure at the university (you, of course, have been here longer—through the formative period of your late adolescence and young adulthood—and are, therefore, the "real" Harvard man), but also in our unerring commitment to Mother Harvard. We have been, and are, responsible and engaged citizens. We care deeply about the culture, standards, and mission of the place, and over the years we have tried—more or less successfully—to design new institutional roles for ourselves that might take advantage of our experience and our long perspective. Even our rigorous critiques are a sign of our affiliation and caring.

We are siblings in the similar ways we compose our professional lives outside of Harvard; balancing and combining the internal and the external, taking our ideas and values public … joining the boards of colleges, universities, and arts institutions; speaking to diverse audiences across the country and world, bringing our voices to the larger

public discourse, traveling around the world to witness the cultural variations and test the universal appeal and usefulness of our ideas and insights.

We have followed a similar sibling path in writing books; working with the same literary agent, and hoping that our work will strike a chord beyond the academy, and be taken seriously within it; searching for the near-impossible and treacherous balance between popular acclaim and rigorous scholarly acceptance and critique; working to frame important questions that probe a fundamental dimension—beauty, goodness, creativity, respect—of human expression and experience; questions that we hope will both resonate with people's lived experience and lead to new theoretical insights; questions that will provoke and inspire our readers to become more thoughtful, reflective, and moral actors in the world.

Stories about our families have always been at the center of our sibling conversations; long running stories we tell each other about our parenting; our confusions, struggles, and exasperation, and the patience and forgiveness that we have discovered within us… narratives expressing the love and loyalty we feel for our children; our admiration for who they are becoming and the journeys they have chosen to take, and the occasional surprise we experience when we discover how much they have to teach us, how well they know us, and how much we have begun to value their advice and counsel. I think it was your children who warned you that it would not be a good idea for you to retire any time soon, and you listened to them.

But even with all these bonds we share—in the academy and the real world, in our public and private lives—like most siblings, we have asserted our differentness, claimed our uniqueness, and carved out our own special niche. The well-defined contrasts between us are also embedded in the sibling story. Howard the theoretician. Sara the portraitist. Howard, the structural thinker, creating schemas and frames; naming things, drawing boundaries and categories, determining what is in and what is out; ordering and synthesizing vast amounts of information; often beginning with over-arching abstractions, conceptions, umbrellas of knowledge, and then testing those against the empirical realities. Hoping to hear challenges that will give firmer edge and validity to his schemas. Sara, the phenomenologist, painting portraits from

grounded data, inserting herself into the narrative, joining aesthetics and empiricism, speaking with an interpretive voice. Always moving from the particular to the general; resisting categories and hierarchies.

Howard leading a team of researchers—at Project Zero and GoodWork—setting the intellectual standards, focusing the questions, mentoring, teaching, and guiding, provoking debate and conversation, and producing work that is collaborative but retains his distinctive voice and imprint. Sara, working alone, out in the field; listening, witnessing, observing, and questioning; training her mind and heart with undiluted attention to the person or institution or relationship she is seeking to document. She is smartest out in the field, soaking in the context, and using it to inform her interpretation of events… then hiding out in her studio; enjoying the privilege of solitude, her most creative space. So different we are; a differentness that I have always found instructive, engaging, and compelling; a contrast that has always made me greatly admire—and occasionally envy—your particular gifts and acumen; a contrast that has helped me see the signature of my own work.

My subtle mention of "envy" above underscores the last part of our sibling connection that I will mention; a soft shadow of darkness that is part of our symmetry; our knowing each other so well and our valuing each other so highly. I believe that in part we each measure ourselves by using the progress and achievements of the other. I look to you to see how I am doing, to track my journey, to spur me on. This is rarely made explicit. We don't query each other about advances on our books or the volume of our sales or the honoraria we receive for speeches. The metrics we use are rarely quantitative. Our measurements are more nuanced and subjective, softer and kinder, as we look for the lessons and inspiration that we might see in the other's journey. When you pull ahead I'm aware—once again—of the twin emotions that all siblings must feel. I applaud your win and quietly admit the rivalry it has inspired.

As I conclude this short missive, I worry that I have taken this sibling shtick too far. This has been my feeble but heartfelt effort to express to you my deep respect, my unerring devotion, my love… my admiration for who you are, what you do, and the way you do it. I also wanted you to know how carefully I have watched and studied you over these four decades, how much I have learned, and how valuable your presence and work have been to the definition of my own.

Howard's Response to Sara Lawrence-Lightfoot

I am deeply touched by your contribution, Sara. You put into words what I have often thought subconsciously but don't think that I've ever articulated, and I am quite sure I've never uttered these thoughts to anyone else. Our backgrounds, our disciplinary trainings, and even our style of research and writing are quite different, though perhaps many others on our faculty are even more different. (As George Orwell might have put it, "All professors are different, but some are more different than others.") When it comes to school policy and promotions, we often agree, but by no means always, and neither of us is afraid to speak his or her mind. I have to confess that I wish I could speak my mind the way that you speak your mind.

About that confession: I tend to put forth my ideas quite quickly, often forcefully, and then may waste energy in trying to justify every facet. You're much more likely to sit back, wait until at least the most vocal have spoken their minds (alas, often more than once!), and then you may speak up softly but with conviction and strength of argument. Or, as it sometimes turns out, someone—and it might even be yours truly—will say, "Sara, what do you think?" and that gives you the opening that you need and deserve.

So far I've focused on time spent in faculty meetings, and we've spend many days and some nights together with twenty to thirty senior colleagues at the Harvard Graduate School of Education. But I value much more our less formal contacts: our chats in the hall, our walks in the neighborhood, and the many drinks and meals (scores if not hundreds of times over the decades) during which we've broken bread and toasted each other.

It's that combination of both personal and professional ties that empowers your characterization of others as siblings. (Of course we both have <u>real</u> siblings, and we value them.) You've hit the nail precisely on the head. I may have relations with most of our long time colleagues, but it is almost always you that comes to mind when I have to grapple with a serious question. "What will Sara think? What will Sara say? Should I consult with her? If we've been in disagreement, why is that, and what can I learn from her point of view?"

I would not consider this to be “sibling rivalry,” and if it is competition, it’s certainly the healthiest variety. Rather, I’d think of it as the kind of intimacy that we can have with very few persons (usually family members), and it is a special gift when that kind of trust and intimacy ties one closely to a long time, much honored, and legendary colleague.

Jonathan Levy

My wife died in New York at forty-four in 1984. She was a Bostonian and had many loving Bostonian relatives, especially female relatives. My eleven-year-old daughter badly needed the company of understanding women and the structure of a good New England school. I needed something. I did not know what, except that it had to be something else somewhere else.

We moved to Boston. My daughter enrolled in the Park School. At Howard's invitation, I came to work at Project Zero. I knew nothing about Project Zero except that it was a group of psychologists who investigated the arts.

And I knew nothing about psychology. Howard kindly let me sit in on one of his lecture courses which were my introduction to the field; they, and the day-to-day work at Project Zero, under Howard's direction—the meticulous collection of data, the various small studies with a common large purpose and the discussions, both formal and informal.

I began to understand what psychological inquiry was about: The observation of human behavior *in motion and in action,* in order to document and perhaps predict it. I found this enterprise admirable and courageous, like cartography before the invention of exact measuring tools.

As I learned more, I began to understand Howard's central place in the field: that, as a psychologist ("a philosopher with a grant" is Howard's definition in his most recent book), Howard had chosen to investigate the most inaccessible of territories—this was a time before sophisticated brain scanning—the nature and function of the human mind.

I had heard about Howard's theory of multiple intelligences and began to understand the enormous effect it had and continues to have on the day-to-day practice of education around the world.

And I learned about and was privileged to work on a small part of the GoodWork Project, which sought to identify and examine, profession by profession, the barriers we have to doing both expert and ethical work

in our professional lives. That is, it was at its core an investigation of the practice of ethics in action. Nothing seemed more important to me in the "low, dishonest decade" of the 1990s and, alas, nothing seems more important now.

What impressed and continues to me about Howard's work is the combination of imagination and precision he brings to all his investigations; that, and that the topics he has chosen to investigate are both fundamental in theory and useful in practice. That, to my mind, is the most admirable combination a researcher can achieve.

In the course of working with, or near, Howard, for 20 years I came to learn more about his manner and method of investigation.

As a Principal Investigator it is to conceive the outline and purpose of a study, to imagine and organize the best method to conduct it and to find the right people to help him realize it. As a teacher, it is to inform, question, coax, and listen. As a manager, it is to bring good people together and cause them to understand that whatever they are contributing, including xeroxing and filing (which my daughter did at Project Zero), is useful. And as scientist, it is to bring the exceptional order, power, and clarity of his mind and his precise sense of taxonomy to bear on invisible things.

And, over the years, I have come to know Howard not only as a colleague but as a man and a friend. I have found him unfailingly kind, understanding, and generous in everything except, perhaps, on occasion, his time, which he, understandably, must guard closely.

It has been a privilege to have been Howard's friend and colleague for the past 20 years. I am glad I know him. I admire him and his work and am more grateful to him than I can say, professionally and personally.

Howard's Response to Jonathan Levy

It is with an especially heavy heart that I pen these words and, uniquely, in the third person. Ellen and I have known and been friends with Jonathan for thirty years. Indeed, as Jonathan mentions at the beginning of his essay, the connection goes back even longer, since I was interviewed by Geraldine Caro, Jonathan's first wife, long deceased, before we had met Jonathan. We watched with pleasure, and occasionally sought to be helpful, as Jonathan served as a sole parent for Catherine and had warm relations with many other individuals and families in the Boston area.

Jonathan studied at Harvard College and at Columbia University and became a playwright. He had a special fascination with plays for children. As I remember it, it was his interest in the ways in which children might be affected by literary and dramaturgical presentations that initially brought Jonathan to Project Zero, when it was quite a small outfit. Claiming no knowledge of psychology or social science, Jonathan immediately entered the fray of research; he not only participated in but made signal, important contributions to several of our studies of children's literary development in the 1980s and 1990s.

What began as a largely professional relationship evolved into a deep and, I don't hesitate to say, loving friendship. Jonathan had suffered a first heart attack when young and from then on, care of his heart was always a concern. But it never cast a shadow on our friendship, which was filled with a never ending volley of great stories, caricatures, imitations, gossip, and (at least for me) sensible career advice. Jonathan kept teaching at Stony Brook for his career, and we often found occasions to meet in the New York area or at conferences where one or both of us would present, sometimes on the same panel.

Only in the very recent years did Jonathan's cardiac problems become so severe that his travel and participation were curtailed. And then, in classic courageous Jonathan fashion, he called us up from Connecticut several months ago to tell us that the end was near, and we had a series of conversations, filled equally with humor and tears. Perhaps that is the way that it should be, for someone who has led an exemplary life, and is, perhaps above all, a person of the theater.

At Seven Decades

Ann Lewin-Benham

Who is this Howard you ask? I say:
An intelligentsia with wide sweeping sway
A sharp and pointed iconoclast
Seeing anew what most of us pass,

Replacing ideas imprecisely wrought
With his mind's own brilliant original thought,
Forming theories from all he finds
That seep in the conscious and reshape minds.

Who is the Howard that as he flies
See streams of words before his eyes?
In the time we drink a cup of tea
He writes a new book with alacrity.

In contrast to media's shallow conventions
Howard publishes bold contentions
To prick the cognoscenti's powers.
Insights, like arrows, pierce their towers

And down come tumbling long-held "isms"
Of what intelligence is and isn't
Equipping teachers with new offenses
To harness their students' intelligences.

Frames of Mind and *Unschooled Minds*
Follow fast on *To Open Minds*
And so we see in *The Mind's New Science*
Howard's become cognition's restylist.

Then, having jolted psychology
He tackles the whole of society:
What shapes genius? And what makes leaders?
How can youngsters become succeeders?

The mind of the future, in Howard's opinion,
Will have five traits that hold dominion
And quoting Howard's own rhym-ette:
"A mind that is *disciplined* features depth;

And *synthesizing* entails breadth;
While *creating* reveals a mind with stretch."[1]
Respectful is next, trait number four,
And *ethical* fifth, and that's the core.[2]

For fifteen years he defined a new field—
Good Work. The research in time revealed
Three traits that make Good Work make sense:
Ethics, engagement, and excellence.

Good Work led Howard to study cases of those who sit in the highest places:
He calls them *Trustees* and he sees their mission
To call to account others' sins of omission.

Now turning seventy, empathetic,
Trying to change a world synthetic,
Striving to leave the planet immune
To politics' ploys and plays of Tycoons.

A new intelligence he might define:
"Existential," he would opine,
Might be the kind of mind that hence
Reveals the highest intelligence.

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[1] Gardner, H. (2010). *Five minds for the future*. In J. Bellanca & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (p. 19). Bloomington, IN: Solution Tree Press.

[2]
Ellen asks to put ethical last
But kindly gave the writer a pass
When told the meter would surely decline
If "ethical" came at the end of the line.

Howard sees around bended corners
That stifle cynics and stymie scorners.
But what is behind the man we see?
I promise to tell with veracity:

A crap detector perfectly honed
The inside scoop on all he's known
A patriarch grand and influential
Enriching his offspring's genetic potential

Challenging Ellen to higher ends
Cajoling and chivvying all of his friends.
He won't let us off if we don't do our best
And calls to account any effort that's less.

We thank the universe you are you
To push the mind to what's next and new
To needle, to nail, to nudge, to nurture
To fashion a more intelligent future.

I wish you a happy birthday dear man,
I cherish the decades you've been at hand
Ever ready to write or call
A finer friend could never befall.

I give you my admiration always
And as you enlighten life's long hallways
I wish you health and instill in your vision
Belief in your powerful precognition.

Howard's Response to Ann Lewin-Benham

When I finished college, I wrote a novel. It was 1200 pages in longhand and not even clipped together; rather, it was being held loosely in a bag. It was terrible, and perhaps its only saving grace is that I knew it was terrible. That cured me from the desire ever to write another novel. I've never tried to write a real poem, being content with short ditties, which are only very occasionally witty. And so I take off my hat to you, Ann, for having written a clever poem, a touching poem, above all, a real poem that places me in a better light than I deserve, but for which I give a "hearty" thank you.

Our lives can be seen as quite diverse, or as eerily parallel. On the surface, they are quite different—you grew up in "the city," went to Bryn Mawr, ran a school which included Danny, your own child, and then started and directed for two decades the wonderful Capital Children's Museum. This downtown Washington, D.C., museum was outstanding on many dimensions. I came to know it best because of the Model Early Learning Center, where you (with colleagues from Reggio Emilia) sought to demonstrate that inner city kids were as capable as suburban kids of benefitting from a progressive, media- rich, open-ended, non-didactic education.

As for me, while my family came from Germany, I grew up in Scranton, Pennsylvania, with very much an academic rather than an activist slant. To be sure, I did teach piano to make a little extra money, and I co-taught in a K-2 classroom in Newton, Massachusetts, for six months, but, as proved to be the case with my novel writing, it was sufficient time for me to realize that I did not have the talent to be a good and effective teacher of young persons.

I believe that we actually first "met up" in the realm of ideas. You had been reading about Piaget, Montessori, Vygotsky, Feuerstein, and Reggio Emilia, and you learned that there was a dogged group of scholar-activists in the Boston area at Project Zero who inhabited much the same intellectual space. There ensued a rich decade with plenty of exchanges back and forth, and I vividly recall many visits on my part to the Capital Children's Museum to behold the various experiments that you and colleagues were carrying out—and also, to be honest, to observe the

extremely dicey politics of running a museum in any city and most especially in the sword-filled nation's capital (and, alas, it hasn't gotten any better). It is more than a footnote that you were kind enough to employ my daughter Kerith as an assistant, and, along with Ellen Lagemann, you stand out as a fantastic mentor and friend for Kerith, who has gone on to be an accomplished professional.

How does it all add up? The Capital Children's museum has little resemblance to its guise during your day; America has less interest than ever in progressive ideas and has gone the route of tests, accountability, and measurement full swat. The name "Reggio" is known everywhere in the world, but even in Reggio there are struggles to keep the original sparks alive, and most who invoke the name have little deep knowledge of what was accomplished there during the height of the Malaguzzi era.

It would be easy to get discouraged, but it would be wrong. Good ideas and practices are eventually recognized, though not necessarily in the places or in the way that anyone could have anticipated. The several powerful books about the "right kind of education" that you've written will exist as long as paper and/or digital media remain. Most importantly, there are the dozens if not hundreds of young professionals, and the many thousands of young children, whose lives were permanently enriched by contact with you, your handiwork, and your mind work.

A Mentor and a Friend

Jin Li

To have [like-mined] friends [who seek the same life path] come from distant quarters—is this not a source of enjoyment?

Confucius

The quote by Confucius appeared in the spectacular opening screen of the 2008 Beijing Olympic Games. And it was translated into the simple, and I dare to assert, pretty off, English "Welcome Friends!" The problem with this translation was that the word "friends" in the quote was never meant by Confucius, per either denotation or connotation some 2500 years ago, to be the notion "friends" as we know it today. It referred instead to people who crossed distant quarters to seek the teacher who held life's inspiration and fulfillment for them. "Peng" (朋) in Confucius' expression or "friend" in translation, is someone to whom one dedicates oneself, to nurture each other, and to pursue together social, moral, and aesthetic self-perfection for life.[1]

After I got my doctoral degree from the Harvard Graduate School of Education (HGSE) in 1997, I heard Howard refer to me as a student and a "friend." First doubting my ears, and then taking note of Howard's kindness and generosity, I ignored his reference. As time went by, he dropped "student" altogether and just used "friend." Surely, there is something more than sheer kindness and generosity toward me by Howard (although he is certainly kind and generous toward me) when he calls me a friend. I feel that when he uses this form of address, the meaning is not that far from "peng" as used by Confucius.

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[1] See Zhao, C. (1970). *Lunyu xiang shi* [Detailed interpretation of *Confucius Analects*]. Taipei, Taiwan: Huanlian Publishing House; Hall, D., & Ames, R. T. (1994). Confucian friendship: The road to religiousness. In L. S. Rouner (Ed.), *The changing face of friendship* (pp. 77-95). Notre Dame, IN: University of Notre Dame Press; Hall, D., & Ames, R. T. (1998). *Thinking from the Han: Self, truth, and transcendence in Chinese and Western culture*. Albany, NY: State University of New York Press; Ames, R. T., & Rosemont, H. Jr. (1999). *The Analects of Confucius: A philosophical translation.* New York: Ballantine for the meaning of "peng" in *Confucius Analects*.

Of course, I feel honored. But that feeling does more for me than just the momentary appreciation. It helps me think about the kind of person I am and still strive to become. It reminds me of my passion for intellectual work, particularly the standard of quality I must not neglect. It alerts me to the responsibilities I carry for my scholarship, my students, and other people. It is true that when somebody one admires gets a step closer to oneself, his or her influence amplifies. Without any doubt, Howard's influence has shaped the scholar I am today and, to a large extent also, the person I have become. In Chinese, we call such a teacher "enshi" (恩師). I never expected to meet such a teacher abroad. Being nurtured by such a teacher is already good luck for anyone; then being called a friend, a *peng,* in addition is like doubly lucky.

How it all Began

"Where can I study creativity for a Ph.D.?" I asked my professors at the University of Pittsburgh, having just gotten A+ for a graduate course on developing children's creativity. "Hm, I can't think of a program like that in America, but here you might read this book and study with Howard Gardner." My professor at Pitt pulled from his bookshelf Howard Gardner's *Frames of Mind*. It was 1988.

I was puzzled that I was handed this book that didn't even have the word "creativity" anywhere on the cover page. I was specific about that, looking forward to studying creativity because I was determined that that understanding would recover Chinese children's creativity stolen by the horrible civil chaos back home. Well, as a student who was used to fulfilling demands by teachers whether or not I understood the purpose, I dutifully read this book, *Gott sei Dank!* But quickly my dutifulness became fascination that wouldn't allow me to put down the book. It was not strictly a book on creativity to be sure, but on human mind and intelligence, yet it contained many insights that I had not encountered before. So I decided to follow my professor's advice to apply to Harvard to study human mind and intelligence. I figured that without the mind and intelligence, human creativity could not occur. It just happened that the place Howard Gardner was teaching was HGSE. My European American husband thought I was reaching for the moon and wished me good luck.

My professors at Pitt told me that Howard Gardner called to inquire about my English writing skills. They said that he wanted to make sure that as a foreign student I could actually write in addition to reading and speaking. Professors Mulshalko and Fredette affirmed "she is fine."[2] I guess that was how I was admitted into HGSE and became Howard's student. I had no idea who Howard was beyond being the author of a book I found very interesting. In hindsight, I think it was my blessing not to know and to care about the fame of my mentor with whom I was about to study. Although I did travel a very distant quarter all the way from China, I did not know my teacher yet. To my good fortune, Howard turned out to be the teacher I would seek knowingly if I had to do it all over again.

As soon as I arrived at HGSE, Howard asked me to read a chapter of his *To Open Minds* (1989), a book in which he detailed his reflections on his visits to China in the 1980s to observe Chinese art education in schools. He gave me the draft of his chapter that contained his conclusions. Not understanding that he wanted me to offer comments, I read, dutifully again, the draft, thinking that it was additional reading he had assigned to me as a student. It was and still is a habit of mine to write comments in the margins of anything I read, and I wrote quite a lot in the margins of his chapter. Some weeks had passed, and Howard asked for my comments. I was surprised that a professor would care about a student's views of his writing. It was more surprising to me that an *American* professor would care about a *foreign* student's views. I went to meet with him. After sensing that this was not a formality but sincerity, I asked him if he wanted to hear my true comments or comments that a student is supposed to express. I am sure that this was a very strange question to Howard, but it was not to me. Growing up in a society where there was a surface discourse regarding what one could and should say in the open and a private discourse for whispering one's real opinions, I took for granted the differentiation. Meeting with a professor is surface and official discourse in which one need not offer one's true thoughts and feelings. Since I was in America, I feared less; it

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[2] My gratitude toward these two wonderful professors is expressed elsewhere. See Li, J. (2012). *Cultural foundations of learning: East and West*. Cambridge University Press, Preface.

was my effort to adapt to American life that prompted me to ask the professor for permission to speak my mind.

"Of course, your true comments!" said Howard. With his invitation, I told him that if he published his chapter, Chinese people would be offended.[3] I bet that this opening statement of my true comments was not what Howard anticipated. I did not know then that candor in America is also greased with diplomatic softening, a communicative style I have since come to understand and use. I never got a chance to ask Howard how my statement made him feel. The only thing I remember from the rest of that meeting was that I kept talking, pouring out all I had written in the margins while Howard sat there *quietly* taking notes. I must've come across as either naïve or just dropped from a different planet. Later, when I realized how fast Howard talks (one newspaper commentator used the metaphor "machine gun" to describe the way Howard talks in public) and how articulate a speaker he is, I had a hard time putting the two images into the same person. I regretted endlessly my audacity in that meeting and wished for his forgiveness. But I must admit that this initial encounter with Howard left on me a deep impression of how a highly esteemed scholar also possesses the virtue of magnanimity toward an obviously unacculturated student.

Creativity Unlocks Creativity

To my delight, Howard actually taught a course on creativity. I took it and loved it. After all, Professor Mushalko at Pitt was right about sending me to Howard. His work on mind and intelligence was well connected to the notion of creativity. The part I liked most concerned

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[3] What Howard observed struck me as accurate. However, I thought that his analyses and conclusions stayed mostly at the level of the surface discourse (it was entirely possible that his visits to China were tightly controlled and staged by the Chinese government. If so, then he would have little chance of seeing anything else). As a result, he saw only things that people felt compelled to show but not how they truly thought and felt in private. Thus, taking what appeared to be a survival strategy of the Chinese at that time as what they truly desired and preferred would make them feel misunderstood. The second reason that Chinese art educators and learners would feel misunderstood was that Chinese ink and brush painting is a very different art domain in comparison with Western modern art. Chinese artists go about doing their artworks differently from their Western counterparts in modern art. Howard's chapter did not make this distinction. Parenthetically, my qualifying paper for my doctoral degree was a response to the book.

different levels and kinds of human creativity. At that time, Howard was embarking on his *Creating Minds* (1993) where he analyzed seven creative individuals across seven different domains of work. Our class lucked out for this timing because he shared with us his thinking and discoveries of how these people were able to achieve breakthroughs in life. I became aware of the broad perspectives he took that linked individuals' psychology and development to the particular discipline or craft in which individuals worked. Since a discipline or craft is a product of cultural activities in human historical contexts, to understand creativity in them is also to understand the role of social and cultural processes.

I wrote some papers for that course. My final paper was on the well-known Chinese painter, Qi Baishi. I adopted the perspectives of the person, the domain, and the field (that judges the creativity of the work) as introduced by Howard and analyzed how this painter was able to achieve his highly acclaimed artistic creativity. By doing so, I also presented the particular domain of Chinese ink and brush painting where I discussed the basic goals, methods, standard of artistic quality, and judgment of the field as defined in Chinese culture. The teaching assistant for that course told me that Howard thought well of my paper. This undoubtedly raised my self-confidence in pursuing intellectual work.

I liked this topic so much that I decided to write my qualifying paper (QP in short form, a partial fulfillment required to move on to write a doctoral dissertation) on it. While still taking courses at HGSE, I studied Western and Chinese art history by auditing courses on these subjects in the Yard (part of Harvard's core curriculum choices for undergraduates). I focused on the notion of domain and developed the theory of horizontal and vertical domains that constrain how artists create their works. I argued that Western modern painting is a good example of a horizontal domain, with all elements open to novelty, but Chinese ink-brush painting is a vertical domain with many elements closed off from innovation (in order to set the domain's boundaries). Because there are domain-specific aims, mediums, criteria/standards, and aesthetic judgments, artists in one domain go about expressing their creativity very differently from those in another. Both cultures, and for that matter any culture, have both vertical and horizontal domains. But

individuals working in different domains are likely to end up achieving different kinds of creativity. This QP was passed with distinction, and eventually published in *Creativity Research Journal* (1997). Publishing my first sole-authored paper in a peer-refereed journal, along with the praise that the paper received from those in the field, made me realize that I myself may have some creativity to unlock. But I did not unlock it by myself; I didn't even know that I had any (since one of the things an oppressive regime does to people is to crush their creativity). Howard's own thinking, perspectives, and skillful mentoring not only helped me to understand creativity, but also made me realize that human creativity may be formed in many and complex ways yet to be understood by us.

No Longer Afraid of the Beast of Writing

As they say, it will take a dictionary to be worn out for an adult to be fluent in another language. A worn-out dictionary happens to coincide with ten years' passage of time, and I might add, the time that a number of writers referenced for achieving anything worthy of the term mastery.[4] I did that once with a German dictionary during and after my college education in China. And I was certainly in the process of wearing out not just the first but the second English dictionary since 1985 when I immigrated to the U.S.[5] But foreign language learners are often misled to believe that speaking fluency is all there is to learning a foreign language. I guess that it depends on what one needs the language for. If it's just getting by daily routines or even carrying out tasks of a job, say, a store clerk at Walmart, speaking fluency plus some reading skill will do. However, if one desires to do intellectual work in an academic setting, writing well is an indispensable skill. This daunted non-native English speakers out of HGSE, causing them to cross over to technical fields.

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[4] For their discussions of how dedicated, deep, and long-term practice holds the key to developing excellence in any domain, see Colvin, G. (2008). *Talent is overrated: What really separates world-class performers from everybody else.* New York: Portfolio; Coyle, D. (2009); *The talent code: Greatness isn't born. It's grown. Here's how.* New York: Bantam Dell; and Gladwell, M. (2008). *Outliers: The story of success*. The "ten-year rule" goes back to the 1980s or maybe even late 1970s.

[5] Now people hardly use dictionaries any longer. Instead, they search word meanings and usages online. But the worn-out dictionary timeframe still applies to language learning that also coheres with Malcolm Gladwell's "10,000-hour Rule," based on research by Herbert Simon, Michelene Chi, and others.

Those who don't quit are either crazy, thick-skinned, or saved. I moved from the first two to the third category because of Howard.[6]

As it turns out, those who make a living by writing in a foreign language agree that improving writing is like pushing the rock of Sisyphus: just as one thinks one has made progress, one gazes at a steeper hill to climb. The efficacy of Howard's help does not lie in my successfully delivering the rock to the hill top, but in the idea that, despite knowing the Sisyphean myth, I am no longer deterred by the ever changing incline. I have realized that this steeper hill is the beast of writing that everyone faces. A talented native writer has better linguistic capital, but a foreign writer can also access that capital if she lucks out with a great teacher and is willing to learn from him.

The first time I tasted Howard's irreplaceable teaching came from my struggle with writing the proposal for my QP due to the Committee on Degrees at the end of my coursework. This was a very challenging writing task, although it was no more than five pages. This very requirement, as explained to students by HGSE, was instituted on purpose: to train us to think well and to write concisely. Many a time, my peers' proposals were rejected by the Committee on Degrees that was made of faculty members who examined such proposals with a great deal of critical attention. And many, as a result, had to revise and resubmit their proposals, a process HGSE models after the real world operations of publication in peer-refereed journals. I had seen many of my peers sink in frustration, depression, and not infrequently, loss of self-confidence. For this reason, everyone approached this task with apprehension. I was no exception.

I worked for a long time on this proposal, "striking it a thousand times with my hammer and forging it a hundred times in the crucible" as the Chinese would say. And like many of my peers, my initial proposal met the fate of revision and resubmission. Particularly formidable was the demand from the Committee on Degrees that I explain ideas such as "culture," "changing culture," and the enduring part of "culture" that I

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[6] Of course, I have also been helped tremendously by my husband and lifelong companion, friend, Michael Hench, who loves literary work and has edited all of my writing. Whereas Michael helped with my writing in general, Howard's training helped develop my ability to write in my field.

put in my initial proposal. Anyone who studies the cultural influence on anything knows that five pages were not even enough to get beyond the banality of these terms. I had two choices: either drop these terms altogether (which meant changing the research idea to something I didn't want to study) or forge ahead even when I had no idea of how. I felt an insurmountable obstacle and a sense of loss.

I told Howard about my difficulties. I was dumbfounded when he said that I should visit him on a Sunday afternoon at his home, and he would sit down with me to go over the writing. I went. Howard went over the paper sentence by sentence and showed to me how a given idea should be formulated thoughtfully and concisely. He explained to me that the Committee on Degrees would not demand that students elaborate on abstract concepts of culture in five pages, but it did want students to think well, to anticipate skepticism, to be careful with terms we use, and to demonstrate that we have considered all of these elements in research and writing.

I came home and compared what he helped me express and what I had written previously. This tutoring by Howard reminded me of the fact that tutoring by *gouvernanten* was the only way the German literary giant Goethe got his early education. I never understood why this was a European tradition for the nobility and well-to-do folks. Now having just tasted this one-on-one tutoring by a great intellectual, it dawned on me that the kind of learning that is afforded by this type of interaction dwarfs the kind of instruction by a single teacher to a large class anywhere and anytime. I understood then why research shows one-on-one tutoring to be most effective.

This is to say that watching Howard write, not to lay down his own ideas but those of mine, was such a rare moment of learning that I can only use the word "privilege" to describe it. It was then that I saw a way to move forward, avoiding the Sisyphean hill. Also due to this learning experience, I was led to the double-vision of attending to one's writing itself in addition to the actual ideas conveyed. From that point on, I always do both whenever I read something of interest.

Special Way of Encouragement

Maybe I suffer from superfocus, a symptom common among ADHD folks. But luckily I don't have ADHD. Still, with such a style of focus, one

does things like reading a book while walking on the street or while cooking and burning food, not recommendable at all. I remember one time I was reading while walking on Garden Street off Appian Way where HGSE is located. I almost bumped head-on into a person. That person turned out to be Howard! Quite embarrassed, I apologized to him. He smiled and picked the book from my hand. When seeing the title of the book, *Word and Object* by Harvard philosopher W. V. O. Quine, Howard said "that's good!" This was just one example of the many special encouragements I received from Howard throughout the years.

I have never heard Howard praise any student directly. But he conveys his encouragement in ways that I find more meaningful. He is certainly very demanding of students' work and does not praise people just so that they will feel better about themselves. But students know that he is watchful of their progress. As noted previously, sometimes he would share his views with his TAs, who then conveyed them to his students, and sometimes he would just send a student's work to a well-known scholar in the field and then forward that scholar's reactions back to the student. There is no doubt that each time I received this type of reaction, I felt nothing but Howard's support and encouragement. Given how busy he was, no student expected him to go out of his way to do something like this. It cost him time to communicate with people on behalf of his students. But when he does it, it means that much more to his students.

Broad, Relevant, and Scientifically Interesting

The whole process of getting a doctoral degree from HGSE took a very long for me. At times, I felt that I might never complete my degree work. There were two reasons. First, the already long process became more prolonged because I had a child. I was unwilling to sacrifice my child for my studies, so I spent much time providing intellectual stimulation to my son by taking him to museums, live performances, trips, weekend Chinese school, and simply play dates. Second, the whole field of research turned up so much new research all the time that I felt permanently inadequate. How was I going to keep apace with it? I wondered how professors were able to do that and thought that they must have special ability that I simply don't have. After my coursework and QP, a sense of stagnation hit me.

Then a shortcut that might lead me out of the ditch loomed promising. It came from remembering what a friend, a former doctoral student, had shared with me. This friend had successfully graduated and revealed how she managed to finish her degree work: "If you can study an egg, don't study the whole hen. Leave that to other folks. You need to finish!" I figured that I would just follow suit and study the hen after I finish my dissertation on the egg.

So I summoned enough energy and wrote to Howard about carving out a piece from the existing research project on which I had been working at Project Zero. My reasoning was simple: so that I wouldn't have to start from scratch and could be done with my dissertation as soon as possible. I did not dare to tell Howard about the egg and the hen, though. Howard responded promptly; he said something to the effect, "No, this is not the kind of work you should do. You should do research that is scientifically interesting." I should have known better! I felt like a falling object being caught and spared from breaking on the ground. Although it was the first time I heard the phrase "scientifically interesting" from Howard, I knew what he meant. I thought about important things that Howard had taught over the years and decided there and then to abandon not only the expediency of eggs and hens but also all expediency for good.

I went back to the drawing board and contemplated a topic of human development that is applicable to all human beings, educationally important across time and space, and scientifically interesting. To ensure the topic would be scientifically interesting, I thought to add a few more criteria to it: Everyone knows the topic, yet no one bothers to ask questions about it; it cannot be easily exhausted conceptually in order to sustain my interest and that of the field(s); and it should enable me to discover something profound about my own culture that I didn't already know. After few months of cudgeling my head and discussing with peers, I came up with the topic of children's learning beliefs as shaped by their cultural values.

This topic has two parts, learning and beliefs. The former is a human universal and the latter is a cultural imperative. Either alone is commonplace, as anyone's grandma knows. But when the two are put together, we are not sure anyone knows anything about them, especially if we add the cultural part to it. I sort of knew some of them in my own

culture viscerally and some things about European American culture cerebrally. But what exactly learning beliefs are, how children develop them, and how they are guided by them in different cultures, I couldn't tell. As far as I knew, no one else could either. I ran this idea by Howard. This time, he approved the topic. The rest was just toiling with sweat to conduct the research. I traveled back to China and conducted a set of studies, first focusing on that culture's learning model. This work alone was exhausting, but it bore fruit. Later I replicated that part of the study with European Americans, laying bare the vastly different cultural models despite many educational commonalities. The European American learning model emphasizes the mind and its functions (such as critical thinking, analysis, and logic) whereas Chinese model focuses on what I call "learning virtues" of diligence, self-exertion, perseverance, concentration, and humility. This work led me to study preschool children's learning beliefs and now the actual socialization process that fosters such beliefs. My most recent research on immigrant children shows that children's learning beliefs often predict how well they achieve in school.

Howard's guidance has indeed led me to inquire into a topic that is not limited to one idea or one concept, but a broad and essential human activity that needs our research into human cultural history, present state, other related fields such as philosophy, morality, cognition, affect, communication, socialization, and educational practices. No less important to me was Howard's insistence on better work that also enabled me to gain weighty understanding of my own culture. I am glad that he intervened with my egg idea; otherwise, I would have been stuck and barren with it, probably not even going on to study the hen, let alone anything beyond. A good mentor does exactly what Howard does: knowing when to push the student, even in a culture where students' choice, autonomy, and interest reign supreme.

Unabating Support

While a student at HGSE, along with the sense of stagnation mentioned earlier, I doubted that any university would want to hire a foreign-born person as faculty. So I told Howard that it would be very satisfying to me if I could get a position teaching anywhere. He replied, "You should not think about this now; you should show that you are a good student first." It was clear that Howard did not find my worry about

getting a job legitimate without learning and mastery of my field in the first place. His mentoring put my worry to rest, and I plunged into my studies.

I did not know what would come after I obtained my degree. I lucked out with a teaching position at Brown University. Soon after I moved to Providence, Howard asked me to visit him. I asked why. He said he needed to talk to me about career development. I went, and he took me to walk with him around Fresh Pond near his place, which took more than an hour. He asked me about my plans for publication. I told him that I would like to write a book. "No, don't imitate me, but publish journal articles on research findings!" This, particularly the first part, was very surprising to me since I had been watching how Howard as a role model wrote so many books. Knowing that his students might try consciously or unconsciously to emulate him, he wanted to make sure that I had the right understanding from the beginning of a career path. He explained that as a junior faculty member, one must establish oneself by doing rigorous research and by publishing in journals. Empirical journals are the repositories of scientific knowledge. I must make contributions to it. When one has produced respected research, one can, if one wishes, write books. But the order should not be reversed. He was, of course, right.

Howard is probably one of the busiest people in the world. He really has no time for things he is not obligated to do for sure. But when I got my tenure, he asked me to go to Cambridge to meet him because he wanted to have a drink to express his congratulations. I knew that he didn't have to do that, and he could have used his time for other important things. But he took time to invite me to a restaurant near HGSE for a cheerful drink. I did not and still do not take it lightly.

I must admit that I feel guilty for having occupied much of Howard's time after my degree work in 1997. For some reason I had thought that in the West, when students are done with their degrees, they ought to be like the koala bears climbing out of their mothers' pouches for good, trying to make it on their own. But little did I know that the mentor-student relationship continues, in this particular case mainly because the student might not make it alone if it were not for the unabating support of her mentor.

I cannot enumerate how many times I have turned to Howard for advice, ranging from job interviews to research funding to publication to tenure review. As time goes by, I even turn to him for general advice on life. Howard always shares his wisdom with me. He does not waste any words. But his succinct advice is more helpful. Recognizing the efficacy of such aphoristic advice is why the Chinese have a saying "chatting with you once is better than reading books for ten years." Until I met Howard, I did not comprehend how chatting with one person once could ever trump reading books for ten years. This expression was probably created to capture their profound experience with people who were like me, bumping into someone with broad knowledge, deep insights, inspiring visions, and above all willingness and ability to share all of them with others.

Teacher and Friend for Life

Howard will remain my "enshi" for life. As his student, I feel that I have taken almost too much from him. No student should have such privilege. Frequently, I also feel that Howard was unlucky to be stuck with a student like me because the benefit is not reciprocal. As a recipient of such privilege, I am forever indebted. But I am also aware that there is no way I can ever return anything useful back to him. I know that getting returns is not why he supports his students. As a Chinese, I grew up with the belief and conviction that the teacher-pupil relationship is a core relationship in one's life. It is the nurturance that plays the decisive role in the pupil's development after she departs the swaddling of her home, the nurturance that makes the Chinese liken this relationship to that between a parent and a child. But landing in such a teacher-pupil relationship is a matter of sheer luck. One can only wish for it but not expect it. When it happens, though, one treasures it, taking it to heart.

Although Howard as a mentor will never change, I have also accepted his regard of me as a friend. As I alluded to in the opening part of this piece, I feel that the meaning of this friendship is more akin to the notion of "peng" in Confucius' quote than the common meaning as we now know it. Being a friend in that sense, I exchange observations and thoughts. Howard does the same. Both look at each other's expressed ideas and offer free responses. The exchange is still lopsided with me having much less to offer, but when I do, it no longer requires me to ask

for permission to speak my mind and no longer runs the risk of *faux pas.* Perhaps as I move forward as a teacher, I pay him back by mentoring and supporting my own students as he mentored and supported me.

Howard's Response to Jin Li

Nowhere in my lifeline was there any indication that I would become involved with China. (Indeed, as I was growing up, it became increasingly remote from the rest of the world.) It was almost a complete accident that I was asked to join the first official Harvard expedition to China in 1980. My roommate was a leading American scholar of China, Phillip Kuhn, who must have wondered what a monolingual American psychologist was doing taking up one of the precious slots on the tour, just a few short years after the end of the disastrous Cultural Revolution.

It was equally a surprise when two years later, I was invited to join, and then to lead, a delegation of American arts educators on a two week trip to major cities in China. The back story here may be worth relating. I travel light, and for the latter trip I had packed exactly one pair of pants, one sweater, and one overcoat (and Beijing is not warm in March). Turns out that the day before the trip was to begin, the official head of the delegation became ill. Since I was the only member of the delegation who had been to China before, I was commandeered to head the delegation.

At that time, China was believed by many to be one of the flattest societies in the world—in essence, no social or political hierarchy. In truth, nothing could have been further from the actual state of affairs. Everything in China was hierarchized to the maximum degree; as the head of the delegation, I received every honor and courtesy. Looking back at the strange but highly revealing trip, I have confidence that I can identify the biggest impact that I had on our Chinese counterparts. When our group had to make a decision, I would poll everyone, and if there was not general agreement, we would discuss until we achieved some kind of resolution. Rarely, if ever, did I overrule the majority view. This was small-town democracy at work. It absolutely shocked the Chinese arts educators; they had never seen their own views taken seriously, unless it was part of their designated role to proclaim policy and to instruct others about their tasks.

In the later 1980s, I made several trips to China, each time wearing the garb of a researcher and arts educator. I never learned the language, and my knowledge was undoubtedly superficial. Yet I did decide to write a book about China, *To Open Minds*, in which I recorded

my own reactions to China, what I observed, and how each country's educational institutions could be improved, particularly with respect to artistry and creativity (the two areas on which I had chosen to concentrate).

Without having anticipated it, I began to have students from mainland China. Two wonderful students, Jie-Qi Chen and you, Jin, are represented in this Festschrift. From a thousand miles away, it is possible to see similarities between the two of you—just as a Chinese national might see similarities between Bill Clinton and George W. Bush (or Shira Katz might compare me with Madonna). But I am more struck by how each of you is very much her own person with her own priorities, and how each has carved out a distinctive personal, professional, and scholarly path, just right for Jie-Qi or for you.

Jin, your chronicle of our time together is done with precision and accuracy. Since it places me in a positive (I should say "overly-glowing" light), I should simply say, 'Thank you."

I might add that, from the point of view of the teacher/adviser, it was not clear to me in which direction you would ultimately head, though I had great confidence that you would pursue that route persistently and ultimately successfully. Because you had been at several institutions of higher education in the US and Germany, and because you were married to an American national and were soon to have a child, I saw you as attempting to synthesize your own very full (and very challenging) background as a Chinese national from Sichuan province with the many opportunities as well as the many traps that America presents.

As a budding scholar you could have gone many ways. Indeed, your study of different kinds of "horizontal" and "vertical" creativity was an important line of work which you could well have pursued further. In the end, I believe you have chosen a focus that is just right for you: a deeper understanding of the similarities and differences between Western and Eastern educational philosophies, centering particularly on the purpose and the means of learning in the respective traditions. You have done this empirically, through clever studies; anthropologically, by acute observations in many settings; and with a daunting command of the relevant historical, philosophical, and occasionally religious and

pedagogical writings. As a result, you already stand at the very forefront of scholars in this area—a considerable achievement.

Over the years you have also encountered some of the less admirable aspects of American academic life, ones which we might prefer to attribute to China or other faraway lands but which are alive and well here. I think this may have been the one time in our relationship where I could have been genuinely helpful, as you were dealing with a runaway academic committee. But it was your strength and ultimate sense of rectitude and justice which prevailed in the end. I attribute this less to the U.S., or to Germany, or to China, than to the personal strengths that you've developed over a series of very full decades… with more productive ones to come.

An Ode to Howard: WWHD?

Liz Liao

With gratitude, respect, and affection, on the occasion of Howard's 70th birthday

Can we ever predict what life will bring?
Prodigious skills in art, or will we sing?

And me, a mere mouse, when first at PZ,
Unformed, meek, so very noticeably.

Studying irony and metaphor,
Thinking in ways unknown to me before.

A taxi seen as a yellow-jacket,
Nonliteral speech and how to unpack it.

Not just through research, but life at PZ,
Unlearning broad misperceptions, e.g.,

Moral compass—an ethics GPS?
No—societal contract, nothing less.

The meaning of the word, "quinquennium,"
Useful about once per millennium.

Yet when lost with data, RA's just knew,
We would ask ourselves, "What Would Howard Do?"
Time went on, with development, stages,
Constructivism, turning new pages.

Off to Pittsburgh, Cleveland, new work afar.
Options offered to me: grants and HR.

I found a niche in which I could succeed,
The match between skill and workplace need,

New challenges and horizons bring fear,
I needed mentorship, values that were clear,

When uncertain, and not having a clue,
I would ask myself, “What Would Howard Do?”

Optimal learning can only take hold
When the stretch is enough, and breaks the mold.
At times it was harsh, but never for naught,
More than just research, life lessons were taught.
Was management too hard for me, too rough?
Wise words from H: “Don’t be afraid to be tough!”
Advice, at times subtle, at times not so,
Candor was the best lesson for me, though.

Many years later, gratitude steadfast,
Deep admiration, in iron firmly cast.

And today, pondering problems anew,
I just ask myself, “What Would Howard Do?”

Howard's Response to Liz Liao

Perhaps there is a hint of truth in the suggestion that Ellen and I served as your professional parents, at least for a while. After all, as stipulated by the National Science Foundation, it was our job to inculcate in you the skills and understandings required of a researcher in the social sciences. I think we did the job effectively because we were blessed with a very good student!

Yet it became clear to us, and to everyone else who had extended contact with you twenty-five years ago, that you had incredible potential and talent in administrating academic organizations. And so it was entirely natural for you to become the "managing director" or "chief officer" of Project Zero. While running any kind of informal, underfunded academic organization would challenge someone with a fistful of higher degrees from across the professional spectrum, you rose to the occasion and did a superlative job. I think that is because you have a virtually unerring sense of what you could and should do yourself; what required some informal consultation; and when it was important to get wide and deep "buy in."

For extra credit, almost twenty years ago, you ran the first Project Zero Summer Institute, launching well an institution that has become synonymous with innovative ideas and practices in pre-collegiate education.

You have not worked with Project Zero directly for almost two decades, and I am not alone in saying, "I miss your sound managerial instinct." But you have gone on to play major roles at Harvard at the School of Public Health and the Faculty of Arts and Sciences, always combining good judgment with a sense of which lines should not be crossed and why. Perhaps on occasion I've been a bit helpful, but hardly necessary. (And there's been more than one time that I've said to myself, or to others whom we both know, "What would LIZ do?") For Ellen and me, the pleasure is now spending time with you and Keith socially and following the adventures (and occasional misadventures) of the younger generation.

I can't close without also mentioning your wonderful "no strings attached" gifts over the years to Project Zero. These contributions have

allowed us to do just the kinds of things that no government and few non-profit funders will allow—e.g. sending a worthy student to a conference, or celebrating the successful culmination of a difficult study. Brava!

My Friend Howard Gardner

Richard J. Light

What a wonderful opportunity to share my thoughts about Howard for a significant occasion. What follows are some personal reflections, with a bunch of concrete examples. Each illustrates why Howard is a special person for me. And for my entire family.

Howard The Scholar

There are many smart people around Harvard. That includes both faculty friends and many students. Within that firmament of talent, Howard may well be among the handful of smartest people I know. And he capitalizes on his intelligence in one of the most engaging ways I have ever known or seen. His accomplishments are special and different from so many others in a particular way. He deeply cares about, and engages with, a far broader and wider range of ideas than most anyone else I know.

It is easy to imagine a distinguished professor writing a book about learning. Or about truth. Or beauty. Or leadership. Or what it means to do good work. Or about different kinds of cognition. Or about the real world of schools.

I know of only one person who has written, seriously and in depth, about ALL of these topics. And I know I am even leaving some topics out. Howard did not just write a two-page essay or a blog about each. He has written entire books about each of the ideas above, often combining them in creative ways.

As I think about friends and colleagues, not just at my own university but across the entire country, I find it impossible to think of anyone else who even approaches Howard's wide ranging interests and substantive productivity. And that is just the beginning.

Howard the Mentor

Once a faculty member becomes part of Howard's "orbit" of friends and acquaintances and colleagues, and he seems to have an enormous number of such friends and colleagues, you begin to get some idea of the

"reach" of his teaching and instruction. Some time ago Lois Hetland called to say Howard had suggested we talk. I ended up on her doctoral committee together with Howard. More recently Alexis Redding called to say she would like to come to talk with me at Howard's suggestion. She ended up taking a course I teach and she was a star. Now she is working with Howard and me. A few months ago Tiffanie Ting called to say Howard suggested she speak with me about her work. Yes you guessed it, I am now a member of Tiffanie's faculty doctoral committee serving with Howard. Most recently it was Barbara Hou. Same result I expect.

The point here is that I am just one of Howard's many colleagues. Certainly I am not the only one. If he is sending his wonderful students to meet and to come to chat, then I have little doubt he is sending these and other students to meet with other faculty members most appropriate to their interests and work. In other words, Howard is doing what a textbook definition of the word mentor describes—he is introducing each of his students to a broad variety of his own colleagues who might share that student's interests. In this way his students get to meet a new person, and each is given an opportunity to share and expand their own ideas.

I am struck by Howard's "style" as he goes about mentoring and including younger colleagues in his work. Often I receive a note from him where I notice that a whole group of these younger and talented colleagues are "cc'ed. They quickly become part of his "team." It might be Wendy. It might be Lynn. It might be Jessica. It might be Katie. Whoever it is, Howard's style with younger colleagues is a living definition of a great mentor—he includes his "team" every step of the way when organizing an activity of any kind.

I have even seen the ultimate act of a mentor—first drafts of various essays and documents that Howard has shared both with me and with some younger colleagues, complete with rough prose and even occasional typos that pop up while Howard is working to get his thoughts out. Perhaps some perfectionists will be surprised to hear this—how can a distinguished, world class professor such as Howard actually share the roughest of first drafts with younger, "impressionable" students or colleagues? My reaction is simple—so that others could learn from what Howard does. And he does it so routinely. By sharing early drafts with a wide circle of younger folks, Howard is quietly teaching them that

sharing early work, and inviting suggestions and improvements, is an integral part of doing good work. It certainly is an integral part of doing great work. I suspect I am not the only person struck by Howard's generosity of spirit as he does this.

Howard the Advisor

I have seen Howard's advising in action, and it is a somewhat different kind of advising from what most professors offer. Even excellent professors. Howard has a habit of sharing his earliest thoughts and drafts and plans, and asking his advisees and younger colleagues to feel free to comment on that first and unabashedly rough first cut. Those students and younger colleagues who then offer advice and reactions to Howard's rough draft get to sit with him and to discuss with him their ideas and suggestions. My interpretation of this entire process is that THEY think they are giving him THEIR excellent advice. While what is really happening is that by sitting with Howard and discussing substantive ideas, they are getting HIS insights and ideas and advice about how to do excellent work. This is the single best way I know of to advise students. And Howard has perfected it and implemented it. They think THEY are giving advice. In fact, they are GETTING the best kind of advising in the world.

Howard the Entrepreneur

We all know that talented and imaginative as many academics are, being "entrepreneurial" is not a word that describes most professors. Howard has a track record, including one or two examples that may even be a bit underappreciated because they are not known widely, that should lead to any "Entrepreneurial Hall of Fame" for professors.

Example One is the activity that Howard is widely known and admired for. It is his work, in collaboration with David Perkins in running Project Zero. The idea that more than 40 years ago a very young Howard decided to explore in a rigorous way the intersection between arts and education, may seem to some like "just another interesting idea." Well, easy to say. Yet Howard really did something few other professors do. He took over a newly formed, tiny research group (founded by philosopher Nelson Goodman) and together with David Perkins developed Project Zero into a large, broad, and long-lasting

organization—one so strong that it continues to thrive even after he stepped away from its day to day activities.

I have seen for myself the impact of Project Zero, as an institutional enterprise with a lasting impact, when I talk with random students here at our campus. More than a few bring up their wish to work with Project Zero. Or to take a class on the work that Project Zero is sponsoring. Or to learn from what Project Zero has found in its extensive work linking arts and education. These comments are nearly always brought up not by me, but by a student. When I try to think how many other new enterprises on a campus have been created more than 30 years ago, with entire generations of students and research associates engaged with its work, it is hard to think of many. Project Zero continues to prosper and to have an impact. This is a great testament to Howard's capacity and ingenuity to conceptualize a need, a serious need, to then raise the funds and support needed to get a concrete activity up and running, and finally to "embed" the activity into the ongoing fabric of a university such as Harvard.

Example Two is for me personally the most compelling example, because it gave me the opportunity to work side by side with Howard in creating a "new thing" here on our beloved campus. About five years ago I had just finished a series of ongoing interviews with undergraduates. One of the questions I posed to graduating seniors was: "Even if you love your experiences here at Harvard, nothing can be perfect, so can you think of a single, concrete improvement that you would suggest for students if you were appointed "Dean for a Day."

The undergraduates seemed to love this question. And one unexpected response from more than a few students was, roughly, "I enjoyed and learned from my courses in history, chemistry, literature, psychology and philosophy—yet perhaps Harvard forgot to offer the most important course of all…." This response surprised me, and so I asked students what in the world they are talking about. What is that one critical thing Harvard "forgot to offer?"

A number of graduating seniors replied that as good as the academic courses are here on campus, it would be so valuable if somehow freshmen could be asked to grapple with some different kinds of questions. Questions that may be non-academic yet that are truly

important to each student. When I asked for examples, students suggested many: What does it mean to live a good life? Is that different from leading a productive life? How about living a happy life? And how might I think about a situation I might face where leading a happy life somehow conflicts with my leading a productive life?

Armed with these examples, I immediately shared this finding with two good people. One is Howard, whom I suspected might have some good insights about a constructive next step. And the other was the Harvard Dean of Freshmen, Tom Dingman, whom I have known for years as a great colleague. The upshot is that we quickly added Ms. Katie Steele to our "leadership team," and we went about organizing a freshman discussion program. The plan was to offer three, 90 minute discussion sessions, in groups of roughly ten to twelve freshmen, each led by a mature adult for students who wished to sign up. These three sessions would carry zero academic credit. The whole point was to capitalize on students' enthusiasm by making this a voluntary activity for freshmen.

Howard was integral to creating the structure of the discussions for each of the three sessions. We developed a plan for each freshman to devote one session to growing up, one to his or her current time at college, and one to thinking about the future. In developing these sessions Howard played a major, leadership role. He repeatedly pushed the rest of our leadership group to ask more rather than less from the students who sign up. Typical Howard.

The first time we tried out "Reflecting on Your Life," five years ago in spring of 2008, I was secretly hoping we would get at least 20 freshmen to volunteer, so we could implement a successful but small pilot study. Howard predicted we would get far more than 20. Howard was right and I was wrong. To everyone's surprise and delight, nearly 180 students indicated an interest in participating that first year. And when we actually went ahead and ran the discussion groups for the first time, we ended up having about 130 freshmen who stuck with it. This program proved so popular that we quickly yet carefully recruited more discussion leaders in addition to Howard and me, including Dean of Harvard College David Pilbeam, Professor Diana Eck, Tom Dingman, Katie Steele, Rick Melvoin the Harvard Overseer, John Rosenberg the Editor of *Harvard Magazine*, and several other superb faculty colleagues.

I share these details because a key feature in helping these freshmen discussion groups to succeed was Howard's constant urging that we push the students reasonably hard, and that students should come to each session with a carefully planned set of "exercises" to engage them. "Reflecting on Your Life" has steadily become an ongoing part of the freshman year at Harvard. Now in its fifth year, it is prospering. Over the five years we have engaged over 25 different faculty members, senior administrators, and a Harvard Overseer as group discussion leaders. It is, in a word, a grand success with real impact. Yet another example of taking a new idea, developing it into a program, and then "embedding it" into the ongoing fabric of life at a great university.

So working with Howard on this project has been a personal pleasure. And as he often seems to do, my good friend and colleague took it to yet another level. Over the past few years Howard has introduced a similar idea to several of the Harvard undergraduate Houses. He has explored the idea of creating discussion groups for sophomores and juniors and seniors. He has explored the idea of creating "reunions" for the freshmen in his original discussion groups as they go through their four years here on campus. In addition, Howard and I together explained our Harvard program to the Freshman Leadership Office at Stanford University, and we recently learned from our friend Tom Ehrlich at Stanford that they have now initiated and actually tried out a similar program there, building on our example.

After all this, Howard still was not done. He now has explored the idea of trying out a similar program out at Amherst College, where he is a trustee, and he even ran a few exploratory sessions there. He has explored a similar plan with Colby College, and they may pursue the idea. He met with colleagues at Smith College to share the plans. In fact, for all I know there may be a few other institutions where Howard is sharing this idea—always in the spirit of helping students to "make the most of their precious college experience."

I share these details because I suspect that not many people know about how fabulous an entrepreneur Howard actually is. It is common these days to pick up a newspaper and read about the excitement of various corporate "start-ups." Often these might be new, high-tech ventures. Well here on our campus, Howard has started up the equivalent of several imaginative small businesses, plus a large, long-

lasting, and world-class business in Project Zero. I would describe him as one of the best entrepreneurs I have ever known. He creates lasting change.

Howard the Family Man and Friend.

It was probably about 15 years ago that I got a call from Howard, wondering if we might have a chat about his son Benjamin. Ben is a super charming young man, and Howard felt he simply wasn't being challenged quite enough at the school he was attending in the early grades. Knowing how enthusiastic I was about BB&N as the school my two daughters attended, Howard wanted to talk a bit about what might be a good fit.

Most parents want a good school and a good education for their children. What made my conversation with Howard just a bit different is how it was immediately obvious that Howard and Ellen both cared little about simple name recognition, or abstract prestige—they really wanted a serious school. One that would be a great match for Ben's many skills and talents. The happy outcome to this event is that Ben did indeed enter BB&N a year later. And he seemed to genuinely prosper. I felt good that I had been just a bit helpful, and this particular event was one of the more personal opportunities I had to interact with Howard and Ellen. It certainly gave me a wonderful insight into the kinds of values they had when it came to education for their son.

And this was just a beginning. When I once wondered to Howard about the impact of "Renaissance Weekend" on his family, including Ben, Howard didn't just sit me down and tell me. He did far more—he helped to arrange an invitation to the event for Pat and me. We enjoyed it and in fact ended up going there for about seven years. It was a wonderful experience. Our children joined us. And it would not have happened without Howard's initiative.

A final thought about Howard as a family man comes from the interaction of Howard's daughter Kerith with me, and the interaction of my daughter Jen with him. Some years ago Howard wondered, knowing my acquaintance with some business schools, whether I might be able to meet for a session with his daughter Kerith. Kerith is smart, crisp, and articulate, and she was considering whether or not to apply to a business school for the next step in her career. I did indeed meet with Kerith. I

remember very clearly we had a wonderfully leisurely breakfast together at Henrietta's restaurant in Harvard Square. It ended with my urging her to explore several schools in particular, and I was thrilled when I learned she had applied and been admitted to her first choice.

Then there is the satisfying relationship between my older daughter, Jen, and Howard. One day Howard returned from a trip and to my astonishment, he told me that he had met my daughter, now a professor at Northwestern. It seems they were both part of a MacArthur Foundation "strand of work," and the result was that they would meet once or twice a year as part of a larger working group. The best moment came when, about three years later, Howard sent me a three sentence e-mail which basically said, "I was with your daughter Jen last week and she runs a great meeting. She seems to be similar to you in style.... It appears the apple doesn't fall far from the tree." What father doesn't enjoy hearing such a nice remark about his daughter? Obviously that is a great compliment, since I had made a point to "butt out" of the happy professional relationship that Howard and Jen might have developed. How thoughtful of Howard to share that simple observation. And even allowing for a tiny bit of exaggeration, it was a wonderful thing for him to do.

Howard is a treasured friend and colleague. Now we are embarking on a new project together, "Liberal Arts for the 21st Century," and we are for the first time actually "co-leading" an exciting and new enterprise. I am so happy to share these reflections with Howard, with Ellen, and with everyone else who might find them as enjoyable as I do.

Howard's Response to Richard J. Light

Four decades go by quickly! It's that long that we've been colleagues at the Harvard Graduate School of Education, and nearly that long that we have been personal friends as well as professional colleagues. Ellen and I have watched Sarah and Jen grow with enormous admiration for their achievements; and we will always be indebted to both you and Pat for the care you have shown for our children, and especially for Kerith and for Ben at crucial "turning points" in their own education. What greater gifts can any friends bestow?!

Over the decades, we doubtless sat together at hundreds of meetings and had many lunches, drinks, and sidewalk chats. It's therefore somewhat of a surprise that, as you note, we only joined forces directly on a project half a dozen years ago, when, with the cooperation of the Freshman Dean's Office at Harvard, we devised those sessions that are now called "Reflecting on your Life." Not only have the sessions been personally satisfying for us, and, we can now add, for the hundreds of students that have participated, but thanks to the internet and the Teagle Foundation, analogous sessions are being launched in campuses dotted across the land.

Almost as much a surprise was our realization about two years ago that we were both worried about the status of education in the "liberal arts and sciences" (LAS) in this country—the kind of education that we and our families were privileged to receive (typically at much lower cost), but that was under siege for both understandable and bogus reasons. We agreed that there had been many articulate defenses of LAS, dating back to the 19th century, and we did not feel the need or capacity to add to such encomia. What was needed, instead, was a solid empirical study of how different stakeholders or constituents conceive of higher education today; and then to ascertain whether there exist programs and approaches that can bridge the misalignments that we fully expect—indeed, that we are already finding—across constituencies and across campuses.

Exactly what form that study will ultimately take, and the nature of our contributions, remains to be seen. But I will always be grateful to you for having started the conversation. I am touched, indeed, a bit

overwhelmed by the very kind ways you have characterized me, especially in view of the fact that, after forty years, you know my warts intimately. So in addition to a heartfelt thank you, please allow Ellen and me to express our gratitude to you and Pat for forty years of invaluable friendship, which includes more than of its share of “wise counsel.”

Tanya Marie Luhrmann

I've known Howard now for over 20 years. We met over my first book. My publisher, the editorial house at his university and my alma mater, sent it to him, and he asked to meet me, and we had a long walk down the Charles, talking about how people perceived their worlds. A few years later we coincided at the Center for Advanced Study in the Behavioral Sciences, that magical Edenic grove for scholars out in Stanford California. We had many talks that year. I was writing a book about psychiatry. He was at the beginning of 'Good Work.' I remember that we talked about everything, and I remember that he gave me some exceptionally good advice. I was worried, as one is, that I was not cool enough or trendy enough. "No one ever invites me to conferences," I complained. "Don't worry," Howard said. "Put your head down and do what you do." He told me not to strategize and not to double-think, but to choose what came naturally and to trust in my intuition. Howard encouraged me to be who I was, not a sheep. I have always been grateful.

But I did not realize until recently how much I was in Howard's intellectual lineage. This recognition has come to me in the last year or two, with the dawning surprise of realizing something that has been true all along.

All my work is about minds. I am obsessed by the question of how reality becomes real for people. Not the table-and-chairs kind of everyday reality that perplexes most cognitive psychologists, but the invisible immaterial reality that holds so much importance for so many. How does God become real for people? Why do some people feel that God is present, like a person among people, while others do not? Why does God press in upon some people like a grim low cloud, while to others, God is joy?

I have been working for years on two different projects. One of them is about God (and the supernatural more generally) in the United States. In the experientially oriented evangelical churches I have studied, people seek to experience God in their minds: to pick out thoughts and images that they feel have come from God, rather than from themselves. To do this they have to learn to think about their minds differently—not as walled off from an outside, external world, but as containing within

the mind an outside presence: God. I noticed that it was hard work for them to get to that place where they could imagine their minds in that way. It did not seem natural to them, at first. They had to be taught which thoughts were good candidates to be thoughts that came from God, rather than from their own fey imagination. They had to learn that God's thoughts felt different from their own, that they stuck out in a perusal of one's own experience, that they felt "not me." They had to learn, too, that God's thoughts were shaped by God's character and that they gave one peace. If you did not feel good when thinking a thought, the church taught, that thought did not come from God.

It was remarkable to me that people could learn to pay attention to their minds in this way; and even more that when they did, they seemed to experience their minds differently. They became able to point to what they called God's voice, and they reported that they could recognize it the way they recognized someone's voice on the phone.

It also seemed to me that what Christians were doing when they prayed was to make inner sensory experience more significant, to see with the mind's eye and hear with the mind's ear, and to attend to these inner sense experiences more carefully. It also seemed to me that these new attentional practices had real consequences for people and that what they imagined became more real for them. I ran an experiment to test these ethnographic hypotheses, and indeed, those in the imagination-rich prayer condition reported more vivid mental imagery and more spiritual experience. They said that God became more of a person for them when they prayed in this way.

Part of this story is psychological. Some people are more comfortable attending to what the mind imagines than others. In general, they are the ones who become the prayer "warriors" and immerse themselves in prayer. But most people respond to the training to some extent. It is no accident that inner sense cultivation—using the mind's senses to experience what the mind imagines—can be found throughout Christianity, Judaism, Islam, shamanism, in most spiritual traditions. Using the imagination to seek God is far easier than ridding the mind of all thought, as the strictest Buddhism demands and as some Christianity teaches (for example, Centering Prayer).

But part of this story is cultural. At least, part of the story has to do with the way people imagine their minds. The Christians I knew all had to be taught to experience their minds differently: as containing the presence of another agent, as porous to the world in a specific way. They had to be taught to take what they imagined seriously, because at the beginning, they treated the imagination as the source of fantasy, not of the real. It also seemed to me that when these Protestants reported experiencing God with their senses, they were more likely to hear God speak than to report a vision—something that might be associated with the Protestant emphasis on hearing, compared to the Catholic embrace of the visual.

These cultural differences seem to play a role in psychotic experience—the second of my two projects. For years I spent time with homeless psychotic women on the streets of Chicago. I was answering a most pragmatic question—why don't these women want help?—but also getting increasingly interested in their experience of voices. A new, controversial movement argues that if people who hear distressing voices develop a respectful relationship with those voices, the torment of the voices can diminish. Again, this suggests that the way the mind is imagined has real consequences for the way the mental events are experienced. I am now doing comparative interviews between people on the San Francisco peninsula and in Chennai and (shortly I hope) in Ghana, talking to people who meet criteria for schizophrenia in detail about their voice-hearing experience. (This time they are housed and high-functioning, for the most part.) What we know so far is that there are sensory variations. In India, people report more visual hallucinations on average than in the U.S. (this is now supported by epidemiological work). It also seems to be true that the Americans have a remarkably harsh experience of voices. They seem to imagine themselves to have a wall between the mind and the world, and they do not feel comfortable when the wall is breached. For Americans, the mere fact of hearing a voice means that you are crazy. In India, people can have a relationship with their voices in a way that is much more difficult for Americans.

And so I am building a theory that reminds me of Howard, and of our walks together, and of his books that have led me to this point. My theory is that the way you attend to your mind changes your mental experience, and it does so in profound and specific ways.

I believe that there are what we should call different "theories" of mind: different patterns of inferring what happens in one's own and other minds. "Theory of mind" is of course a term with a long tradition in developmental psychology. Why co-opt it? Because—with a growing number of anthropologists—I believe that the mind inferred by these western toddlers is inferred differently in different social worlds. To be sure, it is not so different as to imply that toddlers in these different settings do not grasp that people have minds or do not realize that beliefs affect behavior. Nonetheless, we have begun to notice differences in the social modeling of minds—and evidence is emerging that these differences are causally consequential.

When a group of anthropologists and psychologists met at Stanford in the summer of 2011 to explore this topic, we identified at least six such "theories":

The Euro-American modern secular theory of mind: In this theory of mind, people treat the mind as if there is a clear boundary between what is in the mind, and what is in the world. Entities in the world, supernatural or otherwise, do not enter the mind, and thoughts do not leave the mind to act upon the world. The assertion that they do is seen as a symptom of mental illness (thought insertion and thought withdrawal). What is in the mind is not real in the way that tables and chairs are real; one can speak of 'mere' imagination. At the same time, what is held in the interior of the mind is causally important. Intentions and emotions are powerful and can even make someone ill.

The Euro-American modern supernaturalist theory of mind: This theory can be found undergirding charismatic Christianity, contemporary Chinese healing, alternative bereavement practices, paganism, and other practices that are sometimes identified as 'new age'. Here people treat the mind as if it conformed to the modern secular theory, except in specific respects. The mind-world boundary becomes permeable for God, or for the dead person, or for specific 'energies' that are treated as having causal power and, usually, their own agency. The individual learns to identify these supernatural presences, often through implicit or even explicit training. Other features of the secular theory apply. The training becomes important because the secular model of mind is the default model with which these individuals work.

The opacity of mind theory: This theory is found in varying forms throughout the South Pacific and Melanesia. Its most striking feature is the insistent refusal to infer what other people are thinking unless they verbalize their intentions. In these societies, asserted intention is taken to be causally powerful in a way that felt intention is not. That is, whatever one's actual intention may be, the intention one asserts (or is taken to have asserted) is taken to be causally powerful. The impropriety of inferring privately held intention is so great that it can be impolite to look directly into another's eyes. At the same time, the boundary between the mind and the world is often porous, so that spirits (or the Holy Spirit) pass back and forth across it.

The transparency of language theory: In these societies, for which our best examples come from Central America, language is understood to align with the world rather than to express interior states. Fiction may be frowned upon; play by children may be tolerated but not encouraged. The vocabulary to describe mental states may be thin or near-non-existent. Most notably (to ethnographers) beliefs that happen to be false but are not understood to be false by the speaker may be identified as 'lying'. When an utterance is assessed, what matters is its truth-relationship to the world rather than its relationship to the intention of the speaker.

The mind control theory: Our best example of this theory locates it in Thailand, but it can be found in different versions throughout Asia. In Thailand, the most important concern around the mind is how well it is controlled. One can have a well-controlled mind, or one that is less well-controlled. When the mind is poorly controlled, emotions and intentions become powerful and can enter other poorly controlled minds as ghosts or spirits. Thoughts thus are real in a way that is quite different from the Euro-American model. One's mind(s) can be unbunched, and can wander. Thoughts can act in the world and on other minds in ways that are only partially related to those that first thought them.

Perspectivism: This theory suggests that the world is dependent on the perspective one takes on it. Many Amazonian peoples are held to conceptualize theoretically the world as if it is seen from a particular perspective: a human's or a jaguar's, for example. Here there is a great deal of interest in the idea that what appears to be blood to a human may seem to be beer to a jaguar (for instance). There is an expectation

that a human can become a jaguar and vice versa. The most important feature of a mind seems to be that it can migrate from body to body. People sometimes fear ending up in a non-human form permanently. People can make claims that they have seen other people becoming non-human, or been with humans who become non-human.

I think you can see at least five dimensions along which culturally different theories vary.

The degree to which the mind is 'bounded' or 'porous:' are other minds (God, spirits) understood to be able to be present inside the mind? Can thoughts themselves cross back and forth across this barrier?

The degree to which interiority matters: are emotions and thoughts understood to be causally powerful and significant? Are emotions allowable explanations for behavior or for illness experience?

The epistemic stance: the degree to which thoughts and the imagination are represented as 'real'. Is it 'mere' imagination or does the route to the real like through the mind?

The sensorial weighting: the social importance given to specific senses. All humans share the same sensory apparatus. But different social settings draw attention to the senses in different ways. How does that matter?

Relational access and relational responsibility: is it socially allowable to display knowledge of inferences about other minds? Does the inferred knowledge (as opposed to socially shared knowledge) confer a responsibility to act?

I think that there is good evidence for at least some consequences to these differences, and I am setting off to collect more, in a tricorne collection of spiritual experience and psychotic experience in the United States, India, and Africa. In the United States, the western secular mind is imagined as walled off from the external world. Its inner feelings are causally powerful—sadness is a legitimate reason to be ill, as is not true in many parts of the world—but thoughts and feelings are not 'really' real, not like tables and chairs. When westerners speak of something imagined, they are often contrasting it to something true. Religious westerners sometimes violate these expectations in specific ways, but the

background expectations linger. The supernatural can be playful, even fun, because it is real but not quite real.

In Africa, by contrast, minds are often inferred to have the capacity to do damage at a distance and what is in the mind is very real. In India, the elite worry about controlling the mind. It is the non-elite who become obsessed when spirits take control.

These are schematic differences. But I predict that they will shape the way people interpret distressing voices and the way that they encounter God. That is important, because between biometrics and neuroscience many people presume that the symptoms of psychosis and the glories of spiritual experience are driven by the brain independent of culture—think of the talk of the "god-spot." If we can demonstrate that different ideas about the mind are associated with these differences it will be an exciting contribution.

These are ultimately Howard's questions, and they stem from the curiosity that Howard helped to nurture and to build. I aspire to be his kind of intellectual: bold, far ranging, deep, and provocative. He has literally framed the problem of thinking differently about the mind. I am indebted to him as are we all.

Howard's Response to Tanya Marie Luhrmann

Apparently, as you suggest, we had met a few times, probably in Cambridge, Massachusetts. I was vaguely aware that you were a rapidly rising star in psychological anthropology. But it was only through the good luck and timing of the "major domos" of the Stanford University Center for Advanced Study in the Behavioral Sciences that we had the good fortune to spend most of the academic year of 2004-5 together. Of course, I was well into middle age, while you were still (and certainly looked like) a "kid." And of course, I was supposed to spend my time noodling about humane creativity and good work with my long time colleagues Mihaly Csikszentmihalyi and Bill Damon. But I have no hesitancy in saying that our almost daily walks around the Stanford Hills (where you now live!) were among the highlights of the year, and those walks and talks proved much more powerful for me than the "designated CASBS transformers" of volleyball games or weekly paper presentations.

Permit me to recall a sad event: about three-quarters of the way through the year, one member of our 40 person cohort of "Center Fellows" committed suicide. We were all shocked and depressed; it was a severe blow to the community that all of us had tried to set up. As it happens, within the CASBS "family" were four psychiatrists, and under normal conditions, one would have expected one or more of the psychiatrists to take the lead in organizing our group of sudden mourners. None did—they were "otherwise engaged." And so, Tanya, you and I took it upon ourselves to set up a simple but meaningful set of conversations and rites, marking this untimely death and trying to reconfirm the solidarity of the group. We may not have led the group in any other way. In fact, as I will argue, from many perspectives, we are "outliers," and yet it was natural for us to undertake and fashion this needed endeavor.

So what did we talk about throughout the year? In a word, just about everything. Political, personal, professional, gossip, nothing was off limits. But what sticks most in my mind was the question: how does one become a good professional, and launch a powerful career, when one does not merely follow the crowd?

I've often referred in these pages to my disparate interests. I challenge readers to mention any scholar nowadays whose books cover, in order, the gamut from witchcraft in London, to being a good Parsi, to the training of different varieties of psychiatry, to the conversations that evangelicals have with their gods (and now evangelicals on three continents!). And every time that I see you, Tanya (and I hope that is at least once a year), I fully expect to learn that you are exploring an entirely new topic: perhaps working with tantric yogas, perhaps with neurophysiologists, perhaps with both.

Yet, as you point out in your powerful essay, clear through-lines have emerged and continue to emerge in your work. I take no credit for this. You were all put together before we took our first walk. But it is clear that you are bringing the lens of the psychologist (and the cognitive psychologist rather than the Freudian psychologist) to issues about "belief" and "mind" that individuals have over the world; and that you are then using the cultural lens of the anthropologist to discern similarities and differences within and across groups. As in so much of your work, you are raising new questions and bringing fresh lines of evidence to bear on them.

I do not know whether, in the end, you will have the same six "theories of mind" that you propose, or whether these theories will end up differing along the five dimensions that you have identified. But about this I have confidence: the conclusions you reach will not only revise some of the ways in which we make sense of our own and other's experiences. They may also fundamentally reorder our understanding of how psychology and culture interact. And that is the mark of the significant scholar!

Work

Tod Machover

Nobody knows more about work—in every sense of the word—than Howard Gardner. Being a bit work-obsessed myself, I have been drawn to Howard's ideas and advice, and this in turn has led to a strong bond of collegiality and friendship between us, and to my deepest appreciation for how Howard has enabled me—and all of us—to understand how we work, why we work, and what our work is for.

I first met Howard about ten years ago (after having absorbed most of his writings during my school to professional days) when he was conducting research on interdisciplinary collaboration. Howard was interested in discussing the music-science-technology culture at Pierre Boulez's IRCAM in Paris, where I had worked after graduate school as its first Director of Musical Research, and also the "antidisciplinary" MIT Media Lab where I have worked since its opening in 1985. Howard asked the most probing questions about these two unusual environments, understanding deeply—because of his investigations into how the mind works and how multiple intelligences divide as well as unite, both internally and externally—how difficult it is to establish environments where people from truly different perspectives can find significant points of commonality. Through speaking with Howard, I gained new insight into structural conditions at IRCAM that made it almost impossible for true collaboration to transpire, and also uncovered some tips for nurturing broader collaboration at the Media Lab—such as how best to define common goals for complicated projects—that continue to inform my mentorship, management and creative roles at MIT.

Since that first meeting, Howard and I have tried to meet every few months—usually over lunch—and typically discuss a very wide range of subjects. I look forward to each encounter with great anticipation; I know we will cover subjects and uncover ideas that I could never have guessed in advance. Sometimes we talk about "intelligences" and the arts, since Howard thinks so deeply about the cognitive structures that underpin artistic activity. We talk about musical work (how different pieces that we love are put together, how one decides what ideas are contained in a single work or spill over into an *oeuvre*) and about how music works

(which aspects of music elicit thoughts and emotions, what can be conveyed through first sonic impressions or only through familiarity, how text helps or hinders comprehension). We talk about how institutions work in general, and how the very different cultures at our two home institutions encourage or hinder productive exploration. I have learned more from Howard than from anyone else about how best to mentor and support younger colleagues. I have also come to understand better the differentiation between the interests of individuals and those of institutions, similar in many cases, but not at all identical.

Our discussions often veer to education, since my music composition work has become increasingly focused on audience development and creative involvement. From his broad experiences worldwide, Howard has directed me to environments such as the Reggio-Emilia schools, where young people define projects according to their passions, cohere as a group because of shared goals, and determine individual contributions of which they can be proud and from which they can learn. No one knows more about translating creative exploration into tangible knowledge than Howard, and he has helped me to clarify my own investigations time and time again.

Howard's concentration on "good work" is, in my view, a natural extension of his application of cognitive theory to pedagogical practice. For what good is our knowledge if it cannot transform lives and societies for the better? It is extremely difficult to be a profound theorist as well as a successful activist, and no one combines these opposite modalities better than Howard. We often discuss how a particular idea or technique can best be put into practice to have the largest impact on learning or doing, and, conversely, what we need to better understand about cognition in order to design a tool or an activity to better "hook" and sustain a program of new insights and interventions. I always bring problems and projects I am struggling with to Howard to hear his advice, and he is often aware of potential challenges in my current activities before I notice them myself. Howard is always right … and always respectful and helpful!

This profoundly responsible and generous attitude comes from years of reflection on how one's work affects others, while also revealing who we truly are. Howard and I have often discussed surprising decisions and actions taken by colleagues, acquaintances, or public

figures that might be explained by seemingly disconnected personality quirks, cognitive styles, or distant experiences, none of which are in fact so distant after all. Or at other times, Howard has convinced me to look more carefully at someone's work that I had misunderstood but whose deeper, more subtle intentions were perhaps original, courageous, and worth further investigation.

Howard understands the relationship between our work and our lives better than anyone I can think of. He knows that our work *is* our life, in every sense; and in every sense as well, Howard's is a masterpiece.

Howard's Response to Tod Machover

Those of us who spend our lives in Cambridge, at places like the Media Lab at MIT or one of the Harvard professional schools, have plenty of opportunities to meet, listen to, watch, and interact with fascinating colleagues. Indeed, while I'd known of your work for many years, and we've had indirect connections via colleagues like Jeanne Bamberger, our first real encounter (which seems to gibe with your memory) was when you kindly agreed to be interviewed for a Project Zero study on interdisciplinary research. I am not inclined to use the phrase "love at first sight." But when I think about how rich that encounter was, and how many insights we obtained, it was clear that I should strive to connect with you again.

It's been a solid decade that we've been meeting and talking regularly, sometimes with Ellen and June, occasionally with one or more of your or our children. We've talked and shared, and described work(s) that we are planning, that are underway, and that (in your case) have been staged—in many cases, to great success in many regions of the globe. As you mention, one could never predict the agenda of any of our get-togethers: the topics can range from discussion of the highest purposes of music and living, to the way to run an organization more successfully (we have lots of ideas about that!), to the latest academic or professional gossip.

What's remarkable about our friendship is that it is not at all transactional. So many relationships in our world—and that includes the well-endowed world of Cambridge/Boston—are closely tied to the service that one person (or group) can provide another, and vice versa. The relationship thrives so long as the transactions happen but can suffer a quick death once the "service has been supplied."

Our relationship is not like that. Or perhaps (and here I will speak just for myself) I see our friendship as transactional in the highest sense. By being together, talking and sharing what we are doing, and offering suggestions and reacting to them, we are responding to one another's endeavors in the most helpful and least targeted sense—we might even say responding with "a sense of a life." It's the kind of attention and feedback that we might get from our parents, our initial teacher, or a

very wise person who happens to take an interest in us. But in our case, I'd like to think that it is just the natural product of a wonderful friendship, which I deeply cherish, as does Ellen.

Leadership as Storytelling: A Reflection on Howard Gardner's Work

Kathleen McCartney

In 1992, I met Howard at a conference on behavioral genetics, sponsored by the Dahlem Foundation. I am not sure Howard remembers our first encounter, but it was memorable for me because Howard is . . . well, he's Howard Gardner. Not surprisingly, Howard gave one of four keynote addresses. In contrast, I was the raconteur, a role assigned to newly-minted scholars, as I was then; I didn't have the sense to know how difficult it would be to write a chapter, reflecting our conference discussion, on the penultimate day of the conference. Howard and I were gathered in Berlin with 42 other scholars, mostly psychologists. The foundation incentivized our hard work by day with a glorious setting and decadent dinners. Berlin, not New York, is the city that never sleeps, so there were many late night after-dinner conversations over beer at a café on the Kurfurstendamm.

Howard's paper was on multiple intelligences, and I remember the behavior geneticists, the alpha males at this event, giving Howard a particularly difficult time. Then and now, Howard was interested in whether the accepted psychological constructs for intelligence were the right ones. The behavior geneticists weren't interested in theory; their focus was more mundane, specifically the identification of established traits with good psychometrics properties, which they could first administer to twins and adopted people, and ultimately employ in statistical models to compute heritability coefficients. One of the more prominent behavior geneticists dismissed my work as well. He labeled a conceptual paper I had written with Sandra Scarr on gene-environment interaction and correlation as "a lovely fairy tale." I got the better of him later in the day. At dinner, this scholar, a strict adherent to the scientific method, had a new target—those who believe in God. When he proudly confessed his atheism, I accused him of accepting the null hypothesis. This got a chuckle from quite a few of the conference participants, including Howard. The next evening, I bravely sat next to Howard at dinner. Thus was the beginning of a friendship that would not start in

earnest for another eight years, when I joined the faculty of the Harvard Graduate School of Education.

It is no accident that I begin my reflection on Howard Gardner's legacy with a story. Storytelling is at the heart of Howard's thinking of leadership, best exemplified in two books: *Leading Minds,* published in 1995, and *Changing Minds,* published nine years later. Howard begins with the proposition that aspiring leaders should be students of leadership. Although some individuals may possess some proclivities for leadership, Howard believes these people, as well as others, can profit from valuable lessons exemplified in the study of iconic leaders and the narratives they used to change the course of history. Some leaders merely relate what Howard calls "a traditional story," which is unlikely to produce any real change (Gardner, 1995). Other leaders inspire with "an innovative story," by giving a narrative a new or fresh perspective, one that resonates with others. The leaders who produce the most change use "a visionary story," which is completely new and inspires action among a group of people. Thus, Howard, a student of the mind, primarily views leadership as the process of *changing the minds* of others. Leaders can only lead when there are followers who are inspired by their words.

Howard demonstrates effectively how storytelling changes minds through the work of three visionaries of global importance, three men whom he identifies as his own "chosen heroic leaders." The first is Mahatma Gandhi, whose story of *peaceful protest* influenced people across the world, then and now; Gandhi's story led to India's independence. The second is Nelson Mandela, who was profoundly influenced by Ghandi. Upon his release from a 27-year prison sentence, Mandela's story centered on *reconciliation*, not revenge or violence; Mandela's story led to the end of apartheid in South Africa. Jean Monnet, a French economist and diplomat is Howard's third chosen leader. In an effort to prevent more world wars in Europe, Monnet worked to create institutions to *unite* Europe culturally and economically; his story set the stage for creation of the European Union.

As Howard notes, all three men created their constituencies, functioned effectively without benefit of financial resources, and forged relationships with people representing the opposition. Peaceful protest, reconciliation, and unity are each powerful narratives, especially when coupled with personal sacrifice. Gandhi, Mandela, and Monnet were able

to change the minds of their followers, "by creating a compelling story, embodying that story in one's own life, and presenting the story in many different formats so that it can eventually topple the counterstories in one's culture" (Gardner, 2004, p. 82). Embodying the story in one's life is critical for followers, who are inspired by personal integrity in their leaders. In the end, the stories leaders tell matter because they provide a path to individual and group identity, and thereby to action.

Howard is a developmentalist who reminds us that stories change throughout the life cycle (Gardner, 1995). Young children's stories involve what Howard calls "rigid dualities," typically good vs. evil. Later, adolescents will "revel in relativism," a wonderful Gardnerism that provides a cognitive foundation for this tumultuous time in an individual's life. Over time stories mature in complexity. Finally in late adulthood, we work for personal integration of the stories from across the lifespan. The synthesis is personal in that it reflects meaning making. Howard persuades us of this when he writes that we "crave an explicit statement of value—a perspective on what counts as being true, beautiful, and good" (Gardner, 1995, p. 55). Thus, like all of human activity, leadership provides opportunities for personal growth. It is important to highlight that the leader must seize these opportunities in order for there to be development.

Higher education institutions provide a distinctive context for the study of leadership. There are few "unschooled minds" there, as Howard might have said. Instead, all stakeholders must be part of the leadership team, as he noted in an opinion editorial for *The Harvard Crimson*. Wise university leaders listen carefully to faculty, students, staff, alumni, and governing boards. Most writers on leadership observe that one should lead by persuasion; this dictum is perhaps truest on a university campus, where again the story is what matters. Although the overall mission of higher education is the same across most college and university campuses—teaching and research—the competitive advantages of institutions vary, providing fodder for what our mutual friend, Marcelo Suárez-Orozco calls "the master narrative." What are the strengths, hopes, and dreams of an institution? It is the job of a dean or president to make that case effectively by using stories of impact. And when she does, faculty, students, and staff—not to mention media coverage, rankings, and funding—follow.

Leaders must do more than change other people's minds—they must learn how to change their own minds. By cultivating intrapersonal intelligence, a leader develops the capacity to examine the mind as an entity and thereby change it. Changing one's own mind and others' minds are linked. Howard puts it this way: "When changes of mind matter mightily, when resistances melt and a new set of resonances takes over, the rest of us take note" (Gardner, 2004, p. 197). We ourselves, take notice, as well, as we observe our own personal development. Nan Keohane described the college presidency as "omnivorous" because "a leader could always be doing something that would advance the interests of the institution and is usually working through most of a seven-day week" (Keohane, 2010, p. 201). In my experience, this is certainly true; thus, it is important to fight for time for self-reflection.

For me, personal growth is the reward of leadership. I experience great satisfaction when I am able to listen to members of my community who disagree with me, especially when I am able to view their criticism as caring; when I am able to confront individuals with authority to advance a position I hold dear, especially when I know I am advancing an unpopular opinion; when I am able to take a calculated risk to advance my institution, especially when the outcome is not clear; when I am able to accept failure with humility, especially when I am able to accept responsibility for my actions. Howard might call this "good work."

My development as a leader has profited not only from Howard's writings, but also from our many conversations. During the spring semester of my second year as dean, he made an appointment to meet with me. Usually when people request a meeting with a dean, they want something; in contrast, Howard had something to give, specifically good advice. He told me to spend time during the summer articulating my change agenda for the Harvard Graduate School of Education. The way he gave me this advice was quintessential Howard: "Go to the mountain this summer. Then come back and tell us what your priorities are as dean. Your senior colleagues are ready to listen, and we are ready to follow." I took his advice, of course, and I wrote a memo, which I titled, "The Mountain Memo." And so began my narrative of how the faculty of the Harvard Graduate School of Education would define our comparative

advantage—working at the nexus of practice, policy, and research. It's a good story that I have enjoyed telling these last eight years.

References

Gardner, H. (1995). *Leading minds*. New York: BasicBooks.

Gardner, H. (2004). *Changing minds*. Boston, MA: Harvard Business School Press.

Gardner, H. (2007, February 9). Leadership at Harvard. *The Harvard Crimson*.

Keohane, N. O. (2010). *Thinking about leadership*. Princeton, NJ: Princeton University Press.

Howard's Response to Kathleen McCartney

Of course, I knew about you, and something about your work, when you were a young professor starting out in the Harvard Psychology Department. By a stroke of fate, we both found ourselves in Germany, in Dahlem, at that conference on behavioral genetics. You rightly perceived that I had thrown myself, wittingly or not, into the den of the lions. Nearly everyone there was a genetic determinist, and few had patience for a discussion of environmental opportunities, cultural influences, or the limitations of behavioral genetics.

My memory is that you did not join in "shoving" me toward the lions, and I'm grateful for that. I am also struck (and I wonder if you are as well) by how outmoded that "Debate in Dahlem" now seems. As we learn of the precise details of genetics and epigenesis, and the complex multiple interactions over time between biological and cultural factors, discussions of "Just how much of IQ is inherited?" or "Where is the gene or gene complex that dictates IQ?" seem anachronistic.

But of course, it was only when you came as a member of the Senior Faculty to the Harvard Graduate School of Education that we really came to know each other. At first, we were peer faculty members in a small and quite comfortable department of Human Development and Education. But very soon two things became clear: l) there were problems with leadership both at the university and at the school; and 2) you were willing, as many of us were not, to assume a leadership role.

By all accounts (including mine!), Kathy, you were a wonderful dean at HGSE. We admired your leadership and would have been happy to have you continue indefinitely, though that was not in your life plan. As you point out in your kind remarks, I have studied leadership—including the leadership of academic institutions—and so I supposedly know something about the topic. Truth to tell, I have benefited from my studies of impressive educational leadership in the past, e.g. Robert Maynard Hutchins at the University of Chicago in an earlier and very different era. But most of what I have learned has been by watching leaders at Harvard succeed or fail (or fall somewhere in between) and trying to tease apart the crucial variables.

There's no formula for describing a McCartney deanship. But if I were teaching a course on your eight years at the helm of our school, I would emphasize your kindness, your candidness, your extremely hard work and attentiveness to specifics, your skill at dealing with difficult characters whether they work for you or are your designated bosses, your skill at learning from those who have occupied similar seats, and, most crucially, your capacity to make hard decisions, when necessary, and assume responsibility for them.

It's not exactly like parenting, but it's not entirely different either. I don't really think that you needed to read any Gardner to pick up or enact these traits. But if my neologisms or metaphors helped you to understand what you are about, I'm gratified.

I'd be happy to send any student of mine, or indeed, any grandchild of mine, to a Kathy McCartney school!

In Celebration of Howard Gardner's 70th Birthday

Elizabeth McCormack

Howard Gardner is my friend. I know him and his books. Often it is difficult to recognize the author in his works. This is not true of Howard. His values shine through every page of his writing.

But more than any other characteristic, I admire his human qualities. He is a compassionate man. There are few people to whom I would go when in serious trouble—of any kind. I would go with confidence to Howard Gardner. His response would be wise, practical, and satisfying. We all need friends like Howard Gardner.

Howard's Response to Elizabeth McCormack

You have one of the most remarkable stories in contemporary American life, from entering a religious order, to becoming the President of a Catholic college, to leaving the presidency, to forming a love relationship which culminated in a wonderful marriage, and then, for the last forty plus years, serving as chief philanthropic adviser to the entire Rockefeller family; serving on numerous non-profit boards, which craved your advice as well as your cautionary notes; and then, for extra credit, providing sage and sympathetic advice to many hundreds of people, including my daughter Kerith and me.

Those who want to know more about your history can consult No Ordinary Life by Charles Kenney. No doubt many of the juiciest events in which you have been a player have not made their appearance in this biography, but it successfully conveys the sweep, the reach, and the remarkable accomplishments of your exemplary life.

It's been Kerith and my good fortune to be able to count on your friendship, to consult you about what to do (and, equally important, what not to do), but also just to be able to discuss the events of the day, the city, and the world with a person who has experienced much, thought a lot about so many things, and handled dicey situations with discretion, but never hesitated to speak her mind in timely fashion. You are a role model for countless individuals of all backgrounds and addresses—even going beyond your beloved New York area. The thoughtful models, messages, and missions that you've conveyed have had and will continue to have influence far and wide, long after both of us have departed from the scene.

Michael McPherson

Isaiah Berlin drew attention to the ancient Greek tale of "the hedgehog and the fox" in his essay of the same name. The hedgehog, whose quills are its universal defense, "knows one thing," while the fox, with wiles and tricks in abundance, "knows many things." Like any simple dichotomy, this one can be overdrawn, but still it is often illuminating.

Some of the greatest and most admirable scholars and thinkers are hedgehogs. John Rawls, whose remarkable career can be seen as devoted primarily, if not exclusively, to building a magnificent intellectual apparatus that allowed him to fashion his monumental theory of justice looks to be a hedgehog. The devotion, patience, and consistency with which Rawls developed this framework seem wholly admirable and in some ways almost superhuman. Ron Dworkin, the great legal theorist, decided to classify himself when he titled a recent book *Justice for Hedgehogs*. It's not hard to think of other leading social scientists whose careers have been built around some one big thing—Milton Friedman in economics, B. F. Skinner in psychology, Talcott Parsons in sociology are likely candidates.

I have had the opportunity at various points in my career to work with two of the greatest of the intellectual foxes of the present era. Amartya Sen, Harvard's unique economist-philosopher, seems equally at home in proving theorems in social choice, explaining the causes of famines, or reviewing the intellectual history of India. His resourcefulness and versatility are legendary. You will recall that it was Amartya who opened a whole new field of activity in economic theory by observing that the standard theory of economic rationality characterized the people economists imagined as "rational fools." Albert Hirschman's whole career marked him, beginning with his days as a resistance fighter in Europe in World War II, as a fox, a label he eagerly embraced. Hirschman, as a developmental economist, political thinker, and intellectual historian, always seemed to me on the lookout for the unasked question, the overlooked perspective. In an essay on economic development in Latin America, Albert celebrated the idea of finding "a whole new way of turning a historical corner" in thinking about social change.

Foxes have perhaps a harder time in building a distinctive reputation than do hedgehogs, who can indeed be conveniently labeled with one big idea. As Berlin's original essay suggests, it's easier to quickly say what hedgehogs like Plato or Dostoevsky are all about than is the case with the foxy Aristotle or Shakespeare.

So, Howard, which is it, hedgehog or fox? I suspect people who know Howard and his work superficially might incline to think of him as a hedgehog, with his "one big thing" being multiple intelligences. While multiple intelligences could certainly rank as a career-defining conception, I think those of us who have had the opportunity to know Howard better would find that characterization much too confining. Think of Howard's work on interdisciplinarity, his longtime leadership of the GoodWork Project, his role in arts education at Project Zero, and his passionate commitment to the distinctive brand of schooling developed in Reggio Emilia in north Italy—while these various lines of inquiry have their connections to multiple intelligences, each has its own motivations and analytic integrity.

If hedgehogs might be recognized for their exceptional focus, foxes may be more playful. One of Howard's great contributions to the Spencer Board was the sheer fun he always conveyed about the play of new ideas. Howard seemed to find a different and illuminating angle to almost any discussion. He seemed to take particular delight in learning from colleagues whose intellectual dispositions and background were different from his own. I remember with special fondness the interplay between Howard and Rich Shavelson. If you were to fashion a checklist of characteristic methods and predispositions these two psychologists brought to their work, I expect you would find far more differences than similarities between them. Yet it was easy to see how much joy both took from their interactions, how much they learned from one another—and how often they turned out to agree on the things that really mattered.

No one, it has been rightly said, is indispensable, but it does turn out that some people actually are irreplaceable. My colleagues and I miss Howard as a board member, but I'm happy to continue to hold him dear as a colleague and a friend.

Howard's Response to Michael McPherson

We knew each other peripherally in decades past, and you graciously invited me to speak and be honored in 1997 when you were president of Macalaster College. But we came to know one another in a more variegated and deeper way when you were chosen as the President of the Spencer Foundation a few years later. For almost a decade, we not only discussed grants and larger policy questions on a regularly scheduled basis. We also found, and took advantage, of many opportunities to meet outside of Chicago, the most memorable for me being the trip that you, your wife Marge (whom we mourn), and I took to Reggio Emilia in northern Italy.

There may be a few extant accounts of the genesis of that trip but here's the one I like. Within education, ten years ago, there was a great deal of discussion of the "learning organization" and "the learning community." Sometimes, I suspected that talk contained more "hot air" than knowledge-based insight. And so, one day, out of the blue, I said to you, "Would you like to see a <u>real</u> learning organization in education? If so, I'll see whether we can make a trip to Reggio." I think that the trip was both fun and fodder for each of us. Among other things, it helped to catalyze a serious study of the demonstrable effects of early childhood education by James Heckman, one of the leading economists of our time.

No one can reach the positions you've reached, Mike, without ambition, and yet you have always struck me as a truly modest person. You have achieved a great deal, ranging from your admission to the University of Chicago at the time when others of us were preparing for our bar mitzvahs, to important writings in economics, philosophy, and education, to firm and positive leadership of major institutions. You lead by listening very carefully and very widely, doing a lot of homework on your own, thinking deeply about the options, and then testing out your own preferences/priorities/predilections with people whose judgment you trust.

While you and I did not always agree on programs or policies, I always felt deeply respected in your collegial company—and I hope that I did not make your job any more difficult! (If indeed, I oscillated between a "hedgehog" and "fox" persona, I trust that the Spencer Board could take

that Janus-stance in stride.) And now that we no longer see other on a calendrical basis, I look forward to any opportunity to break bread or exchange ideas with you.

Pat McPherson

Dear Howard,

What fun to be invited to comment on your exceptional life and times at this auspicious moment in its course. I have long been an admirer of you and your work but lately—in your last decade and a half—I have had the real pleasure of getting to know you and to have the good experience of working with you. You not only bring your fine intelligence to any task at hand but you have a generosity of both mind and spirit that is too rare today and which I have much appreciated.

I knew it would be a very good thing to have you as a Member of the Society, after our work together for the Spencer Foundation, so I rejoiced when you were elected. The engagement you and Ellen have shown in the doings of the A.P.S. is very gratifying, and other Members are so pleased with your enthusiastic participation. I am sending along a few pictures which may prove my point.

I send warmest good wishes for a lively, productive and healthy future, and may our friendship only ripen.

Cheers, Pat

Howard's Response to Pat McPherson

I've had the honor of serving on a number of boards and committees that you've chaired. Over the years, I have had the opportunity to consult with you, in person or by phone or email, on literally dozens of issues in education or policy—some quite dicey—where I was uncertain about the optimal course to follow. Most fun has been the opportunity to travel with you, and other members of the American Philosophical Society, both to Paris and to London to spend unhurried time chatting, walking, dining, or just being in the fascinating surroundings to which you, as the Society's Executive Officer, led us.

You inhabit many worlds, Pat, but I think of you as a person of few words—unlike so many of our colleagues, you don't go on and on and on. But, in a manner befitting a trained philosopher, those words are carefully chosen, thoughtfully rendered, and, in my experience, often unerringly on the mark. No doubt that is why you have been entrusted with an uncountable number of important leadership positions. And that is why, whether you happen to be a designated leader or not, so many of us turn to you when we are need of smart and prudent advice. If that advice is succinctly presented, so much the better, particularly when it is followed, as it so often is, by a smile or even a jolly round of laughter.

Deborah Meier

THANKS, HOWARD, FOR PRESSING THE "OBVIOUS"—in ways that influence beyond our usual circles. You provoke, argue, ponder, and come back once again with a new angle: we are simply not standardizable. For better or worse, it's a fact.

Howard's Response to Deborah Meier

We do not know each other that well; I wish we knew each other better. I hope therefore that you will forgive me for revealing that I have used your name, without permission, for over two decades. And that is when, in speaking to educators, I come to mention the heads of school whom I most admire. Without hesitation your name is at the top of the list! That is because not only have you thought and written brilliantly about American education for decades, but because you've actually done it: provided sterling leadership at Central Park Elementary School, Central Park Secondary School, the Mission Hill School in Boston, and probably other entities of which I am not aware.

You are not a shrinking violet. You make it clear, both orally and in writing, what you believe in and why you believe in it. But on every occasion that I've witnessed, you do this in an open and positive way, inviting others (including skeptics and fence-sitters) to join you in discussion and providing support as needed. You lead by voice, but even more, you lead by example: you walk the talk, and that places you in a tiny minority among the "talking heads" on the American educational scene today.

Have you, have we, been successful? As mentioned elsewhere in my notes, there was more openness to a progressive approach to education twenty years ago than there is today—and especially more openness than was the case in the U.S. and the U.K in decades past. In that sense, we can hardly "declare victory and go home." Yet I believe that you would agree that we need to think in terms of the long run, and in terms of the individuals and institutions that we have succeeded in infecting and affecting, often against the odds.

Parenthetically, I note that the last two winners of the prestigious Grawemeyer Award in Education were Pasi Sahlberg (for Finnish Lessons) and Diane Ravitch, your long time co-blogger (for Reign of Error). I am sticking my neck out here, but I venture that neither of those awards would have been given had it not been for your brave and deeply reasoned talks and writings for the last decades. Long may they continue!

What Does "1/2" an Intelligence Mean?

Seana Moran

According to Howard Gardner's multiple intelligences theory, an intelligence is a "biopsychological potential" with "the capacity to solve problems or to fashion products that are valued in one or more cultural settings" (Gardner, 1983). To qualify as an intelligence, a cognitive capacity must be supported by scientific findings in experimental psychology, neuroscience, evolutionary psychology, developmental psychology, psychometrics, and individual differences (including the occurrence of exceptional individuals such as prodigies and savants).

In 1999, Howard explored whether a ninth intelligence, which he termed "existential intelligence," might satisfy these criteria. So far, his conclusion has been: No, there is insufficient evidence that this "proclivity to pose and ponder questions about life, death, and ultimate realities" warrants inclusion in the pantheon. Yet, Howard keeps his options open by continuing to write and talk about existential intelligence and include it in his list as a "1/2" intelligence.

In this essay, I do not enter the debate for or against the existence of existential intelligence. Instead, I ponder what "1/2" an intelligence means. Why do we find ourselves with a not-fully-formed intelligence at this point in evolution or cultural history? From our biological heritage, what aspects of our neurology may affect and restrict the emergence of existential intelligence? From our cultural heritage, what aspects of our understanding and valuing of cognitive capacities may contribute to the promise of existential intelligence, but also perhaps its inhibition?

I make three assumptions related to the purpose and development of intelligences. First, a problem is a perceived obstacle, difficulty, or challenge that calls for a solution. It is a state of deficiency or need from the perspective of a goal. For example, only when a person aims to climb a mountain is the fallen tree across the path a problem. Since problems are what intelligences aim to solve, intelligences are summoned into action when problems arise or are created.

Second, evolution is not intentional or planned, but rather is an ongoing bricolage process. This process has no goal; rather, it has

interactions among the materials available that can result in new forms, lost forms, or perpetuation of existing forms. The evolution of an intelligence probably is messy, with starts and dead-ends, depending on environmental affordances and cognitive resources available for allocation. Evolutionary adaptations could include changes in structure or function.

Third, culture, or the shared meanings, values, goals, and practices within groups of people, is not a static—or even necessarily stable—set of rules. Rather, culture comprises patterns of thinking and behavior distributed across individuals within the group. Individuals both adapt to and contribute to culture. Through the use of intelligences, cultural patterns may involve goals by individuals and groups, but the larger culture may result as often from unintentional drift than intentional planning. That is, cultures may evolve as much as progress.

My primary thesis is: perhaps existential intelligence does not pass the necessary threshold of Howard's criteria not because it is not an intelligence, but rather, because the intelligence isn't developed enough—evolutionarily, culturally, or both—for our current sensors to extract, measure, refine, and maneuver the new intelligence sufficiently for scientific publication or everyday, practical application. However, the phenomena which existential intelligence addresses exist: history tells of writers, philosophers, spiritualists, artists, and scientist who have explored "ultimate questions" across the millennia. Thus, perhaps, existential intelligence is not sufficient, nor perhaps necessary … *yet*. In the following sections, I consider where we might not measure up along the dimensions of the three parts of the definition of an intelligence: problem solving, biopsychological potential, and cultural value.

Where Did Existential Intelligence Come From?

Before proceeding, let's note that existential concepts are not new. Philosophers and psychologists in the late 19th and early 20th centuries explored the differing subjectivities among individuals and how they addressed "big questions." The existential philosophers, including Heidegger, Sartre, Merleau-Ponty, Buber, and Nietzsche, countered the reductionistic categorizations of all aspects of life that were popular in their time. Instead, they focused on the liminality and flows of experience as well as the meanings of one's being and contributions to a beyond,

including the possibility that these experiences, meanings, and contributions could amount to nothing (see Crowell, 2010). Although their phenomenological framework and their notions of authenticity, alienation, anxiety, and freedom are also relevant to intrapersonal intelligence (Olivares, 2010)—processing information about and knowing oneself—these ideas also required a "transcendence" beyond the self-perspective or self-focus to a "direct openness to the world." One's being is dictated neither by nature nor culture, but by the presence of oneself at this point in time and space. This proposition is the starting point for the types of problems that existential intelligence would be called on to consider and solve.

Some turn-of-the-century psychologists centered their inquiries on the person and on experience, not on subpersonal constructs popular today. Individuals live through time within social groups, interpret perceptions, share symbolic culture, and contribute to the ongoing flow and flux of others' experience as well as of collectivities. Vygotsky's cultural-historical, developmental perspective emphasized how experience (*perezhivanija*), through interactions among individuals and with cultural artifacts, forms the basis for gaining an individual "sense" of the world, and how these idiosyncratic senses interact to form agreed-upon cultural "meaning" (see Moran & John-Steiner, 2003). James's notions of stream of thought, awakenings, religious experience, and his focus on "the loss of all the worry, the sense that all is ultimately well with one, the peace, the harmony, *the willingness to be,* even though the outer conditions should remain the same" (James, 1902/1916, p. 248) centralizes the individual as a participant in life, not just a bundle of traits. Dewey (1910/1982) also focused on experience, relationships rather than objects or ends, meaningfulness, and the ramifications of meaning not just on the person immediately but also on the situation and sometimes the wider context of world or future.

Although philosophical existential notions have made their way into popular culture through "just gotta be me" and "why try? we're all gonna die" attitudes that oversimplify authenticity and nihilism, much of the existential approach has been submerged by more analytical approaches and by a backlash against postmodernism. Still, recent psychological studies related to self-deception mechanisms (e.g., von Hippel & Trivers, 2011) and free will (e.g., DeJong, 2011) are reminders

of existentialism's influence. Similarly, the existential perspective was lost in psychology during much of the 20th century with the ascendance of behaviorism and cognitivism. However, some would argue it has returned through not only Howard's existential intelligence but also the work of neuroscientists (e.g., Damasio, 1994) and positive psychologists (e.g., Baumeister & Tierney, 2011; Keltner & Haidt, 2003).

What Was the Origin of an Existential Intelligence?

Howard's existential intelligence, however, is not a direct descendant of the existential philosophers or psychologists. The more proximal trigger for existential intelligence came from suggestions by both promoters and critics of multiple intelligences theory for other possible intelligences beyond Howard's original seven (linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial, interpersonal, and intrapersonal). Four common suggestions for possible intelligences were: religious or spiritual intelligence, emotional intelligence, moral intelligence, and aesthetic or artistic intelligence. Howard weighed these candidates against multiple intelligence theory's criteria. His assessment was that these prospective intelligences seemed to have a common foundation, which he referred to as "existential." They all addressed experiences with phenomena not easily explained, such as perceived abysses, awe, transcendence, oneness. Those in the midst of such experiences grasp for results from the other intelligences—e.g., for words (linguistic), or arguments (logical-mathematical), or sharing and perhaps comfort (interpersonal), or categories (naturalistic)—and are left wanting.

Proponents of a religious or spiritual intelligence gave examples of transcendence to something greater than everyday affairs, a oneness with God, and consideration of our relations to nonliving objects, such as the earth or the universe (e.g., Vaughn, 2002). Although the problems addressed by this proposed intelligence seem to focus on connection, such as enlightenment or awakening, the concepts and end-states they conclude with tend to fall within the purview of intrapersonal intelligence: for example, inner peace or self-actualization. Emotional intelligence, popularized by Goleman (1995), primarily concerns self-awareness, self-regulation, and getting along well with others. Thus, it can be parsed across the intrapersonal and interpersonal intelligences in Howard's theory. Although people saw lack of these skills as problems, especially in today's more collaborative workplace, emotional intelligence

does not address more "ultimate concerns." Moral intelligence, the capacity to understand right from wrong, could, but need not, address ultimate concerns. Much of morality—and what has been described in publications on moral intelligence, such as fairness, empathy, and cooperation (Borba, 2002; Coles, 1998), concerns quotidian interpersonal relations. Thus, most often the moral problems that arise can be addressed by interpersonal and intrapersonal intelligences. Finally, proponents of an aesthetic or artistic intelligence (e.g., Mucha, 2009) focus on being "present" and acutely aware of one's surroundings, movements, and results. Although the emphasis is on artistic behavior, it is unclear what the problem is that this intelligence addresses other than to "make." But all intelligences "make" something—a solution or a product, so it is unclear what artistic intelligence contributes other than the self-focus handled by intrapersonal intelligence.

These suggested intelligences seem to arise from two cognitive errors: confusion of intelligence with domain and confusion regarding scale. Problem solving is an interaction of the person's capabilities with the environment's challenges and supports. It is difficult for our minds to stay focused on the *relationship* or *interaction*, to "sit on the fence," so to speak. Instead, the tendency is to fall one way or the other, misattributing the relationship to either an attribute of the individual (it's "in us") or the environment (it's "out there"). Both of these cognitive errors stem from this type of misattribution—confusing what is biopsychological from cultural, and confusing where the line is between "inside" and "outside" when parsing cognitive faculties within the mind.

A confusion between *intelligence* and *domain* arises when the distinction between an intelligence as a biopsychological potential and a domain as a structured body of knowledge is ignored. A domain is a lattice of symbolic ideas and tools that is organized around a cultural purpose or directive for behavior by cultural members. Religion, morality, and the arts are clearly cultural domains. A domain does not require its own intelligence. The intelligence is in the person; the domain is in the culture. Culture exists in part in artifact and in part in the minds of cultural members as "carriers." Learning involves all or part of the domain being internalized by individuals through use of their intelligences; creativity can be thought of as individuals using their

intelligences to contribute new ideas and tools to the domain (see Moran & John-Steiner, 2003).

Perhaps because the labels chosen for intelligences—such as linguistic, logical-mathematical, and musical—also can be used to describe domains—such as the subject courses taught in high school, e.g., language arts, mathematics, and music—there has been a tendency to assume a one-to-one correspondence between intelligences and domains. As Howard has argued, this is an oversimplification. Proficiency in the domain of language, for example, draws on linguistic intelligence, but also on logical-mathematical intelligence (e.g., the logic of syntax is much like that of mathematical equations, and whether a statement is "true" depends on logical rules and sequencing) and musical intelligence (e.g., intonation in speaking, rhythm in poetry). In reading and writing, spatial intelligence comes into play because readers and writers must orient spatially to the letters and words arranged on the page (and different cultures orient them differently, as shown in the juxtaposition of left-to-right Western script versus up-to-down Japanese script). In conversation, interpersonal intelligence is important for emphasizing important points in the message, for ensuring the other person(s) have understood, and for conveying and receiving emotional signals in communication.

This intelligence-domain confusion arises, in part, when people attribute a behavior to be a characteristic of the person: a church-goer is a "religious person," a do-gooder is a "moral person," a painter is an "aesthetic person." This leap in categorization is a cognitive error because the behavior and the personal characteristic are not the same. Many exceptions can be found where people attend church services to socialize rather than because they believe in God, serve meals at homeless shelters for college course credit or as a new experience rather than from the goodness of their hearts, or paint in political protest or as a scientific experiment rather than to make a beautiful or inspiring object.

This confusion also arises when the behavior is highly valued in a culture, or when some cultural members believe the behavior should be increased in value by cultural institutions. Cultural members want to benefit from the resources provided for performance of the behavior. These cultural members can indirectly make claims on these resources by asserting an intelligence for it. They may believe that public or

common goods (e.g., tax dollars, natural resources, time) will be allocated to those who use the resource best, i.e., to those who show high ability in this intelligence. “Intelligence” has long been a capacity used as a criterion for allocating educational and workplace resources. If cultural members can increase the perceived value of what they already do well or what they would like others to do more of (e.g., behave morally or make aesthetic judgments or objects), calling it an “intelligence” is a strategically savvy move. The behavior then becomes viewed as a capacity belonging to the person.

But in both of the above causes for confusing intelligence and domain—psychological misattribution or economic gain—the result is the same: giving the intelligence the same label as the domain task/behavior creates intellectual confusion and slows the progress of understanding both the intellectual and the domain phenomena. It becomes all the more confusing since domains can be considered the collected understandings of current and past cultural members and, thus, comprise the aggregated outputs of various intelligences. But that is all the more reason to make a clear distinction. The experience of the domains of religion/spirituality, morality, and aesthetics comprises a richer array than just the cognitive aspect that existential intelligence may provide to it. And existential intelligence’s use is not limited to these domains, but rather can be called upon in biology and medicine (at what point does life cease?), search-and-rescue (when do we change from rescue to recovery efforts?), justice and corrections (what are rights versus privileges?), law (what counts as a “person”?), climate science (when is life and/or civilization unsustainable?), and history and anthropology (what makes a group a civilization, and when did civilization begin?).

The second confusion is one of *scale*. This confusion relates to problem solving because it blurs what satisfies as a solution or product—the output of an intelligence. Howard intentionally defined intelligences as a middle level between macro behavior and micro mechanisms of cognition. An intelligence differs from behavior because the intelligence is called upon in the performance of domain tasks. A person is confronted with a situation that involves tasks pertinent to a particular domain’s knowledge and tools. The task’s demands and the presence of the domain’s symbols stimulate the intelligences that can process different aspects of that knowledge to produce a solution or relevant product.

Intelligences also come into play to communicate the solution or to other task participants. Production and communication are behaviors. Behavior, then, results from a coherence or coordination of intelligences in action; behavior supersedes intelligences. With the same logic, an intelligence supersedes cognitive mechanisms, such as memory, sensation, perception, or motor planning, which address smaller units of more specific types of input. As computer software programs call on variables and functions to carry out a particular operation, an intelligence calls on these micro mechanisms to process specific bits of information.

Two micro mechanisms pertinent to existential intelligence, and sometimes confused with "intelligence," are imagination and abstraction. Imagination is the mental faculty of generating sensations that are not perceived through bodily senses and that do not necessarily correspond to phenomena that *can* be directly sensed. That is, imagined objects can include fantastical elements that one would not find in the "real world." Abstraction is the mental faculty of reducing the abundance of information available in an object, phenomenon, situation, or idea to only those characteristics relevant to a person's specific purpose at the time. For example, in a conversation about sports, a soccer ball might be abstracted or generalized to "ball," whereas in a conversation about geometry, it might be abstracted to "round" or "polygon" from patterns on the ball's surface.

But imagination and abstraction are not all there is to existential intelligence. An analogy would be baking cookies. Cookies are the solution to the problem of a sweet tooth. Imagination and abstraction are like ingredients, like flour, sugar, butter, and baking soda. But if I only had one ingredient—say, sugar, which adds sweetness—I would not end up with cookies. The ingredients need to work together—to "inform" one another by providing structure (flour and egg), leavening (baking soda), and emulsification (butter) for cookies to result. Similarly, for existential intelligence to address ultimate concerns, it cannot be only imagination or abstraction, but rather must use these intellectual ingredients to produce an outcome that has the potential to be culturally valued.

It is possible to consider imagination or abstraction as intelligences because they do process information. But these capacities are not intelligences because they do not directly solve problems or fashion

products. They provide information to the intelligences and the intelligences then can inform or frame problems or solutions; however, further processing is required. In addition, these faculties are called upon by all of the intelligences and most cultural domains. Imagination brings into view in the "mind's eye" the realm of possibilities. Abstraction stratifies information and knowledge. Specifically for existential intelligence, imagination and abstraction make possible the opportunity to even engage the information the existential intelligence addresses, a question I turn to next.

What Is Existential Intelligence For?

When are existential issues most likely to arise? What types of situations do people experience in which ultimate concerns are the focus? According to Howard's writings, as well as articles and websites that refer to existential concepts, such situations include birth, disease, death, trauma, crises, shocks, stories of origins and destinies (e.g., myth, cosmogony), and events that increase uncertainty (Olivares, 2010; van den Bos, 2009). In these situations, people feel at a loss for how to proceed.

Yet, some individuals, over the course of history, have seemed particularly adept at stepping into this void. People who have been viewed as exemplars of existential intelligence include spiritual entrepreneurs who founded religions (e.g., Buddha, Jesus, Martin Luther), political antagonists to the status quo (e.g., Joan of Arc, the Dalai Lama, Martin Luther King), and intellectual renegades of their time (e.g., Socrates, St. Augustine, Copernicus, Darwin). Not all who venture (or fall) into the void come out intact. History tells us of those who died, committed suicide, or went mad. Unfortunately, we cannot make use of data that cannot be collected from the individuals whose insights were lost to personal catastrophe. In the particular case of religious mysticism, William James (1902/1916) suggested, "But more remains to be told, for religious mysticism is only one half of mysticism. The other half has no accumulated traditions except those which the text-books on insanity supply" (p. 426).

Furthermore, not all existentially intelligent exemplars change the course of history-writ-large, as the individuals named above have done. For example, the hippies of the 1960s, positive psychology in the 2000s,

and perhaps the Arab Spring in 2010 were launched from an existential crisis involving ultimate concerns, but degenerated into, respectively, "sex, drugs, and rock 'n' roll," studies of "happiness," and the familiar violence and dogmatism that tends to occur during political revolutions.

Given these situations and exemplars, what problems does existential intelligence appear to solve? Existentialist philosophy and psychology's common thread was the role of an aware agent's understanding of, and influence in, the world from a wider perspective than just self-interest or the prescriptions of one's biological and cultural regimes. What is now called "subjective" was central to these scholars. For them, there is no one "right answer," and there may be no solution at all. But subjective resonance (or sentiment)—i.e., emotional information—can tip one's understanding toward being more or less "right," not as a stable reference but as a temporary configuration of the flux. There can be *meaning*. When meaning fails, life becomes absurd and stressful. This mental stress is like an alarm to which existential intelligence responds.

Existential intelligence is a meaning maker (van den Bos, 2009). Meaning connects—it processes relationships (see Olivares, 2010; Park, 2010, for review). Meaning-making and meaning in life have both become burgeoning subfields of psychology (see Parks, 2010; Wong, 2012). Existential intelligence addresses the "big questions" of life, interprets experienced phenomena, and locates the person within imperceptible dimensions (e.g., conceptual webs, or moments—such as death or perhaps Csikszentmihalyi's (1991) flow—that are beyond time).

Existential intelligence comes to the fore when contemplating one's "place in the world" not only physically or socially but also cosmically or metaphysically; transcending the here-and-now of sensory perception. It does not seem directly dependent on the senses as other intelligences are. In some ways, existential intelligence *extends* information that is the output of the other intelligences, e.g., location and proprioception are components of spatial intelligence, and experiential—including emotional—information is the purview of the personal intelligences. In other ways, existential intelligence needs very little sensory input to operate; it can make meaning of whatever inputs it receives. Helen Keller (2003), who was blind and deaf, placed a strong focus on the "ultimate concerns" that are the fodder for existential intelligence.

As these functions suggest, "relations" tend to be the information that existential intelligence processes. The relationship usually, but not always, includes the self: *my* relation to the infinite and the infinitesimal, the impact of an event on *my* life or future, the impact of *my* action on the universe. But, with existential intelligence, the focus is not on the self as an object, but the self as an agent within a wider context. Frankl's (1959) classic analysis of how some prisoners survived the Holocaust emphasized how they focused on relationships between themselves and the future—they had a personal direction or purpose in life, or a reason for being that was perceived as outside themselves.

In addition to focusing on relations that *are*, existential intelligence can also address relations that include a "beyond," incorporating or addressing *what is not,* or *what not yet is.* It can contemplate ultimates, such as origins and destinies, good and evil, infinites and infinitesimals. For example, literature seems a particularly fruitful venue for existential intelligence to be used, as stories address beginnings, endings, and moral battles (some might say narrative structure *is* this frame). Mathematics, too, would be a good venue: calculus, for example, was created specifically to address what happens "at the limit."

Existential intelligence can have a developmental trajectory. Kegan's (1982) developmental theory of meaning-making outlines five "orders of consciousness," that primarily call upon intrapersonal or interpersonal intelligences, which individuals use to make sense of their experiences—from their bodily sensations, through feedback from others on their behavior, to their own ideologies. Most of Kegan's orders can be effectively handled by other intelligences: bodily-kinesthetic and spatial in the earliest orders, adding linguistic and the personal intelligences in the middle orders, and more integration of all the intelligences in more mature orders.

Over the life span, the objects to which a person relates become increasingly more abstract and relations-oriented. Kegan's highest order, which very few people reach, involves making meaning of processes. At this level, there are no concrete "things" to consider anymore, everything is relationship in motion over time. This order seems the purview of existential intelligence par excellence. This developmental progression, however, may make existential intelligence hard to see. For most people, the problems this intelligence addresses don't come to their attention

until late in life. Only if a specific individual encounters one of the dramatic situations listed earlier would there be occasion to use existential intelligence at an earlier age. It is difficult for a culture consistently to pass on existential knowledge, norms, and behaviors when it tends to occur at the deathbed (and heartbreaking in the implications for what it means to be a prodigy of existential intelligence; Kornhaber, personal communication, February 11, 2012).

Most everyday experiences can be "made sense of" through mental schemas we inherit genetically or culturally. There is no need to process information from the current situation other than to recognize which evolutionary or cultural script to run. Only when those scripts fail—when culturally shared meanings or when genetic programs don't work as they should—would existential intelligence be called for. Existential intelligence outputs meaning when existing meanings—from evolutionary endowment, personal perception, or cultural tenets—don't make sense. This intelligence is called into play when a person's "life narrative hits something that is hard to assimilate … or when the cultural narrative does not provide guidelines for meaning or action" (Klass, personal communication, January 22, 2012).

Thus, we come full circle to the list of situations in which we already believe existential intelligence might be helpful: traumas and extremes (Olivares, 2010). Unless these situations are thrust upon us through some catastrophe (e.g., a brain tumor, see Strang & Strang, 2001), the *ideas* of traumas and extremes are rarely pressing concerns in comparison to the daily struggles to survive and succeed. Furthermore, recent studies of willpower (Baumeister & Tierney, 2011) propose that addressing such situations requires extreme cognitive effort and significant durations. Unless boosted by the adrenaline released in an emergency or catastrophe, existential intelligence may not be used until the other concerns of life in quotidian domains have abated, or the other intelligences have completed processing their respective types of information available in the environment or through other intellectual processes, or there just happens to be considerable free time and resources lying around.

That is, at least in the past, there may have been a requirement for discretionary time or intellectual resources for existential intelligence to come out and play. Perhaps this discretionary dimension of existential

intelligence is one reason that it appears as a luxury through most of history—only something that aristocrats, or scholars with generous benefactors, could afford. Using existential intelligence is not framed as a leisure pursuit like using linguistic intelligence to write poetry, or bodily-kinesthetic intelligence to dance, or spatial intelligence to sculpt, or interpersonal intelligence to throw a party. Yet, we can find examples of existential play: individuals who enjoy exploring the unknown or changing their relationship to their self, body, or environment, such as through intensive study, meditation, yoga, or mountain climbing (Klass, personal communication, January 29, 2012).

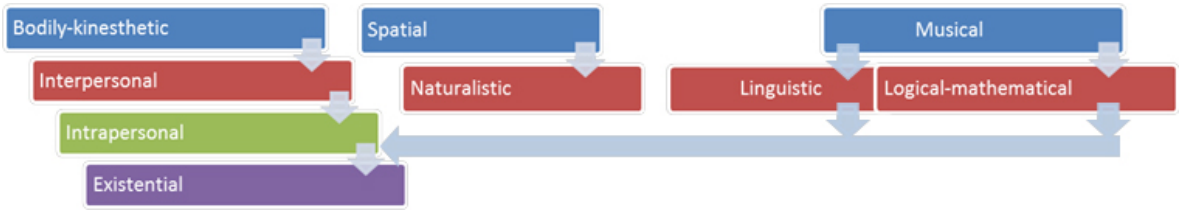
Still, existential intelligence can be useful for everyone. As with the outputs of other intelligences—such as understanding what someone said (linguistic), or not getting lost in some physical terrain (spatial), or placing vegetables correctly in the refrigerator's produce drawer (naturalistic)—the output of existential intelligence (meaning) helps individuals to survive and to thrive (Parks, 2010; Wong, 2012)—especially in uncertain, hard-to-comprehend environments. Some would say that our current environment is becoming increasingly uncertain and incomprehensible. Because of technologies like flash trading and social media, even formerly banal areas of life, like finance and friendship, are becoming overly complex. Meaning-making through appraisals of comprehension and significance of experiences reduce anxiety and disorientation (Park, 2010) perhaps to help other intelligences to function under stress.

If this intelligence is as fundamental as handling emotional information, then why is it not considered an intelligence? If, as basic developmental psychology theory purports, a capacity requires usage and practice to develop, then existential intelligence might need additional venues to emerge. Where and when should those venues be? The situations in which existential intelligence is called for may be "sacred"—not necessarily in religious terms, but in terms of being "set apart" from the hubbub of everyday cognitive processing. Metaphorically, existential intelligence may be a "shy" intelligence. Why? We can look at the issue from two perspectives based on the other two components of the definition of an intelligence: the "biopsychological potential" frame and the "valued in a cultural setting" frame. In both frames, since existential intelligence may not, at this time, be fully formed, can we appreciate the

intelligence in a precursory state—can we appreciate the diamond in the rough, before it has been cut, polished, and set?

Is Existential Intelligence a New Generation in Intelligence's Family Tree?

From an evolutionary perspective, it is unlikely that all the intelligences came into being at the same time. We could logically surmise a genealogy or family tree of the intelligences (as in the figure below). Sense-based and motor-controlling intelligences arose first, followed by culture-based intelligences, then most recently the reflective intelligences (see Donald, 1993, for a similar conception).



The first-generation intelligences are built upon faculties that all animals have to be able to survive—to move through their environments, to find food and other resources, and to reproduce. By becoming intelligences, not just reflexes, these capabilities became under at least partial intentional control and furthermore, developed feedback for self-adapting learning.

The two most fundamental intelligences, then, would be bodily-kinesthetic and spatial intelligences, which process information related to movement and location of ourselves and other objects around us. A perhaps more controversial suggestion for a third fundamental intelligence would be musical intelligence. I do not suggest that the earliest humans sang, whistled, or played musical instruments, which is what comes to mind when we consider music today. Rather, I propose that the underlying basis for musical intelligence is rhythm. It is the intelligence that most fundamentally tracks time. It would be most likely that this time-tracking capability emerged as an intelligence later than spatial or bodily-kinesthetic, but it does complete the trifecta of basic abilities of movement, space, and time.

From the sense-based intelligences arose the second generation of cultural intelligences. Bodily-kinesthetic intelligence spawned the

interpersonal intelligence as humans distinguished what is outside me *and* coordinated with those others to form groups and work toward common goals. Spatial intelligence spawned naturalistic intelligence, which categorizes objects found in the environment around the person into bins, probably first physically and concretely (i.e., separating the edible from the inedible parts of harvested vegetables, concretely (i.e., putting the harvested vegetables into different storage arrangements), then eventually abstractly (i.e., desirable and undesirable characteristics of potential mates). Musical intelligence spawned linguistic and logical-mathematical intelligences. Spoken and written language are decidedly temporal as a person must speak, listen, and read sequentially. In addition, language has many musical features, such as intonation and rhythm. Logic is also sequential in its presentation in philosophy of premises, warrants, and conclusions, and its presentation in mathematics and computer science as sequences of AND, OR, and NOT statements that must be addressed in order. Furthermore, frequency, amplitude, and meter are fundamental musical properties. Conventional wisdom is that mathematics is the foundation by which music is studied, but it is likely that the properties of music were more "natural" and mathematics harnessed those properties into abstract concepts.

From the cultural intelligences evolved the most recent generation of personal intelligences: intrapersonal and existential. Intrapersonal intelligence arose from interpersonal intelligence once intrapersonal intelligence could harness the powers of more developed linguistic and logical-mathematical intelligences to be able to abstractly apply characteristics of other people to "I" or "me." Thus intrapersonal intelligence, I suggest, arose from a strong coupling of the cultural intelligences. This strong coupling of the cultural intelligences, filtered and perhaps directed by a strong intrapersonal intelligence, then, could spawn existential intelligence.

Existential intelligence would be the fourth generation. Yet, in some ways, its power lies in its ability to bring into awareness the meanings stemming from the abilities that the first-generation, sense-based intelligences provide us. The stoppage of movement, space, and time, at the extreme, is death. Even young children and other primates have a sense that death is important (Klass, personal communication, January 28, 2012). Existential intelligence brings to this vague sense the

powers of abstraction and imagination to give meaning, to make the vague feeling something that can be contemplated.

Although, as this essay hints, existential intelligence may still be "in the womb," not ready for its full debut into culture but "kicking" every once in a while to let us know it's there (thus, following Howard's convention, it's the 3-1/2 generation!). Of course, this section is speculation. I cannot prove an evolutionary progression theory because little direct evidence is available (although some scholars, e.g., Donald, 1993, have synthesized findings from a wide variety of other fields as indirect evidence). Change in brain *function* won't necessarily leave traces in brain structure: plasticity can be observed through changes in behaviors and fMRIs of patients with brain damage, but those tools were not available as measures during prehistoric (or even most of historical) time. Nor will changes in brain function leave forensic evidence in bones since the brain is soft tissue that decomposes. But current theory posits that the brain was "built up" over evolutionary time. The brain stem and cerebellum, which control bodily functions and movement including basic sensory inputs, are oldest. The limbic system, which undergirds memory and emotion, which are fundamental underpinnings of culture to associate and to remember and propagate shared understandings, emerged next. Finally, the cortex evolved. The cortex is where these more primitive sensory, motor, emotional/visceral, and rudimentary memory functions become "intelligent": the cortex areas associated with these functions allow us to process then respond, not just to instinctively react. The reflective, self-referential, judgmental, and imaginational functions are located in the more recently evolved cortical areas behind the forehead. Where, then, does existential intelligence reside? Recent neuroscientific studies suggest the anterior cingulate cortex (ACC) as a segue system between the limbic system and the prefrontal cortex (PFC). The ACC is where our values—emotion-based information coming from the limbic system—serve as cognitive standards, as information against which we can appraise experiences. This brain area has been associated with cognitive anticipation, decision-making, flexibility, empathy, cooperation, adaptive response, and reflection (Luu & Posner, 2003). People with lesioned ACCs do not understand the significance of events, thoughts, actions, or relationships (Allman et al., 2001).

The ACC sounds an "alarm" when an input is not what we expect—not only events that do not live up to our anticipations, but also outcomes that exceed what we predict. These mismatches can include when two conflicting goals arise at the same time, when we respond inappropriately for the given situation, and when we have no idea what should happen next (Inzlicht et al., 2009). Thus, this brain function ties to self-relevance within a larger context, as discussed above in the functions of existential intelligence. The ACC conveys not only valence of information but also its implications (Sharot et al., 2007). It interprets significance and can inhibit other parts of the brain from interacting, which can create a situation in which the brain's own spontaneous or abstracted information becomes primary over sensory input (Newberg & d'Aquili, 1999).

When life does not meet our expectations, the ACC's alarm can be uncomfortable. The ACC has been shown to process the emotional information or suffering associated with pain (Rainville et al., 1997). This alarm triggers anxiety as a signal we "need to think about it." The spindle-shaped neurons of the ACC, found only in the higher primates (including humans) so far, are posited to "have a role in the coordination that would be essential in developing the capacity to focus on difficult problems" (Allman et al., 2001). Those "difficult problems" are the calling card of existential intelligence. Furthermore, the ACC focuses mental effort when the task is not familiar or practiced, i.e., when uncertainty is high. As the task becomes overlearned and automatic, the ACC is not activated (Allman et al., 2001).

Reduced anxiety is associated with reduced ACC activation. For example, religious conviction has been associated with less firing of the ACC in response to errors and with fewer errors made by the individual (Inzlicht et al., 2009). These findings were interpreted in existential terms: "we suggest that religious conviction reduces the incidence of uncertainty, conflict, and error because it provides meaning systems that successfully accommodate experience, results in zealous goal pursuit that narrows attention away from discrepancy, or provides rigid predictions that assimilate inconsistent observations." When the job of the existential intelligence—to make meaning—is done, the ACC calms down.

Thinking—especially thinking about "big questions"—is expensive. It takes considerable effort and, thus, glucose. Glucose use tends to be conserved by the body, as much as possible, to protect the brain. As disease or trauma assaults a human organism, the organism will go to great lengths to make sure that glucose goes to the most basic functions of the brain—to stay alive, then to sense, then to move. Thus, thinking uses precious glucose, and the question arises: how much can I afford to engage in it? For example, studies of bereavement find that if meaning is to be made of unexpected deaths of loved ones, it usually occurs within the first few weeks after the shock or it doesn't happen at all (see Park, 2010, for review).

Another question comes to mind: is existential thinking worth the cost? Perhaps that is one reason why, as recent studies have proposed (e.g., Izuma & Adolphs, 2011; Sharot et al., 2007), the brain seems to have a bias, also centered in the ACC, toward optimism. If we believe things will work out well, and ignore or reframe events that don't, we can avoid the anxiety that sets off an alarm to think and use precious glucose. Why address existential problems at all? Recent studies suggest that this optimism bias is a sign of the ACC differentially tracking positive and negative information, as assessed by emotions, autobiography, and motivation toward goals, then regulating how other parts of the brain will respond. Thus, the ACC guards the existential intelligence and may only allow its use when resources are not needed for other brain functions (including, perhaps, when the brain realizes the body is dying and doesn't allocate cognitive resources to motion, etc.), or when there is no other option (such as emergencies).

These findings, however, set up a conflict. Existential intelligence—addressing the "big questions" of life—requires a safety net of resources for the brain before the ACC may neurologically "allow" the existential intelligence to operate. Yet, existential intelligence is called for in just those situations when the brain may be stressed—trauma, near-death, uncertain situations—that activate the ACC to signal the alarm. Is this a catch-22 for existential intelligence? Is it a sequencing issue: which part of the ACC fires first determines whether existential intelligence may be utilized? Is it a hierarchical issue: different parts of the ACC hold varying levels of "power" to assess and regulate the other ACC parts' functioning? Is it a threshold issue: the ACC determines what happens based on

summing, averaging, or multiplying the informational inputs it receives, then decides? These questions require further investigation. The point is: if this speculative theory is true, the evolutionary neurology of existential intelligence may not be sufficiently worked out for it to be a stable capacity. Then, neurologically speaking, it is a "1/2" intelligence, only a partially formed biopsychological potential.

Is Existential Intelligence Valued in Modern Cultures?

Now I turn to the other component of the intelligence definition: cultural value. What would it look like when a newly evolving intelligence meets culture? Would we embrace it immediately? Not likely. Early users of linguistic or logical-mathematical intelligences may have been accused of laziness for using effort for acts that "don't do anything useful" for the group because they don't immediately bring in more food. Similarly, early users of intrapersonal intelligence probably were considered selfish "navel-gazers."

Psychologically, we don't like uncertainty or things beyond our control or understanding, and we will work hard to assimilate the strange behavior stemming from the new intelligence into our current mental models and criticizing the novelty. Subjective sensations of transcendence or epiphanies are usually explained away through current scientific findings or theories, religious tenets, or, if all else fails, through psychological madness. Sociologically, the new intelligence would be a perturbation or disturbance, so first it would be shunned then marginalized as an error, eccentricity, or fad. It wouldn't be pretty: think about the weird noises and squawks that probably heralded the birth of linguistic intelligence (revisited each time a new baby learns to speak), or the out-of-tune cacophony of proto-music. New intelligences, at best, will be found in small pockets of performance until they are shown to be economically viable and perhaps slightly advantageous for gaining resources.

Then, finally, politically, if someone with power does see the new intelligence as valuable, it is controlled, regulated, standardized (Scott, 1999). No doubt, certainty, conformity, and standardization can make life easier, but they also can make us complacent. Complacency breeds disuse of the intelligence, as its outputs are increasingly institutionalized. The implications of this institutionalizing process are

that, based on brain plasticity and other more pressing environmental concerns arising, the mind may decide to put the intelligence's underlying gray matter to a new use. Thus, such maneuvers over the long term may decrease a society's capacity for cultivation of existential intelligence in its population. Although this process is beneficial in the short term, it may inhibit existential intelligence from ever fully emerging as an intelligence for daily use.

Perhaps only recently has existential intelligence had the opportunity to be even mildly valued. When would the practical importance of this new intelligence arise? Existential intelligence would not be needed in prehistoric times and probably even in hunter-gatherer societies where people had to spend most of their time finding and collecting food. Then, the three most fundamental intelligences would be most supported. As individuals started to morph random sounds into words that referred and signified, linguistic intelligence would be supported. As individuals realized that they could extend the basic counting they could do on their fingers or toes or by collecting concrete objects into piles, logical-mathematical and, eventually, naturalistic intelligences would be supported.

As these meaningful linguistic utterances and logical-mathematical calculations could be used to coordinate individuals into community projects with results far exceeding what one person could do alone, interpersonal intelligence would be supported. As interpersonal intelligence blossomed, yet conflicts or differences arose, intrapersonal intelligence would blossom. However, since a proto-intrapersonal intelligence might create turmoil in the joint efforts to achieve collective goals if each individual focused only on one's self, it is unlikely that intrapersonal intelligence was culturally supported until cultures were sufficiently developed enough to have economies of abundance. In the same vein of thinking, existential intelligence might arise when there was sufficient abundance of resources and time for individuals to consider the "bigger questions" beyond survival of community and self.

Even now, in the early 21st century, we tend not to value existential intelligence. It takes a lot of effort, and we have few individual psychological tools to effectively handle the anxiety that the anterior cingulate cortex uses as a signal to start its engines. It is easier to fall back on the environment for guidance (Bednar & Page, 2007; Shepherd

& Kay, 2012). In our case, that environmental support comes in the form of cultural norms and social institutions that provide rules for behavior. Institutions abate our anxieties (Jaques, 1954; Kay et al., 2008; Menzies-Lyth, 1988; van den Bos, 2009). Thus, we use institutions to structure experiences so they seem more stable and comprehensible. Furthermore, we remove into institutions those events that might trigger an existential crisis: for example, birth, disease, and death are placed in and sterilized by hospitals; dramas and traumas are removed from mainstream social circles of friends and family into psychotherapy, counseling, and now pharmaceuticals.

In addition, today's central, most prestigious institutions and domains in our culture don't value or cultivate existential intelligence. They foster increasing information and consumption, which can overwhelm contemplation and reflection, just by wasting mental resources as the other intelligences are trying to process the abundance. Business barrages consumers with advertisements to focus them on immediate gratification. Education bombards students with factoids to pass standardized tests. The trades and retail service providers concentrate on solving the immediate need—a haircut or a leaky toilet—albeit after providing an array of pseudo-choices, e.g., the latest hairstyles or brands of toilet floats. Thus, the majority in our culture is not likely to think existentially on a regular basis.

Still, as mentioned earlier, there have been elites in existential intelligence throughout recorded history. In science, for example, likely candidates are Newton, who invented the calculus to address limits; Aryabhata, the Indian astronomer to which the invention of the number zero is currently ascribed; and Georges Lemaître, a Belgian physicist and priest who suggested the universe was expanding and launched the big bang theory. In his studies of Gandhi and Luther, Erikson (1962, 1970) proposed the notion of "cultural innovators," unusual individuals with "high intelligence" whose psychological concerns matched the cultural questions of the time, such as Luther's father issues being worked out through a more direct relationship with God the Father and a reduction in the fatherly influence of the Catholic Church's Pope (Klass, personal communication, January 22, 2012).

Many of these elite thought leaders—mostly recognized in philosophy, religion, and science—were considered, in their time, as

deviants and either isolated (as monks were in monasteries), punished (as Copernicus was), killed (as Socrates was), or shamed (which Darwin was afraid of). If the existential thinker happened to find a way to stay in society, eventually he or she may be revered as special for seeing what others could not. A young adult dystopian novel, *The Giver* (Lowry, 1994), depicts what can happen in such a "chosen one" culture where a single elite person is selected to use existential intelligence and engage the "cares of the world" so that everyone else can be "happy." Even if the elite survives, it can take considerable time for the rest of the culture to catch up with the existential thinker—to overcome the inertias or the biases of the status quo—and be declared a "genius" or a "saint" for understanding what others previously could not.

Nevertheless, the *possibility* exists that existential intelligence could be valued and possibly increasing in value within a contemporary culture. Domains might be considered a way culture controls the aims and deployment of intelligences through articulating and reinforcing values as well as structuring content (Bourdieu & Passeron, 1990). There are domains where, intuitively, we might expect existential intelligence to be more useful and possibly more often used: besides religion, there is medicine, law, cosmogony and cosmology, especially as new technologies put our culture "at the limit." A few further possibilities include the growing domains around "seed ideas" of systems design and sustainability. These domains do not guarantee that all practitioners have strong existential intelligence: there can be technicians in these domains-of-promise that don't address larger questions, such as priests who focus only on the delivery of their sermons or scientists who focus on following procedures for experiment replication. But these domains could create environments that increase existential intelligence's value. They can serve as incubators to support the use of existential intelligence for a sufficient time so that it could be recognized and survive in the broader culture.

What if existential intelligence is born during our lifetimes? Could this century be the time when evolution and culture, biology, and environment, interact to increase the incidence and prevalence of existential intelligence in the population—rather than it being deviant or marginal? Could we recognize it as it happens? Hard to tell. After all, humans are not skillful at sensitivity (Perkins et al., 2000) or at

prediction (Gigerenzer, 1994). Perhaps we can only perceive—and thus fully conceive and culturally nurture—an intelligence that has become sufficiently pervasive as to be considered significant. These phenomena tend to come into focus only in the rearview mirror; we look back to see what happened.

With our current culture's emphasis on science as the most prestigious domain for determining knowledge, and science's increasing emphasis on numbers and statistics as arbiters of knowledge, "significant" refers as much to statistical significance as to subjective and collective significance. Then, we must consider the requirements of the arbiter to determine the extent of the construct we deem relevant to perceive and measure—in our case, existential intelligence. Given empirical science's methods of breaking apart psychological phenomena into constructs and factors rather than understanding how the mind makes gestalts, perhaps we can't scientifically know how existential intelligence functions. As Klass pointed out, "Dissection of the animal does not tell us about the living" (personal communication, January 28, 2012). Then again, science history is replete with stories of the development of new tools to expand science's capabilities. Just as optics and telescopes opened the heavens to scientific inspection, so too might as-yet-undeveloped methods open existential intelligence to further empirical inquiry.

Different domains have different conditions that must be met before its tools and practices can be utilized and it can put an intelligence to work. These differences can be conceived of as a cultural innovation curve. An innovation curve concerns the diffusion of an innovation through a population (Rogers, 1962/1983) using an S-shaped logistic curve. A small number of "early adopters" are open to novel experiences and have few barriers to using something unfamiliar. The "majority" of people wait until a sufficient number of people they know use the innovation; that is, they follow the crowd through social learning. A few "laggards" do not adopt the innovation until they *must* because it has become the new norm (e.g., when television or cell phones or Facebook become The Way to communicate, everyone needs them).

This curve can be applied to how domains and cultures adopt an innovation—in this case, the newly evolving cognitive capacity of existential intelligence. As venues for human experience and

interpretation, art needs media, philosophy needs ideas, and business needs markets. These requirements can arise spontaneously and be cultivated or exploited quickly by anyone with the sensitivity to seize the opportunity. We might say that these domains can be found on the early parts of the cultural innovation curve. However, psychology, where multiple intelligences theory and its criteria reside, requires large sample sizes because of its current statistical emphasis. Established educational systems, where multiple intelligences theory has been most often applied, require large populations. These requirements place psychology and education at the *end* of the cultural innovation curve—after the majority of cultural members have "gotten with what's happening." Only after the masses have access to the innovation—existential intelligence—can psychology and education use their tools. They need the majority to already be using existential intelligence in sufficient numbers to be able to test and/or experiment on them. Because of their domains' statistical constraints for large sample sizes, these domains may be laggards in valuing and using existential intelligence. In effect, current psychology and education domains may tend to "find out what happened" long after the innovation first arose.

Even my back-and-forth in this section of the essay—existential intelligence may be rising or not, valued or thwarted, nurtured or punished—supports my argument that our culture has not "made up its mind" about existential intelligence. Perhaps we are actually "1/2-way there."

Conclusion: What Now?

It is difficult to say whether existential intelligence's "1/2-ness" derives from evolutionary slowness or cultural shunning or both. If existential intelligence is an evolutionarily recent emergence, there may be little record of it, especially if the evolutionary change is functional (brain plasticity) rather than structural (brain anatomy) or genetic. If existential intelligence is thwarted by lack of cultural interest, and there are no perceived problems to solve, why try to develop it? The other criteria for an intelligence—psychometric tests, experiments, developmental pathways—would be nonexistent or scarce, because they would be considered not needed and there would be insufficient samples of individuals with the intelligence to run studies (although some

scholars have tried, e.g., Klaassen & McDonald, 2002; Shearer, n.d.; Tirri & Nokelainen, 2008).

Is existential intelligence something we *want* to nurture? If so, how do we increase sensitivity to and use of the "unknown"—contemplating nothingness, focusing on the limits of the infinite and infinitesimal, exploring what may exist at and beyond the boundaries of the senses and the intellect? A full curriculum is beyond the scope of this essay. However, one option is a curriculum of practicing and developing expertise in "experiencing" rather than of acquiring knowledge. It may be worthwhile to start with a focus on emotions, not as a counterpoint to cognition but as a necessary input component and processor of cognition. Perhaps we could return to the existentialist philosophers and psychologists from 100 years ago and synthesizing their ideas with the neuroscientific connection between existential intelligence and anterior cingulated cortex pathways. This synthesis suggests reframing the cognitive emotions—confusion, frustration, surprise (Scheffler, 1977)—not as "negative" emotions to fear as signals of our "stupidity," but as signals that "we're on to something important." Similarly, cultivating awe (Keltner & Haidt, 2003) and curiosity (Kashdan & Steger, 2007; Schmidhuber, 2006) as appraisals and generators of our own ever-updating mental models. However, we should not "sugar-coat" existential intelligence as the new "fun" intelligence. The work it does is important, but not always pleasant. But then, exercise is not pleasant; it is exertion. Yet, many people engage in it willingly as sports. Existential intelligence deals with what most cultures posit to be unpleasant situations, such as death. Yet, these situations can still be *good* and *fruitful*. Death of a loved one should not necessarily be "gotten over" and the experience of it pushed aside. Rather, it provides just such a venue for existential intelligence to be used and strengthened. Sorrow and solace are important experiences that may be one of, as William James said, "the only openers of our eyes to the deepest levels of truth" (Klass, 2012; quote in James, 1902/1916, p. 160).

This curricular approach might require an epistemology that is not only post-industrial (beyond the need for standardization) but also post-knowledge (beyond the need for agreement) toward an epistemology of tolerance and diversity (the need for weaving of differing experiential perspectives). Existential intelligence is most often anchored to the

subjective experience and meaning-making with large issues. It takes a *particular* perspective, not a universal perspective. A standardized test for it seems silly. It is dynamic and relational, not reductionist. Thus, steering clear of co-optation and control in favor of amplification and coordination may be a start.

Then again, maybe we shouldn't think too much. Existential intelligence is the elite intellectual's mental tool par excellence. Perhaps evolution and culture are right where they should be—with built-in brakes to keep our intellectual capacities from entering an infinite loop, spinning out of control, going mad. Since existential intelligence need not be limited to processing sensory or motor information, but can take any bit of information from any source, including perhaps spontaneously concocting something. It can find or devise patterns ad infinitum. Where does it stop? Then again, how can we place a stopping point—a limit—on an intelligence *dedicated* to contemplating the limitless? It's a conundrum, a difficult problem for the existential intelligence to ponder. Anyone have 1/2 a mind to think about it further?

References

Allman, J. M., Hakeem, A., Erwin, J. M., Nimchinsky, E., & Hof, P. (2001). The anterior cingulate cortex: The evolution of an interface between emotion and cognition. *Annals New York Academy of Sciences*, 107-117.

Baumeister, R. F., & Tierney, J. (2011). *Willpower: Rediscovering the greatest human strength*. New York: Penguin Press.

Bednar, J., & Page, S. (2007). Can game(s) theory explain culture? *Rationality and Society, 19*(1), 65–97.

Borba, M. (2002). *Building moral intelligence: The seven essential virtues that teach kids to do the right thing*. San Francisco: Jossey-Bass.

Bourdieu, P., & Passeron, J. C. (1990). *Reproduction in education, society, and culture*. Thousand Oaks, CA: Sage.

Chen, J-Q., Moran, S., & Gardner, H. (Eds.). (2009). *Multiple intelligences around the world*. San Francisco: Jossey-Bass.

Coles, R. (1998). *The moral intelligence of children*. New York: Plume.

Crowell, S. (2010). Existentialism. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy.* http://plato.stanford.edu/archives/win2010/entries/existentialism/. Accessed January 10, 2012.

Csikszentmihalyi, M. (1991). *Flow: The psychology of optimal experience*. New York: Harper Perennial.

Damasio, A. (1994). *Descartes' error: Emotion, reason and the human brain*. New York: G. P. Putnam and Sons.

DeJong, B. M. (2011). Neurology of widely embedded free will. *Cortex, 47*(10), 1160-1165.

Dewey, J. (1910/1982). *How we think*. Lexington, MA: Heath.

Donald, M. (1993). Précis of Origins of the Modern Mind. *Behavioral and Brain Sciences, 16*(4), 737-791.

Erikson, E. (1962). *Young man Luther*. New York: Norton.

Erikson, E. (1970). *Gandhi's truth*. New York: Norton.

Frankl, V. (1959). *Man's search for meaning*. Boston: Beacon Press.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1999). *Intelligence reframed. Multiple intelligences for the 21st century.* New York: BasicBooks.

Gardner, H. (2006). *Multiple intelligences: New horizons*. New York: BasicBooks.

Gigerenzer, G. (1994). Why the distinction between single-event probabilities and frequencies is important for psychology (and vice versa). In G. Wright & P. Ayton (Eds.), *Subjective probability* (pp. 129-161). Oxford, England: John Wiley & Sons.

Goleman, D. (1995). *Emotional intelligence*. New York: Bantam Books.

Inzlicht, M., McGregor, I., Hirsh, J. B., & Nash, K. (2009). Neural markers of religious conviction. *Psychological Science, 20*(3), 385-392.

Izuma, K., & Adolphs, R. (2011). The brain's rose-colored glasses. *Nature Neuroscience, 14*(11), 1355-1366.

James, W. (1902/1916). *The varieties of religious experience,* New York: Longmans, Green.

Jaques, E. (1954). Social systems as defense against persecutory and depressive anxiety. In M. Klein, P. Heimann, & R.E. Money-Kyrle (Eds.), *New directions in psycho-analysis* (pp. 478-498). New York: BasicBooks.

Kashdan, T. B., & Steger, M. F. (2007). Curiosity and pathways to well-being and meaning in life: Traits, states, and everyday behaviors. *Motivation & Emotion, 31*, 159-173.

Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., & Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology, 95*(1), 18-35.

Kegan, R. (1982). *The evolving self*. Cambridge, MA: Harvard University Press.

Keller, H. (2003). *The story of my life*. New York: W.W. Norton & Company.

Keltner, D., & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cognition & Emotion, 17*(2), 297-314.

Klaassen, D.W., & McDonald, M.J. (2002). Quest and identity development: Re-examining pathways for existential search. *The International Journal for the Psychology of Religion, 12*(3), 189-200.

Klass, D. (2012, in press). Sorrow and solace: Neglected areas in bereavement research. *Death Studies*.

Lowry, L. (1994). *The giver*. New York: Laurel Leaf.

Luu, P., & Posner, M. I. (2003). Anterior cingulated cortex regulation of sympathetic activity. *Brain, 126*(10), 2119-2120.

Menzies-Lyth, I. (1988). *Containing anxiety in institutions: Selected essays*. London: Free Association Books.

Moran, S., & John-Steiner, V. (2003). Creativity in the making: Vygotsky's contribution to the dialectic of creativity and development. In K. Sawyer et al., *Creativity and development* (pp. 61-90). New York: Oxford University Press.

Mucha, R. T. (2009). *Aesthetic intelligence: Reclaim the power of your senses*. North Charleston, SC: BookSurge Publishing.

Newberg, A.B., & d'Aquili, E.G. (1999). The neuropsychology of spiritual experience. In H.G. Koenig (Ed.), *Handbook of religion and mental health* (pp. 76-94). San Diego: Academic Press.

Olivares, O. J. (2010). Meaning making, uncertainty reduction, and the functions of autobiographical memory: A relational framework. *Review of General Psychology, 14*(3), 204–211.

Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin, 136*(2), 257–301.

Perkins, D., Tishman, S., Ritchhart, R., Donis, K., & Andrade, A. (2000). Intelligence in the wild: A dispositional view of intellectual traits. *Educational Psychology Review, 12*(3), 269-293.

Rainville, P., Duncan, G. H., Price, D. D., Carrier, B., & Bushness, C. (1997). Pain affect encoded in human anterior cingulate but not somatosensory cortex. *Science, 27*, 968-971.

Rogers, E. M. (1962/1983). *Diffusion of innovations, 3rd ed*. New York: Free Press.

Scheffler, I. (1977). In praise of the cognitive emotions. *Teachers College Record, 79*, 171-186.

Schmidhuber, J. (2006). Developmental robotics, optimal artificial curiosity, creativity, music and the fine arts. *Connection Science, 18*(2), 173-187.

Scott, J. C. (1999). *Seeing like a state: How certain schemes to improve the human condition have failed.* New Haven, CT: Yale University Press.

Sharot, T., Riccardi, A. M., Raio, C. M., & Phelps, E. A. (2007). Neural mechanisms mediating optimism bias. *Nature, 405*, 102-1055.

Shearer, B. (n.d.) Development and validation of a scale for existential thinking. www.miresearch.org/files/Existential_AERA_Proposal-05.doc. Accessed January 20, 2012.

Shepherd, S., & Kay, A C. (2012). One the perpetuation of ignorance: System dependence, system justification, and the motivated avoidance of sociopolitical information. *Journal of Personality and Social Psychology, 102*(2), 264-280.

Strang, S., & Strang, P. (2001). Spiritual thoughts, coping and 'sense of coherence' in brain tumour patients and their spouses. *Palliative Medicine, 15*, 127-134.

Tirri, K., & Nokelainen, P. (2008). Identification of multiple intelligences with the Multiple Intelligence Profiling Questionnaire III. *Psychology Science, 50*(2), 206-221.

Van den Bos, K. (2009). Making sense of life: The existential self trying to deal with personal uncertainty. *Psychological Inquiry, 20*(4), 197-217.

Vaughn, F. (2002). What is spiritual intelligence? *Journal of Humanistic Psychology, 42*, 16-33.

Von Hippel, W., & Trivers, R. (2011). The evolution and psychology of self-deception. *Behavioral and Brain Sciences, 34*(1), 1-16.

Wong, P. T. P. (2012). *The human quest for meaning: Theories, research, and applications.* New York: Routledge.

Howard's Response to Seana Moran

I knew you first, Seana, as a student at the Harvard Graduate School of Education. You came with a glowing recommendation from Vera John-Steiner, a much respected and beloved colleague, and that meant a lot to me. You were never among the more talkative students (there is, in my experience, almost no correlation between how much a student talks and how much of what is said is worth hearing!), but I could tell from your occasional remarks and your writings that you were unusually thoughtful and unusually original—two momentous pluses for doctoral students!

It wasn't clear to me in which scholarly direction you were headed, and I don't know that it was all that clear to you; but I was delighted when, for your dissertation, you proposed an original topic to be approached with an original method. Using the interviews of numerous well-regarded writers from The Paris Review as a means of teasing out three different varieties of creative writers was a brilliant stroke. It has certainly changed my view of what it means to be thought "creative" in the present hour and "creative" over the long run. You have illuminated the remarkably different ways in which writers may draw on their personal lives, their preoccupation with language, and the features that the current "field-in-power" seems to cherish. I suspect that if we look at other areas, particularly in the arts, we would find a similar mix of means and motivations.

As part of your involvement with the Good Work enterprise, you've had the opportunity to work with, and to watch, several of us at work, most notably spending three years as a fellow with Bill Damon. You've done an excellent job of mastering our own ideas, developing them further, and, when appropriate, discerning weaknesses and gaps and suggesting how one might go further. (For extra credit, you agreed to co-edit the book *Multiple Intelligences around the World* and that task, along with several papers that we worked on together, makes you a maven of MI theory, in both its strengths as well as its lacunae.)

A student should take what she can from her teacher and mentors (of course, avoiding the features of the "anti-mentor") and then move on to her own work. You were always an original thinker, but it's been a

special pleasure for me to see you carve out your own research agenda, ranging from the study of wisdom to the ways in which different educational systems inculcate or fail to inculcate a sense of purpose and other virtues.

In your contribution to this volume, you return to themes from my own work: what does it mean to be "an intelligence," on what criteria should we be adding (or not adding) further intelligences, and can we make sense of the curious phrase "half an intelligence"? In candor (and this is not something that I have said very often with respect to MI theory), you have thought more deeply about these issues than I have. The least that I can do in return is to react to your formulation, sophomoric though that reaction may be.

As you know, my invocation of the "half intelligence" (around 1999) was in part a wisecrack. I wanted to indicate that while there may well be an existential intelligence, I had not yet found that the candidate intelligence adequately met my 8 criteria. Perhaps only half adequately, hence 8 ½. (But I also had in mind Federico Fellini's wild yet well regarded movie of 1963 called "8 ½." Obviously with the passage of time, the cinematic allusion will have less and less meaning.)

But, Seana, you decided to take the 1/2 seriously and to ponder the possibility and nature of existential intelligence. In particular, you've pondered: 1) whether the candidate intelligence has actually evolved fully—as, say linguistic and spatial intelligence have evolved; and 2) whether there are cultural needs and supports for this intelligence, as there are for, say, bodily-kinesthetic intelligence or interpersonal intelligence.

I find your speculative essay (and it is admittedly speculative) convincing. Just as there is no reason to think that all animals appeared on the scene at the same time, it's quite plausible that various intelligences emerged at different points in pre-homo sapiens or proto-homo sapiens evolution. I've always felt that intrapersonal intelligence was the last of the "big 8," and indeed I've been sympathetic to Julian Jaynes' argument that before Homer of the Odyssey, individual Greeks (e.g. in the time of the Iliad) did not have a sense of self in the sense that nearly all human beings do today. (Jaynes' remarkable book is The Origin of Consciousness in the Breakdown of the Bicameral Mind.)

Turning to your second line of argument, it is also intriguing to think that there may be human potentials that prove to be problematic from a cultural point of view. Let's take, as a point of departure, your gritty definition of "existential intelligence": the intelligence that seeks to make meaning out of life, particularly at times of uncertainty, anxiety, or rapid transformation. There are many reasons why cultures should resist those destabilizing moments; and, since those crises cannot be totally avoided, over time cultures seek (sometimes deliberately) to instill an established religion (or set of deep beliefs) that are widely, almost reflexively, held. It may simply be too chaotic for each person, or for every small group of individuals, to come up with his/her own web of meaning. We admire and honor Viktor Frankl, one of the pillars of existential intelligence, for the philosophy that he developed in a concentration camp; but we certainly don't want most individuals to have to undergo that extreme circumstance.

One of my reasons for the "half" was my uncertainty about whether there were convincing neurological underpinnings for an existential intelligence. You nominate the anterior cingulate cortex (ACC) as essential for the exercise of the intelligence, and you may well be right. But you are quite cautious in indicating when, and to what extent, the ACC might be activated to deal with "the world of ultimate ideas."

I tend to agree with you that those of us in the academy are most likely to see the appeal of an existential, meaning-making intelligence. Isn't that what a liberal arts education is supposed to stimulate? Aren't those the works that we honor and at our most ambitious try to emulate? And isn't that what "the App Generation" may be trying to avoid by preferring a ready-made technological solution to everything? And yet, paradoxically, the very threat of loss of meaning, globally, may end up giving a final positive evolutionary nudge to the emergence of a full-blown existential intelligence.

One final thought. In addition to having devoted an admirable amount of thought to existential intelligence, your essay is a model of how, in the future, one should think more generally about candidate intelligences. And so, within the ambit of this Festschrift, I invite you and other readers to consider the "half" case for existential intelligence, in light of the arguments for "teaching intelligence," the focus of Sidney Strauss' fine essay.

Reality, Relationships, and Reflexivity: Innovations in Learning

Geoff Mulgan

I first came across Howard Gardner when he accepted an invitation to speak on political leadership in London in 1995. The arguments he made about storytelling had an immediate impact on a small band of politicians and advisers, and later shaped my thinking about strategy, which is at its best as much about narrative as it is about analysis.[1] But his main influence on me has come through his writings on learning, and many of the things I've been involved in since then have drawn both directly and indirectly on the constellation of his ideas, from MI to mastery of disciplines, 'GoodWork' to the integration of purpose and ethics into schooling.

Like many I was brought up in the backwash of the three R's—reading, writing and arithmetic—the misspelled mantra that mutated into late 20th century tests and PISA scores. Even in an era on the verge of reliable voice recognition systems, when electronic calculators already feel like antiques, the three Rs still have a significant impact on life chances. But here I want to mention three other Rs that have helped me think about what comes after the mastery of literacy and maths: learning for real; learning that's embedded in relationships; and learning that is reflexive.

I first grasped their importance at a tangent. When I was at university I worked in parallel as a door-to-door salesman of encyclopedias for a U.S. company. Tramping the streets on rainy nights was often dispiriting. Most people didn't answer the door at all and the great majority who did were less than keen to talk to me. A small minority did invite me in, and with them the priority was to talk about their children and education for as long as possible without mentioning the dread word encyclopedia. Then, almost imperceptibly, you were

[1] G. Mulgan, *The Art of Public Strategy*, Oxford University Press, 2009.

meant to steer the conversation to the indisputable conclusion that their children's future rested entirely on their willingness to buy the product.

I was never very good at it, and even when I did manage to persuade people to sign the contract a fair proportion were rejected by the credit agencies. But what struck me most, both at the time and in retrospect, was that I felt that I was learning as much in my time on the streets as I learned in the lecture halls of the prestigious university I was attending. I learned how to interact with people, about the nature of the society I lived in, and about the dynamics of families. I saw the intimate home life of Jehovah's Witnesses and Shiite Muslims, bankers and welders. But I also learned a craft.

The reasons are mirrored in many other compelling learning experiences. First, it was for real. My test was not an exam paper or pleasing a teacher. It was very clear if I was succeeding or not. What John Hattie calls 'visible learning' was very present. Second, I learned mainly as an apprentice, first watching and then working with a much more experienced salesman, and finally being coached by them, which also meant continuous feedback. Apprenticeship has a place far beyond the mainly manual jobs where it still survives—and it's striking that more than half of all American Nobel Prize winners had worked as graduate students, postdocs, or junior colleagues of other Nobel laureates.[2] Finally my job was to create a relationship with people—not just to make a rational argument about why their children's future would be harmed if they failed to commit a sum of money equal to a pint of milk a day. The job of selling encyclopedias was very far from being 'good work'. Most of the people doing it were quite cynical about their task. Yet it was, nevertheless, not bad as a model of learning, and rather more like the natural learning of children in daily life; whereas the learning at university was artificial and abstract. There are clearly many successful modes of learning: I often learn most lying in a hammock reading a book. But a thriving education system needs to make the most of all the ways in which we learn naturally, and often many of these ways go unused.

A few years later I started applying these lessons to practical innovation. In the early 1990s I spent a lot of time around small firms,

[2] Robert Kanigel, *Apprentice to Genius*, John Hopkins University Press, 1993.

factories, and offices, and saw that although a handful were offering learning opportunities to their staff (from Spanish courses to engineering classes), the great majority didn't. Workplaces were not places of learning—indeed learning was often seen as a distraction from the job. Apprenticeships were fast disappearing under the onslaught of de-industrialisation. I came up with the idea of a University for Industry that would use satellite TV and online networks (this was a couple of years before the internet went live) to deliver a range of courses to the workplace; some a minute long, others a few hours, and others still offering qualifications over many months. The UfI was conceived as a platform not a deliverer of training, usually working with onsite trainers or coaches. The more that the lessons could be integrated into working life, and applied quickly, the better. In the vision, too, was a platform that could support multiple intelligences rather than privileging logical-analytical intelligence.

The UfI was announced in a speech by Gordon Brown (who later became Prime Minister) but took a few years to gestate. It was finally launched in the late 1990s, renamed Learndirect, and gained many millions of users. In 2011 the recently elected government in the UK decided to sell it off (for £50m). I'm still not sure if it was a success, in that it happened and broadly worked, or a failure in that it did little to change the cultures of the great majority of workplaces. But I remain convinced of the need for new techniques to mobilise learning at work, and would love to see employers assessed according to whether time at work enhances their employee's intelligences or diminishes it.

During the late 1990s and 2000s I worked in a policy role in government concerned with social policy, and later with domestic strategy for everything from energy and crime to migration and technology. (I had various roles in the UK government including head of the strategy unit and head of policy in the Prime Minister's office.) I tried to persuade my bosses of the virtues of the ideas Howard Gardner had promoted. But a much narrower and more utilitarian view of education was in the ascendant in the UK, justified by the lamentable state of many schools. If they couldn't even teach maths and literacy, what hope would they have of mastering ethics or creativity? As a result I played relatively little role in education policy. However, in the mid 2000s I moved from working top down in a policy role to working bottom up in a foundation

based in a poor area of east London. The Young Foundation was created out of the legacy of Michael Young, who had been one of the pioneers of social entrepreneurship from the 1950s onwards. Much of his work focused on new approaches to learning: the Open University, the National Extension College, the University of the Third Age, Summer Universities, and programmes for extended schooling, all aimed to extend learning to new places, changing the character of learning and integrating it more into life. As a pupil of Dartington School, a notoriously liberal institution, Young himself was a profound believer in a rounded vision of learning that should encompass the arts as well as formal knowledge, and that should inspire the confidence that comes from doing things—building buildings, cooking food or starting projects.

When the Young Foundation was launched in 2006 we asked what was the most pressing need for innovation in education. The answer was in some respects obvious. Despite a big increase in investment in schools, and a tidal wave of targets and inspections, large minorities were still not thriving; many teenagers were simply not turning up; and the mismatch between what schools provided and what life and work seemed to need was as wide as ever. A survey that year for Scottish Enterprise showed that when 20,000 employers were asked what they most lacked from new recruits a lack of oral or communication skills was the most common response (57 percent), along with customer handling, problem solving, and team working skills (52 percent, 50 percent and 43 percent respectively). By contrast written communication, literacy skills, and using numbers (30 percent, 29 percent and 24 percent respectively) were still important gaps in jobs applicants, but they came bottom of the list in terms of priorities, almost the opposite ranking to government policy.

Any conversation with employers confirmed their dissatisfaction with the character of school leavers who were not well prepared for more knowledge intensive service industries requiring collaboration, team work and communication. Stronger peer culture influences and less social models of entertainment, meant many young people were being brought up without much sense of how work environments operate. The legacy of a generation of high unemployment meant many children had been brought up in families outside the disciplines of work. The teenage

labour market had largely disappeared along with traditional apprenticeships.

Observation of how teenagers learned showed that most had no shortage of motivation. But they wanted to learn things that had a real application, and many were congenitally ill-suited to sitting for hours on end in a classroom. So it felt timely to try something new. Hundreds of conversations with teenagers, teachers, and others led to a new idea, or rather a synthesis of many old and existing ideas. We decided to call the idea a Studio School, since we were in effect going back to the renaissance ideal of integrating work and learning. We also decided to draw on good examples from around the world, and were particularly inspired by models we found in Denmark, Paraguay, and Australia. We wanted to create a school that would put non-cognitive skills at the heart of the curriculum rather than on the margins; that ran as much of the curriculum as possible through practical, real-life projects, and that would mix ages, and combine teenagers and adults.

Specifically we designed the schools to focus on 14-19 year olds; to remain quite small (300–500 pupils) so as to retain a distinctive ethos; to pursue specialisms (such as healthcare or media) while ensuring general skills. Our intention was that they would be more like a traditional workshop or studio (that is to say combining practical activity and learning) than the classic classroom. So a school might incorporate businesses providing cafes or decorating services, fashion or finance, and it would embed in their pupils right from the start the ethos of serving others, understanding their needs, responding quickly and directly.

As always, ideas take some time to gestate. We spent several years refining the model and testing variants. Field trials generated outstandingly good academic results (which helped persuade ministers to back the idea). We also experimented with variants for older age groups: short courses for unemployed teenagers; support for unemployed graduates; and new kinds of apprenticeship. All drew on the same pool of insights into the nature of learning—that it's best done with others, for real, and with intensive feedback and support.

We were fortunate in finding supporters and Studio Schools became a reality with half a dozen opening each year at the beginning of the 2010s, a dozen announced in 2012, with 50 schools now open or set

to open in 2014 in the UK with advanced plans to open schools in some other countries, all sharing in a very carefully designed set of curriculum plans and management approaches.

Teenagers themselves, and their parents, quickly understood what Studio Schools were for and saw them as an attractive alternative. But throughout their gestation we wrestled with the language. The skills we were concerned with are called core skills, employability skills, and soft skills, yet they are not in any meaningful sense more core than, say literacy and numeracy; they are not particularly related to employability (they are just as important for daily life) and they are not in any meaningful sense soft. Howard Gardner's work on the 8 or 9 key intelligences which we are born with to different degrees, and which schools and training institutions both cultivate and sometimes crush, was much more helpful. So was his work on the five disciplines that together make up a full education—which include the disciplines of ethics, respect and working with others, disciplines that are much less well understood than the disciplines of maths and literacy, or music and history but arguably just as important..

To make the language more useful, and more precise, we adapted Howard's ideas into the idea of SEED skills. They are skills that combine social intelligence (S), emotional resilience (E), enterprising behaviour (E), and disciplines (D)—both inner and outer. They are the seeds from which other achievements grow and contribute to what is sometimes called character, a prime concern of pre-industrial education systems, that has again come to the fore partly thanks to research pointing to the ability to defer gratification as key to future success.[3] These qualities are best cultivated through a combination of learning and experience, as is the case with the inculcation of moral sensibility and respect. We generally acquire the habits of service, and the ethical dimension of understanding other's needs in the way we acquire other things, as we are rewarded, punished and observe life around us, rather than through formal pedagogy. In this respect, they are more akin to language, with

[3] *Measurement and Modelling of Self-Regulation: Is Standardization a Reasonable Goal?* Rick H. Hoyle and Erin K. Bradfield, Duke University, Manuscript prepared for the National Research Council Workshop on Advancing Social Science Theory: The Importance of Common Metrics, Washington, DC, February 25-26, 2010.

grammars, words, and scope for limitless improvisation, than to the sort of knowledge that can be learned by rote.

Some of this evidence is very familiar and has been reinforced by the analytic work of figures like James Heckman as well as the synthetic work of figures like John Hattie.[4] It is obvious to the best practitioners. But it seems to be hard for school systems to act on this knowledge at scale. Hopefully Studio Schools will provide one set of ideas and models that others can emulate, as well as, in time, a body of hard evidence.

The third example is very different, but also bears the imprint of Howard's work. In 2010 I toyed with the idea of a new kind of learning institution that could take advantage of the many empty shops in the UK's high streets and shopping malls. I had recently read about the history of First Aid, which was invented in East London in the late 19th century, and wondered what other skills 1 percent of a population could have that would be most useful to the other 99 percent. It was quickly clear that there were quite a few from CPR to the ability to stop fights. It also soon became clear that a reasonable grasp of many of these skills could be learned in only a few hours, even if mastery took much longer. We decided to call the idea the 'Citizens University' and experimented with different formats. The ones which seemed to work best involved volunteer trainers training volunteer trainees in very fast, very physical, and very fun sessions, about as far removed from everyday schooling as possible. You could say that we were trying to mobilise kinesthetic and interpersonal intelligences to aid the learning process. Pilots are currently underway in several sites across England (now under the name 'The U—a citizens' university.' We think we know what will work, but as always in innovation it's possible that we've missed some vital element.

The common thread linking these three examples is that they all in different ways manifest the lessons I learned selling encyclopedias, which are also lessons all of us learn in our daily lives. They work because the learning they provide is for real; because they build relationships; and because they are intensely reflexive, rich in feedback.

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[4] M. Rutter, (1985). Resilience in the face of adversity: Protective factors and resistance to psychiatric disorder.' *British Journal of Psychiatry*, 147 (1985), 598–611.

In my current role at the UK's National Endowment for Science Technology and the Arts (Nesta) I have a general interest in innovation.[5] Our work straddles commercial investment in early stage technology companies, research and practical programmes including grant funds for the arts. The more I have been involved in both the study of innovation and its practice the more I've been struck that very parallel lessons apply to the emergence of new ideas, perhaps not surprisingly since innovation is often best understood as a process of learning. If you examine the historical origins of the technologies that surround us, most started out not with Eureka moments but rather with observation of the natural world around us. Our predecessors looked at the sun that makes light and warmth, saw things in motion or strange creatures emitting electricity—and then tried to recreate what they'd seen, sometimes literally and then in much more lateral ways. Penicillin is a good example: a natural product that was observed thanks to chance, and then after many difficult years eventually synthesised. The computer is another—conceived as recreating human reasoning, and then created step by step. It's very human to look at nature and to want to recreate what we see—and the leading edge of synthetic biology is in this way no different.[6]

Now this way of thinking has obvious significance for learning. It suggests that one of the best ways to invent a learning technology is to observe successful learning in the natural world and then to recreate it. This sounds rather obvious. But a surprising proportion of educational ideas do not start with observation. They start instead with a free-floating theory or with a new piece of technology.

The second step in every story of innovation however is very different. It can best be thought of as assemblage—pulling together diverse elements to make something new: the pieces of a machine, a boat, a gadget or an institution. It's very rare for these to be a single idea. Much more often they combine existing elements in a new way. The further away you are from any innovation, the more it looks like the dramatically original work of a single individual. The closer you are the

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[5] www.nesta.org.uk

[6] A good account can be found in W. Brian Arthur, *The Nature of Technology: What It Is and How It Evolves*, published by Free Press, 2009.

more evident it is that the innovation is a hybrid, the work of many minds, and often bringing together many incremental elements.

The hero worship of individual innovators and entrepreneurs (and more recently social entrepreneurs) has greatly impeded understanding of how innovation works. Successful educational innovation doesn't just need genius. Nor can it rely solely on educationalists. Instead it requires people who are able to assemble diverse elements together. The more singular they are in their ideas, the less likely it is that these will work.

My hope is that more systematic educational innovation will help to draw on what we know from evidence and observation to create better models of learning. Some will continue to be highly specialist, demanding and organised around disciplines. But there should also be space in every system for learning that inculcates the other three Rs too. This I hope is one of Howard Gardner's great contributions—to provide not a blueprint, but rather some of the crucial building blocks for others to assemble and adapt.

Howard's Response to Geoff Mulgan

You have been a senior thinker and leader in the UK and abroad for so long a period of time that it's hard to believe, Geoff, that you are barely 50, and that I knew you when you were hardly twenty. Precocity is not in itself a virtue, but in your case it has allowed you to hold a number of important positions and to be a major thought leader, cherished by thoughtful people dotted around the globe.

You kindly pay tribute to some of the ideas from "our shop" that have been useful to you over the years, and I appreciate your kindness. But I have no doubt that the balance of trade is very much in your favor. Not only have I learned a great deal from your writings on leadership, politics, innovation, strategy, and the common good, but I've also benefited enormously from our conversations over the years. In a few well-chosen words, you can characterize work, a person, or a movement so precisely that you save me days or even weeks of due diligence, even in this era of powerful search engines. (Put differently, there are still some human beings whose search engines are more useful than those devised in Silicon Valley.) You've also introduced me to numerous luminous persons, many even younger than you, as well as inviting me to a coffee in the House of Commons with Gordon Brown, which he doubtless has forgotten but which I will always remember and cherish.

Most important, Geoff, you have clearly bridged the sometimes enormous gap in education (broadly construed) between ideas (good or not so good) and action (including setting up programs, learning from them, tweaking as necessary, and then, to the extent that they are successful, helping to spread them further). Of Project Zero, I sometimes say, only half in an effort to be cute, "We develop ideas in education and try to give them a push in the right direction." We are fortunate indeed that there is someone like you who can provide the proper steering for a wide range of promising educational interventions.

As with President Obama, who happens to be your age-mate, the question always arises: "What next?" My own view is that, while you have held many positions in many organizations, your thinking and learning have a seamless quality that spans the years. And so I hope that you will simply continue what you have been doing, sharing it widely, building

upon it, and—increasingly—exerting positive influence on individuals who are as young as you were, when we first met and you had just launched DEMOS.

Jeanne Nakamura

This essay will scarcely touch on Howard's paradigm-shifting theory of intelligence, or his work that shaped the domains of creativity and giftedness. Instead, it will address the GoodWork Project, a more recent focus of his attention and the point at which we have intersected most directly. Howard, Bill Damon, and Mihaly Csikszentmihalyi conceived and led this research initiative together for a decade and their friendship defined the project both in its substance and spirit. Indeed, the very definition of good work interweaves those forms of the good that the three of them undertook to illuminate during their careers before the GoodWork Project: excellence, ethics, and engagement. At the same time, Howard in some respects has stood as *primus inter pares* in his dedication to the project and to all of us engaged in it. I think of one period when he was teaching a course about good work at his home base, Harvard—while simultaneously commuting north to teach another course about it at a college in Maine, and south to teach a third at NYU.

When I first learned there would be a GoodWork Project (then called the Humane Creativity Project), I did a little dance of excitement. Three formidable minds would collaborate to probe the relationship between creativity and morality. The project promised to address a burning question for anyone who had studied scientific creativity in the 20th century: how does a person's deep engagement with a domain of knowledge lead to moral concern about the domain and its impact on the wider world? Not very long after, I watched Howard do his own little jig of excitement as he talked with Mike about the germinal project, in falling snow, on a Michigan Avenue street corner. At least I ascribed the dance to excitement and not only to the biting wind off the Chicago lakefront.

One set of findings from the GoodWork Project has concerned the critical roles played by fruitful collaborations, aligned institutions, mentors, and trustees in the perpetuation of good work. As Howard pithily put it in a public lecture, "You can't ask other people to be good workers unless you do it yourself and [join] together to do good work." As the project took off, Howard evolved into its trustee, in the best sense of the word. He has been indefatigable in his efforts on the project's behalf, unstinting in his attention to like-committed individuals and organizations, alarming in the speed with which he answers email, and

wise about the importance of understanding compromised as well as good work, tormentors as well as mentors, and underlying vulnerabilities in apparently flourishing professions.

In an interview study immediately prior to the GoodWork Project, we identified diverse pathways across the second half of adulthood taken by artists, scientists, social scientists, and others who had done groundbreaking work before the age of 50, and continued to be as vitally engaged in their succeeding decades. Some were still as joyfully enthralled by the same phenomena, whether stars or stories, as they had been in childhood. Others skipped restlessly across different domains, repeatedly revitalized and challenged by the novelty. Some shifted into less strenuous but still demanding and richly rewarding pursuits. And others turned some or all of their attention to the common good. The GoodWork Project is a research project—basic science. But the underlying motivations were civic as well as scientific and almost inevitably it led to engagement with many individuals and organizations, especially for Howard's group at Harvard. In the process, it addressed that original animating question of how whole-hearted participation in a domain can lead to action in the wider world. For this example and more, I am grateful to Howard.

Howard's Response to Jeanne Nakamura

You have, strictly speaking, never been a student of mine. I am not even sure that we have ever co-authored a paper (often deemed an important "marker" in the academic world). And yet you've been part of my world, and, at the risk of being presumptuous, I have been part of your world, ever since the GoodWork Project began. You span the mid-1990s, when it was called the "Humane Creativity Project," to the set of related activities that we now call the Good Project.

Jeanne, you are one of the chief trustees of the enterprise, with an unrivalled knowledge of content, measures, claims, and, to be frank, the weak spots and lacunae as well as the high marks and the achievements.

It was great that you chose one strand of the project—that of mentoring—and made it your own. In a few short years your book Good Mentoring has already become one of the "go-to" books in that increasingly visible field. The work on mentoring that you are continuing promises to flesh out much further our understanding of that crucial but often elusive phenomenon.

There's more. The "value sort" that you devised over a decade ago remains the most popular entry point to the Good Project enterprise. The work that you, Mihaly, and colleagues did on Good Work in Higher Education is one of the bedrocks on which our recently launched study, Liberal Arts and Sciences in the 21st Century, is now based.

This is quite a set of accomplishments for one who has never sought the spotlight but who always gives a stellar performance and is now helping her students to do likewise.

You write in your essay about the importance of drawing on good thinking in order to enable good action. Of course this has been an aspiration of the Good Project enterprise from the start. You now have one of the leading roles in the world in the burgeoning field of positive psychology. I always give two cheers for positive psychology, and if you can continue to nudge that field toward behaviors and actions that are "excellent, engaging, and ethical," I'll be happy to add a third cheer, and to raise my glass skyward—and westward—when I do.

Social Responsibility, Self Control, and Doing Good Work

David R. Olson

For too long cognitive psychologists and educational theorists have explored the intellectual development of children, their increasing competence in deciding what is true, quite separately from the moral development of children, their increasing competence in deciding what is good and worth doing. Gardner has long worked on the first of these questions. But more recently with his colleagues Mihaly Csikszentmihalyi and William Damon (2011), he has bridged the frontier separating the cognitive from the moral with their "GoodWork" Project, work that is not only done well but that meets a high ethical standard. This welcome move takes its inspiration from Kant's (1793/2001, 5:178) attempt to bridge pure reason and practical reason via the notion of judgment, an act that "will effect a transition from the faculty of pure knowledge… to the faculty of the concept of freedom," that is the tying together of intellectual reason with moral virtue. It is not just that one must serve two masters, serious thought and moral responsibility, but rather that both thinking and valuing are governed by the same form of judgment, the union being expressed in Kant's well known "categorical imperative"—roughly, what is true or good for one is true or good for all.

For most of us Kantian idealism has been tempered by the less ethereal pragmatism of John Dewey and the psychology of Jerome Bruner who, like Kant, put action, intention, and responsibility at the heart of an account of thinking and doing whether child or adult. And while social activities, intersubjectivity and joint intentions were seen by the pragmatists as critical to learning and development, just how those social activities gave rise to responsibility and self control remained somewhat underdeveloped. But in the last decade a re-reading of Kant by such philosophers as Robert Brandom (1994; 2000; 2011) and Joseph Heath (2011) and a renewed interest in Vygotsky, himself a Kantian, by Jan Derry (2008) and David Bakhurst (2011) have provided new incentives and new tools for putting the agency and responsibility of the learner back at the center of our account of the human mind. Responsibility, a moral concern, rather than knowledge, a cognitive

concern, is seen as the guiding principle in the explanation of learning and action.

In its most basic sense, we think of responsibility in terms of credits and debits, praise and blame. Ultimately, it is a matter for the courts to decide. But it is also at the heart of moral thought, the question of what is good, what is praiseworthy and what is bad, what deserves punishment. A permissive society, in which everyone gets an "A" and in which failure is explained away, has diverted us from the centrality of responsibility in human development; who is responsible is sometimes seen as mere finger pointing after the fact. However, if responsibility is seen as involving the judgment that talk and action meet the norms and standards embedded in the rules and practices of the society, then responsibility may be the key to thinking correctly and acting well.

While the issue of responsibility is relatively neglected in the cognitive sciences, it is sometimes actively disparaged in the educational sciences. In searching for explanations of children's behavior, including successes and failures in life and in the school, researchers and policy makers have focused primarily on causal factors whether inside or outside of the child, factors over which the child has no control and hence no responsibility. A theory of agency and responsibility would allow us to turn the tables, to explain children's behavior in terms of their own intentional actions and experiences within a moral framework of accountability. As agents of their own actions, children are not only the *causes* of their behavior but they may also be seen as *responsible* for their behavior and held accountable by others. The recognition of just what they are responsible for, and learning how to meet those responsibilities, is what allows children to take control of their own behavior as well as their learning.

Accountability

The recent emphasis on accountability expressed in the U.S. Department of Education policy *No Child Left Behind* (U.S. Department of Education, 2002) raised the question: Who is responsible for children's behavior and learning? Clearly no one can learn for the child or act for the child; that is something the child does for him or herself and for which he or she may be held responsible. But who should take responsibility when children fail? The U.S. policy presents a somewhat

unrealistic emphasis on the responsibility of the school as the means of solving the larger social problems of unemployment, poverty, and crime. But it does have the merit of helping us to formulate the topic of children's development in terms of agency and responsibility, a focus largely absent from traditional explanations of behavior and learning. And it allows us to understand "good work" as an expression of wisdom, which Kant (1793-94/2001, 6:58) saw as the application of rationality to the moral law of fulfilling one's duties and responsibilities.

Kant and Dewey's talk of agency and responsibility was buried by psychology's romance with behaviorism and educators' romance with behavioral objectives (Lagemann, 2000). Behaviorism eschewed any reference to agency, action, intention, self, meaning, subjectivity, or consciousness, hoping to explain behavior in terms of causal dispositions, states of the brain coupled with environmental contingencies. B. F. Skinner entitled one of his books *Beyond Freedom and Dignity*, denying that the notion of responsibility had any place in a theory of behavior. Personality theory attempts to predict behavior on the basis of the causal dispositions or traits assessed by the DSM-IV that are outside awareness and beyond intentional control. Personal agency itself is treated as a disposition, namely, self-regulation. The typography itself, the insertion of a hyphen, is an attempt to hide the "self" in self-regulation, a move that avoids objectifying the self.

The Cognitive Revolution denied straightforward causal links between dispositions and behavior by substituting beliefs for dispositions; beliefs, as Hamlet noted, may blunt rather than result in action. But while the cognitive revolution embraced belief and intention and learning (even agency in infancy has come in for attention) (Rochat, 2011; Russell, 1996), cognitivists have had less to say about the moral issue of responsibility for action and learning. As Russell (1996) has noted, responsibility is a social notion implying responsibility to others and to standards set and monitored by others. Responsibility is as much social as cognitive.

Here then is the question: When children fail to meet their requirements is it because they are *unwilling* to take their responsibilities

seriously or that they were *unable* to take them seriously.[1] This very question has arisen in the field of psychiatry. Heyman (2009) recently claimed that there was no scientific way to determine if an accused was unable to control his behavior or simply was unwilling to control his behavior. Further, he claimed that addiction is not a disease but a choice: "Quitting is a choice people typically make when they are ready to take their responsibilities more seriously." One could argue that this implies that there is no real distinction between *unable* and *unwilling,* ability and will are not, as usually assumed separate faculties. What one can be responsible for, and conversely what one can be held accountable for, depends upon the knowledge and resources one has available.

Personal and Collective Responsibility

The topic of children's responsibility for their behavior and their learning leads into deep political as well as moral questions. On the one hand the discussion of personal responsibility may turn into some kind of a right wing rant. Sarah Palin recently said, "We must reject the idea that every time a law's broken, society is guilty rather than the lawbreaker"; true, but deliberately polemical. Even more alarming is Presidential candidate Herman Cain who draws enthusiastic support for his challenge to the unemployed: "If you don't have a job don't blame the government or the economy, blame yourself!" Conservatives in Canada and Republicans in the U.S. have a long tradition of emphasizing personal accountability and responsibility often through "tough on crime" legislation and through rigorous standard setting and testing regimes in education. Indeed, some have found an ally in the notorious individualism of Ayn Rand's *Atlas Shrugged.* Yet few would object to the more modest claim that privilege should be earned (by meeting one's responsibilities) rather than merely given.

Liberal Democrats on the other hand have a long tradition of recognizing social and impersonal factors as causal—hence their concerns with equality, social justice and social welfare including universal education and health care. However, some progressive social

[1] My own institute which once focused on the role of education in cognitive, social, and moral development, now alas, acts as if the major factors in educational development are gender, class, and race, factors over which the learner has no control and hence no responsibility!

policies advanced under the critical banner of "blaming the victim" are aimed at lifting responsibility from the child entirely and reassigning it to such social factors as home environment and social structure. Such reassignment may have inadvertently undermined and diverted attention from the importance of recognizing responsibility for one's actions. The misbehaving child and the underperforming learner are painted as victims with little or no responsibility for their own failures, while responsibility is assigned to the school and society. Yet few would object to the more modest claim that children cannot be held responsible for meeting goals they neither endorse nor possess the means to achieve.

There is also an historical dimension to the problem of individual responsibility. There was a clear rise in the awareness and practice of individual responsibility with the Renaissance and the rise of mercantilism (Holthoon, 2009). Nineteenth-century sociologists Durkheim (1956) and Weber (1930) drew a distinction between *community* and *society* and the formation of persons within those forms of social organization. They showed that the rise of individualism in the 16th and 17th century undermined the traditional community that had been bound together by a network of social duties and responsibilities and replaced it with a bureaucratic society based on private ownership and impersonal roles—autonomous individuals and personal contracted responsibilities. Others had earlier noted the link between individualized identity, sometimes indicated by the right to vote, and the private ownership of property: one 17th century reformer wrote, "to abolish private property is to render such self-conscious individuality obsolete" (Bushnell, p. 38-39). Even Thomas More in his *Utopia* claimed that "private ownership of property is causally linked… to private ownership of the self." That private ownership of the self was seen as essential to moral judgment and to the taking on of contracted responsibilities. Charles Taylor (1989) surveyed the whole history of Western philosophy to advance the claim that the modern autonomous self is a product of the changes that began with the Renaissance—a serf has a different conception of himself than does a free-holder. Just how different and whether or not there has been a gain in "interiority" remains in dispute (Steedman, 2009).

Modern anthropological accounts of contact between indigenous cultures and "civilizing" colonizing societies dramatize this shift.

Canadian Aboriginal people were persecuted for practicing their "potlatch," the annual ceremony of wealth re-distribution through gift giving, a tradition that served to tie the community together in a network of mutual obligations. In the 19th century the Government of Canada outlawed the practice because such sharing "prevented the individual thrift and acquisitiveness that [Canadian] society valued" (Moray, 2006, p. 70). The point to note is that the emphasis on personal agency is in part tied to the individualism of a modern society and may run counter to the "network of mutual obligation" found in family and local community. Thus self-regulation may take quite different forms in different types of society, differences manifest in pedagogical theories some of which treat the classroom as a community of learners, others as assemblies of autonomous individuals. In neither case is self-regulation seen as simply a biologically based psychological disposition.

Agency and Responsibility

If we are to move beyond internalist psychological and externalist social explanations of behavior, what may be put in their place? I hope to have cleared a conceptual space for a theory of personal agency, intention,[2] and responsibility. Personal agency and responsibility cannot be explained away. The basic principle of a modern democratic society is that it is composed of free individuals who are agents or actors who are in control of, and therefore responsible for, their actions. David Bakhurst (2011, p. 45), for example, claims that human beings cannot be explained "without recourse to the notion of rational agents responsible for their thoughts and actions." Indeed, I have argued (Olson, 2003) that responsibility, a moral dimension, could profitably replace knowledge, a cognitive dimension, at the center of the educational agenda.

Agency as Competence Motivation

With will and will power largely abandoned to popular culture, the scientific study of the topic shifted to personality theory and study of such underlying dispositions as ego-strength and achievement motivation (McClelland, Atkinson, Clark, & Lowell, 1953). This literature has recently been brought up to date by Elliot and Dweck (2005) who

[2] Intentions in the sense of purposefulness rather than intentionality as "aboutness."

recommended that "achievement motivation" be seen in terms of competence motivation, a basic human need to master aspects of the environment, a need fulfilled by taking on and achieving goals by one's own efforts. A sense of "control, competence and agency," they suggest, results from taking on and achieving goals by one's own efforts. These authors use the concept of competence motivation to bring together a wide range of empirical topics including intrinsic motivation, self control as well as the social learning theories pioneered by Bandura (1997) and Mischel and Shoda (1995). Whether seen as a personality trait, a basic biological need or a form of cognitive competence there is wide agreement that such motivation is related to academic success (Francis, 1977; Freeman, 2009; Schunk & Pajares, 2005).

Indeed, the evidence is overwhelming that self-regulation is a major determinant of not only success in learning but also success in life. The most dramatic findings of this relation comes in a longitudinal study over a 32-year period of the entire cohort of 1037 infants born in 1972-73 in the city of Dunedin, New Zealand (Moffitt et al., 2011). They addressed the relation between subject's self control, specifically their ability to delay gratification, control impulses, and modulate emotional expressions and their success throughout life. Self control they suggest is an umbrella term that includes self-regulation, conscientiousness, absence of inattention and hyperactivity, executive function, delay of gratification and will power, functions usually associated with the pre-frontal cortex of the brain. Their reported results were dramatic. There was a more or less linear relation between degrees of self control assessed in the pre-school years and wealth, health, and general social competence such as avoiding encounters with police, in adult life. Although there was a sizable correlation with IQ ($r=0.44$) the relation remained intact when the effects of IQ and social class were removed statistically. The high inter-correlations, however, do suggest that several factors are at work rather than a single causal disposition. For example, the famous marshmallow task pioneered by Walter Mischel (Mischel & Shoda, 1995) in the 1960s asked children if they would prefer one marshmallow now or two marshmallows later. Those who chose the latter were said to possess self control. We may note however that such tasks are defined by a linguistic rule that implies a relatively high degree of linguistic and social competence. It is not a brute competence; hence, its high correlation with other measures of general competence such as IQ.

Rather than providing an explanation of behavior, self control itself requires explanation. In particular what requires attention is the relation between self control and social relations.

Meanwhile, some measures of self control have been shown to improve significantly through appropriate training. Diamond, Barnett, Thomas, & Munro (2007) trained 85 pre-school children with a "Tools of the mind" curriculum composed of some 40 activities including asking children to say out loud what they were doing, teaching them some aids to memory and attention, and dramatic play, activities designed to foster "executive control." The program was designed in part on the basis of the Vygotsky's claims about the role of verbal rules in the regulation of behavior (Luria, 1961). Training continued for one or two years. Post-test tasks required children to follow a rule indicating which side of a panel to press a switch while inhibiting the temptation to respond to the switch on the same side that the stimulus appeared, a well-known executive control task. Children in the "Tools" training program were significantly better able to self-regulate than were their matched controls who took part in a balanced literacy program. Two conclusions may be drawn. First, executive control, self-regulation, will power or, as I prefer, *agency*, is a personal competence, presumably with a normal distribution, that may be enhanced through systematic training. And second, traditional school programs as represented by the balanced literacy program had little effect on this ability, and yet it is self control that is known to account for a large part of school success.

These are important results. But there remain important questions. If competence motivation is seen as an enduring causal trait or disposition, it is subject to what is called "the fundamental attribution error" (Ross, 1977). While people are happy to attribute the behavior of others to general dispositional concepts, actors themselves rarely accept that a disposition explains their own actions. Rather they appeal to goals, contexts, intentions, rules, and opportunity. Further, philosophers (Goldie, 2004) point out that causal traits or dispositions, lack "normative status," they are neither good nor bad but rather objective, causal facts about a person—analogous to the soluability of salt or the shatterability of glass—and thereby beyond intentional control and hence outside personal responsibility. If viewed as social competencies, on the other hand, they may be seen as explaining intentional actions for which

the actor may be held responsible by others and for which, hopefully, he or she may come to accept responsibility for one's self. Recognizing this form of competence as a capacity for taking on responsibility endows it with normative force, something that is good or bad and subject to praise and blame by others. It becomes a matter of character rather than personality, if character is seen as made up of dispositions intentionally and responsibly implemented.[3] But again, how does self control, the sense of agency and responsibility arise?

The Philosophy and Psychology of Self, Intention, and Agency.

A Culture of Teaching

Figure 2. The tyranny of schoolmasters. Marginal drawing by Hans Holbein, in Holbein's copy of Erasmus's *The Praise of Folly* (Basel: 1515). Reproduced from this copy of Desiderius Erasmus, *Encomium moriae* (Basel: 1515), in facsimile ed. Heinrich Alfred Schmid (Basel: Henning Oppermann Verlag, 1931), by permission of the Department of Special Collections, Van Pelt-Dietrich Library, University of Pennsylvania.

Self control has long been seen as the outgrowth of social control: Recall the injunction "Spare the rod and spoil the child." Obedience to authority sometimes based on harsh discipline was seen as providing the

[3] Howard and I seemed to agree on this point in an earlier discussion. See *Gardner Under Fire.*

basis of later self control. Others objected that strict punishment could lead only to servility, compliance with the dictates of others, rather than the desired unmonitored self control. Kant for example regarded enlightenment as the capacity to "use one's intelligence without the guidance of another… to use your own intelligence" (Kant, 1784/2001, 8:35). There is a paradox here: Self control is essential to social order, on the one hand, yet social control is the primary means of acquiring self control, on the other (see above Figure).

The essential link between self control and social control is at the center of the more recent attempt to formulate explanations of action in terms of social roles and rules adopted by an agent; rules by definition do have normative force in that sanctions may apply (Bakhurst, 2011; Brandom, 2000; Heath, 2008). What traditionally was seen as the will power of individuals is rather approached in terms of social goals and moral action thereby connecting the intentions of agents to their responsibility for behavior and learning. Social norms and rules provide the sorts of reasons both self and others may appeal to in explaining actions thereby avoiding the attribution error endemic to trait theory without denying that individuals do vary in their social competence.

Truth and Obligation

If moral behavior is social behavior how does a sense of personal agency and responsibility arise? I have already set aside dispositional accounts in favor of a cognitive theory of action. Cognitive theories see action in terms of "rational choice theory" a system that coordinates beliefs to achieve desired outcomes (Stanovich 1999, 2009). Critics such as Heath (2008) point out that rational choice theory leaves insufficient scope for moral dimensions of duty and obligation; persons on occasion may act against self-interest as when they act to uphold a moral rule or law for its own sake, what Kant took as the basic moral principle (Kant 1785/2001, 4:390). Rational choice theory fails to explain the difference between the rationality of satisfying one's needs, what Kant called "prudence," and the rationality of satisfying one's obligations, what Kant called "wisdom" (Kant 1793-94/2001, 6:58). Hence, we must analyze self control in terms of agents taking on and meeting moral obligations.

A tradition from Aristotle through Aquinas to Kant distinguished man from other animals not only because humans are rational but more

importantly because they are moral agents. Holton (2010) analyzes the structure of agency, tracing it to the notion of free choice. He asserts, "It is in the making of choices, and then in sticking to the intentions that result, that we get an idea of ourselves as free agents."[4] Other philosophers, Bernard Williams (1985), Richard Brandom (1984), Joseph Heath (2007), approach agency from a more social perspective taking as the starting point responsibilities to others. Responsibilities to others is a central feature of linguistic pragmatics both in the celebrated "cooperative principle" of Grice (Grice, 1989) and in the theory of speech acts set out by Searle (1983). The speech act of asserting something as true or promising that something will be done are intentional actions of an agent that commits one to certain social obligations. In saying something one is giving one's word to others as to the truth of one's beliefs; it is putting oneself under an obligation that others may rely on. Thus, language itself is seen not only in terms of truth but of involving a set of social agreements. Brandom (2000, p. 34) goes beyond speech acts to language in general, crediting Kant with the insight that all linguistic concepts are "norms that determine just what we have made ourselves responsible for, what we have committed ourselves to." That is, an utterance not only expresses a truth but more importantly undertakes a responsibility to others; it is a social act as well as a cognitive one. Speech acts such as saying or promising puts one under an obligation to others—to be truthful or to do what you said. Asserting and promising are social actions done in collaboration with others, actions based on creating and honoring the rules and norms of language use and of social interaction. The very use of words expressing concepts are at base social norms; to learn a language is to learn a set of social rules with their implicit standards of correctness. Failure to follow those rules disrupts the practice and is subject to sanction, which is to say rules are *normative*. One can be held accountable for what one says or does, and in this way social rules are enforced and taught. All social learning is learning to follow the rules whether through imitation, through sanctions by others, or through explicit agreements (Tomasello, 1999). Such rules are not merely learned of course; they are implicit in the social practice of communicating and they may be made explicit as verbal reasons and

[4] K. Oatley's recent novel *Therefore, Choose* can be read as an illustration of the role of choice in one's life.

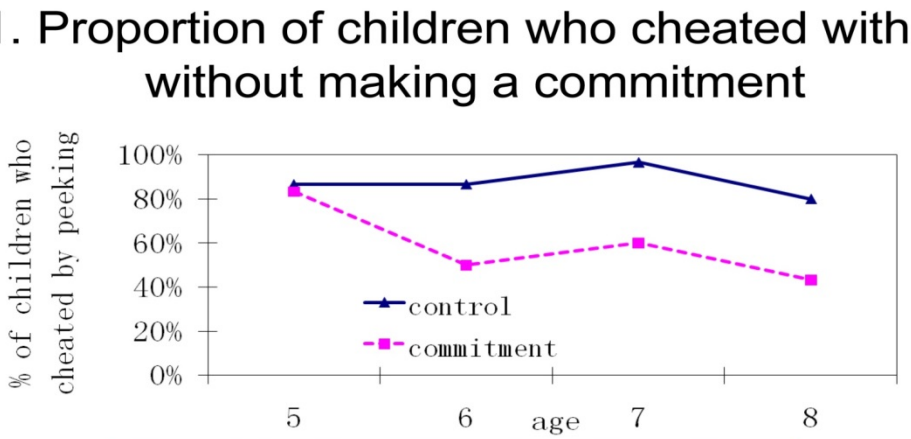
justifications of action. Further, punishment is rarely required as learners have a deep instinct to imitate the social actions of others; sanctions may be required if the norms implicit in the activity are violated. Yet explicit sanction, as when a parent corrects a child's grammar, are usually ignored and yet the child learns the adult grammar.

Earlier, I (Olson, 2007) argued that the speech act of promising illustrated how a promise may control the behavior of others, yet once learned as a linguistic practice, could be used as a means to control the self. Parents first insist that children live up to their promises. Children then learn that in making promises they have put themselves under an obligation for which the parent will hold them responsible. But the same resources may now be used to make promises to oneself, thereby putting oneself under an obligation which one must live up to. This is no longer an act of compliance with the orders of others but with the intentions and goals of oneself. Promising oneself, thereby forming a deliberate intention, is just what is involved in self control whether in the form of delay of gratification, planning for the future, for adopting manners and morals for oneself rather than merely complying with those imposed by others. Social control in this way is the basis of self control. Learning to follow the rules requires that one monitor the fulfillment of those obligations. In such learning parents and teachers have an important ally, as mentioned, the imitative abilities of the children themselves.

Let me summarize this point. I have argued that learning to comply with social norms—social control—is the basis of learning self control, placing oneself under an obligation. Mere social control enforced through reward and punishment may create slave-like servility and simple compliance. But in learning the rules and norms for acting and speaking—as in asserting something or promising something—one is not only learning the Gricean rules of conversational discourse (Grice, 1989) but also learning devices for planning and expressing one's own agency and responsibility—giving one's word that the world is a certain way or that one will act in a certain way. Speech acts learned through making commitments to others become devices for regulating the self. Speech acts, then, becomes the route to taking on responsibility for present action and planning for the future. When children can say that they will do x and can be trusted to actually do x, we say they have learned to be

responsible and the management of responsibility *is* self control. Children begin to do this successfully on average when they are about six years of age, but there is great variability and perhaps deep-seated, biological predispositions that make such learning more or less easy (Moffitt et al., 2010). Nonetheless, self control depends on learning of social rules, norms and standards of correctness.

Some further evidence for the relation between complying with social rules and the development of self control is indicated by a recent study by Kang Lee (in preparation). Lee is primarily interested in children's resistance to lying, a form of self control critical to moral development. In his studies five- to eight- year-old children are placed in a room facing a blank screen. The experimenter secretly places a squeaky toy behind the child and tells him or her not to look at the toy until the experimenter returns, a standard measure of self control. He then leaves the room and records the interval between his departure and the child's yielding to the temptation to turn around and look at the mysterious toy. Most children yield to the temptation within one minute. This study is being conducted in China and in Toronto. Interestingly, the Chinese children resist the temptation better than do the Canadian children. The interesting twist on the study was that half the children were not only told not to turn around but were explicitly asked to give their word—to make a commitment that they would not look. This factor did not alter the performance of the Chinese children who remained largely resistant to temptation. The results for the Canadian children on the other hand were significantly more resistant to temptation when they had given their word (see the figure below).



	5	6	7	8
control	26/30 (86.7%)	26/30 (86.7%)	29/30 (96.7%)	24/30 (80.0%)
commit-ment	25/30 (83.3%)	15/30 (50.0%)	18/30 (60.0%)	13/30 (43.3%)
χ^2	0.131	9.320*	11.882*	8.531*

Commitment made children more likely to resist temptation.

These results suggest that children on average comply with adult demands as all theories of social control would acknowledge, but further they suggest that if the intention becomes their own, as it does in giving their word, children are somewhat more likely to live up to their obligation. Making promises and living up to them, then, is an important means of enhancing agency and self control.

Agents Versus Objects of Education

What role do adults play in developing this sense of agency and responsibility? Treating children as responsible agents contrasts with the now dominant portrayal of children as objects of adult efforts at training. Children's actions including their successes and failures are often explained to them in ways that tend to obscure their own agency, intention, and responsibility. Let me illustrate the ways. First, the school with its obligation to produce skilled readers assigns the agency to the teacher to produce the effect; the children are seen as merely the objects of these operations. Procedures such as testing, designed to put more accountability on the learners, are sometimes opposed, inappropriately I believe, by some progressively minded educators who insist that responsibility lies elsewhere. Second, psychology as a discipline deflects agency by attributing behavior to a variety of causal traits and

dispositions that are not under the voluntary control of the learners themselves, traits such as mental abilities and the spectrum of personality dispositions set out in the DSM-VI. Children's inappropriate behavior is portrayed as a product of these dispositions rather than as a violation of norms that could be learned and to which children as agents could be held responsible. By being held accountable as responsible agents, I suggest, they become responsible agents. Furthermore, rewards and punishments are misrepresented as shaping underlying traits and behavior rather than as giving learners comprehensible information about the rules for which they are responsible and against which their actions are to be judged. Third, psychotropic drugs are administered to children to control their behavior rather than devising methods through which they could learn to control their own behavior and take responsibility for their own actions. Fourth, the brain sciences that have recently moved onto center court attribute the lack of self control or the inability to plan for the future to sub-personal factors such as the pre-frontal cortex, mechanisms that are neither under the control of the agent nor seen as tied to social practice of giving reasons for action. Fifth, the social sciences themselves deflect agency by attributing success and failure to parental styles, social class, race, gender, and a host of demographic variables none of which are available to the learner as agent. As in psychological discourse the learner is seen merely the subject or victim of this host of impersonal forces. Sixth, an entitlement culture advocates as unearned rights some of the very goals and values that could be seen as the product of one's own efforts and perseverance. All of these factors may undermine a sense of personal agency.

The eminent developmental psychologist Jerome Kagan (2009) presented an indictment of contemporary psychology in just these terms. Persons, he claims, are agents responsible for themselves and to society and psychology fails its mission when it "renders each person a passive pawn of genes, hormones, intense desires, or social conditions and, therefore, impotent and perhaps blameless" (p. 256). Similarly, philosopher Bernard Williams (1985) emphasized individual responsibility in relation to its social context:

…the primacy of the individual and of personal dispositions is a necessary truth.… If the [social] structuralists are right, then these dispositions will be more thoroughly determined by social factors such as

class, and more uniform in content, and less understood by the individuals than has been traditionally supposed; but those claims cannot deny the existence and causal role of [personal] dispositions. No set of social structures can drive youths into violence at football games except by being represented, however confusedly or obscurely, in those youth's desires and habits of life. In this sense, social or ethical life must exist in people's dispositions. …ethical thought, as opposed to social planning depends on individualism. (pp. 201–202)

Undermining personal agency, intention, and responsibility was not the intended goal of such psychological and sociological developments. Unlike the behaviorists who denied agency and responsibility altogether and unlike some modern cognitive scientists who treat behavior as an impersonal product of genes and 'memes' leaving little room for an explicit role for agency, most educational reformers assume that children are intentional agents and attempt to instill social norms. But when it comes to understanding misbehavior and underachievement, they revert to psychological and social factors over which the learner has no control and hence no responsibility. In seeking such causal explanations, they fail to place the child as intentional agent at the center of his or her learning, capable of learning the rules, honoring duties and responsibilities to others, and earning the credit for achieving his or her own goals and the goals negotiated with the teacher. They provide no scope for the child to take control of, and responsibility for, his or her own learning.

Developing a sense of responsibility and accountability, of course, is not to be achieved simply by throwing children onto their own resources and punishing them for failure. The challenge rather is to help children, first, endorse goals that they have a reasonable chance for achieving, second, teaching them means—making notes, locating resources, and the like—that make the achievement of their goals possible, and finally monitoring that the endorsed goal is actually achieved. Teachers should be aware of the adverse effects of giving orders, including assignments, and then failing to see that they have been carried out. But equally they should be aware of the adverse effects of the failures that result from setting goals that students themselves will not endorse or that are beyond their reach. Barth (2011, personal communication) has pointed out that it is rarely a lack of willingness of

the children but a lack of knowledge of means, of knowing what to do or how to do it that leads them to quit or drop out. Hence, it is less a case of building will power than of learning how to set goals, learn means, and monitor behavior in terms of the criteria that must be met for success. A clear understanding of just what one has committed oneself to in making a claim, in taking on a project or in setting a goal provides the criteria against which the resulting activity may be judged and for which one is being held responsible. The goal, of course, is to develop children who not only honor the rules and norms of the society but who are able to use these rules to promise themselves what they will do, to plan ahead, to delay gratification, and work towards their goals. In so doing they move from being controlled by others to controlling themselves, to doing "good work."

References

Bakhurst, D. (2011). *The formation of reason.* Chichester, West Sussex, UK: Wilely-Blackwell.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman & Freeman.

Barth, B.-M. (November, 2011). Personal communication.

Brandom, R. (1984). *Making it explicit.* Cambridge, MA: Harvard University Press.

Brandom, R. (2000). *Articulating reason: An introduction to inferentialism.* Cambridge, MA: Harvard University Press.

Brandom, R. (2011). *Perspectives on pragmatism: Classical, recent, & contemporary.* Cambridge, MA: Harvard University Press.

Bushnell, R. W. (1996). *A culture of teaching: Early modern humanism in theory and practice.* Cornell, NY: Cornell University Press.

Derry, J. (2008). Abstract rationality in education: from Vygotsky to Brandom. *Stud Philos Educ, 27,* 49-62.

Diamond, A., Barnett, W. S., Thomas, J., & Munro, S. (2007). Preschool program improves cognitive control. *Science, 308,* 3387-88.

Durkheim, E. (1956). *Education and sociology.* (S. Fox, trans.). Glencoe, IL: The Free Press.

Elliot, A. J., & Dweck, C. S. (2005). Competence and motivation: Competence as the core of achievement motivation. In A. Elliot & C. Dweck (Eds.), *Handbook of competence and motivation* (pp. 3-14). New York: The Guilford Press.

Francis, H. (1977). *Language in teaching and learning.* London: Allen and Unwin.

Freeman, J. (2009). *Gifted lives*. London: Guilford Press.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2011). *Good work: When excellence and ethics meet.* Cambridge, MA: Harvard University Press.

Goldie, P. (2004). *On Personality.* London: Routledge.

Grice, P. (1989). *Studies in the ways with words.* Cambridge, MA: Harvard University Press.

Heath, J. (2008). *Following the rules: Practical reasoning and the deontic constraint.* New York: Oxford University Press.

Heyman, G. E. (2009). *Addiction: A disorder of choice*. Cambridge, MA: Harvard University Press.

Holton, R. (2010). *Willing, wanting, waiting.* Oxford, UK: Oxford University Press.

Holthoon, F. V. (2009). Literacy, modernization, the intellectual community, and civil society in the western world. In D. R. Olson & N. Torrance (Eds.), *The Cambridge handbook of literacy.* (pp. 431-448). New York: Cambridge University Press.

Kagan, J. (2009). *The three cultures.* New York: Cambridge University Press.

Kant, I. (1784/2001). Answer to the question: What is enlightenment? *Basic writings of Kant.* (Wood, A. W., Ed.). NY: The Modern Library.

Kant, I. (1785/2001). Fundamental principles of the metaphysics of morals. *Basic writings of Kant.* (Wood, A. W., Ed.). NY: The Modern Library.

Kant, I. (1793-94/2001). Religion within the limits of reason alone. *Basic writings of Kant.* (Wood, A. W., Ed.) NY: The Modern Library.

Kant, I. (1793/2001). Critique of judgment. *Basic writing of Kant.* (Wood. A. W., Ed.). NY: The Modern Library.

Lagemann, E. (2000). *The elusive science: The troubling history of educational research.* Chicago: University of Chicago Press.

Lee, K. (in preparation). Children's resistance to temptation.

Luria, A. R. (1961). *The role of speech in the regulation of normal and abnormal behavior.* (J. Tizard, Ed.). Oxford, UK: Pergamon Press.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive.* New York: Appleton-Century-Croft.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective systems theory of personality: Reconceptualizing the invariances in personality and the role of situations. *Psychological Review, 102,* 246-268.

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N. Hancox, R. J., Harrington, H., Houts, R., Poulton, R., Roberts, B. W., Ross, S., Sears, M. R., Thomson, W. M., & Caspi, A. (2010). A gradient of self control predicts health, wealth and public safety. *Proceedings of the National Academy of Science.* <www.pnas.org/cgi/doi/10.1073/pnas.1010076108>

Moray, G. (2006). *Unsettling encounters: First Nations imagery in the art of Emily Carr.* Vancouver, BC: University of BC Press.

Olson, D. R. (2003). *Psychological theory and educational reform: How school remakes mind and society.* Cambridge, UK: Cambridge University Press.

Olson, D. R. (2007). Self-ascription of intention: Responsibility, obligation and self control. *Synthese, 159,* 297-314.

Rochat, P. (2011). The self as phenotype. *Consciousness and Cognition, 20,* 109-119.

Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution process. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 173-220). New York: Academic Press.

Russell, J. (1996). *Agency: Its role in mental development.* Hove, UK: Erlbaum/Taylor & Francis.

Searle, J. (1983). *Intentionality: An essay in the philosophy of mind.* Cambridge, UK: Cambridge University Press.

Schunk, D., & Pajares, F. (2005). Competence perceptions and academic functioning. In A. Elliot & C. Dweck (Eds.), *Handbook of competence and motivation* (pp. 85-104). New York: Guilford Press.

Stanovich, K. E. (1999). *Who is rational?* Mahwah, NJ: Erlbaum.

Stanovich, K. E. (2009). *What intelligence tests miss: The psychology of rational thought.* New Haven, CT: Yale University Press.

Steedman, C. (2009). Literacy, reading, and concepts of the self. In D. R. Olson and N. Torrance (Eds.), *The Cambridge Handbook of Literacy* (pp. 221-241). Cambridge, UK: Cambridge University Press.

Taylor, C. (1989). *Sources of the self: The making of modern identity.* Cambridge, MA: Harvard University Press.

Tomasello, M. (1999). *The cultural origins of human cognition.* Cambridge, MA: Harvard University Press.

U.S. Department of Education (2002). No Child Left Behind Act (NCLB). http://www2.ed.gov/policy/elsec/leg/esea02/index.html.

Weber, M. (1930). *The Protestant ethic and the spirit of capitalism.* (T. Parsons, trans.). London: Allen & Unwin. Original work published in 1905.

Williams, B. (1985). *Ethics and the limits of philosophy.* Cambridge, MA: Harvard University Press.

Howard's Response to David R. Olson

I'm not sure, David, that either of us was cognizant of it at the time, but I think it's fair to say that we were baptized.in the same epistemological waters. In the vicinity of Jerry Bruner and the Center for Cognitive Studies in the early and middle 1960s, we were exposed to the most up-to-date thinking and debates in the newly emerging area of cognitive science (and I'm not sure we even used that term yet at the time). Equally important, we learned what we would not have learned in a standard psychology or educational department: that it was fine, indeed it was blessed, to range intellectually widely—to think and write about philosophy, the arts, policy, and current events. Education was to be considered as important and as legitimate as any other field of inquiry. Perhaps to some extent it was the time. The 1960s—a freer intellectual time, where one's number of peer reviewed articles was not the ultimate marker of quality. But I think it was also the unique intellectual atmosphere that surrounded Jerry Bruner (I was about to say "in his prime," but it's more accurate to say "in one of his primes.")

We have tried to repay our debt to Jerry in various ways. As I recall, you were a prime organizer of his 65th birthday and have written an entire biography on our teacher/mentor. I've also written a number of tributes and helped to organize the celebration of the 50th anniversary of his set-breaking publication The Process of Education.

But with all due respect to Jerry Bruner, I'm writing here to thank you for your personal and professional friendship over half a century. As you once remarked to me (and it may have been an offhand remark, but I'll never forget it), "A life goes by quickly." Only rarely have we lived in the same town, but we have taken advantage of meetings, colloquia, and celebrations to remain in touch, and I am the richer for it intellectually and personally.

Your essay is a brilliant attempt to tie together some of the many factors which determine whether an individual or an institution is capable of carrying out good work. It's of course an issue that my colleagues and I have wrestled with for many years. But you approach it from a very different angle, I might even say an "Olsonian" angle, drawing

on and bringing together various analytic stances that you have developed over the years.

As I read the essay, you are proposing that the dominant psychologies of the 20th century—Freudianism, behaviorism, even our once beloved cognitivism—have veered too far in an unproductive direction. In pointing out the many undeniable factors that strongly determine human thought and action, attention has been drawn away from a crucial factor: how we humans develop a sense of agency, a sense of responsibility, the capacity for self-control, the awareness and realization of intent, the insight to know what is right, and then, to the extent possible, to do the right thing. (The insistence of current educational policymakers on "accountability"—and then blaming teachers and principals if students do not perform adequately—is equally toxic and unproductive: just more of the "blame game.")

There is no magic formulate for achieving these desirable states. But a sense of responsibility, trust, and thoughtful agency will never happen unless we give young people the opportunities to try things out, to see their consequences (and to point them out if they are not discerned), to learn from their missteps, and then to take better and more informed steps going forward. Your discussion of how one learns to make and then adhere to speech acts, and the broader set of rules that undergird any functioning society, opens up a fascinating set of analytic and empirical possibilities.

Years ago, I might have nodded in agreement but thought to myself, privately, "Yes, sure these things are important, but after all, school is really for developing literacy, numeracy, and at least a patina of disciplinary and cultural analysis." I no longer believe that voice of decades ago. I have moved much closer to your argument that our fundamental obligation in education (broadly construed) is to nurture the kinds of citizens and human beings with which we would like our planet to be populated. As I have recently put it, "Intelligence may be important, but character is more important." Knowing that you have joined forces with the ideas of Good Work gives me hope that perhaps this "new dispensation" (as our teacher Jerry might call it) will begin to be heard by policymakers as well as by those who are closer to the educational grindstone every day. In which case, we all owe you an enormous debt of gratitude.

Norman Ornstein

Long before I met Howard Gardner, I knew of him. I knew about his pioneering work on intelligence. I knew about his MacArthur Award. I knew he was an academic and intellectual superstar. When I first encountered him in person, it was at a Renaissance Weekend at Hilton Head, and it was not by talking to him, but by hearing him opine, in a typically thoughtful and insightful way, on how people think. Impressive as it was, it was still only one of many impressive presentations at that annual New Year's gathering. Over the years, however, at first only by being together that one time a year, Judy and I became more than acquaintances or casual observers of Howard (and Ellen). We forged a deep and enduring friendship that includes both personal and intellectual bonds.

What I discovered quickly was that among the things I had not known about Howard was what a mensch he is. To friends, Howard is unendingly available, deeply empathetic, always insightful, and enduringly modest. When one is discussing a family or personal issue or problem, many friends find ways of turning the discussion quickly to themselves—one thinks of the classic line, "But enough about me. What do you think of me?" Howard does not do that—his attention, and focus, remain on you and your issue or problem. For one of such monumental reputation, accomplishments and renown, that is simply remarkable.

In part because of our friendship, and in part because of my own interests, I have become more aware of other components of Howard's professional life. The GoodWork Project is the key to understanding what makes Howard Gardner so special. Many scholars focus only on their academic work and are content simply to direct their ideas to a small circle of their peers. Howard is more interested in finding ways to use his research, skills, insights, and powerful intelligence in its many forms to improve society and to foster and expand the kinds of values that benefit our world and educate and inspire its citizens. Identifying good works, encouraging the development and expansion of the tools that enable others to do good works, and focusing his energies and talents on the common good is at the core of what Howard does.

Howard also has a deep affection for Harvard, where he has spent the better part of 50 years. But it is not an unquestioning affection—Howard cares deeply about the governance of this great university and its own values. His deep and thoughtful op-ed in the Washington Post after the cheating scandal reflects his passion about making sure that the right values are represented by the university hierarchy and in the university by its students, faculty, and alumni.

Howard Gardner makes the world a better place. He makes me want to be a better person, and to work as he does to make the world better. These are ample reasons to celebrate his life, his work, his spouse, and his persona.

Howard's Response to Norman Ornstein

The Gardners first met or at least observed the Ornsteins at the annual New Year's gathering called Renaissance Weekend, where families meet socially and present informal papers and discussions on all varieties of topics. It is straight description to say that the Gardner family was part of the large admiring audience, while the Ornstein family members were already the stars of the gathering. If Norm, Judy, Matthew, and Danny were not on first name terms with the First Family, they certainly could have been overhead referring to Bill, Hillary, and Chelsea.

It is our great fortune that the Gardners and Ornsteins have been able to return regularly to Renaissance Weekend. We have become very good friends, and we now seize every opportunity to meet, whether it is in Boston, Washington, Charleston, or more far-flung sites like Aspen. It sounds oxymoronic but, Norm and Judy, you are among the <u>funniest</u> and among the <u>most serious</u> persons that we know. (Norman, you are the more public person, but anyone who knows you both sees that the comedic gifts of the family are equally and lavishly divided.)

As the degree-bearing psychologist, I should be able to offer a deep Freudian explanation for this blend of humor and gravitas, the theatrical comedy and tragedy. But I have a simpler explanation. You are vital participants in the world, you are keen observers of the world, and you form your own opinions but do not hesitate to change them when the facts warrant it. Most importantly, you have learned the lessons of the *serenity prayer*: accept the things you cannot change, seek to change the things that you can, and have the wisdom to know the difference. Fortunately for the world, you have chosen many areas—large as well as small—in which you can make a positive difference. Our world and our time have benefited from the ways in which you both have invested your prodigious talents and energies.

David Pariser

I go back a long way with Howard, to my time at HGSE from 1972 to 1976. He was my thesis supervisor and through him I was introduced to the world of research into the arts at Project Zero. It was a heady time for me, living in Cambridge and sampling courses at the Ed School, in the Yard (The Faust Legend, The Novel from Cervantes to Dickens) and at the Carpenter Center (Art and Visual Perception, Advanced Drawing). Howard was a demanding but reasonable advisor whose greatest virtues were his phenomenal productivity and his passion for his subject matter, his thoroughness, and his dry humor. These traits permeated my every encounter with him and provided me with the model of an academic at the top of his game. I found it particularly inspiring to find someone who was clearly as engaged with the arts as he was with psychology and who did not consider it a sacrilege to apply rational empirical methods to shibboleths like the concept of creativity, or the mysteries of children's untutored and powerful use of imagery, language, and music. My academic training with him and with the folks in Learning Environments (Fred Erickson especially) served me well when I joined the Fine Arts Faculty at Concordia University in Montreal. In turn I have had numerous masters and doctoral students, and my approach to them has been modeled on the challenging, collaborative, and ultimately supportive way that Howard guided me.

Howard loves the arts, and he loves the process of examining the arts from a cognitive-developmental perspective. I can only thank my stars that his pedagogy was untouched by the first stirrings of that scourge of academic enquiry—the postmodern turn—which was waiting in the wings. He offered a main line orientation to cognition informed by such members of the pantheon as Piaget, Bruner, and Vygotsky.

The degree to which I was impressed and fascinated by Howard's commitment to his field of study and by his phenomenal productivity is best illustrated by a dream I had while his doctoral student. Late one evening, in Widener library as I pondered weak and weary over some weighty tome (perhaps something by the Godfather of Project Zero, Nelson Goodman?), I drifted into sleep. I awoke in my dream to a Widener Library transformed into Piranesi-like architectural extravagances: Huge racks of shelves reached 30 and 50 feet to a domed

ceiling, with a maze of buttresses and arches disappearing into the distant gloom. Deep crimson and blue curtains trailed from ceiling to floor, and venerable oak and teak furniture was everywhere and at every level. I was seated at an ornate refectory table with ancient and modern texts piled around me. I started to read, but was quickly interrupted by a book falling with a loud impact onto the table. I returned to my reading, only to have another book slam onto the table. I looked up, and scrutinized the racks and shelves that extended impossibly to the hazy vaulted ceiling. Another book fell from that great height, and I was able to identify the shelf from which it had come. I grabbed a wooden, brass-trimmed library ladder which gave access to the upper shelves and started to climb. When I was about 40 feet off the ground, I reached the shelf from which the books were falling. I looked carefully through the gaps, and discovered the cause for the falling books: Howard and Ellen were curled up in an embrace amidst the scattering books! As a lawyer friend of mine later commented, "*Res ipse loquitur*."

In addition to modeling the joys of academic productivity for me, Howard provided me with some basic tools which have served me well: curiosity, a concern for intellectual rigor, a deep affection for the arts, and a desire to understand how they function and where and how they originate. This perspective has served me well both as a teacher of art teachers and as a researcher in the arts in my own right. Another of his gifts to me was how he modeled respectful but hard-hitting debate. For example there is the lively and extremely relevant discussion that he had with Elliot Eisner published in the December 1996 issue of the journal, *Research in the Teaching of English.* Here Eisner and Gardner cross swords on the question of novels as social science research. The debate as reported is a model of respectful, lively, pointed, and informative exchange. Above all, it is a source of energetic disagreement among my own students who are surprised to see that the notion of "arts based research" is a controversial idea. But of course the controversy inhered not in the value of arts-based research but in whether creating a work of art should qualify as a dissertation in a social scientific field.

The studies Howard has made of creative individuals remain of relevance to my field and many others several decades after they first appeared, and I would wager that they will continue to stimulate and inform future students of the arts. In the field of education Howard has

made a signal contribution with his theory of multiple intelligences—an idea which, even if it is only dimly understood by the troglodytes that set educational policy, is a liberating and powerful notion that has opened many classroom teachers' eyes to the possibility that their students may gravitate towards radically different media and symbol systems.

Last, Howard has been a good mentor and friend—someone who has continued his connection with me once I left the academic nest and found my own niche. Over the years he has been present and helpful with suggestions, contacts and even books for my children. I recall his visit to Montreal, where, while savoring my mother-in-law's boiled chicken, he presented my six-year-old son with what Howard claimed was one of his own very favorite books—*Bartholomew and the Oobleck.*

I know that this event celebrates a certain milestone in Howard's peregrinations around the sun, but I am sure that with a track record like his, he will continue to exercise the same energy, curiosity, and productivity that impressed me when I was in Joyce's wonderful phrase, "Jung and easily Freudend." All the best to you Howard, Ellen, and to the family—and may you continue in good health and to be productive to 120!

Howard's Response to David Pariser

Your contribution has the wit and wisdom to turn the clock back a generation or more to the days when we could have been considered "young"—at least by some! We were all starting our careers. You, coming out of teaching, were forging a place for yourself in the scholarly area of arts education, drawing together the lessons from our masters Rudolf Arnheim, Elliot Eisner, Nelson Goodman, and others. With you, several of us were trying to carve out our own niches, our own audiences, and our own future directions.

Among other topics, you chose to join the controversial issue of whether the artworks of young children really bear a resemblance to the work of modern masters. (I had suggested as much in my 1980 book Artful Scribbles.) I do not believe that there is a simple right or wrong answer to that question. Without question, your research has deepened our understanding of what goes into various artistic creations and how they are judged by individuals of different backgrounds, holding and applying disparate standards. At the same time, you developed a broader approach to the teaching of young art students and future arts teachers, which you have used effectively with generations of students in Canada and elsewhere.

Both in your written remarks for the Festschrift and in your toast at the occasion, you spoke about more personal issues—our common Jewish backgrounds, our complicated but beloved families, and Ellen and my falling in love. Each of these remarks brought back rich memories, though not always precisely the same as yours. Your warm personal remarks stand as a reminder that we are not only professional colleagues, and not only contributors to the scholarly literature, but also human beings with families, friends, fears, aspirations, and, yes, dreams in vivid Technicolor.

Truth and the Citizen

David Perkins

In the best of all possible worlds, truth and productive citizenship would go together. Most citizens would know at least broadly what's happening, understand at least roughly the consequences of various choices, attempt at least a somewhat thoughtful judgment, and vote and act in support of appropriate persons, policies, and projects. In the best of all possible worlds … the world *Candide* enjoyed.

To those of us who live in *this* world, it's no news that in many national contexts, truth and productive citizenship do not cozy up to one another quite so comfortably. Speaking of no news, in the heyday of the Soviet Union the principal organs of printed news were the Soviet newspaper *Izvestia*—izvestia meaning "news"—and the communist newspaper *Pravda*—pravda meaning "truth." Which led to a very popular quip in Russian that translates, "There's no truth in *The News* and no news in *The Truth*."

If one response to the trials of truth and citizenship is ironic, add to that the dystopian. A signal feature of George Orwell's *1984* was the Ministry of Truth, a government organ declaring official truth and propagating it across the citizenry. Provocatively, Orwell worked at the Ministry of Information, the Senate house, London. The description of the Ministry of Truth in *1984* sounds very much like this edifice.

Alongside the ironic and dystopian sits the cynical. Slobodan Milosevic, the Serbian demagogue who stirred up years of violent conflict between Serbs and other ethnic groups, has been quoted as remarking, "What is not published has not happened at all!" (International Court of Justice, 2004). He was notorious for shaping public opinion by controlling the media.

One might hope that such unsettling sentiments would thrive only in totalitarian regimes, but remember the Ministry of Information from which George Orwell slyly adapted his vision of the Ministry of Truth. Or, for an example from the other side of the pond, Richard Nixon once commented as follows (as quoted in Barash & Lipton, 1985, p. 136):

It may seem melodramatic to say that the U.S. and Russia represent Good and Evil, Light and Darkness, God and the Devil. But if we think of it that way, it helps to clarify our perspective of the world struggle.

All this amounts to a reminder of something most of us know but may prefer not to think about too much: Good citizenship depends on a generous helping of truth. It depends on knowing what's what and what's going on, putting citizens in a position to make judgments about who or what to support and how to invest their personal energy. Yet ready access to the needed truths is nothing to count on.

One dismissive response to such fretting is as old as Pontius Pilate and as new as postmodernism: "What is truth?" With apologies for disappointing skeptics ancient and contemporary, it's not the aim here to wrestle with this cranky problem. I've tried to focus the dilemmas of truth taken up here more on matters of data and information than on matters highly interpretive. Of course, any card-carrying postmodernist would shout out that there's no such thing as pure truth. However, to put George Orwell to work again, in his *Animal Farm* all the animals were equal but some were more equal than others. So it is in the world of postmodernist truths: all truths may be equally impure, but some are more equal than others.

Another dismissive response would be to return to the contrast between democratic and totalitarian governments, with the remark that surely truth in a context of democratic citizenship is considerably more tractable, easier to chase in a Nixonian than an Orwellian world. Easier, yes, but not as much so as one might like. Indeed, the main focus here falls not so much on Orwell-size as Nixon-size problems of truth, of which there are plenty.

So here's how we will proceed. First of all, let's look at *the citizen's dilemma*, a quick profile of the challenges citizens face in sorting out truth toward good citizenly judgment. Then let's look at some factors underlying the citizen's dilemma, noting how difficult they are to deal with. Then let's consider how citizens typically manage problems of truth, and after that how society often tries to help them do so. Neither story is terribly reassuring. Finally, we'll consider some ways to do a bit better in a persistently imperfect world.

The Citizen's Dilemma

Since the time of the Greeks, democratic citizenship has been envisioned as a thoughtful undertaking. Citizens of nations—and today we are also encouraged to consider ourselves citizens of the world—are to make wise judgments about whom to vote for, what policies to support, where to lend a hand in behalf of the social good, and in general how to conduct themselves as committed and caring members of civil society.

Of course such ideal citizenship stumbles constantly on the potholes of human nature. Judgments are ideologically colored. Different people harbor different beliefs about what society owes to groups of various sorts, what constitutes just reward or punishment, what the law can constrain and what freedoms are essential, and far more. Then there is the all too frequent puzzle of those who do not care much, deciding and voting on impulse or not at all.

However, the puzzle addressed here is quite different—not so much how citizenly thinking operates for better or worse but what it operates *on* for better or worse: the data, the information, the baseline understandings. Ideally, citizens would at least begin from a common informational point of departure, but such is not so easily secured. The superficial adversarial form of political debate frequently confuses issues more than clarifies them. Misstatements and misleading attributions thrive. Newspaper and TV accounts are so "balanced" they communicate little basis for intelligent choice. Every special interest group manages to find experts to defend its view of the economy, healthcare, or military. With such puzzles in view, one might sum up the citizen's dilemma this way:

How can citizens make wise judgments toward a better society when relevant reasonably grounded baseline truths are so hard to come by?

One of several circumstances that put the citizen's dilemma on my mind was a puzzle of educational policy encountered by chance. The Harvard Education Letter for November/December 2008 (v. 24, no. 6) included an examination of universal pre-K education, pre-K not just for more impoverished students but for all students at state expense. Two opposing views appeared. One argued for a focus on expanding pre-K in poor communities and urged against government expenses toward universal pre-K. Another argued for universal pre-K.

As an educator, I was reasonably well oriented to the landscape but not so informed about the specific issue. So, I asked myself, how would I vote if there were a state referendum? Indeed such a referendum occurred in another state, California in 2006. Not such an easy choice for me, because the arguments on the two sides made opposite claims, claims not so much about the values involved as about what the research showed concerning benefits beyond poor communities.

Puzzles of this sort arise all the time from the journalistic practice of balanced reporting, which comes with a built-in paradox. On the one hand, we certainly don't want unbalanced reporting (well, some people apparently do, but never mind that). On the other, balanced reporting within sharply limited space tends to communicate an apparent standoff, for lack of the fine grain and point-counterpoint that might reveal weaknesses in one or another side.

These and like circumstances reminded me of a trio of themes explored in a pair of books by my long-time colleague Howard Gardner—the good, the true, and the beautiful. Gardner (2000, 2011) argued that these three together offer a broad perspective on what's worth knowing and understanding, and therefore teaching and learning. I became acutely aware that two of the three—the good and the true—were important partners in civic life. Although we must recognize the hallowed philosophical point that truths about the world do not in themselves entail values, good civic judgment inevitably depends on truths about the world—what is dangerous and what is not, what causes what and what does not, what will work and what will not. With commentators disagreeing about facts of the matter for universal pre-school, my value commitments did not have much grist for their mill.

Another much more prominent example of a hard-to-sort-out truth figured in the news several decades ago, around the impact of smoking on health. Some readers will remember how, as research began to emerge signaling strong negative effects, the tobacco companies fought a long-term rearguard action, throwing the findings into doubt in any way they could. While many researchers raised red flags about smoking, some researchers could always be found to raise red flags about the red flags. Almost everyone could agree on the values in play—health and impact on persons and families, the societal cost of health care, personal

freedoms—although people could disagree on their balance. But where was the foundation of facts?

A similar script has unrolled for several years now around issues of global warming. Evidence of genuine and alarming human influence keeps accumulating, while voices from a variety of special interests keep raising doubts. Citizens with the time and interest and technical background can become well-versed in the issue and reach their own grounded conclusions, but that's not most of us.

It's easy to point to other problematic issues—for instance the social costs and benefits of toughness on crime, the causes and cures of recent turmoil in the world economy, the viability of alternative healthcare systems, the impact of social investment in problems of poverty, the wisdom of greater or lesser military budgets, the influence of immigration on job availability, and more. In all such cases, technical professional knowledge seems to offer significant insight even at a relatively descriptive and not so interpretive level. However, these politically charged themes are magnets for grand pronouncements. The technical story rarely makes headway against the waves of rhetoric.

Please do not take all this as suggesting that in every case a clear deep truth merely awaits a proper hearing. Truth, like beauty, somewhat reflects the eye of the holder. Nonetheless, there are degrees of challenge. The aspirations of a jury trial offer a helpful analogy here. A jury of your peers will certainly include people of diverse beliefs and commitments. Even so, jury trials work hard to present jurors with a pool of data, information, and baseline understandings filtered for appropriateness by the judge and by advocates' opportunity to question relevance. Jury trials harbor many imperfections but the effort to come closer to reasonably grounded truths as a starting point is plain. Rarely do citizens pondering what policy or candidate to support share such a launching pad for their thinking. Hence, the citizen's dilemma.

Why the Citizen's Dilemma Arises

Is the citizen's dilemma truly so daunting? Someone might suggest that, if not a paper tiger, it's at worst a feral housecat. Yes, schools might do a better job teaching critical thinking in citizenship contexts. Yes, the nation would benefit from cultural influences that foster greater commitment to citizenly participation. Acknowledged, there are some

tricky aspects to our contemporary world of media and soundbites and special interests. Nonetheless, the heart of the solution might be nothing more than greater commitment and better critical thinking.

As a researcher and educator professionally concerned for decades with the teaching of thinking, I'd be pleased to find my discipline so central. However, greater commitment and better critical thinking would, I fear, fall far short of resolving the citizen's dilemma. Why? Because the judgments asked of people in their roles as citizens in today's societies are difficult in three ways at once: *inherently technical*, *inherently dialogical*, and *inherently adversarial*. A few words on each:

Inherently Technical

We live in a technical world today. Economics, healthcare, energy resources, military defense, ecological management all involve technical issues about causes and effects, ways and means. The policies and procedures that might serve are not just matters for casual opinion. They commonly call upon some understanding of statistics and probability, concepts and findings from the hard sciences, engineering, economics, and the social sciences, and the perspective of history. Of course, no one can be well-informed about everything. However, just getting up to speed in a rough and ready way on a typical issue can be challenging.

Compounding the difficulty is the uncertainty of expert judgment in some fields. For instance, Tetlock (2005) reported an extensive study of the reliability of predictions in the areas of politics and economics from 284 people who made such predictions as part of their professional lives. He found that they did hardly any better than non-experts and worse than some relatively simple rules and models. This does not mean that experts can never be trusted. It simply means that reliability varies greatly with the area of judgment, economics and politics being "chaotic" systems like the weather where medium to long-term prediction is precarious.

Inherently Dialogical

The term dialogical comes from the dialogues of Plato and the legacy of the Socratic process of systematic discussion and questioning. There are more and less elaborate conceptions of what dialogical includes, but serviceable enough here is a relatively straightforward

reading: dialogical issues are complex, involving a tangle of facts and values, allowing multiple perspectives, and thus inviting some kind of systematic social sorting out.

The sorts of issues up for discussion in the public arena tend to have a dialogical character. One simple reason for this is that easier issues allowing straightforward and compelling technical resolution by and large get resolved by the experts.

Inherently Adversarial

Inquiry can be collaborative, adversarial, or anywhere in between. Collaborative inquiry does not mean that everybody begins by agreeing on the basics or ends by agreeing upon the conclusion. However, participants see themselves engaged in and committed to a common endeavor, with no big reasons to disagree extrinsic to the inquiry.

Adversarial situations are quite different. They boil with ideological conflicts, economic stakes, political power plays, and the reach for audiences and adherents. Sometimes disagreement itself is the point, one group feeling the need to disagree with another simply to declare its identity and secure its constituency. Winning the game rather than resolving the issue is paramount.

For example, recently political columnist James Carroll commented on the polarized pre-election political rhetoric in the United States (Carroll, 2012). Carroll drew a connection with the thinking of Vaclav Havel, the recently deceased former president of Czechoslovakia, who warned how power brings a "system of ritual signs that replace reality with pseudo-reality." In the politicking, Carroll urged, both Republicans and Democrats could be seen maintaining ritual stances on various issues that rather plainly do not align with reality.

So … why does the triple threat of inherently technical, dialogical, and adversarial issues loom so large in the public sector? After all, professional issues in many fields share these problems. Perhaps this is the main reason: public discourse is not very well structured to deal with the triple threat.

Again a comparison to jury trials helps to clarify. Jury trials routinely involve technical issues, for instance about the significance of

DNA evidence—but expert witnesses strive to explain the technical side of the story in ways reasonably accessible to the jurists. To be sure, trials are intrinsically dialogical and adversarial, with complex issues of truth and value—but the trial structure, with opposing counsels, witnesses, the judge as a referee and editor of what can count as evidence, and the jurors without blatant initial biases—constitute a structure designed to support a dialogical adversarial process.

Academic fields from astronomy to zoology have their own mechanisms for coping with the triple threat. Journals give voices to different viewpoints and often invite response and debate. Panels at conferences provide settings for publicly engaging tricky issues. Academic inquiry is not so commonly starkly adversarial, although it can be, but at any rate the typical pathways and protocols of scholarly exchange maintain civility and support complex fine-grained debate.

The ROI Problem

Finally, there is a fourth and more individual side to the citizen's dilemma. I, or any of us, have to decide how much thoughtful effort to invest in arriving at a better-grounded personal position.

I might ask myself, "Does the issue matter to society at large?" Perhaps it does, and that's one good reason to attempt a careful decision.

I might also ask myself, "Does it matter to me, my family, my neighbors, my peers?" That would be a personal reason to consider my position carefully. The problem is, many issues that matter to society broadly do not touch me and those closer to me very much. I want to be responsible, but I particularly want to be responsible to those closer to me.

Then I also ask, "Will investing effort allow me to arrive at a much improved position?" Often my answer is not encouraging. Because of the triple threat and the absence of strong structures for supporting complex public discourse, I could spend a great deal of time browsing websites, reading books, and listening to speeches without confidence that I had achieved a much better grounded position.

Finally, I have to ask, "What will be the influence of my position on social decisions?" The point here is all too familiar: an individual's vote is

a drop in the bucket. Stronger patterns of influence such as writing an editorial or going to the streets with an activist campaign involve much more investment of effort.

One could summarize all this as the problem of ROI (Return On Investment):

Relatively high investment of effort by an individual citizen yields relatively low improvement in the soundness of positions, in a context of relatively low influence on elective and policy outcomes, and often in a context of relatively low personal significance.

Notice that this goes well beyond the commonplace observation that individual voices count for little.

The ROI problem may sound like a cynical plug for thin participation in civic decision-making. Not at all! The aim is not to suggest that citizens should simply bow to such forces but rather to explain why in fact they may commonly do so.

How Citizens Deal with the Citizen's Dilemma

The citizen's dilemma is more than an analytical perspective, it's part of our experience. Again and again, we scratch our heads about one or another social issue or choice. In that best of all possible worlds imagined at the beginning, citizens would meet the dilemma head-on through some kind of prolonged dedicated critical engagement. What happens instead?

Hearteningly, people often respond adaptively rather than brushing social issues aside. Not so hearteningly, what people generally do falls well short of thoughtful decision-making.

A useful perspective comes from the notion of *heuristics*. Heuristics are strategies people deploy in problem solving situations lacking a guaranteed solution procedure. When such a procedure exists, as for instance for addition or subtraction in mathematics, by all means let's apply it. When such a procedure does not exist, as say in trying to construct a proof of the Pythagorean theorem, heuristics are an important resource. Classic heuristics for problem-solving include, for instance, dividing the problem into parts and trying to solve each part in turn, or formulating and trying to solve a simpler version of the problem

first, as a stepping stone (Polya, 1957). Heuristics come without guarantees, but they often help.

The catch for truth and the citizen comes from recognizing two different kinds of heuristics, let's call them search heuristics and shortcut heuristics. Search heuristics, like those just mentioned for problem-solving, don't guarantee a solution but they typically do not generate outright mistakes. Shortcut heuristics, in contrast, get you quickly to an answer that's often right or right enough, by bypassing more elaborate but safer procedures.

Here is a favorite example of a shortcut heuristic, drawn from an elementary school child explaining how to approach story problems in arithmetic (Taba & Elzey, 1964):

I know what to do by looking at the examples. If there are only two numbers I subtract. If there are lots of numbers I add. If there are just two numbers and one is smaller than the other it is a hard problem. I divide to see if it comes out even and if it doesn't I multiply.

Mathematically, it doesn't really work. It skips the story part of a story problem and just makes a guess based on the numbers. Practically, it works much of the time, but without understanding the math.

People use shortcut heuristics in many areas of life, for instance in sizing up probabilities, making generalizations from experience, and attributing character traits to people (Kahneman, Slovic, & Tversky, 1982). And people use shortcut heuristics to cope with the citizen's dilemma.

Here are some shortcut heuristics for getting information and viewpoints about an issue.

- I might talk it over with friends
- Or read a couple of short editorials, or follow a commentator aligned with my political leanings.
- I'm likely to manage with information and viewpoints that come my way rather than searching through volumes of information.
- I'm likely to focus on anecdotes that make the matter vivid, rather than sifting through statistics and technical discourses.

That gives me information and viewpoints, but how can I come to a position?

- I might simply align with the trend of my party or other identity group.
- Or follow my general values, not the details of the matter at hand. For instance, if I'm concerned about immigrants and the policy seems to discourage immigration, good enough, never mind exactly what the policy says or how it works.
- When it's a question of voting for candidates, I might vote for character and general stance without looking carefully at platform.
- For the shortest shortcut of all, I might simply follow my gut.

Most people reading this quite likely have used such shortcuts many times. So have I. It's easy to disdain them for their superficiality, but notice that they are not completely irrelevant to good decisions. I do get some traction from information I pick up in conversations, through casual reading, through vivid anecdotes. Following my established affiliations and values makes more sense than ignoring them. Apparent character and general stance presumably have something to do with how an elected official might perform, even if not as much as we would like.

So shortcut coping heuristics do make some contribution to a reasonable decision. Modest though that contribution is, remember the ROI problem from the previous section: investing a lot more effort does not generally gain me that much. Given that, shortcut coping heuristics seem rather natural for all but the most dedicated.

How Society Tries to Help with the Citizen's Dilemma

Plainly citizens need help with their citizenship roles. So let's recognize: some help is there! Democratic societies include a range of institutions that in various ways moderate the plight of the citizen in the face of complex issues.

That acknowledged, the circumstances remind me of one of the minor characters from the classic cartoonist Al Capp, a scraggly fellow by the name of Joe Btfsplk (the last name pronounced like a raspberry or Bronx cheer). Joe's problem was that he was a jinx, bringing bad luck to everyone around him. Capp symbolized this graphically as a storm cloud always hovering over Joe's head.

Typical social strategies to help with the citizen's dilemma seem kind of like Joe. They come with clouds that somewhat jinx their contributions.

Representative democracy provides a case in point. One benefit of representative democracy is that representatives in their roles have professional time to work their way through at least some of the technical, dialectical, and even adversarial aspects of issues. And they have staffs to help. Ordinary citizens do not. So far so good, but here's the cloud over Joe's head: the power positions inherent in representative democracy motivate power consolidation and contribute to the formation of political power blocs, with representatives voting party lines rather than issues.

Another assuredly important democratic institution is freedom of speech, with a range of social media giving citizens access to abundant information and diverse perspectives. Again, so far so good. The version of Joe's cloud that comes with this one is the emphatic lack of critical filtering. Courtroom practices again offer an illuminating contrast. The judge and protocols for advocates raising objections constitute a critical filter whereby neither witnesses nor legal representatives can say any old thing they want. Fact checking agencies in the political arena provide a junior version of the same function, and might contribute more if there were any way to ensure that their comments were noted. More typically though, the grand position-laden pronouncements of the major figures earn far more attention than the next-day annotations from fact-checking agencies.

Another hallowed institution is the political debate, a forum for candidates to advance whatever data they wish along with perspectives and interpretations and values in a dialogical context. Unfortunately, the available time and protocols for such debates push them to the shallow end of the pool. They tend to be brief, full of spin, and aglow with the public personas of candidates more than their substantive capabilities as strategic leaders. Professional debates in journals and conferences, subject to editorial attention and often sustained over a considerable period of time, offer a cautionary contrast.

Ethical journalism calls for balanced media treatment, another important contribution. Every significant voice deserves to be heard, a

fundamental of the democratic process. Joe's cloud has already been mentioned for this one—the illusion of even balance this tends to produce when space is limited as it often is.

Yet another democratic institution with potential is policy-oriented research from universities and think tanks. Joe's cloud here is that much of this policy-oriented research is itself starkly agenda driven, and indeed supported by special-interest groups. In the US, a number of think tanks with emphatic Republican or Democratic bias offer clear illustrations.

Let me mention just one more, a particularly quirky example. Many of the puzzles of truth in a democracy emanate from conflicts of interest. So it would seem that expectations for disclosing conflicts of interest would very much serve the social-political process. Citizens would be in a better position to discount some of what they heard, and spokespeople themselves, having confessed a conflict, might moderate their claims.

Disappointingly, recent research suggests just the opposite. When people hear a conflict of interest confessed, they tend to be less critical of statements that follow rather than more. But spokespeople who acknowledge conflicts of interest seem to feel that they thereby have bought a license to say then whatever they want, and show more, not less, bias in their subsequent statements (Humphries, 2011).

The darkest conclusion one might draw is that we are better off without the various social institutions of democratic practice. The Joes come with too many clouds. But that's not at all the point. Certainly these mechanisms take steps in the right direction, and indeed their absence marks totalitarian and/or deeply corrupt regimes. The conclusion rather is that these patterns and practices are by and large good to have, but not good enough.

Ways to Help More

The ROI problem is a particularly sharp expression of the citizen's dilemma. Recall how relatively high investment of effort by an individual citizen is likely to yield a relatively low gain in the soundness of the position achieved, in a context of relatively low influence on elective and policy outcomes and often relatively low personal significance.

The low influence side of the problem affords little opportunity. The very idea of democracy pivots on many voices each of which intrinsically cannot weigh that much.

More promising approaches address the high investment part of the ROI problem. What if we could lower the investment of effort required to reach a sounder position? If this seems impossibly idealistic, remember the focus here on descriptive information rather than highly interpretive or value-laden "truths," the former not immune from but at least less dominated by frames of reference.

So can we imagine civic processes that reduce citizens' effort for greater gains in at least some point-of-departure truths? Yes we can. Here are three examples, offered not as magic-bullets but simply illustrations of possibility.

Calibration Information

Baseline descriptive information figures importantly in many contentious issues. Moreover, often citizens appear to diverge widely and wildly in their "calibration." Suppose for instance that people are concerned with immigrants displacing citizens from jobs. How often does this actually happen, and for what sorts of jobs? Consider worries about off-shoring, the loss of jobs to other countries as industries relocate or digital services get delivered from other nations via the internet. How much of the job picture does this actually represent?

Imagine then a variety of social mechanisms—schools, newspapers, websites—dedicating some resources to providing simple clean timely baseline information to help citizens get calibrated (the next heading says more about information channels). How would such a strategy address the triple threat of issues that are inherently technical, dialogical, and adversarial?

For the first, calibration information would be drawn from established expertise. Experts might disagree some, but remember calibration information is more descriptive than interpretive. As to dialogical and adversarial, by design calibration information falls on the fringe of that Sargasso Sea, yet it can be tremendously important to making sense of the center. For instance, sometimes issues pumped up in people's minds by political rhetoric turn out to be relatively minor

factors in the big picture. Certainly some of this calibration information would be met skeptically by those whose beliefs it ruffles, but if developed by carefully neutral institutions it might get some traction.

Fingertip Sources

Imagine that a range of social institutions constituted what we might call fingertip sources, putting pertinent information within ready reach of any even mildly interested citizen … calibration information but much more. Suppose that major newspapers, never mind their political slants, generally made available fact checks of political statements quickly and prominently. Suppose that Google offered highly visible front-page links to fact-checking analyses for any user who did not deliberately exercise an opt out. Suppose that newspapers, paper and online, adopted a strategy from typical review patterns for technology devices, tabular summaries of issues in ways that itemize factors and briefly profile critical points. Now and again such layouts do appear, but they could be commonplace.

Back to the triple threat of technical, dialogical, and adversarial, how might fingertip sources help? Expert information compiled by carefully neutral institutions could provide technical input. Some of the dynamic of dialogical and adversarial discourse could be captured in those multi-column layouts that highlight the key points in contention—although which position you take is a highly dialogical and adversarial matter, the profiles of the positions constitute a cooler representation a level up, a map of the territory rather than a battle for its possession.

Policy Juries

Juries have already earned mention a couple of times to illustrate a better, although certainly imperfect, truth-seeking process. In this spirit, imagine policy juries.

These are small groups of citizens convened to work through a particular issue. Policy juries, like conventional juries, draw upon citizens with no initial blatant bias. Jurors receive compensation from neutral agencies. Advocates for two or more perspectives present their cases to the jury, their input moderated by a neutral judge attending to points of order. The jury's charge is to take the time to work through a complex issue and deliver some kind of measured judgment, one which,

unlike the classic guilty/not guilty, can be nuanced. Of course, unlike typical juries, their deliberations would not be binding, but rather a perspective for society at large.

Again it's worth asking how this mechanism might address the triple threat of technical, dialogical, and adversarial issues. As in criminal trials, expert testimony to the jury, including opposed experts, would inform jurors technically. The judge's rulings and a process of objections would filter out uninformed testimony. Advocates for multiple perspectives plus the process of jury deliberation itself would provide a dialogical and adversarial element. Certainly divergent viewpoints would arise within the policy jury process, and could be expressed in the jurors' report. However, the jurors would not begin their work from obviously polarized stances, in contrast with, for instance, many a congressional committee, where members have often made up their minds in advance.

Truth on Trial

Calibration information, fingertip sources, policy juries—nice ideas perhaps, but it's not difficult to see some problems. Recalling Joe Btfsplk and the small storm that followed him around, these notions come with their own evident clouds. However, please remember the mission, not magically to clear the skies, only to brighten the day a bit.

The day could use some brightening, because every day truth is on trial in a democracy. When we think of problems of truth and governance, we usually wince at the wild distortions of dictatorships or profoundly corrupt regimes, the sorts of examples mentioned in the introduction. But truth turns out to be a tricky quest in much friendlier surroundings. The triple threat of inherently technical, dialogical, and adversarial makes truth an uphill climb, and the hill gets steeper yet with the ROI problem. The individual response is natural—shortcut coping heuristics that accomplish something but not nearly as much as one would like. The social response of (sometimes) balanced journalism, fact-checking, and so on is a far from sufficient remedy.

The good news: we can readily imagine stronger supports for the citizen's dilemma. It's hard to say whether the future of democratic settings will include such mechanisms or anything like them, but the very possibility constitutes a kind of encouragement. If we cannot

realistically expect those small thunderclouds to vanish, we can at least hope to shrink them, helping Joe Btfsplk to become a better Joe Citizen.

References

Barash, D. P., & Lipton, J. E. (1985). The caveman and the bomb: Human nature, evolution, and nuclear war. New York: McGraw-Hill.

Carroll, J. (2012). Speaking truth to power, in the world that's full of lies. *The Boston Globe*, January 9, p. A11.

Gardner, H. (2000). *The disciplined mind: beyond facts and standardized tests, the K-12 education that every child deserves.* New York: Penguin Books.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the 20-first century.* New York: BasicBooks.

Humphries, C. (2011). Deeply conflicted: How can we insulate ourselves from conflicts of interest? The most popular solution—disclosing them—turns out not to help. *The Boston Globe*, May 15, Ideas section, start page C.

International Court of Justice (2004). Web record: http://www.icj-cij.org/cijwww/cdocket/cbhy/cbhy_pleadings/cbhy_cr_2006_10_20060306_translation.pdf

Kahneman, D., Slovic, P., & Tversky, A. (1982). *Judgment under uncertainty: Heuristics and biases*. Cambridge, UK: Cambridge University Press.

Polya, G. (1957). *How to solve it: A new aspect of mathematical method* (2nd ed.). Garden City, New York: Doubleday.

Taba, H., & Elzey, F. (1964). Teaching strategies and thought processes. *Teachers College Record*, *65*, 524-34.

Tetlock, P. (2005). *Expert political judgment: How good is it? How can we know?* Princeton, NJ: Princeton University Press.

Howard's Response to David Perkins

One can never know whether there will be books in which the history of Project Zero is chronicled and, if such ever materialize, what description will be given of the leadership over time of the organization to which we have in effect devoted our professional lives.

The facts, as I recall them, can be readily summarized. As young doctoral students, you working with Seymour Papert on "artificial intelligence" at MIT; I was working with Roger Brown on cognitive and linguistic development at Harvard. We were recruited/enticed/dragooned into serving as research assistants for Nelson Goodman, a distinguished philosopher who was launching at the Harvard Graduate School of Education—a research project on basic processes in arts and arts education. You and I both found facets of the work intriguing and made it central to our studies. When Nelson announced his imminent retirement, you first took over the helm alone (1971-1972) and then I joined you for what turned out to be a 28 year managerial marriage (we were, for all the world, co-directors of Harvard Project Zero until we stepped down in 2000).

It is a great source of satisfaction for me, and I suspect for you, that since then we have had three smooth leadership transitions, and while we remain as *éminences grises* on the Steering Committee, the organization has a program and a dynamism which is no longer dependent on either or both of us. (For those readers who want to know more about the history of Project Zero, as I've conceptualized it, see:

(http://projectzero.gse.harvard.edu/assets/pz%20history%20revised%209%2010%2013.pdf.)

I think it would be fair to see that ours was a co-management arrangement. Each of us maintained our own research shop—yours under the title "The Cognitive Skills Group," mine under the title "The Development Group." Though those titles have long since disappeared, we can still discern a historical allegiance for many of our old-timers/lifers. Occasionally, our groups did work together, most prominently in the Spencer Foundation project "Teaching for Understanding." When Project Zero was small and our offices were close by, you and I would simply meet as needed to discuss issues of

personnel, finance, prospects, school administration, the upgrade of the Xerox machine and, perennially, space (Translation: Where will they put Project Zero next? And will there be room for chairs and a small refrigerator?).

As the Project grew in size and complexity (in the 1990s, we had up to 60 individuals on the rolls and a budget of several million dollars a year), it was clear that we needed a more official bureaucracy. And so we experimented with various kinds of managerial arrangements, some more successful than others, while still trying to keep the overall ship flat and flexible and afloat, which we sometimes succeeded in doing.

When it comes to style, I think that most would agree that I am more decisive, aggressive, and vocal about what should be done, while you are far less likely to speak up, and when you do, it is likely to be in a softer, more ecumenical voice. You certainly believe much more in "the wisdom of groups" than I do, though we sometimes joke that when all has been said and done by everyone, we should then simply lock you, Dave, in a room with a pencil or word processor and you'll come out some moments later with the best solution.

Whether our different styles were a plus or minus is for others to say, but I feel comfortable in saying that rarely did we come to festering disagreements. In nearly all cases, we were able to work things out, and I think that consensual style contributed to the relatively smooth running of the organization, in the past and continuing until today.

I've been a leader, rather than a rank and file member of Project Zero. But I venture to say that our complementary styles, and our complementary interests, have been a boon to those individuals—now in the hundreds if not more—who have spent at least a few years working at Project Zero. We develop ideas, we push them in the right direction, and, most important, we have little that resembles an orthodoxy. You and I have both written about intelligence, leadership, creativity, collaboration, interdisciplinary work, arts education, and no doubt a dozen other topics in-common. Rarely are we exactly on the same page, but we are looking for illumination rather than for conflict. Accordingly, those who work on the same floor, so to speak, have a variety of personal styles to learn from, as well as a variety of ideas relevant to the worlds of education and educational reform.

Each summer we hold two institutes, and you and I almost always give one or two talks at each. When I hear the title of your talks, I sometimes make a mental note such as, "Oh, that's the talk about X…." and I figure I don't have to pay much attention. We both believe in "symbolic conduct" (your invaluable term), and so I come and listen dutifully (as do you). But I can honestly say that the time is invariably well-spent: you are always thinking about new issues, or about old issues in new ways, and so those who listen to Dave Perkins speak—whether they've heard him speak once or one hundred times—are not disappointed.

Occasionally, you and I venture on to quite new topics, ones we have not spoken or written about before. That's the case with your essay in the Festschrift. In what I can say is inimitable Perkins-esque style, you talk about the importance of a respect for truth and the need for well-informed citizens. Who, except a dyed-in-the-wool post-modernist or nihilist, could quarrel with those worthy ends?

But then, on the basis of both analysis and empirical findings, you delineate the tremendous challenges to figuring out what is true; to helping people realize that the truth actually matters; and to then yoking whatever understanding may ensue to a commitment to take the role of citizen seriously and to try to make the best decisions, all while surrounded by perpetual argument, all too often motivated by considerations other than truthfulness or civic responsibility.

Just as we are about to throw up our hands in despair (as the situation is really a mess), Dave Perkins, the thoughtful educator, comes to the rescue. As you have so often done in the past, you put forth apparently simple but powerful proposals, such as sources available at one's fingertips, or policy juries empowered to work through complex issues and reach some kind of a grounded consensus. In your own terms, Dave, you remain the "theoretical" or "idea" visionary. As in the past, I fully suspect that political and practical visionaries will appear and help put your promising ideas to the test.

Reconsidering the Nature and Multiplicity of Intelligence: Building on Howard Gardner's Conception

Bennett Reimer

I'm delighted, both professionally and personally, to contribute to this celebratory volume in honor of Howard Gardner, an honor he richly deserves.

I first met Howard in the late 1960s, when I was invited to serve on a panel to discuss issues of the arts in the schools. I was instructed to fly from my home in Cleveland, where I was Chair of the Music Education Department at Western Reserve University, to LaGuardia Airport to meet with others going to the conference to share a van to the meeting at a site a bit north of New York City. Among the gathering at the airport waiting for latecomers were colleagues in arts education I had known for years, some I knew only through their work and was pleased to meet, and a young man clearly not one of the well-established professionals who would be presenting at the meeting. I introduced myself and asked him whether he, too, was presenting.

"Oh, no," he replied. "I'm just observing. I'm working on my doctorate at Harvard and my advisor thought this was a conference I'd get a lot from."

"Well," I said, "I hope your advisor didn't lead you astray."

At the conference Howard occasionally participated during the discussion sessions, and each time he asked a question or made a comment my eyes widened. "Good Lord," I thought. "This young man is bright as hell! I'd bet he's someone we'll be hearing about some day."

Little did I know.

I was later to be involved with Howard as members of a Rockefeller Brothers Fund project to identify exemplary arts programs in schools in the United States, and in 1986 he persuaded me to be a member of one of three two-person research teams to study how the arts were being

taught in China's schools. My assignment was music, of course, and my three months in China remain with me today as one of my most difficult yet fulfilling tasks. In these and other interactions with Howard I thoroughly enjoyed him as a person, a scholar, and a project leader.

The depth and breadth of Howard's writing and lecturing are well known to all who are contributing to this volume, of course, and to much of the world's intellectual community along with various other communities he has addressed in his prolific output. At one early point in his career I promised myself that I would attend to his publications faithfully, impressed as I was with his initial contributions. That proved to be pretty much impossible, his fecundity outstripping my industriousness.

So I concentrated on what most closely related to my own work in the field of education, particularly in arts education and specifically in music education. His *The Arts and Human Development*;[1] *Art, Mind, and Brain: A Cognitive Approach to Creativity,*[2] and *The Mind's New Science: A History of the Cognitive Revolution*[3] helped fill in my own developing interests in cognitive construals of education and of the arts as cognitive domains, as did, especially, *Frames of Mind: The Theory of Multiple Intelligences.*[4]

These contributions by Howard, along with other publications at that time influenced by cognitive approaches to education and the arts, were influential in my decision to revise my *A Philosophy of Music Education*[5] to include and develop principles relating to the mindful nature of music and of education in music, thereby enhancing our perceptions of music's status and our attempts to incorporate such

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[1] Howard Gardner, *The Arts and Human Development* (New York: John Wiley and Sons), 1973.
[2] Gardner, *Art, Mind, and Brain: A Cognitive Approach to Creativity* (New York: BasicBooks, Inc.), 1982.
[3] Gardner, *The Mind's New Science: A History of the Cognitive Revolution* (New York: BasicBooks, Inc.), 1985.
[4] Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: BasicBooks, Inc.), 1983.
[5] Bennett Reimer, *A Philosophy of Music Education* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc.), 1970.

understandings in the ways we value and teach this art (*A Philosophy of Music Education, 2nd Edition*).[6]

In addition, Howard's work on intelligence prompted me to delve deeply into intelligence theory and to begin to find myself deeply impressed with and also puzzled by some of his approaches to and proposals on this topic. I was pleased that he focused on the multifaceted nature of intelligence, as I had also begun to do, and especially that he named, flat out, music as one of his seven original intelligences. How could a philosopher of music education of a cognitivist stripe *not* be delighted with his position?

Yet as my thinking about his conception of frames of mind evolved, I was led to construct alternative positions to a variety of his proposals, positions I would not have been able to articulate if his had not led me to do so. My own theoretical advancement on issues of intelligence (if I may be allowed the term "advancement") was influenced both by similarities and differences in our positions, for which I am grateful. Our attempts as scholars to build what we regard to be more secure foundations in our thinking are often taken in the footsteps of others who have taken this journey, our paths diverging occasionally when other directions seem more enticing.

For example, Howard's conception of the multiplicity of intelligence led him to conclude that human minds are framed not by a single intelligence but by various ones, originally seven: linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal.[7] Eschewing the established position in much if not most intelligence theory "that intelligence is a single faculty and that one is either 'smart' or 'stupid' across the board,"[8] he claimed, probably correctly, that "I may have been among the first persons to violate the

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[6] Reimer, *A Philosophy of Music Education, 2nd ed.* (Englewood Cliffs, New Jersey: Prentice Hall, Inc.), 1989.
[7] Gardner, *Frames of Mind.* Chapters 5 through 11 (73-276) discuss and explain each of the seven.
[8] Gardner, *Intelligence Reframed: Multiple Intelligences for the 21st Century* (New York: Bauer Books, Inc.), 1999, 34.

rules of English (and other Indo-European tongues) by pluralizing the term 'intelligence.'"[9]

This move caused him, thankfully, to reject "the psychometric approach to intellectual plurality [which] was (and still is) generally restricted to those faculties assessable through brief oral questions or paper-and-pencil instruments."[10] This liberated him, and many others including me, from a rigid quantification so often depended upon in work on the nature of intelligence.

After a discussion of the reality "that there is not, and there can never be, a single, irrefutable and universally acceptable list of human intelligences,"[11] Howard asserted that "it must be admitted that the selection (or rejection) of a candidate intelligence is reminiscent more of an artistic judgment than of a scientific assessment."[12] He nevertheless opted at that time for the seven frames of mind as those that satisfy his prerequisites for what can be considered an intelligence. "To my mind," he writes, "a human intellectual competence must entail a set of skills of problem solving—enabling the individual *to resolve genuine problems or difficulties* that he or she encounters and, when appropriate, to create an effective product—and must also entail the potential for *finding or creating problems*—thereby laying the groundwork for the acquisition of new knowledge."[13] (Emphases in original).

This "prerequisite" of intelligence (later, in a slightly revised form, he calls it a "definition"),[14] is founded on a set of eight criteria, or "signs," that led him to qualify his seven initial frames of mind as being, in fact, intelligences: potential isolation by brain damage; the existence of idiots savants, prodigies, and other exceptional individuals; an identifiable core operation or set of operations; a distinctive developmental history along with a definable set of expert "end-state" performances; an evolutionary history and evolutionary plausibility; support from experimental psychological tasks; support from psychometric findings; and

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[9] Ibid.
[10] Ibid., 35.
[11] Gardner, *Frames of Mind*, 60.
[12] Ibid., 63.
[13] Ibid., 60-61.
[14] Gardner, *Intelligence Reframed*, 33-34.

susceptibility to encoding in a symbol system.[15] But despite his skepticism of quantification as a viable mode by which to understand the nature of intelligence, a different order of quantification, along with a variety of difficulties, entered the scene.

First, he soon found himself in need of expanding the original list of intelligences, thereby diluting what had come to be regarded as an established base for those anxious to finally have the slipperiness of intelligence definitions anchored to the ground. After all, if the comprehensiveness of the initial seven turned out to be insufficient by their author, even in face of the rigor of his eight criteria, how many others might crop up in an accumulation soon having no end in sight? In recognition of this uncertainty, Howard was extremely modest in regard to how definitive any of the eight criteria could be, and therefore in how definitive any list of intelligences such as the seven he was proposing could be regarded to be.

Second, he encountered a good deal of difficulty in justifying why and how he was expanding his list, having to continue to verify the high level of indeterminacy and subjectivity of choice-making in this arena that he had previously taken pains to point out, yet arguing for the need to do so anyway. A new frame he was now proposing—a naturalist intelligence, seemed to fulfill his eight criteria, so he boldly broke the mold of seven by stating that "I have thus acknowledged an eighth intelligence by a simple performative speech act."[16] (Read: "It is an intelligence because I say it is," a flash of humor that delightfully bubbles up now and then in Howard's writing).

In addition, he gave consideration to two other possible candidates, a spiritual intelligence, and an existential intelligence. He soon rejects the spiritual, at least as broadly conceived, in favor of a more narrowly defined version of the spiritual termed "existential," which "may well be admissible." But he finally decides to not add it to the list as a ninth because "I find the phenomenon perplexing enough, and the distance from the other intelligences vast enough to dictate prudence—at least for

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[15] Gardner, *Frames of Mind*, 63-67.
[16] Gardner, *Intelligence Reframed,* 52.

now. At most," Howard concludes, "I am willing, Fellini-style, to joke about "8 1/2 intelligences."[17]

The notion of frames of mind as he had conceived them was, for me, weakened in explanatory power by the high level of indecisiveness attached to this way of specifying how intelligence is exhibited. An alternative was needed, it seemed to me, one that recognized the sagacity of Howard's theory, along with his refreshing openness about its many vagaries, but which took other directions more fruitful for stabilizing and simplifying our conceptions of the substantive qualities of intelligence and of how it works in human functioning. Although his chapter "A Critique of the Theory of Multiple Intelligences" in *Frames of Mind*[18] is a memorable and educative model of modesty, honesty, and professionalism, so typical of Howard's work, his theory seemed to me to have become uncomfortably indecisive. Nevertheless my own attempts to deal with the fascinating field of intelligence theory were influenced importantly by the wisdom of his writings. I also emulated Howard in regarding my forays into this and other complex topics as being necessarily tentative and evolutionary.

At the core of my search for a more persuasive concept of intelligence was a phrase in Howard's definition, that "it must entail a set of skills…." He stipulates what such a set would enable—resolving genuine problems or difficulties, creating effective products, and finding or creating problems. But one can accomplish these things (and countless others) with a high degree of intelligence or a low degree of intelligence. Intelligence is not itself those accomplishments but the set of skills and processes that *enable such accomplishments to occur*. Stipulating what those skills and processes consist of identifies what intelligence *is*; a way the mind works to accomplish all sorts of good results such as resolving problems, etc. (or, as Howard well explains, to accomplish bad results as well).[19]

A competent teacher, for example, can quickly and accurately gauge the level of intelligence a student possesses in regard to a problem

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[17] Ibid., 66.
[18] Gardner, *Frames of Mind,* 277-298.
[19] Gardner, *Intelligence Reframed,* 45-46.

by discerning, through the lens of the solution offered, the processes the student called upon to solve the problem. That is, the result the student obtained was dependent on the breadth and depth of the student's set of skills of intelligence and how effectively or ineffectively they were employed. The result itself, which can range, as all teachers know, from quite stupid to remarkably astute, is not intelligence. It is, instead, an outward *demonstration* of an attained level of intelligence, achieved through the perhaps faulty or perhaps expert *application* of the skills/processes employed to address the issue at hand. Intelligence resides within the skills and their employment. The *demonstration* of intelligence is what is portrayed as a result of their effective or ineffective use.

Howard never quite pinpoints the set of skills needed to achieve acts of problem solving (etc.).[20] Absent a specification of these skills there is no way to improve their effectiveness, the *sine qua non*, after all, of education. One can and must, of course, work backward from the demonstration to clarify its cause (some level of employment of the skills of intelligent functioning). But in order to affect those skills one must know what they consist of so they can be addressed directly and productively. Otherwise, teaching could consist only of responding to an inept demonstration by saying "that was not very intelligent" (or effective, or thoughtful, or proper, or accurate, etc.), "so do it again and this time be more intelligent" (effective, thoughtful), etc. This is not very intelligent as teaching, the required tuition left rudderless. It is also not rare in education, unfortunately, when teachers have not been led to understand clearly what the skills of intelligence actually consist of so as to help them be employed in more productive ways enabling students to think/do things more intelligently.

What are these skills, these foundational qualities of intelligent thought and action?

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[20] A search of Howard's books related to the topic of intelligence has not uncovered the hoped-for delineation. Given his prolific output on intelligence I may have missed it, in which case I would be pleased to stand corrected.

In my *A Philosophy of Music Education: Advancing the Vision*, 3rd Edition,[21] I devote a chapter to music as intelligence, explaining in detail my view of what intelligence consists of and applying it to issues of musical intelligences. I will draw on that discussion here in more general terms, to give a sense of the position I propose and why I believe it expands on and adds specificity and stability to Howard's.

First, it should be acknowledged that attempts to answer the question of what intelligence consists of have occupied diverse impressive minds for a very long time. Howard himself, in *Frames of Mind,* mentions more than 30 important views of intelligence over the centuries and over 40 characteristics that have been associated with it.[22] John B. Carroll's monumental *Human Cognitive Abilities: A Survey of Factor-Analytical Studies* lists 205 factors associated with cognitive abilities, many of them containing several subfactors.[23] In *What Is Intelligence? Contemporary Viewpoints on Its Nature and Definition,* editors Robert Sternberg and D. K. Detterman discuss two dozen definitions offered in the book and present a 56-item framework conceptualizing the larger field.[24] A perusal of the two-volume, 1,235-page *Encyclopedia of Human Intelligence* yields still more proposals (seemingly endless) for what intelligence consists of.[25]

All this makes very clear that attempts to define the nature of intelligence have occupied diverse scholars for so long, and with so many questions still unanswered, that further attempts to do so must be made with extreme modesty.[26] Like Howard, I offer my definition not with the

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[21] Reimer, *A Philosophy of Music Education: Advancing the Vision*, 3rd ed. (Upper Saddle River, New Jersey: Prentice Hall), 2003; Chapter 7, "From Theory to Practice: Musical Roles as Intelligences," 199-239.

[22] Gardner, *Frames of Mind*; Chapter 1, The Idea of Multiple Intelligences; Chapter 2, Intelligence: Earlier Views; and Chapter 3, Biological Foundations of Intelligence.

[23] John B. Carroll, *Human Cognitive Abilities: A Survey of Factor-Analytical Studies* (Cambridge and New York: Cambridge University Press, 1993), 791-95.

[24] Robert J. Sternberg and D. K. Detterman, eds., *What Is Intelligence*? (Norwood, New Jersey: Ablex Publishing Corporation, 1986).

[25] Robert J. Sternberg, ed., *Encyclopedia of Human Intelligence* (New York: Macmillan, 1994).

[26] A useful overview of issues and dimensions of intelligence, available on line, is "Intelligence: Knowns and Unknowns;" Report of a Task Force established by the Board of Scientific Affairs of the American Psychological Association, released August 7, 1995.

conviction that it is definitive, but that it nevertheless adds a useful, original, and compelling dimension to the ongoing endeavor.

Two dimensions are required in a definition of intelligence if its nature and utility are to be portrayed convincingly. First, it is necessary to identify, precisely, the "set of skills" Howard mentions but does not stipulate. What mind/body functions (the two are unified in all cognition), are called into play in any and all acts of intelligence?

Second, how do these skills work in human affairs to accomplish things like solving problems, creating things (including ideas, interpretations, plans, actions, visions of the past and future, works of art, and so on) that are in themselves marked by a quality societally construed as valid evidence of intelligence?

Here are my proposed two dimensions defining intelligence, followed by an explanation and application of them that will flesh out their import.

Intelligence consists of

1) The ability to make increasingly acute discriminations, as related to increasingly wide connections.
2) These discriminations and connections are produced within the context of culturally devised role expectations.

By the term "discriminations" I mean primarily differentiations, the ability to perceive "the character or basic factor(s) by which one entity is distinguished from another."[27] This process of noting distinctions making discriminations ranges across a wide continuum from the obvious to the subtle. A person's capacity to discriminate differentia at increasingly acute levels of precision, nuance, refinement, particularity, and meticulousness is one essential dimension of the level of that person's intelligence.

By the term "connections" I mean primarily implications; the capacity to perceive how and to what degree entities are interrelated with each other across a broad range of identicality, similarity, affinity,

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[27] *Random House Dictionary,* 2nd ed., s.v. "differentia."

association, proximity, relevance, pertinence, difference, contrast, dissimilarity, incommensurability, incompatibility, opposition, and so forth. A person's capacity to apprehend implications at increasingly comprehensive levels of interrelatedness is the second essential dimension of that person's intelligence.

The term "as related to" in my definition of intelligence joins discriminations of differentia with recognition of connections. Human intelligence is characterized by the remarkable capacity not only to differentiate acutely but also to comprehend how that which is differentiated is connected to—implicates—other differentia. That capacity to perceive more precisely (the quality we may call "apprehension") while at the same time comprehending more inclusively (which is the definition of "understanding," an imaginative act)[28] constitutes, I suggest, the primal identity of intelligence.

The capacity to discriminate connectedly or to interconnect discriminatively is the basis for all so-called higher-order cognitive functions. Cause and effect, categorization, metaphor, creativity, problem solving/finding/creating, synthesizing, judging, interpreting, theorizing, model-building, critical thinking, all these and many other cognitive operations are built on the foundation of fine discriminations connected in a variety of generative/implicative ways for particular purposes. I propose that this first dimension of my definition of intelligence be understood as identifying the general factor (called in intelligence theory the *"g"* factor) underlying all intelligent functioning.

So far this definition of intelligence remains partial and at the level of an abstraction, necessary but not yet sufficient. The issue of how these mind/body functions become realized in lives as lived remains to be clarified.

For Howard, intelligence is actuated in the seven, or eight, or eight and a half domains he recommends. A useful conception in many ways, but also deeply problematic, as he recognizes. It is also insufficient, I

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[28] See my description of the imaginative nature of understanding, and its foundational contribution to meaningful experience as explained by Mark Johnson, in Reimer, *A Philosophy of Music Education: Advancing the Vision,* 3rd ed., 205-206.

suggest, to delineate the manifold ways that humans behave intelligently in the real world. The domains recognized in Howard's theory are helpful at a certain level of analysis, but are not optimally related to all that occurs in human life that calls on intelligence to be activated.

The second dimension of my definition addresses that level, that is, *the context of culturally devised role expectations.*

There can be no making of discriminations, and of implications among them, absent some specific context and purpose for them. One can not simply "make discriminations" or "make implications" devoid of some demarcation that determines what is relevant to their making. While the general factor of intelligence exists as the basis for all its diverse possible applications, in the actual manifestations of intelligence there is no separation of the *"g"* from the particular contexts in which it is put to use.

Those contexts, I propose, are most practicably and substantially conceived to be the roles people play as each culture provides them. Rather than frames of mind in their uncertainty and indecisiveness, the notion of roles illuminates both the specificity of each way to be intelligent and the authenticity of intelligences to human lives as they are actually undergone and played out. It also makes the confounding, unresolvable search for the "number of intelligences" entirely irrelevant. There are as many ways to exercise intelligencet—o be intelligent—as there are roles to play, whether fewer, as in less complex cultures, or more (exceedingly more) as in most present world cultures. (For a rough but quick sample of the roles played in a western culture like the United States, flip through the Yellow Pages). Howard also recognizes, frequently, the essentiality of cultures as determinants of how intelligence is manifested, although minus the specification of the skills of intelligence themselves.

The marriage of the general factor of intelligence and its multitudinous possible expressions in all the many roles cultures provide for people to play in their lives is here brought to practical fruition. This is especially the case, I would argue, for the practicalities entailed in the field most devoted to the purpose of nurturing intelligences; the field of education.

I will mention several factors connected to my proposed definition to clarify and expand on it (only briefly, given the constraints of this single chapter), factors that in practically all cases are entirely compatible with Howard's views. Here, as those familiar with his work on intelligence will readily notice, the overlaps of my theory with his are striking. What differs is primarily the conceptual context in which the factors are embedded.

1. Critically, and crucially, intelligence as I conceive it always exists *to some degree*. It is not something dependent on a specified level of its attainment in order to qualify it as intelligence. Whatever level one has achieved in discriminations and connections in a particular role at a particular time is the level of one's intelligence in that role at that time. Learn something new; or refine something already known, an advance in intelligence. Forget something, or lose touch with the workings of certain discriminations and connections in a role, a decrement occurs. The stereotypical view that intelligence is a unitary constant, something a person either has or does not have (or is or is not) to a stipulated, unchangeable degree is unacceptable in my theory. Instead, one's level of intelligence is in constant motion. That is why lifelong education makes sense.

2. Cultures provide the foundations for what discriminations get made and the manner in which they are made, and of what implications among them get made and the directions in which they are expanded and deepened. That is, culture largely determines how the skills of intelligence play out functionally. For humans, culture is not optional. A meaningful life for humans is one in which intelligences are given the opportunity to develop as connected with culturally grounded arrangements of meaning potentials. These arrangements are actuated within the roles the culture makes available and the ways the roles are conceived to function appropriately.

3. In addition to culture, individuality shapes human minds in their manifestation of intelligence. More than any other species on earth individual humans are different from one another. While culture provides coherence through the particular roles that must be played in order for the culture to be viable, the people playing the roles naturally display high degrees of variability in their playing out of the roles in which they are involved.

This variability stems from a host of factors, including, foundationally, genetics—the innate capacities with which the individual is endowed by nature. In addition are all the factors supplied by nurture, so crucial in determining what the individual will become and what degrees of achievement will be made possible by the accumulative experiences/learnings undergone. Further, individual factors such as motivation, preference, attitude, interest, ambition, curiosity, and a variety of other psychological/emotional elements will inevitably play their parts by their influences on the intelligences people will be enabled to demonstrate.

4. One of these influences, essential in the mix determining the depth and breadth of a person's intelligence development, is opportunity. Given the plasticity of the human brain, intelligences are ready, willing, and able to be developed whenever the opportunity to do so is present. How readily those opportunities are made available to members of the culture, whether guardedly and protectively or openly and generously, largely characterizes the level of democracy of each culture. All aspects of culture, including government systems, belief systems, moral and ethical systems, education systems, can be conceived as determinants of and monitoring instrumentalities for the apportionment of opportunities for intelligences to be developed.

Ideally (for those supportive of democracy) a system will be in place that provides universal education equally available in breadth and depth to all its members and to as high a level as possible. A general education component is needed for all students, to provide foundational acquaintance with and initial development of the intelligences embodied in the roles most valued in the society and that are amenable to schooling. A specialized, elective component is also required, in which individuals' preferred or particularly high intelligence potentials, revealed/discovered through their general education (and life experiences) can be fulfilled optimally. The attainment of these conditions is, perhaps, the major challenge of education for any society in which full achievement of human potential is a grounding value.

5. My proposal to regard intelligence as the ability to discriminate finely and to interrelate those discriminations widely and deeply applies equally to mental and physical operations. Of course, as mentioned previously, there can be no actual separation of the physical and

mental—of the body and the mind—physiologically or psychologically or philosophically, given that human brains are necessarily bodied.[29] That is not the issue I am addressing at the moment. My point here is more limited while no less profound. It is that manifestations of intelligence are often, if not always, deeply dependent on actions of the body.

The common division in Western and other cultures between mind and body, while often useful theoretically, is not germane for any convincing theory of what intelligence is and how it functions. Fine discriminations embedded in wide connections must often be made within and through the actions of the body as called for in the role being played. For example, the high level of intelligence required to be a successful athlete depends on, is manifested by, and in fact is determined by the exquisitely fine discriminations being made by the body within the particular context of connections called for by a) the particular sport being played, (say, football), and b) the particular role within the sport that is being played (defensive end). Sport, it is often believed, is not a matter of mind. But nothing humans do is devoid of mind. Here mind and body are unified in particularly powerful and evident ways. That is the case as well in the arts, in the mechanical and manual trades, in many roles in medicine such as nursing and surgery, and in all the countless other roles in which distinctions and their implications are inseparable from thoughts and actions being carried out interdependently. (Again, refer to those Yellow Pages).

The lesser status of physical actions as compared with so-called "pure thought" is a prejudice based on an artificial separation of two deeply interconnected human functions. That is an unfortunate stratification into "higher and lower" of the two major ways our brains and bodies support each other to create meaning. Intelligence as I construe it entails all that makes us human; our minds, bodies, and as I will mention next, feelings, each of them intertwined in the fullness of significance with which we are capable of saturating our lived experience.

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[29] For a thoroughgoing treatment of the body/brain integration in human functioning see Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason* (Chicago: University of Chicago Press), 1987.

6. Several dimensions of human functioning relate to and enhance the workings of intelligence, the realm of feeling being particularly pertinent. Human feelings arise from the substratum of emotion.[30] Feelings carry the generality of an emotional state to the level at which particulars of events and thoughts are processed in awareness and thereby made conscious. Feelings can be understood as the central portal to conscious awareness, and therefore as the basis for the noticings on which discriminations and their implications depend. Emotions, in their generality, can usually be named; that is, assigned a relatively stable indicator. Feelings transcend, or underlie, the more generic nature of emotions, the immanent undergoings at the level of feeling remaining tacit yet meaningful, pervading the experiences we have of the inner and outer world. Not in and of themselves intelligences, feelings nevertheless are "enablers" of the operations of intelligence. The more sensitive a person is to the feeling-tones pervasive in thought and action the more refined and pertinent can the discriminations and connections of intelligence be.

Another enabler of intelligence is knowledge. The larger the storehouse of learned material available to a person the more richly can it be brought to bear on the role being played. In itself knowledge is inert. When called upon to serve the needs of relevant discriminations and their implications it comes to life, providing acts of intelligence with the sustenance they require in order to be actuated fully.

Memory adds to the list of the many enablers of intelligence. When material relevant to a task being addressed is easily to hand, it readily enriches the task of intelligence, feeding it and nourishing it as it progresses. Sensory processing, attention, energy, interest, intuition, all these and other aspects of thinking and doing are implicated in intelligence, empowering it in the depth and breadth entailed in its successful functioning. The dynamic and inclusive nature of intelligence

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[30] Penetrating discussions of the emotion/feeling relationship and its functions in human consciousness are given in Antonio R. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (New York: Putnam's, 1994), and *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (New York: Harcourt Brace, 1999).

becomes clearer when seen in light of the many contributory qualities it relies upon.

7. In addition to being accumulative individually, human intelligence is also accumulative communally. The romantic notion of the solitary genius (a person of superlative intelligence in a particular life function) working in splendid isolation on matters never before imagined may have attractive resonance and is not to be entirely dismissed. In the need for intelligence, however, the realities of daily life far overwhelm such exceptional cases of it. Humans build upon and carry forward the accomplishments of their forebears. Their own contributions are inevitably related to, even dependent upon, instances of intelligent functioning occurring before, then improved, refuted, altered, enhanced. Intelligence is not separate from communities of accomplishment on which it calls.

In addition, much human intelligence is carried on directly in community with others, each participant adding the intelligence of his or her role to the larger context of the endeavor at hand. Think of a well functioning sports team, a symphony orchestra or jazz quartet, a group of scientists/researchers tackling a shared problem, a hospital operating room with its cluster of specialists, a business with its many coordinative departments, a dance troupe, kids making a mural for a schoolhouse wall, a wedding being planned (well, maybe not), on and on. Humans now and forever have worked together intelligently to produce something larger than a single individual can accomplish. The concept “distributed cognition” relates directly to this aspect of intelligent endeavors.

8. Just one more issue here in regard to discerning the nature of intelligence in its many guises. The level of specificity of a definition of intelligence is a key factor in its utility, very general definitions being useful for certain purposes, very detailed definitions for others. My definition is not as detailed as some others, which aim at specifying the individual components underlying the structures of discriminating and interrelating. For a venerable example, John B. Carroll identified ten types of cognitive components by which we process information: monitor, attention, apprehension, perceptual integration, encoding, comparison,

co-representation formation, co-representation retrieval, transformation, and response execution.[31] These, along with other similar analyses, help identify the elements through which discriminating and connecting occur, and thereby help to clarify the constructs at the level I identify. They are useful in representing that elemental aspect, or dimension, of intelligence.

At the other end of the continuum of specificity are definitions, like Howard's, more general than mine, focusing more heavily at the level of domains or disciplines in which intelligences reside. Music, for example, does indeed represent a genuine way in which intelligence can be manifested. Highlighting that conviction turns our attention to the nature of that domain in a broad sense, as different from yet similar to other such areas of mindful endeavor. Doing so is helpful in a variety of ways.

But music, as all other domains, embraces a great variety of possible ways to exercise intelligence, each with its own particular discriminations and implications that are required to be made in order to fulfill the particular musical intelligence being activated. Performing composed music, for example, enlists a particular set of knowings and doings. Performing by improvising music entails a substantially different set. Some musical practices combine composing and improvising as integral to the process of its creation, adding another dimension of intelligent functioning. Composing, conducting, arranging, listening, analyzing, critiquing, philosophizing, researching, teaching, on and on with all the many musical roles various cultures have devised, each calls on the particular ways to make the discriminations and connections relevant to what is to be accomplished in order for the role to be played successfully.

Further, and getting closer to the diversities contained within each of the above categories, are varieties of ways to enact them. It is one thing to be an intelligent performer as a pianist, quite another to be an intelligent trombonist, or percussionist, or violinist, or guitarist, or

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[31] Listed and explained in Robert J. Sternberg, "Cognitive Approaches to Intelligence," in *Handbook of Intelligence*, ed. Benjamin B. Wolman (New York: John Wiley, 1985), 60-61.

singer, etc. Each represents a way in which the mind/body/feeling complex inherent to musically meaningful sounds is brought to life, both within those sounds and within the larger cultural/historical milieu in which those sounds exist. That is the level at which music reaches its operational reality, the ways people actually create and respond to the instances we construe as music in its diverse aspects. My explanation of intelligence emphasizes that essential, fundamental level of music's multiplicity as but one example of the comparable multiplicities in each of the domains cultures devise.

Howard is certainly not unaware of the specificities of roles actually played within the various domains, sometimes mentioning them in passing, but his emphasis is on a more general level. While that is a necessary concern, it leaves unaccomplished all due attention to the grounded knowings and doings entailed in intelligence-in-action, especially when successful teaching, conceived as the nurturance of the skills of intelligence, is a primary goal and value.

The level my theory addresses adds a necessary and effectual dimension, I think, to both more detailed and more general attempts to clarify the nature and multiplicity of intelligence. The theory also democratizes the notion of intelligence, recognizing it not only as the possession of the elite who attain an extraordinary level of it in some venerated endeavor, but as the possession of all humans to various degrees in all the countless ways in which we play out our lives. Among the many extant conceptions of intelligence, Howard's being an example of remarkable value, the one I propose seems to me sufficiently specific and focused, and with sufficient originality, to provide additional utility both theoretically and practically. Particularly in regard to education the implications of this view are rich with possibilities for significant advancement in both theory and practice. While I have drawn substantive implications from my theory for music education,[32] the task of doing the same for education as a whole remains to be accomplished.

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[32] Reimer, *A Philosophy of Music Education: Advancing the Vision*, 3rd ed.; Chapter 8, "Toward a Comprehensive General Music Program," Chapter 9, "Toward a Comprehensive Specialized Music Program."

For Howard's initiating me into the conundrums of intelligence, and for his providing the incentive to fashion still another possible approach to them along with the foundation for my attempt to do so, I am deeply indebted. The glimpse I got of his potentials so many years ago has been verified beyond all imaginings, in his abundant and path-breaking scholarly leadership in an extraordinary diversity of fields. Back then, little did *any* of us know.

Howard's Response to Bennett Reimer

When you came to our Festschrift celebration in late September 2013, I had no idea that you were already seriously ill, and so it came as a complete shock to learn of your death two months later. As you note, you and I went back a very long way. You were an important contributor to my formation as a professional with an interest in the arts; it was formative to behold firsthand someone who could speak to, and was held in veneration by, the music education community. Indeed, you served for decades as a model of someone who contributed to scholarship on the one hand, and yet never lost sight of the individual musical educator or the individual musical student on the other. In this respect, among others, I always thought of you in conjunction with our dear friend Elliot Eisner, who also died shortly after the Festschrift celebration.

Being good colleagues in the academy means having substantive discussions, sometimes with deep disagreements, and then going out and having a drink (which I can remember doing more than once, at the German "Brauhaus" near the Art Institute of Chicago). And so of course we spoke and corresponded a lot about musical intelligence. I have to concede that this discussion was invariably one sided. You were a musician, and you had spent your life studying, teaching, and writing about music. I was, at best, an amateur pianist, with little formal teaching in music, music history, or music theory. When I wrote about musical intelligences, it was as part of a much larger tapestry in which I was trying to compare with one another a number of basic human competences. (I can admit, just to you, that I knew even less about some of the other intelligences than I did about music!)

Still, given my friendship with and respect for you, I want to try to give my perspective on the issues that you so thoughtfully and thoroughly raise.

First of all, I should state up-front that I agree with you completely about the cultural differences in how music works in many parts of the world. In lumping the world's musics, musicians, and musical roles together, I am engaged in severe oversimplification. I also agree on the importance of the continuing contribution of any culture to the forms that music takes at any particular moment.

At its heart, MI theory holds that humans have evolved to foreground a small number of a basic set of competences, of which music is deservedly one. The theory is at heart a vertical theory: it claims that musical thinking and competence are fundamentally different from spatial thinking or linguistic thinking or understanding other people.

Most writers, and indeed most people, including you, are inclined to think in terms of horizontal organization. That is, there are capacities like memory, attention, consciousness, and sensory acuity which cut across the several intelligences. Without question, we can easily adduce an argument in favor of horizontality: there are, for example, some aspects of attention which do cut across domains. But the distinctive part of my theory—be it right or wrong—is to assume that there are significant differences between, say, memory for music, memory for language, memory for bodily positions and the like. I believe that some of the disagreements that we have had reflect our different angles on the power of vertical as opposed to horizontal organization of cognition.

In earlier discussions with you, I became aware of a flaw in my theory, and also a distinction that I had missed. The flaw was a conflation of intelligence, a set of skills involved in dealing with areas like music, with a domain, an organized body of knowledge and/or a role as it exists in a society (you allude to this when you refer to "yellow pages"). Classical music can be considered a domain, while jazz is another; similarly, individuals can be involved with music as they adapt to roles such as composers, conductors, performers, listeners, improvisers, etc. It's important that we keep separate the musical computational powers, which can be applied anywhere, from the particular domains (genres, roles) that happen to exist at a particular moment in one or another society.

As for the distinction that I had missed, one can and perhaps should distinguish three separate connotations of the word intelligence:

1) A universal characteristic that all humans have. Barring severe pathology, we all have the capacity to be involved with music (and the other forms of intelligence).
2) Individual differences. Though we all can continue to improve throughout life, some individuals have much more musical intelligence (we could even call it "musical g") than others. There is no family quite

like the Bach family, and it's not just because they all happened to live near one another in Germany three centuries ago.
3) Using one's intelligences (and other skills) sensible and sensitively. One can have and manifest a lot of intelligence (a high IQ, so to speak), and yet do it in ways that others would consider unproductive, ugly, or a waste of time. I think, Bennett, that when you speak about musical intelligence, you invoke this value judgment (person A is musically intelligent, person B much less so)—one that is perfectly sensible, but not one about which I was concerned in developing MI theory. (As a case in point, consider Glenn Gould's groundbreaking interpretation of Bach's Goldberg Variations: some listeners loved it, others thought it was perverse and brutal.)

I should add a note about making increasingly significant distinctions and discriminations. We agree about the importance of ever finer discriminations, but I would add that not all experts will concur on the value of various kinds of distinctions, though I think consensual agreement is more likely in music than it is, say, in contemporary painting or dance.

I have to acknowledge sadly that our long and, for me, enriching conversation cannot continue in the way that it had before. I'm deeply in your debt for the time that you spent with me, thinking about these issues, and indeed writing the profound essay for this Festschrift at a time when you were no longer well. It's up to others now—our readers, our students, indeed anyone who cares about musical issues—to continue and advance the exchange.

Carla Rinaldi

Dear Howard,

There is something mysterious about birthdays, in every birthday. In our own birthday, in a birthday of a friend, of a dear person, of someone you know and appreciate. It is a celebration, it is a thank you to life, for the life you have received, for the dear person life has given you the possibility to meet, for the memories life leaves you, for the hopes and the dreams….

To celebrate your birthday is for me an occasion to thank you for the honor and the possibility you gave me to be close to you along a professional and personal path that leaves permanent traces in my person, in my thinking, in the Reggio Emilia experience.

It is still very vivid in me the emotion I felt the first time we met here in Reggio. It was 1982, you and Ellen, your book on the "seven intelligences" and the curiosity to meet Malaguzzi and the Reggio experience… there was a seminar, many reflections, many exchanges but also some fun and pleasure in discovering also the good "reggiana" cuisine… do you remember that nice restaurant in the foothills with Malaguzzi explaining to you how to make "cappelletti"?

And then Washington, with Vea and Amelia… Malaguzzi had just died, we were there, grieving, but we had to narrate our experience, our "theories" confronted with the one which made you famous around the world… it was 1995. It was in that occasion that I discovered the depth of your thinking but also the profound generosity of your person.

You understood the richness of our exchange and at the same time the need we had to re-affirm that the project generated by the thinking of Loris Malaguzzi could and should continue and develop beyond him, beyond his life to generate hope and future.

Then came your proposal for a research project together with Project Zero, what has now become a milestone of our collaboration and our friendship….

Then, many memories, more recent ones, around your theory that have helped teachers and researchers around the world to find the

meaning of their work and, above all, to “encounter” the intelligences of their students and of people living in different societies and cultures.

All the memories of your more recent trips to Reggio Emilia, with Ellen, with the Orozcos, the meetings with the Mayor, with the city, with the hundreds of people who wanted to meet you….

If I had to find a single definition for your person and for your intelligence, I would say “generous” … yes, the “generous intelligence!” Generous in the thinking, in the acting, in the vision, in the interest with which you look at the other and at what is not visible!

All this is an emotion for me to have had you as a friend in my work and in my life.

You are a friend: a friend of Reggio and a friend of mine.

For all this and for much more, Happy Birthday Professor Gardner, Happy Birthday Howard and many thanks for the future you will donate to all of us.

Carlina

Howard's Response to Carla Rinaldi

As you know well, "cara Carla," of the various transformational experiences I've had as an educator, nothing compares with my initial visit to Reggio Emilia and to the score of additional visits that took place over the next three decades.

When we first came to Reggio, it was clear that Loris Malaguzzi was the principal figure. Ellen and I could not help noticing that most of the individuals around him were women, typically a generation or two younger. It is our privilege to have gotten to know so many of the original group of educators, and it has been my special privilege to have you, Carla, as the person who, more than anyone else, has helped me to understand the "landscape" in Reggio—educational, political, social, and even financial. Thank for your being *primum inter pares*.

Being friends means being able to share with one another the problems, the challenges, and the obstacles, as well as the learnings, the opportunities, and the visions. We've been able to exchange all kinds of personal impressions and feelings, including some quite painful. But we've been sustained because of a shared belief in the importance of early childhood, the necessity that it be taken seriously, and a conviction that a good part of the optimal educational regimen for young children has been created and continually improved upon in Reggio.

In my response to Mike McPherson's contribution to the Festschrift, I recalled a moment when I had heard, once too often, the phrase "learning organization" and "learning community." In a flash of inspiration, I offered to accompany Mike and Marge to Reggio Emilia because, of all the educational environments in which I've been immersed, the continuing learning, improving, reflecting, and documenting in Reggio stands out.

I used to joke that I did not know whether it was the background in Communism, or the background in Catholicism, that catalyzed the incredibly talented and dedicated cadre of educators in Reggio. But now I can vouch for the fact that it is less political and less religious, and more founded on a deep understanding of, and belief in, human possibility and human rights. That's what has drawn so many of us, including our dear friend Jerry Bruner, back again and again to Reggio; it quenches a

thirst that we have had ever since the last time that we left the Diana School. And perhaps that is my best answer to the question you pose: “What is the Reggio intelligence?”

Three Short Vignettes about Howard Gardner

Melissa Rivard

It has always seemed something of a miracle to me that I ever came to work for Howard Gardner, now nearly 20 years ago. I have often attributed my being hired as one of his assistants both to my ignorance—when I met Howard, I hadn't a clue that I was in the presence of one of education's greatest rock stars and didn't know just how nervous I should have been—and my timing. I met Howard during my final interview for the position and had been told by his assistant that his father was gravely ill and wasn't expected to live—information she must have felt compelled to mention because it was likely to have an effect on Howard's demeanor. Having recently lost my own mother, I couldn't help but express my condolences to him at the outset of our interview. This had the unintended, but welcome, effect of shifting the tenor of our conversation from business-like to personal. We spent the remainder of my brief interview sharing experiences and feelings about past and pending loss.

My initial feeling of connecting with Howard on such a personal level was hard to reconcile with the warnings I had received from those I met with earlier in the hiring process to "be prepared for a challenge." Unbeknownst to me, I had been spared the fate of the other candidates for the position—an administrative position, mind you—who froze, as I would have, at questions such as, "Which behavioral scientist has had the greatest influence on your life?" and, "I see you're a feminist studies major. How do you think you'll feel about devoting your life to making a privileged white male's life easier?"

It wasn't long before I began to get a sense of just how accomplished, not to mention famous, Howard actually was. One of my primary responsibilities was to format and edit Howard's daily writing and correspondence. Each morning, I'd arrive at work to find a floppy disk of his writings on my desk. At first, I was just astounded by the sheer volume of work that each disk held and found it hard to fathom how Howard had generated this amount of material—dozens of pages of notes and letters—each night. (I came to dread Mondays when Howard had had two uninterrupted days to do nothing but work.)

My astonishment at the quantitative aspect of his work was soon eclipsed by a sense of amazement at the intimate view I had into a life and a world unlike any I had ever encountered. My formal education had been less than stellar, and in college I had little direct contact with, or mentoring from, my professors. I remember the slightly voyeuristic thrill of reading Howard's personal correspondence with people like YoYo Ma, Stephen Jay Gould, and E. O. Wilson. (I'm sure there were many others who would have impressed me had I known who they were.) And while I marveled at the names that appeared in the salutations of his letters, I was equally impressed by their content. I recall one letter to Wilson following a long lunch together in which Howard revealed that he was rethinking his theory of seven intelligences.[1] Their conversation, revealed in detail in the copious notes Howard had typed afterward, had convinced him that there must be an eighth intelligence—that of the naturalist—and he detailed his reasoning. Having both his raw notes and his synthesis of them before me was the first of what would come to be many opportunities to see inside Howard's thinking process. It left me both in awe of how his mind worked as well as more than a little intimidated. I lost sight of the experience I had had with him during my interview and became almost mute around him.

I recall how, a month or so after I began working for Howard, I went with some friends to see *32 Short Films About Glenn Gould* at the West Newton Cinema during a prolonged heat wave. I was more interested in the prospect of cooling off than I was in seeing this particular film. To my dismay, the air conditioning was broken that night, and I found myself stuck in an uncomfortable seat in a stiflingly hot room wishing I were watching something with more of a plot. Unable to concentrate on the film, my eyes wandered from the screen and began scanning the theater, eventually resting on the back of the head directly in front of me. The back of this head looked strangely familiar and—after a minute or two of staring at it—I realized it was the back of *Howard's* head. From there, I quickly surmised that the heads on either side of him were those of his wife Ellen and son Benjamin.

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[1] The editors concurred that referencing the contents of correspondence the author encountered in her work with Howard could be shared for the festschrift.

I don't think I watched another frame of the film from that point on. I was fixated on the fact that Howard was sitting in front of me in a movie theater and began to prepare myself for our first encounter outside the office. Inwardly, I was thrilled that this first "run-in" was happening at such an auspicious moment, one that revealed me as someone of culture and taste. Surely being seen at a film about Glenn Gould would lend me some "cred" in Howard's eyes. When the film finally ended and the lights came up, Howard turned around and saw me. I feigned surprise at seeing him there. But, rather than impressing him with my choice in pastimes as I had imagined, Howard exclaimed to Ellen in genuine embarrassment, *"The ONE time I go to the movies in ten years, someone at Project Zero catches me!"* as if he had been caught at an adult movie theater and not a film about a classical pianist. He offered the explanation, as though *we* needed one, that he had brought Benjamin to the film because he was studying the piano. Ellen gracefully redirected the conversation by asking for introductions and then we went our separate ways. The encounter did little to ease my nervousness around him.

Howard dropped off the day's floppy disk of notes and correspondence as part of his morning run. I knew this, but it was a couple of months before I realized that the tattered oxford shirt, khaki pants, and worn-out tennis shoes I saw him wearing the mornings when I arrived early were actually his *jogging attire*. This troubled me deeply, in part because it offended my fashion sensibility but mainly because I knew he suffered from chronic back pain and running in those shoes could not be helping matters. (I had watched on a number of occasions as he held meetings with his advisees from a prone position on the couch in Project Zero's main office.) I became convinced that this was the source of his problems and momentarily overcame my fear of talking to Howard to let him know.

When I suggested to Howard that he might want to reconsider his choice of running clothes, he scoffed at the idea that he needed to buy special gear to run. Nothing I said about the importance of shock-absorbing shoes or fabrics that stretch and wick made any impression. What did make him reconsider, however, was something I suggested more as an afterthought than anything else: "Howard, as a woman, it would scare me if I turned around and saw a man running behind me in

his street clothes." He became interested in the idea that clothing served an important "symbolic function"—in this case, communicating that a person is running for exercise and that there is no need for alarm—and admitted that this was an angle he had not considered. I nodded knowingly, as if that had been my point all along. I don't know if Howard went out and bought a real pair of running shoes after that conversation, but getting him to think of something he hadn't considered before was victory enough.

Now that I know Howard, it's hard to see these experiences with him through the lens that I did then—that of a young woman intimidated by someone of his academic stature and renown. Looking through my current lens, I see some of the subtler messages that support my initial impression of Howard, someone defined not only by his great intellect but his more human qualities. I recall that, along with the correspondences with E. O. Wilson and other luminaries, there were countless other letters to lesser-known individuals. Howard responded to everyone who wrote to him, each and every one. (And he received a lot of mail.) These letters were necessarily brief but always reflected that he had thought about what that person had said or asked about in their letter. I still marvel at this. During the eternity I spent watching Howard's head in the stifling movie theater, I saw it bend repeatedly toward Benjamin's as he alerted his son to subtle details in the film, such as the positioning of Gould's hands, that he didn't want him to miss. Howard saw the film as an opportunity for his son to observe a master's technique and that overrode any concerns about "squandering time at the movies." The fact that he was concerned about "getting caught" by someone from Project Zero reflects the importance he places on setting a good example and being a mentor, not only to his children, but also to those who work and study with him. In retrospect, I am flattered that he was concerned at all about what I might have thought. And, in the years since my first (and albeit small) rhetorical victory over the running shoes, I have witnessed Howard's willingness to be swayed by what he considers to be a good argument many times.

While I remain in awe of Howard, my direct experiences with him over the years have helped to paint a more complete picture. For me, it has been the moments when Howard's more human qualities have surfaced that have left the most lasting impressions and helped temper

my initial intimidation. These moments enabled me to take advantage of the extraordinary experience of working so closely with him—to observe a master from a privileged vantage point—and learn from him as much as I have.

Howard has a formidable work ethic and taught me what it means to be deeply committed to one's work. He places a premium on having a good reputation and, from him, I learned the importance of being conscientious and doing what I say I will do. While I will never have more than a fraction of Howard's discipline, I am more disciplined than when I first met him. I think about what I spend my time on and how it connects to what I consider important. But above all, I have developed confidence under Howard's tutelage—through the number and nature of the tasks he entrusted to me over the time I worked for him. Through adopting some of his organizational and thinking strategies, I have accomplished things I never thought I could do.

Howard's Response to Melissa Rivard

You will always be Mo, to me, and while that is doubtless a nickname with its own history, it also signals something very important to me: your capacity for "more." You are a person of prodigious talents—with respect to both human and technological matters—but you never flaunt them in the slightest. Indeed, in a community (Harvard-Cambridge) where so many people spend so much time showing off, and all too often claim that they know and can do more than is actually the case, you embody the opposite tendency: if any of us wants to have something done well and without fanfare, we instinctively think of you, because you will do "more" and you will do it in the most helpful and useful way. And this situation holds true whether we are trying to figure out how to deal with a difficult employee; persuade a manager to assert herself; study a group that has not previously been subjected to "research" and record what we've learned in ways that will be useful to future researchers, and also to teachers and learners (and those who occupy both roles). (We will save for our memoirs the saga of the time that you and Shana Waldman discovered that my personal assistant was a nationally known con man—as ever, your steadiness at that time made a great deal of difference to my psyche.)

It's typical of you to have said nice things about me, and my family, in your contribution to this Festschrift. We've worked together, sometimes very closely, for a solid two decades. I am eager to state, for the record, that I've gained as much from working with you—both in terms of the many skills and techniques that you've introduced to me but also because you are a wonderful, loving, and loveable person.

Neil Rudenstine

For many years, Howard Gardner has been one of the nation's most original and brilliant leaders in studies related to the nature of intelligence, the sources of creativity, the nature of intellectual leadership, and—most recently—the conception of "good work" as it manifests itself in the actualities of our world. No one has opened up more avenues of inquiry in his field than Howard. And no one has matched the quality of his contributions. His influence and service have reached far beyond the classroom and lecture hall. I feel privileged to be able to add a brief words to this festschrift—and I look forward to many more intellectual *fests* emanating from Howard in the future.

Howard's Response to Neil Rudenstine

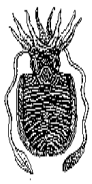
Thanks Neil, for that lovely tribute, which is not deserved but very much appreciated. You've been a great teacher, mentor, and role model to me and to so many others around the world—and your impact on Harvard, as its 26th president, has been lasting and overwhelmingly positive.

Because most of the persons who read this volume will not have had the privilege of knowing you personally, let me briefly relate two anecdotes, quite different from one another yet equally telling.

1) Perhaps fifteen years ago, when you were at the Mellon Foundation, I applied for a large grant. You and your colleagues decided to award the funds to another group—a perfectly valid decision, perhaps even the right one! You and I hardly knew one another at that time. Yet you took the time to write me a note, nine pages (!) on yellow legal paper, laying out both the reasons for the decision and your suggestions for how the work could nonetheless be carried out. I am not kidding that, upon finishing the letter, I said to myself, "Whether or not Neil sympathizes with me, I certainly sympathize with him for the effort that he chose to put out for what could have been a one sentence letter of rejection." But, Neil, that is simply not the kind of person you are.

2) When you were President of Harvard, I took the liberty of sending you a paper in which I was developing the idea for a major project. You kindly agreed to look at it and to give me your reactions. I came to your office for an hour—a very generous appointment in view of the dozens of demands on your time each day. You went over virtually every paragraph in the paper, and I noticed you had marks in *two* different colors—clearly indicating that you had read the paper more than once! I ended up with a slew of useful suggestions, even as I was amazed that any busy administrator could spend so much time with a single one of his thousands of constituents. When I said that to you, you winked at me and said, "And the best thing is that I did not have to make a single (administrative) decision for the past hour!"

Oliver Sacks



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Oct 1/12

Dear Howard,

We have known each other for I don't know how many years, and every encounter with you - in person, or through your writings - has made me see things in a different light - above all, your theory (but it is so much more than a theory) of "multiple intelligences". You have transformed so many lives, and so many educational practices, in your pioneering work on Psychology and education - you have enriched us all -

I salute you with great admiration and affection. Happy Festschrift! Oliver

Howard's Response to Oliver Sacks

Every author who writes on a certain topic in a certain way has in mind one or more role models. (This seems to be true even when the author's goal is to demolish that role model—the argument put forth by Harold Bloom in his influential The Anxiety of Influence.) When you began to write about the patients whom you had studied, it was clear that you owed a debt to Alexander Romanovich Luria, the wonderful Soviet neurologist-psychiatrist-psychologist who introduced readers to *The Man with the Shattered World* and *The Mind of the Mnemonist*. With tongue partly in cheek, Luria termed his writing "romantic science."

As we grow older, some of us come to occupy the role once assumed by our elders, our role models. And for anyone these days living and writing about persons and patients with unusual strengths or deficits, you, Oliver, have become the point of departure, the embodiment of arresting, clear, and insightful case studies. No need to do the study: when your name appears in the Table of Contents, or in the *New Yorker* (or other highly literate publications), the people whom I know will turn immediately to the designated page and become absorbed in the world that you are limning.

You have personal experience with some of the conditions that you've written about. I don't know that I have written about my own cognitive and perceptual anomalies, but I happen to be both color blind and prosopagnosic (unable to recognize or remember faces). Moreover, my daughter has the same flavor of prosopagnosia, and we believe that my late father had it as well. We've talked about this for years within the family, but it was during the week of August 30, 2010, that my daughter phoned me excitedly to say, "Did you see this week's *New Yorker*? We've been found out!" And from then on, I have referred literally dozens of persons to your brilliant description of prosopagnosia. Now once skeptical friends can understand that, while we (you, my daughter, I) may not mistake a spouse for a hat, we are simply unable to easily encode the features that allow most people to readily distinguish Person A from Persons B, C, and D.

Oliver, you not only educate, you not only enlighten, you make explicable the lives of so many human beings, including those of my family and me.

Can the Internet Effectively Serve Peace Education in Regions of Conflict?

Gavriel Salomon

Introduction

Howard Gardner and I have known each other since the early 1970s when we both participated in David Olson's National Society for the Study of Education Yearbook on media and symbols (1974) with such luminaries as Jerome Bruner, John Carroll, E. H. Gombrich, David Perkins, Rudolph Arnheim and others. The Yearbook—*Media and Symbol Systems*—was much inspired by the writings of Nelson Goodman, which was of great interest to both of us then. A while later computers burst onto the educational stage and some of us, still interested in the interaction between symbol systems and learning, turned our attention to the new game in town. Howard and I even published a paper together (Salomon & Gardner, 1986) which was an attempt to apply lessons learned from research on educational television to the study of computers in education. Since then we went in different directions—Howard into the study of minds while I (for a while) into the design and study of technology-enhanced learning environments.

But not for long. I started suspecting that the mushrooming hopes about computers in education were much exaggerated and that the technologizing of education was gradually becoming the Golden Calf of education, an educational panacea. Research gradually supported my suspicion (e.g., Fuchs, & Woessmann, 2004; Hattie, 2007). It suggested that today, even after 40 years of introducing information-communication-technology (ICT) into schools, there are no more than a few islands of true pedagogic change and hardly any continents to speak of. Becoming tired of fighting techno-worshipers, I turned my attention to an entirely different field—research on peace education, a field of great relevance and concern in the Israeli/Palestinian context of intractable conflict.

Lessons from Face-to-Face Peace Education

Planned Peace Education

Peace education (PE) in the socio-political contexts of intractable conflicts, such as Northern Ireland, Bosnia, Sri-Lanka, and Kashmir, while being manifested in different educational and civil forms, has a common underlying purpose: to increase mutual understanding between adversaries and promote reconciliation. Although the stated goals of PE differ somewhat in their particular foci from place to place, there is a common core—to get each side to give legitimacy to the other side's collective narrative. This, in turn, is based on (a) coming to acknowledge one's own role in the conflict; (b) coming to empathize with the other side; and (c) coming to develop positive dispositions, attitudes and perceptions toward the other side (e.g., Salomon, 2002).

Importantly, the methods used to attain these overriding goals are often school-based curricula, joint projects, and dialogue encounters among youths. While in Bosnia the main vehicle for PE is a school-based curriculum (Danesh, 2010), in Kashmir, as in many other places, it involves dialogue meetings (e.g., Center for Dialogue and Reconciliation, 2010) and joint projects (e.g., Ohanyan, & Lewis, 2005). Indeed, where the groups of adversaries can meet, face-to-face dialogue encounters, and joint bi-national or bi-ethnic projects are the most common vehicle for PE. Dialogue encounters are usually based on the well known contact hypothesis (i.e., with contact comes increased understanding and acceptance of the other; e.g., Pettigrew, Christ, Wagner, & Stellmacher, 2007). Joint bi-national projects and activities, such as soccer clubs, theater groups, and orchestras, try to sidestep conflict-based dialogues and facilitate instead interdependence and trust in the service of completing a joint product.

Research into the PE dialogue encounters has often yielded positive but qualified results (Maoz, 2011). Dialogue encounters do not appear to affect strongly held attitudes and beliefs as much as they affect less strongly held ones. And participation in PE programs often leads to only short-term positive belief/attitude change (Rosen, 2009). Attitudes that can be affected by PE programs can easily succumb to socio-political pressures and thus quickly become eroded (Salomon, 2011). The effects of PE programs need ongoing reinforcement and scaffolding for them to last.

Positive changes that were measured at the completion of programs and became quickly eroded could, however, be revived when role playing the other side, peer-teaching of the lessons learned, or reflection on workshop experiences were introduced as follow-up activities (Rosen & Salomon, in press). This suggests that the effects of PE programs did not totally disappear but were overshadowed by competing influences. The follow-up interventions were able to overcome these competing influences.

Another finding of importance, although not surprising, is that the groups entering PE come with different perceptions of peace (Biton & Salomon, 2006) and different expectations (e.g., the stronger side seeks moral justification, the weaker side seeks to have a voice [Shnabel & Nadler, 2008]). The groups also understand the encounter processes very differently and thus exit with very different outcomes (Jews end up giving greater legitimacy to the Palestinian narrative, while the latter strengthen their adherence to their own narrative [Husseisi, 2009]).

The approaches used in PE range from the interpersonal, based on the contact hypothesis, to the confrontational, based on the assumption that inequalities need to be worked through (Suleiman, 2004), and from the joint-project approach that usually sidesteps the conflict, to the personal storytelling approach that combines elements from the interpersonal and the confrontational approaches. Each of these has its advantages and disadvantages (Maoz, 2011). Still, all of them address in one way or another a variety of psychological, social, and cognitive processes and mechanisms ranging from reduced anxiety, distrust, and anger to increased mutual understanding, respect, and self-awareness, from reduced stereotypes to increased legitimization of the other side, and from a greater willingness for contact to a diminished hatred. In other worlds, PE in its various manifestations and foci affects a variety of interrelated psychological mechanisms while also creating new social norms and shared attributions.

Incidental Peace Education

More durable effects have been found to result incidentally—from more neutral joint activities such as inter-ethnic or bi-national soccer clubs (Zuabi, 2007), joint businesses, hospital wards, and theater groups (Varshney, 2002), as these, by their very nature, are very intensive and

prolonged. It is apparently very effective to work towards a common and *important* goal that transcends ethnic or national conflictual issues.

Such joint activities are usually based on continuous interactions, come to serve common goals (the reason they exist), and may often entail strong interdependence among the club, business, theater or hospital participants. Why are such joint undertakings to be considered as possible variants of PE? The reason is that they may well accomplish, quite unintentionally, the kinds of planned and deliberate changes PE tries to attain: Reduced prejudices, changed attitudes, reduced stereotypes, greater willingness to have contact with the "other" side, increased legitimacy granted to the other's collective narrative. However, such joint activities sidestep the disputed issues and therefore produce effects that, while positive, are quite shallow yet appear to last. The real issues—history, bad feelings, negative attributions, feelings of oppression, and rejection—remain untouched. As Roe and Cairns (2003) point out, painful historical memories that remain unacknowledged hinder any true reconciliation. Moreover, it is far from being clear whether the positive effects—more positive attitudes and feelings toward the other *individuals* participating in the process—tend to generalize beyond the encountered individuals to the other *group*.

A study by Zuabi (2007) exemplifies the incidental effects of joint activities. Zuabi (2007) studied the changes of feelings, attitudes, and willingness for contact in Jewish and Arab youngsters training and playing soccer in three bi-national clubs over a whole year of joint activity. He compared the effects with those of uni-national soccer clubs. The effects were positive and impressive in the bi-national clubs, and they endured for three years. Not so in the uni-national clubs where no changes were measured. It became evident that under the conditions of bi-national soccer clubs, a number of the contact hypothesis conditions that are claimed to lead to reduced prejudices and similar changes were met: There was strong interdependence among the players, regardless of nationality, there was parental support, and there was a common goal. Moreover, the goal was of utmost importance to the players; nationality did not play any role in this respect as the players' minds were on playing well as a team and winning.

This is precisely what other studies found: In regular PE the focus of attention is usually the conflict, arousing blame, defending one's

position, conflicting identities, mistrust, and similar painful and contentious issues. Not so in joint business, sports, or art activities where the focus is on the task to be jointly accomplished—the *raison d'être* of the whole undertaking. Babbitt and Somers (2011) found, for Blacks and Whites working together, reduced sensitivity to issues of race and prejudice when the focus of their joint activity was on the task to be accomplished rather than on social issues. Similar findings are reported where Blacks and Whites train and play together (e.g., Brown, et al., 2003), where multi-ethnic businesses of Muslims and Hindus work together (Varshney, 2002), and where medical teams of Blacks and Whites jointly work in hospital wards (e.g., Betancourt & Reid, 2007).

There are three lessons that can be learned from PE research that could inform the use of computer mediated communication (CMC) for PE, as follows: First, PE is not a matter of short, shot-in-the-arm intervention. Changing hearts and minds is a long process, less like psychological engineering and more like slow socialization. Indeed, as we have seen, short encounters, ostensibly effective in the short run, do not have durable effects. What one needs is prolonged, continuous intervention of the kind exemplified by the bi-national soccer clubs studied by Zuabi (2007) or by the joint activities in businesses or music bands.

Second, PE must grapple with an array of interrelated personality tendencies, including right-wing authoritarianism (e.g., Halperin & Bar-Tal, 2010), emotions (fear, anger), cognitions, beliefs, expectations, attributions, actual knowledge, and understandings as both points of departure and as potential outcomes of PE programs. Thus, for example, Dhont and Van Hiel (2011) found that trust and perceived threat are important mediators of direct contact when the outcome is the reduction of prejudice. Laham et al., (2010) found that respect for the other serves as an important predictor of more positive actions in contact situations. We at the Center for Research on Peace Education hypothesized—that acknowledgment of one's own "contribution" to the conflict can be an important outcome of a PE program. In short, PE has many aspects, many predictors, and many kinds of outcomes.

Third, in the case of joint projects, it is not just a matter of having a common goal. The goal also needs to be of great importance to the participants. A goal of great importance overrides ethnic or national

differences and disputes. However, the focus on the common task at the expense of the dividing ethnic or racial issues begins to fail when external forces—a terror attack, collapsing peace talks, or a military incursion—impose themselves. The focus quickly shifts to the ethnic or racial conflict. In other words, having the belligerent parties engage in an important common task appears to work well as long as there is no competition with conflict-related issues (e.g., Roth, 2004).

In short, whether PE is carried out with conflict resolution as the intentional and explicit goal (as it is carried out in Northern Ireland [Smith, 1999], Bosnia [Danesh, 2010], Israel [Maoz, 2010]), or as the undeclared, incidental goal (as it is carried out in work places) is a complex and multi-aspect process. It entails far more than the exchange of information, interpersonal familiarity, reconciliatory moves, or mutual respect. It entails all of these but in addition allows that kind of contact that reduces fear and the experience of threat, it allows the expression of anger and affords empowerment, it provides the sense of equality and the opportunity for self-examination, and more. This conclusion has led us to ask a new question: Can contact through the internet provide all this?

Enter the Internet: Computer-Mediated Communication

PE, based as it is on face-to-face dialogue encounters or on joint projects and activities, can reach under the best of conditions only a very small fraction of the population. Maoz (2010) points out that despite the prevalence of PE programs in Israel, only about 9 percent of Jews have ever participated in a series of PE programs with Israeli-Arabs and only 3.5 percent with Palestinians of the Palestinian Authority. Indeed, what difference would it really make if 3000 or 3700 youngsters out of a population of millions participated in PE? Moreover, claim Bar-Tal, Rosen, and Netz-Zehngut (2010), not much can change with respect to the resolution of ethnic or national conflicts if the whole society-wide ethos of the conflict does not change. As formulated by UNESCO, the idea is not just to change a few minds and hearts but to establish a *culture of peace* (1994), and this requires a *social ripple effect* of PE programs (Salomon, 2011). Such a ripple effect cannot be expected to emerge from the limited number of participants in dialogue or joint project encounters.

Enter the internet, allegedly coming to rescue PE from the limited number of possible face-to-face dialogue participants (Yablon, 2007). Let much larger numbers of individuals from adversary groups carry out dialogues with each other or work together toward a common product through the internet with the hope that such indirect contacts will serve PE the way face-to-face meetings do. Is this a realistic hope?

So we ask, to what extent can interactions through computer-mediated communication (CMC) serve to promote mutual legitimacy of, empathy with, and positive attitudes and feelings towards a true adversary? To what extent can virtual interaction through CMC activate processes and lead to effects that compare to those of face-to-face interactions?

The employment of CMC entails more than just a technical solution to the limited numbers of PE face-to-face program participants. It is an entirely different medium of communication, not just a pale copy of face-to-face encounters. For one thing, it does not entail that which makes human communication so special—the visual and physical proximity with all that this can convey (Bode & Molloch, 1994). For another, more often than not, discussions through CMC are asynchronous rather than synchronous (immediate), which means that they allow for reflection, planning and more mindful engagement rather than spontaneity and emotionality.

What Does the Relevant CMC Research Tell Us?

As Walther (2009) in his comprehensive summary of the field points out, research on the strategic use of CMC for the purpose of improving inter-group relations is "fragmented, and at times overly simplified" in "that some theories have been appropriated superficially" (p. 226). Most of the studies of intergroup relations involving the internet did not involve groups of adversaries, certainly not groups involved in real protracted conflict. Also, most studies did not evaluate the extent to which changes of attitudes and perceptions generalized from the individual participating to their respective groups, or whether the observed changes survived the passing of time. Nonetheless, the available research clearly suggests that the use of CMC in and of itself is insufficient to produce real change.

However, as summarized by Walther (2009), interactions through the internet have their advantages: anxiety becomes reduced quicker than in face-to-face communication. Mutual trust appears to develop faster. Shy, inhibited, and introverted individuals benefit more from virtual communication than from to face-to-face interactions. Introverted and neurotic individuals find their "real me" on the internet whereas extroverts and non-neurotic ones find their "real me" in more traditional forms of communication (McKenna & Bargh, 2009). Just as with face-to-face interactions, working jointly on a common task with a common goal via the internet is a more effective way to change minds and hearts than are activities unrelated to any joint task.

The Absence of Eye Contact

The most basic attribute of CMC is what it does *not* entail: there is no face-to-face contact. What is the effect of this lack? Research into CMC-based interactions does not provide a clear answer. It is argued that the absence of facial and other visual cues might keep inter-group dialogue participants on task rather than arouse stereotypes. Writes Walther (2004), "in CMC, when the turban and the yarmulke need not be visible during interactions, can commonalities be made more salient than differences?" (p. 10). As always in such cases, the answer is "it depends": The effects of the absence of visual cues turn out to depend on the content and focus of the discussions: When they involve for example non-conflictual issues such as the adversaries' holidays, attitudes become more positive (Mollov, 2006); but when the discussions focus on politics, conflict becomes aroused (Ellis & Maoz, 2007). Rice and Markey (2009) had young female college students interact through the internet with a confederate for 15 minutes and compared their post-interaction feelings with those following face-to-face interaction. The results supported Walther's observation: more introverted and neurotic participants were indeed more anxious following face-to-face interactions; extroverts and more stable participants showed equally low levels of anxiety after CMC and face-to-face interactions. These findings are in line with the insights of McKenna & Bargh (2009) about the more relaxing nature of CMC, due in large part to the absence of visual proximity.

However, the lower levels of anxiety that CMC interaction are claimed to afford may also have a downside. Stritzke, Nguyen and Durkin

(2004) found that the absence of visual and auditory cues online softens the experience of social rejection and inhibitory feedback cues from other participants among shy individuals. However, when encountering frustrating experiences during online interactions (an expected and very frequent event when true adversaries interact), feelings can easily flare up and aggression is expressed (Eiko & Koji, 2005). Indeed, while online communication may reduce inhibition and facilitate self-disclosure and intimacy, particularly for lonely and shy individuals (Sheeks & Birchmeier, 2007), it may also lead to socially problematic behaviors (Caplan, 2007). That is, in the absence of face-to-face afforded eye contact, auditory cues, on-the-spot evolving social norms, mutually inhibiting and restricting behaviors, uninhibited expressions of hatred, anger, and blame can easily surface. This would be particularly expected when mutually threatening groups of adversaries interact in the context of an intractable conflict (Abramovich, 2005).

According to the anthropologists Boden and Molotch (1994), face-to-face communication ("copresence") is necessary (not just desired) when the information to be exchanged is emotional, novel, complex, and contradicting of one's beliefs. Indeed, daily experience tells us that when discussions with an adversary become difficult and emotionally loaded, we prefer to discuss the matter face-to-face. For this reason, we complement communication through e-mail, faxes, and phone calls with long distance travel to meet the other side over a cup of coffee (Urry, 2003). Eye contact (and sometimes physical touch) allows us to overcome bad feelings, misunderstandings and issues of mistrust, to calm angry adversaries and allow them to calm us down. And as pointed out by Engelberg and Sjöberg (2004) virtual interactions emphasize cognitive aspects at the expense of the emotional, while face-to-face communication affords greater sensitivity to emotional cues "which would, therefore, be preferred to the rather shallow interactive character of the Internet" (p. 259). Emotions, and particularly empathy, have repeatedly been found to mediate the effect of dialogues on reduced prejudices and stereotypes (e.g., Nagda, 2006). Thus, while virtual communication may be well suited for carrying out a common task or project, when serious misunderstanding arise, accompanied by hard feelings, copresence becomes necessary.

Conclusion

So, can virtual contact through CMC lead to the kinds of effects peace education generally hopes for? Much, of course, depends on the way PE is conceived and defined. If its main theme is mutual understanding, as desired in Northern Ireland (Smith, 1999), then virtual interaction may be well-suited to the task. But if the focus is on less cognitive and more emotional aspects such as empathy, reduced hatred, and ability to acknowledge the contribution of one's own side to the conflict (and overcoming the fear of such acknowledgment), then it makes sense to divide the labor between virtual and face-to-face interactions. Internet-based interactions alone will not suffice; one needs also an approach that addresses and promotes relevant emotions, something that is better served by copresence (Tam, et. al., 2007). A mixture of face-to-face and internet interactions, appears to be quite effective (e.g., Hoter, Shonfeld & Ganayem, 2009). Indeed, this may be a practical way to reach a large number of people so badly necessary to affect the culture of war and turn it into a more peaceful one.

References

Abramovich, D. (2005). Overcoming the cultural barriers of conflict: Dialogue between Israelis and Palestinians, Jews and Muslims. *Journal of Intercultural Studies, 26,* 293-313.

Mckenna, K. Y. A., & Bargh, J. A. (2009). Causes and consequences of social interaction on the Internet: A conceptual framework. *Media Psychology, 1:3*, 249-269 .

Bar-Tal, D., Rosen, Y., & Nets, Z. R. (2010). Peace education in societies involved in intractable conflicts: Goals, conditions, and directions. In G. Salomon & E. Cairns (Eds.), *Handbook on Peace Education* (pp. 21-45). New York: Taylor and Francis.

Betancourt, J. R., & Reid, A. E. (2007). Black physicians' experience with race: should we be surprised? *Annals of Internal Medicine*, *146,* 68-69.

Biton, Y., & Salomon, G. (2006). Peace in the eyes of Israeli and Palestinian youths as a function of collective narratives and participation in a peace education program. *Journal of Peace Research, 43*, 167-180.

Boden, D., & Molotch, H. (1994). The compulsion of proximity. In R. Friedland, & D. Boden (Eds.), *Nowhere: space, time and modernity* (pp. 257-256). Berkeley: University of California press.

Brown, K. T., Brown, T. N., Jackson, J. S., Sellers, R. M., & Manuel, W.J. (2003). Teammates on and off the field? Contact with black teammates and the racial attitudes of white student athletes. *Journal of Applied Social Psychology*, *33*, 1379–1403.

Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic internet Use. *Cyber Psychology & Behavior, 10*, 234-242.

Center for Dialogue and Reconciliation (2010). http://cdr-india.org/peace_Education_training.php

Danesh, H. B. (2010). Unity-based peace education: Education for peace program in Bosnia and Herzegovina. A chronological case study. In G. Salomon, & E. Cairns (Eds.), *Handbook on Peace Education* (pp. 253-268). New York: Psychological Press.

Dhont K., & Van Heil, A. (2011). Direct contact and authoritarianism as moderators between extended contact and reduced prejudice. Lower threat and greater trust as mediators. *Group Processes Intergroup Relations, 14*, 223-237.

Eiko, M., & Koji, O. (2005). Interpersonal relationships on computer-mediated communication—The psychological analysis of interpersonal trust, aggression and emotion-regulation skills. *Journal of Multimedia Aided Education Research, 2*, 159-173.

Ellis, D.G., & Maoz, I. (2007). Online argument between Israeli Jews and Palestinians. *Human Communication Research, 33*, 291-309.

Engelberg, E., & Sjöberg, L. (2004). Internet use, social skills, and adjustment. *Cyberpsychology & Behavior, 7,* 41-47.

Fuchs, T., & Woessmann, L. (2004). What accounts for international differences in student performance? A re-examination using PISA Data. *CESifo Working_Paper* 1235 (Munich, CESifo).

Halperin E., & Bar-Tal, D. (2011). Socio-psychological barriers to peace making: An empirical examination within the Israeli Jewish Society. *Journal of Peace Research, 48*, 637—651.

Hattie, J. (2007, September). *Developing potentials for learning: Evidence, assessment and progress*. Paper presented at the meeting of the European Association for Learning and Instruction (EARLI), Budapest, Hungary.

Hoter, E., Shonfeld, M., & Ganayem, A. (2009). ICT in the service of multiculturalism. *International Review of Research on Open and Distance*

Learning. Retrieved January 12, 2012, 10. www.irrodi.org/index.php/irrodi/article/view/601/1207

Husseisi, R. (2009). *The relationships between legitimizing the opponent and adherence to one's own narrative* (Unpublished doctoral dissertation). Faculty of education, University of Haifa, Haifa, Israel (Hebrew).

Laham. S.M., Tam, T., Lalljee, M., Hewstone, M., & Voci, A. (2010). Respect for persons in the intergroup context: Self-other overlap and intergroup emotions as mediators of the impact of respect on action tendencies. *Group Processes Intergroup Relations, 13*, 301-317.

Maoz, I. (2010). Educating for peace through planned encounters between Jews and Arabs in Israel: A reappraisal of effectiveness. In G. Salomon & E. Cairns (Eds.), *Handbook on peace education* (pp. 303-314). New York: Psychological Press.

Maoz, I. (2011). Does contact work in protracted asymmetrical conflict? Appraising 20 years of reconciliation-aimed encounters between Israeli Jews and Palestinians. *Journal of Peace Research, 48*, 115-125.

Mollov, B. (2006, June). *Results of Israeli and Palestinian student interactions in CMC: An analysis of attitude change toward conflicting parties*. Paper presented at the annual meeting of the International Communication Association, Dresden, Germany.

Nagada, B. & Ratnesh, A. (2006). Breaking barriers, crossing borders, building bridges: communication processes in intergroup dialogues. *Journal of Social Issues, 62,* 553–576.

Ohanyan, A., & Lewis, J. E. (2005). Politics of peace-building: Critical evaluation of interethnic contact and peace education in Georgian-Abkhaz peace camp, 1998–2002. *Peace & Change, 30*, 57–84.

Olson, D. R. (1974) (Ed.). *Media and symbols: The forms of expression, communication, and education*. The 73rd Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press.

Pettigrew, T.F., Christ, O., Wagner, U., & Stellmacher, J. (2007). Direct and indirect inter-group contact effects on prejudice: A normative interpretation. *International Journal of Intercultural Relations, 31*, 411–425.

Rice, L., & Markey, P. (2009). The role of extraversion and neuroticism in influencing anxiety following computer-mediated interactions. *Personality and Individual Differences, 46,* 35-39.

Roe, M., & Cairns, E. (2003). Memories in conflict: Review and a look to the future. In E. Cairns, & M.D. Roe (Eds.), *The role of memory in ethnic conflict* (pp. 171-180). New York: Palgrave McMillan.

Rosen, Y. (2009). Transformation of central and peripheral beliefs: Challenges for peace education. *Journal of Transformative Education, 7*, 1-12.

Rosen, Y., & Salomon, G. (in press). Durability of peace education effects in the shadow of conflict. *Social Psychology of Education: An International Journal*.

Roth, A. (2004). *Reconstructing the opponent's narrative in the intractable conflict as a way of peace education by internet based communication* (Unpublished MA thesis). University of Haifa, Haifa, Israel (Hebrew).

Salomon, G., & Gardner, H. (1986). The computer as educator: Lessons from television research. *Educational Researcher, 15*, 13-19.

Salomon, G. (2002). The nature of peace education: Not all programs are created equal. In G. Salomon, & B. Nevo (Eds.), *Peace education: The concept, principles and practices around the world* (pp. 3-14). Mahwah, NJ: Lawrence Erlbaum Associates.

Salomon, G. (2011). Four major challenges facing peace education. *Peace and Conflict: Journal of Peace Psychology, 17*, 46-59.

Sheeks, M. S., & Birchmeir, Z. P. (2007). Shyness, sociability, and the use of computer-mediated communication in relationship development. *Cyber Psychology & Behavior, 10*, 64-70.

Shnabel, N., & Nadler, A. (2008). A needs-based model of reconciliation: Satisfying the differential emotional needs of victim and perpetrator as a key to promoting reconciliation. *Journal of Personality and Social Psychology, 94*, 116–132.

Smith, A. (1999, April). *Education and peace process in Northern Ireland*. Paper presented in the annual conference of the American Educational Research Association, (AERA), Montreal, Canda.

Stritzke, W. G., Nguyen, A., & Durkin, K. (2004). Shyness and computer-mediated communication: A self-presentational theory perspective. *Media Psychology, 6*, 1-22.

Suleiman, R. (2004). Jewish-Palestinian relations in Israel: The planned encounter as a microcosm. In R. Halabi (Eds.), *Israeli and Palestinian identities in dialogue* (pp. 31–46). New Brunswick, NJ: Rutgers University Press.

Tam, T., Hewstone, M., Cairns, E., Tausch, N., Maio, G., & Kenworthy, J. (2007). The impact of intergroup emotions on forgiveness in Northern Ireland. *Group Processes Intergroup Relations, 10*, 119—136.

UNESCO. (1994). *Declaration and integrated framework of action on education for peace, human rights, and democracy*. Geneva, Switzerland: IBE.

Urry, J. (2003). Social networks travel and talk. *British Journal of Sociology. 54*, 155-175.

Varshney, A. (2002). *Ethnic conflict and civic life: Hindus and Muslims in* India. New Haven: Yale University Press.

Walther, J. B. (2004). Language and communication technology: an introduction to the special issue. *Journal of Language and Social Psychology, 23*, 384-396.

Walther, J. B. (2009). Computer-mediated communication and virtual groups: Application to interethnic conflict. *Journal of Applied Communication Research, 37*, 225- 238.

Yablon, Y. (2007). Feeling close from a distance: Peace encounters via internet technology. *New Directions for Youth Development, 116*, 99–107.

Zuabi, B. (2007*). The influence of participation in bi-national soccer clubs on the perception of "the other side" among Jewish and Arab youth in Israel* (Unpublished MA thesis). University of Haifa, Haifa, Israel (Hebrew).

Howard's Response to Gavriel Salomon

Though you are from Israel and I am from the U.S., and you were educated on the West Coast and I on the East Coast of the latter country, we easily connected and became friends many years ago. Sometimes we've joked it is because we are both "Jaeckes"—literally "Jackets"—a phrase used somewhat disparagingly to refer to Jews who are of German rather than of Eastern European or Sephardic background. Indeed, should he spy me dressed more formally than others at a gathering, cellist Yo-Yo Ma will immediately tease me about being a "Jaecke." And he goes on to explain that the tensions between German-Jewish musicians (à la Rudolf Serkin) and Russian-Jewish musicians (à la Isaac Stern) used to be so acute that if you studied and played with one camp, you were shut out of the other.

Anyway, whether it is "Jaecke" or something beneath the surface, we've shared interests, friends, and even publications for many years. There's a picture of us around 1971, taken from a conference at which were gathered a score of scholars (all men, I regret to report) who were interested in the role of media, symbolic systems, and various kinds of natural and artificial languages in human expression and communication. This interest had penetrated philosophy in earlier decades—for example Charles Sanders Peirce, Susanne Langer, Ernst Cassirer, and my own teacher Nelson Goodman. But by the early 1970s, it was becoming part of the vocabulary and the thinking of psychologists and educators. After all, we were now working in a cognitive era, rather than in the earlier behaviorist era, which explicitly barred any "mentalistic" terms or concepts.

And so, each in our own way, sometimes working with one another, sometimes alone, sometimes with other colleagues, we developed what we called a "symbol system approach." This initiative in the social sciences focused on how individuals—and particularly younger persons—decode and make sense of the myriad of symbolic systems, technologies, and media that human cultures have invented over the ages to make sense of and interpret the world. In my remarks about our mutual friend Elliot Eisner, of blessed memory, I mention how I used to debate him annually about whether one should be able to submit a novel as a dissertation. I joked that out of an audience of 1500 persons, 1498

agreed with Elliot. Thank you, Gabi, for being the one other member of AERA who (I think!) agreed with me.

In the last twenty years, you have continued your ties with Project Zero, but working more with David Perkins than with me. And you have chosen a uniquely important and uniquely challenging issue: peace studies. I had not made the connection until now, but at about the time that you had turned your attention to peace studies, my colleagues Bill Damon, Mihaly Csikszentmihalyi, and I had turned our attention to "good work" and, more recently, to other kinds of "good." It seems fair to infer that, as we reach our later years, we are less interested in understanding for its own sake (however wonderful that is) and more interested in whether we can use our knowledge—old or newly acquired—to try to improve the state of the world. And what bigger and more important issue than trying to nudge the world, and especially the dangerous part of the world in which you live, closer to a State of Peace?

During that twenty year period, you have carried out ingenious studies and also gathered a comprehensive, perhaps unique, mastery of the literature. You've documented how difficult it is to bring together parties that have long been at odds with one another and have also documented more promising avenues for doing so. It's clear that, barring a miracle, one-shot exposures do not work; intensive, lengthy, and multi-faceted relations are much more likely to hone and raise the sensitivities of hitherto warring parties. And now, in the essay for the Festschrift, you raise the fascinating question of the extent to which online contacts can be constructive in bringing about heightened understanding and warmer ties. As you note, we are still in the early stages of pondering this question, and the digital media are changing very rapidly. But once again, Gabi, you have been a pioneer—in raising this question and in suggesting what the possible answers might be.

Howard Gardner: The Ethical Theorist

Leonard Saxe[*]

In his hometown, Scranton, PA, there is a school that is called the Howard Gardner Multiple Intelligence Charter School. Several years ago, Howard visited (it was then a private institution, the "Howard Gardner School for Discovery") and gave a lecture. As he tells the story—with characteristic modesty—during the visit, he passed a group of students and overheard them remark, "There's the man who is named for *our* school." This anecdote reveals a piece of what it is like to walk in Howard's shoes. He may unintentionally have created a cognitive puzzle worthy of Piagetian analysis, but the children's misattribution notwithstanding, he is an intellectual "rock star" whose ideas have shaped public discourse and whose recognition is well-deserved.

For more than half a century Howard has made Cambridge, and Harvard University, the center of his universe. But, perhaps like his unassuming self-presentation, his place-centeredness masks his worldliness and the international reach of ideas. In this age of celebrity, Howard is an unusual figure. For a scholar, he has high public name recognition, and he travels widely to disseminate his own work and also to learn from others. But his ideas are even better known than his persona. Practitioners in a wide variety of areas have adopted his ideas, sometimes in ways that make him cringe, but often in ways that make their practice more mindful, more ethical, and more effective. As one who has had an insider's view of how his career unfolded—my perspective is both as a fellow research psychologist and as his brother-in-law—what is most extraordinary is how Howard has leaped beyond the metaphoric boundaries of Cambridge to become a thought-leader of several different communities of practice. Like the moniker given the founder of the modern discipline of social psychology, Kurt Lewin,

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Howard is a "practical theorist."[1] But his scholarship is driven by a particular ethical mission and that makes his work and career unique.

Impact

Few contemporary scholars, particularly research psychologists, can match the level of impact that Howard's work has had. His influence has been felt not only in education where schools have been named for him and multiple intelligence (MI) programs have been developed, but he has contributed to a panoply of fields, including art, journalism, and medicine. Without question a prolific psychologist and education scholar, Howard has also become a leading thinker about business. In a 2008 *Wall Street Journal* ranking of business "gurus,"[2] he was listed number five; ahead of fellow writer-scholars Steven Covey and Daniel Golemen, and ranked above business innovators Richard Branson, Michael Dell, and Jack Welch. The trajectory of his scholarship has taken him from considering basic developmental psychology questions, to issues of neurobiology, and throughout his later career, to how we think about intelligence, creativity, leadership, and ethics. Although the "mind" has been the persistent focus of his work, the ways in which he explored the mind have been as varied as the fields that have been influenced by his thinking.

Assessing Howard's impact is reminiscent of an insight of Julius Richmond, the distinguished pediatrician and putative father of the Head Start program and, later, Surgeon General of the United States under President Carter. Richmond was committed to using scientific evidence to develop social policy, but pointedly noted that the most important effects are often the most difficult to evaluate and attribute to a cause.[3] His analysis showed that the effects of powerful ideas and social interventions diffuse and appear in a host of ways. In the case of

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[1] Saxe, L. (2009). Kurt Lewin. *Encyclopedia of group process and Intergroup relations*, Dec. 16, 2009, 534-536.

[2] White, E. (May 5, 2008). New breed of business gurus rises. *Wall Street Journal*. http://online.wsj.com/article/SB120994594229666315.html.

[3] See, for example, Richmond, J. B. & Kotelchuck, M. (1983). Political influences: Rethinking national health policy, in C. H. McGuire (Ed.), *Handbook of health professions education: Responding to new realities in medicine, dentistry, pharmacy, nursing, allied health, and public health* (pp. 386—404). San Francisco: Jossey-Bass.

Howard's career, there are direct indicants of his influence, yet his impact has been much broader—on how we understand thinking and learning, how we appreciate the process of creativity and discovery, and how we view the ethical conduct of work in a variety of professions. Some of his contributions are already an integral part of contemporary thinking, so much so that they are not attributed to him.

Others who are collaborators of his wide-ranging thinking, in particular, his students and co-authors, will no doubt have contributed to this volume and described some of the specific features of how he has enhanced our understanding of thinking and human behavior. I want to acknowledge and celebrate these contributions, but my initial perspective will be the fit between Howard, the person, and his thinking or scholarship. As we celebrate Howard's life and work in this festschrift, I want to try to illuminate how an academic psychologist, who lives the life of the mind and devotes much of his waking hours to reading, writing, and teaching, became a public figure whose ideas make a difference in the world. This essay will provide only a glimpse into the nature of Howard the person-scholar-public figure. I hope, however, to provide some insight into the persona who has, to borrow a phrase from his writing, "changed minds" and is now hard at work try to enhance our understanding and practice of ethical behavior. He may be a rock star, but there is little that is frivolous about what he tries to do.

Humility

I have never queried Howard directly on the point, but if I were to ask him if he thought he was an important figure, he would likely demur and downplay the significance of his contributions. Certainly, by his appearance, one would never guess that he was an important public personage. On most days, he fits the Hollywood stereotype of the absent-minded professor, his tousled hair and scuffed shoes framing a textbook exemplar of someone who failed to master "dress for success" principles. Even when Howard hob-knobs with powerful government and business leaders, as he often does, his attire is a well-worn off-the-rack suit, with a sweater that might show intimacy with a moth. He appears as is, a man consumed with thinking and the larger-than-life problems of our contemporary world.

Superficial appearance issues aside, if I were to ask Howard about his stature, his answer would probably focus on what he failed to accomplish. The academic recognition he has not received, the jobs and grants he failed to obtain, and the ways in which his ideas have been distorted by some of those who have tried to apply them. He would also likely express concern for a world that has not integrated his ideas about assessing abilities, fostering creativity, and creating a moral and ethical society. Although he is surprisingly patient with all manner of questions and critique, his modesty sometimes morphs to anger at the way in which others behave unethically and without concern for the greater good. He regards himself as extremely lucky to have a wonderful family, to have good and long-lasting friendships, and to have had opportunities to work with leading intellectual figures of the 21st century.

It is difficult to understand how Howard's persona and work interact without knowing his biography. He has written and talked about it several times, so I am not revealing anything beyond what is already in the public domain.[4] He was born at a moment of great personal and political turmoil. His parents, Hilde and Ralph (*z"l)*, were Jewish émigrés to the United States from Nuremberg, Germany. Howard's father was a successful businessman and, for several years after Hitler's rise to power, Ralph tried to leave Nuremberg. He eventually succeeded in obtaining a U.S. visa, and Ralph and Hilde arrived in the United States on November 9, 1938, precisely at the moment that Kristallnacht ("the Day of Broken Glass") enveloped Germany. It was the point at which the Nazi war against the Jews, which took shape with the 1935 Nuremberg Laws, evolved from ugly to unthinkable and became the Final Solution. Coordinated attacks took place across Germany that killed nearly 100 Jews, led to the arrest and transfer to concentration camps of nearly 30,000, and destroyed Jewish businesses. Ralph and Hilde came to New York with few resources, but with an extraordinary will to build a life in America for themselves and their family.

At the time of Howard's birth in July 1943, the world had seemingly gone mad. The flames of war covered the atlas—from Europe

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[4] Gardner, H. (2006). A blessing of influences. In J.A. Schaler (Ed.), *Howard Gardner under fire: The rebel psychologist faces his critics* (pp. 1-32). Chicago and LaSalle: Open Court.

to Russia, to China, to the South Pacific—and the Nazi killing camps of Eastern Europe were systematically executing the Final Solution. But there was a tragedy closer at home that would also color his life. Howard had an eight-year-old brother, Eric, who had come with his parents from Germany to America. Six months before Howard's birth, Eric was killed in a sledding accident on a Scranton street witnessed by his mother. Eric, by all accounts, was a brilliant and wonderful child, and had fueled his parents' capacity to restart their lives. Eric represented Ralph and Hilde's hopes for the future, and they were broken by his death. As Howard has described it, his parents would have ended their own lives but for the knowledge that Howard was in his mother's womb. It was not until he was ten-years-old that he learned of his brother's death and began to appreciate the scope of the Holocaust. But the shadow of tragedies surrounding World War II and the death of his older brother were present throughout his childhood.

Not to be overly psycho-biographical, I have no doubt that a part of what explains Howard's humility are the circumstances of his childhood. It was not necessarily maudlin. He and his sister, Marion (my spouse), may have been born into a family living under a tragic cloud, but what they experienced as children were loving parents who were devoted to them and to the rest of the family. He grew up in a home that exemplified what Jewish tradition calls *gemilut hasadim* (acts of loving kindness). Among these acts were his parents' efforts to enable other members of the family to come the United States. His parents shared resources with their relatives and aided them in finding homes and jobs. When Howard was young, the Gardners lived in a small apartment, often crowded with family who stayed for short and long periods. One of Howard's aunts had been a victim of Dr. Mengele, imprisoned at the Auschwitz concentration camp.[5] She was a surrogate parent and a model of determined survival. Howard grew up with a father who worked extremely hard and who teamed with cousins, fellow survivors of the Nazi wrath, to build a very successful business (perhaps, tellingly, a bookbinding company), while his mother guided his education. Howard learned to love books, music,

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[5] For a description of his aunt's trauma, see Leff, L. (2005). *Buried by the Times: The Holocaust and America's most important newspaper*, Chapter 10. Cambridge: Cambridge University Press.

and ideas. It was a home in which love and hard work were in ample supply, and American materialism absent.

Dedication

Given his background, it should not be surprising that Howard is self-effacing and incapable of indulgence or extravagance. It should also be obvious why his family remains his priority. For all of his fame, and for all of the mornings and evenings he spends in his study writing, for all of the days that he travels the world lecturing, collecting data and accolades, he never fails to be in contact with his parents, sister, children, and now, his children's spouses and grandchildren. His father, Ralph, passed away in 1999, but his mother, now 102 years young, lives less than a half hour from his home and office in Cambridge. Until his mother moved to a smaller apartment, his ritual was to return from a trip—often with awards and a copy of one his books translated into a foreign language—and to deliver the proceeds to her. The equivalent of his trophy case was his mother's walls and bookcases. Today, a day does not go by that he is not in contact with his mother—by phone, by fax, by email.

Howard's dedication to his family and, in similar ways, to his friends and colleagues both helps to describe who is and how he learns from others. The simple summary is that he is the consummate teacher and, simultaneously, the ever eager student. When his children were young and he drove carpool, his trips to and from school became legendary. His turn at carpooling was part TED talk (which, of course, did not exist then), part Socratic dialogue, and a kind of non-broadcast NPR. Whether the topic was a news story of the day, a fact of history, or his reports of recent travels, Howard was the teacher and his charges were his pupils. Every trip was treated as a teachable moment for his young passengers. But it was also a laboratory for him to test his ideas about learning and the way in which the mind acquires and uses information. It was a model of teaching I tried to replicate (not always successfully) when I became a parent.

Engaging Others

Howard's prolific output of books, scholarly articles, op-eds and letters to the *New York Times*, and his travels, make him incredibly busy. Frequent flyer programs actually make objective comparison of his

travels possible, and I have no doubt that such an analysis would place him in the top one percent of the population. You might think that this would make him someone who did not have time for friendship, and a scholar so immersed in his own work that he had no time for the student or stranger who simply had a question. Although he is like the rest of us who often feel burdened by the constant stream of email and other distractions, he somehow manages to cope. He has cultivated a circle of close friends, many of them distinguished intellectuals, with whom he has sustained long-term relationships; he has helped legions of colleagues by providing feedback on their work and support for their careers; and, although he cannot answer every query that comes his way, he is incredibly generous with his time. His discipline, but more importantly his dedication, to being responsive to others is remarkable.

To be prominent is to be a leader, and Howard's capacity to engage with others is one feature of his leadership style. Howard has written extensively about leadership and, while he regards his views as not very radical, they focus on leadership as a "cognitive enterprise"—a process that occurs between leaders and followers.[6] In the Gardnerian framework, he is an indirect leader, one who influences others by the creation and dissemination of ideas rather than by direct influence. Interestingly, while his leadership model includes the ability to tell one's story and to teach others, it does not include the bidirectional relationship of a leader and followers. In fact, in Howard's case, his ability to engage with others—from friends and family, to collaborators, to critics, to students and practitioners—is key to how he teaches. As social network theory explains, the ability to listen and relate to others is one of the traits of an effective leader.[7]

But what explains his ability to be a social animal? One reason is his wide-ranging set of interests and knowledge. It should be obvious to anyone who reads even a small part of his published canon that he has an impressive grasp of fields from art, to history, literature, music, philosophy, politics, and science. His understanding of these fields is

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[6] See, in particular, Gardner, H. (1995). *Leading minds: An anatomy of leadership*. New York: Basic Books.

[7] For a discussion of social network theory see Kadushin, C. (2011). *Understanding social networks: Theories, concepts and findings.* Oxford: Oxford University Press.

dynamic, and he works assiduously to expand his knowledge base. Not only is he interested in these multiple areas of human expression, but one could imagine him having gained prominence in one or more of these fields. He, perhaps, could have been a concert pianist or another kind of scientist. He does not, as some surmise, possess uncommon strength in all of the forms of MI, but there is no question about the breadth and depth of his knowledge and skill. It enables him to engage with individuals from different domains of interest and skill.

Perhaps the best reflection of how Howard has leveraged his prominence in concert with his social networking skills is travel. As intimated earlier, while he has maintained stability of place—living, studying, working in and around Harvard for more than 50 years—he is also an inveterate traveler. He has written extensively about the cultures of some of the places he has visited, such as Reggio Emilia in Italy and Chinese schools, but he uses every opportunity to travel as a laboratory to develop and test a narrative of how people think and deal with the world. He believes that our purpose in life is to learn about ourselves and the world and to pass this knowledge on. In one of his writings missing from his curriculum vita, he has prepared a travel companion for his children and grandchildren filled with advice about how to navigate the world. One of his framing comments is that travel is one of the ways in which you become educated. He believes he has learned more about the world and himself through travel than by way of anything else. Someone, someday, will analyze the notes he keeps on each day of his international travel and produce the ultimate "thinking person's guide to the world."

Howard, without question, is a prominent public intellectual, deserving of the accolades, awards, and honorary degrees he has received. He is a hero to those frustrated by normative approaches to educating children and adults. All of us whose work concerns the mind should be pleased that society recognizes the importance of a thinker who thinks about thinking. But what is, perhaps, most extraordinary about Howard is his concern with morality and ethics.

Ethical Thinking

Born into a world enveloped by war, and the son of parents who had narrowly escaped Hitler's murderous grip, it should not be surprising that issues of morality and ethics pervade his work. In one

sense, all of his scholarship, including his most basic research on developmental and neurobiological processes, is ethically driven: in the service of a more just world. Indeed, his formulation of the theory of multiple intelligences arguing for a broadened view of human potential is inherently pro-social. His contribution, however, has not just been to develop and promote ideas that can be used to enhance our world, but he has made the ethical dimension of our work—of how we can create better societies—an essential part of his focus. The multiple intelligences work is paradigmatic. Early on, he promoted MI as a way to encourage schooling that would help individuals realize their potential and, by doing so, "feel more engaged and competent and therefore more inclined to serve society in a constructive way."[8] Education is not merely for the sake of learning, but for making our world better.

A social responsibility objective was reflected in much of the work that he did in the years following publication of the MI formulation. Whether his focus was on "extraordinary minds," "leading minds" or "creating minds," the framing and coda of his analyses were always in reference to creating more just and fair societies.[9] Thus, as part of his study of "extraordinary minds," he sought to understand how to "link talent and a sense of social responsibility."[10] And, later, as part of his studies of leadership, his goal was to foster development of responsible leaders who empower, rather than manipulate, and who will bring positive change to their organizations and society at large. For Howard, the challenge is how to educate people toward social responsibility. Ethical concerns pervade Howard's thinking and writing.

His concern with social responsibility became more explicit, beginning in 1995, when he collaborated with Mihaly Csikszentmihalyi and William Damon, to create what became the GoodWork project.[11]

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[8] Gardner, H. (1987). Beyond IQ: Education and human development. *Harvard Educational Review*. 57(2), 187 - 193.
[9] Gardner, H. (1993). *Creating minds: An anatomy of creativity*. New York: Basic-Books; Gardner, H. (1998). *Extraordinary minds: Portraits of 4 exceptional individuals and an examination of our own extraordinariness*. New York: Basic-Books; Gardner, H. (1995). *Leading minds: An anatomy of leadership*. New York: Basic Books.
[10] Gardner, H. (1998). *Extraordinary minds: Portraits Of 4 exceptional individuals and an examination of our own extraordinariness*, p. 6. New York: Basic Books.
[11] http://www.thegoodproject.org/good-work/the-good-work-project/

GoodWork is a value-driven effort to promote social responsibility and excellence through education and, for nearly 20 years, has been the central focus of his work. He has not abandoned his concern with issues of the mind, far from it. But they have become background rather than foreground in his research and writing. Howard has prioritized the study of how each of us—students, professionals, leaders—balances our individual needs with moral and ethical standards. Characteristic of Howard's work, his approach is to create a framework—GoodWork—and then to develop its implications.

I leave it to others to examine the details of the GoodWork project and to assess its impact as an application of socio-psychological thinking to enhance human potential. Instead, I would like to draw from a different tradition, Jewish texts and history, to characterize this aspect of his work and to place it, perhaps, in a larger framework. I do so, in part, because Howard's approach appears to me to be characteristically Jewish. He is not an observant Jew, albeit he is proud of his heritage, and my claim is not that his ideas derive from his Jewishness. Nevertheless, taking a page from his stylized way of integrating history, biography, and intellectualism, I want to place his work in a particular tradition of Jewish intellectual thought. I draw, in particular, from the life and work of the great medieval rabbi, scholar, and physician, Moses Maimonides, later known as Rambam.

Maimonides was born in Cordoba, Spain in 1138, the eldest son a prominent rabbi.[12] Like the Gardner family 800 years later, Maimonides' family had to flee Jewish persecution, traveling from Cordoba to elsewhere in Spain and then living in Morocco and Palestine. Eventually, when he was 30, he and family settled in Egypt, in an area that is now part of Cairo. Young Moses Maimonides had been a child prodigy and at an early age studied science and philosophy, as well as Jewish texts. He went on to become the most influential rabbi of his era and also gained fame within and beyond the Jewish community as a physician and a philosopher. He was a prolific writer and his published canon, over the course of his 66-year life, included dozens of books. His fourteen volume

[12] For a description of Maimonides' life and ideas see Nuland, S. (2005). *Maimonides*. New York: Schocken. Also see, Kravitz, L.S. & Olitzky, K. M. (1999). *Shemonah Perakim: A treatise on the soul*. New York: UAHC Press.

Mishneh Torah, a summary of Jewish law, is still closely studied today, as are his works on ethics and philosophy.[13]

A direct comparison of Maimonides and Howard Gardner would be inappropriate, but in several interesting ways, Howard's work reflects a Maimonidean approach to understanding and improving our work. At a simple level, Maimonides was concerned with turning complex ideas into concepts that could be understood and used by ordinary individuals to enhance their lives. In his *Mishneh Torah* commentary, he synthesized centuries of Talmudic debate into principles that could be easily understood. To use a well-known example, from the Talmudic discussion of charity (*tzedakah*), Maimonides drew a list of "eight levels of giving." Sometimes called the Maimonidean ladder, it describes the highest level of charity as providing for a person in need in such a way that s/he no longer needs assistance but can provide for him/herself, while the lowest level of giving as giving charity out of pity. The eight levels of giving are not of the same order as Howard's eight types of intelligence. But the MI formulation shares with the Maimonidean charity ladder the effort to simplify a complex discussion—about the nature of intelligence—into a form that can be used to transform educational practice.

The greatness of Maimonides' contribution to Jewish thought was not, however, his codification of Jewish law in understandable language. In a larger sense, he was able to reconcile the gulf between religion and emerging scientific thinking. His faith was unbridled, yet he was an Aristotelian thinker who elaborated a theology in which religion and faith were not only compatible, but complementary.[14] Howard regards religion as sometimes, but not necessarily consistently, a positive force in human affairs,[15] yet his position and Maimonidean thought are surprisingly synchronous. Maimonides argued that what he called the "rational

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[13] Twersky, I. (1982). *Introduction to the Code of Maimonides (Mishneh Torah).* New Haven: Yale University Press. See also Kraemer, J.L. (2010). *Maimonides: The life and world of one of civilization's greatest minds*. New York: Doubleday Religion.

[14] See, in particular, his seminal philosophical work, Maimonides, M. (1956). *A guide for the perplexed. (Moreh nevukhim). Trans. Michael Friedlander (1904). New York: Dover.*

[15] Gardner, H. (2011). *Truth, beauty and goodness reframed: Educating for the virtues in the twenty-first century*. New York: Basic Books. See also Gardner, H. Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet*. New York: Basic Books.

function," what Howard would label as the "mind," is the most important of our functions and the essence of our ability to know and discover truth.[16] The rational function is also closely linked to ethical behavior and foreshadows Howard's approach.

Maimonides' elaboration of his views of the rational function and its implications for leading an ethical life are an essential part of his commentary on a section of the Mishnah, *Pirke Avot* (*Ethics of our Fathers*). *Pirke Avot* is a compendium of ethical precepts, drawn from Biblical sources, as taught by rabbis and scholars. Maimonides' commentary is an introductory framework for understanding ethical behavior and appreciating the way in which ethics shape human behavior. His focus is on the ways in which we develop a balanced life, where our rational abilities—including our scientific understandings of the world—enable us to control our emotional/irrational desires.

The fundamental issues that Maimonides articulated are, in a uniquely modern way, reflected in Howard's recent scholarship where he asks how we as individuals, and as members of families, neighborhoods, and societies, behave in an ethical way toward others.[17] As part of his analyses, Howard introduces an interesting distinction between morality and ethics. He reserves morality to describe our ethical relations with others who are part of our local communities—those with whom we can identify and share common humanity. And he proposes that religious codes, such as the Ten Commandments, enshrine a framework for individual moral behavior.[18] Ethics, in contrast, is a broader term applied to our relationships in an ever more complex social world. For Howard, ethical decision-making is an abstraction and lacks the visceral component of how we relate to those who are actual and proverbial "neighbors." One influence on the broader culture is the role we play in society—our professional and other obligations—each of which may be

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[16] Kravitz, L.S. & Olitzky, K. M. (1999). *Shemonah Perakim: A treatise on the soul*. New York: UAHC Press.

[17] See Gardner, H. (2011).

[18] Although the Ten Commandments are often treated as the defining statement of Biblical ethics, the name "commandments" is an inaccurate translation and they are not intended as a complete statement of ethical principles. In Biblical Hebrew, they are "*assert ha'dibrot,"* the ten sayings. They constitute a central part of the code of individual and social responsibility prescribed in the Bible, but only a part.

associated with specific norms. These norms do not necessarily promote moral behavior, but they are what lubricate modern life in complex societies where we no longer feel the sense of common destiny with others. The challenge that Howard lays down is to create a more humane world in which morality and ethics prevail.

Howard rejects simple religious formulations as a solution to contemporary ethical dilemmas. His argument is that our complex and interdependent world makes morality insufficient as a tool for peace and co-existence. Looking at the state of the world in 2013, it is obvious that there is much truth in this observation. But it turns out that Howard and Maimonides are not far apart. Maimonides was a Jew who lived in an alien (Muslim) culture and wrote during an era in which the tensions among Islam, Christianity, Judaism and, in a different sense, Greek science and philosophy were palpable. The world had not yet created weapons of destruction so lethal that all of human culture could be erased with a few keystrokes, but the destructive potential of clashes between civilizations was as evident to the 12th century scholar as to Howard in the 21st century.

More important, than the common elements of their diagnoses is what to do about the problem. Again, Howard's work can be viewed as a modern extension of Maimonides and the tradition of focusing on the intellect as the pathway for humans to create a better world. Promoting knowledge and understanding particularly through science is undoubtedly important. As Howard has written, "one would have to be an intellectual Luddite to ignore the findings and explanatory models of science."[19] At the same time, science (what Maimonides considered *chochmah*, also translated as wisdom), is not sufficient. We do not have explanations for every natural phenomenon, nor of human behavior. It does not account for chance, or unusual leaders who promote good, as well as evil, and it does not guarantee that collectively we will pursue what is moral and ethical.

To create "good societies," ones in which morality and ethics prevail, requires according to Howard, that we sublimate our self-interest and model ethical behavior for others. From my own perspective as a

[19] Gardner, H. (2011), p. 203.

practicing Jew, that sublimation is what it means to be faithful to the tradition. Howard arrives at a similar conclusion, albeit from a different vantage. I would like to think that confluence adds validation to the principle, but more importantly is what we do to resolve the dilemma of an imperfect and ethically challenged world. How do we set aside our individual interest and harness scientific and technological progress to promote beauty and goodness? Howard's work opens the door to new thinking about these problems and how we might educate one another to address them.

Howard's work, in particular his focus on how to educate individuals to enable them to create moral and ethical societies, illuminates problems that have been with us since the beginning of history. But it does feel more urgent to solve these problems today. We live in an era in which the potential for self-delusion and self-destruction seems to be growing far more rapidly than our ability to place the common good above our own immediate interests and those of our group. Howard does not provide a comprehensive plan for a creating a "Good Society," but he describes some of the central cognitive roads that each of us needs to traverse to get there.

Unfinished Work

One of the most oft-cited teachings offered by *Pirke Avot* has particular relevance to a festschrift in honor of Howard Gardner and his lifework. It is a pair of precepts attributed to Rabbi Tarfon: The first, "The day is short; there is much work to be done…" captures the ambition of a scholar who asks and tries to answer large and universal questions. The second part of the couplet lays out the challenge to Howard for the future: "It is not up to you to finish the work, yet you are not free to desist from this effort."[20] Howard may be past the age of "normal retirement" as defined by our Social Security Administration, but the imperative of his work continues.

In Jewish tradition, it is customary to offer a blessing—to individuals of all ages—"May you live until 120" ("*Ad meah v'essrim shana*"). Moses, the Biblical prophet who led the Israelites out of slavery

[20] *Pirke Avot* 2:15-16.

in Egypt through the desert, lived 120 years. He died in sight of the Promised Land, not being allowed to enter. According to the text, when he died "his eyes were undimmed and his vigor unabated."[21] He had his full faculties to the end of life. May Howard continue to enlighten us and the world with his ideas and may his first 70 years be only a prelude to a long and fruitful career.

[21] Deuteronomy 34:7.

Howard's Response to Leonard Saxe

I am fortunate to have many professional colleagues and friends who gathered at the Festschrift celebration, as well as wonderful family. All four of my children spoke lovingly at the celebration, and it was touching that my mother, at age 102, was able to attend. (She died, peacefully, six weeks later.) You, Len, are the man who knows all and can tell all—respected psychologist and social scientist recognized the world over and, thanks to my sister Marion, my brother-in-law for over forty years.

I had no inkling of what you would speak or write about at the Festschrift—recall that this publication and the accompanying event were my wife Ellen's and my friend Mindy's doing. It is now clear that you have accomplished a *tour de force*: a description both of my work and of my family background, which only you (probably informed at spots by others in the family) could have written. Thank you, Len, for this herculean accomplishment.

Your survey of my life is accurate and moving, and it would be supererogatory for me to revisit what you have accomplished so deftly. But I will allow myself three comments:

1) Like a few other contributors, you refer kindly to my humility. It's true that I don't spend a lot of time thinking about what I've accomplished or failed to accomplish. Each day is a new day. But as I've mentioned at several points, I tend to be quite critical not only of myself but of many others as well. I don't feel that this represents the highest form of humility. As for the remark about focusing on things that have not worked out, I try not to dwell on these myself (not a good use of time!) but do share with my students and children who may think (erroneously) that everything has worked out well. (As my teacher Roger Brown said to me half a century ago, "We all have a folder filled with worthy but still unpublished papers.")

2) You refer appropriately to the enormous effect that my parents had upon me and upon others as well. As I have often quipped, "I chose my parents well." Because she lived longer and was more of a social person—indeed a prototypical "connector"—people tend to think about my mother

more than about my father. But Dad (Ralph, Rudi) was a formidable personality in his own way, very thoughtful, very considerate, and also possessed of a keen sense of humor.

I have to admit that in reading your tribute, Len, one of Dad's favorite wisecracks occurred to me. You generously draw some comparisons between my work in ethics and the approach taken by the great Jewish thinker Moses Maimonides. I am moved by the comparison. But then, in the background, I hear my father's voice saying, "Den Unterschied moechte ich Klavier spielen koennen." Very loosely translated, what Dad might have interjected at this point is, "Howard—you and Maimonides! I'd like to be able to play the difference on the piano."

3) I want to take this opportunity to thank you, Len, for your many contributions to many communities. As noted, you are a major contributor to social scientific thought. During the last twenty years, you have focused on Jewish studies. In addition to accumulating a vast amount of knowledge on a capacious topic, you've carried out important and pioneering studies of Birthright Israel—the program that gives young American Jews the opportunity, at no expense, to spend 10 days in Israel. Because of this and other work, you are now regularly recognized as one of the leading Jewish thinkers in the country. Finally, and closest to home, you have done innumerable things—invisible as well as visible—to strengthen our family and help to bring it together, in good times and sad times. And for us, that is the biggest of all Mitzvahs.

The Animating Core

Steve Seidel

NOTE: In a week Project Zero will move its offices yet again. Last week, in preparation for the move, I spent an entire day sorting through dozens of boxes containing 25 years of memories and materials (including countless memos from Howard) from my work—and, more importantly, my learning—at Project Zero. In one file folder, I found a draft of a research report that I'd sent to Howard in the early 1990s for his review. His comments were scrawled all over the draft and in a page of typed comments. In no uncertain terms, he wrote that few readers would be truly interested in the methodology and background to the study unless I started the report with what the big ideas were in our findings and what we learned from doing the study. Lead with ideas!

I can't guess how many times Howard said this to me over the years. I do know, though, that he has modeled this endlessly in everything he's written and every talk he's given. Studying Howard, in this regard, has been a transformational lesson in the power and critical importance of ideas—the responsibility to have them, the hunger of others to hear them, and the possibility that they can change the world.

Indeed, I see my years at Project Zero as an apprenticeship in the work of having and sharing ideas. To apprentice with Howard in this regard has been an incredible gift—the opportunity to work with a true master.

In gratitude for this and so much more, I dedicate this 'idea' essay to him.

January, 2012
for Howard Gardner

Having been a professor at the influential Bauhaus school of fine art, crafts, and design in Germany from 1923-1933, Josef Albers came to the U.S. in 1933 when the Nazis closed the Bauhaus. Albers accepted a teaching position at Black Mountain College in Asheville, North Carolina, where he began to write in English about his theories on the place of the arts in education. In a 1935 essay called *Art as Experience,* Albers put

forward an argument that the arts should be at the core of the curriculum of a liberal arts education.

If art is an essential part of culture and life, then we must no longer educate our students either to be art historians or to be imitators of antiquities, but for artistic seeing, artistic working, and more, for artistic living. Since artistic seeing and artistic living are a deeper seeing and living –and school has to be life—since we know that culture is more than knowledge, we in the school have the duty to remove all the fields of art from their decorative sideplace into the center of education—as we are trying to do at Black Mountain College.

To intensify this purpose, we have to bring about in school a nearer connection, or better, an interpenetration, of all the art disciplines and artistic purposes in school life, which will show that their problems are very much the same.

Then we will learn through the parallelism of their common problems—for example, the problems of balance or proportion—that they are tasks of our daily life too (Albers, 1935, p. 392).

Elegantly, Albers makes two arguments here—first and most obviously, that the arts should be the engine of the curriculum, 'interpenetrating' every subject area and the design of all courses and projects in a school. He supports the argument for the central role of the arts in school based on his belief that "school has to be life" and on his belief in the importance of "artistic seeing and artistic living." In these views, as in the title of his essay, he echoes John Dewey. Albers elaborated his thoughts on this topic in many articles, essays, and notebook entries (Horowitz & Danilowitz, 2006). What this actually looked like at Black Mountain, outside of Albers' own documentation of his classes, is less clear. Yet the rich cast of important American artists who spent time as faculty, students or visitors there suggests that something powerful was happening on this out-of-the-way and short-lived (1933-57) college campus. To name only a few, this group included Robert Rauschenberg, John Cage, Anni Albers, Cy Twombly, Ruth Asawa, Robert Creeley, Buckminster Fuller, Gwendolyn Knight, Merce Cunningham, Jacob Lawrence, Ben Shahn, Charles Olson, and Robert Motherwell.

When I first read Albers' words above, my immediate response was that they should be the motto of every school and every classroom in America. The arts had been the center of my professional life for 40 years and Albers' argument resonated with my own beliefs and values. But upon further reflection, I quickly realized that thoughtful and passionate historians, scientists, ethicists or environmentalists, among many others, could certainly make the case for their disciplines to thread through and provide focus and coherence to a school's curriculum—and could make the case just as convincingly as Albers had for the arts. Thus, I wondered, are the arts no more special—and no more deserving of this honored core of the curriculum—than any other discipline or theme?

Perhaps the second and potentially more profound argument that Albers was making, albeit implicitly, in his 1935 essay was that there *should* be a core to the curriculum of every school—whether this be a powerful idea, concern, or a disciplinary perspective—and that that core must be aligned with a deeply held idea about the purposes of education. Once identified and established, this core could animate a school's curriculum and programs and give them meaning and coherence. For the benefit of students and faculty alike, an explicit 'interpenetrating' core might function like an engine with pistons connected to every aspect of the curriculum and (to mix metaphors), provide a glue to bind students' experiences. I hear Albers' words arguing for an 'animating core' to every curriculum.

Looking Back

Indeed, as I thought about the best schools in which I've worked or visited and the educational ideas that I have most admired, four significant educational adventures came quickly to my mind. They include all levels from infant/toddler through early childhood, elementary, middle and high school age students. All have been located in classrooms and schools. Each has a powerful animating core to their curriculum. Interestingly, none of them held the arts as the animating core, though the arts have had an important place in all of these schools or practices. Moreover, none of these four holds an academic discipline as its core. Rather their cores are all issues, values, processes and/or purposes.

The four cores are: *identity, quality, research, and understanding*. Across the different educational settings, these animating cores share the following characteristics:

- Near obsessional attention is given to them;
- They centrally define the criteria by which these educators hold themselves accountable;
- They are tied to the educators' deepest values;
- They have rich complexity, taking on new meanings and dimensionality, in different academic contexts (subject matters, etc.);
- They seem to serve the critical initial purpose of engaging students in the subjects they are studying and, over time, seem to help in holding their attention;
- They come alive in social and intellectual processes that continually enact and revalidate the core.

I do not see 'theme-based instruction' qualifying as an animating core to the curriculum. 'Egypt' or 'the rain forest' or even 'revolutions' do not seem to have the capacity to "interpenetrate" the curriculum, or to serve as central, cross-cutting goals of a broad educational experience. Nor, for that matter, would I consider the 'back to basics' movement of the 1980s or even the Common Core State Standards Initiative as animating cores for a school's curriculum. Both of these reflect broad and vague goals 'adopted' by states and districts, but rarely embraced by the faculty and administration of particular schools. They may provide focus and goals, but they have little that inspires and unites a school community.

Identity: The Group School of Cambridge, Massachusetts

Fortunately, my first serious work as an educator was my ten years as a teacher and staff member at The Group School, which was founded in 1969 by youth workers and working class adolescents in North Cambridge, Massachusetts. The founding students were frustrated by their prior public school education, where they experienced little respect from adults, few options for satisfying employment, and a curriculum that did not connect to their experiences. The school's name reflected their collectivity—the strength, solidarity, and pride they felt in having come together to create a new institution. They knew they needed each other to build a positive identity out of what was emphatically and

dramatically considered a deficit—their birth into hard economic circumstances.

The second critical choice they made for their fledgling school was to have an exclusive admissions policy. The school existed to serve working-class high school students of any age. In other words, social class was the determining factor for admissions. Thus, the themes of the power and potential in collective identities, even and especially identities that had painfully low status in the established social order, were at the center of the entire enterprise.

Concomitantly, students and staff evolved an approach to the school's curriculum that focused on the positive dimensions of being a working class person. Intuitively, the students and staff were anticipating a shift that explicitly emerged in the 1980s from deficit-images of working class and poor youth and communities to asset-based images and identities (Delpit, 1995, p. 173; Ladson-Billings, 1994, p.151). The principle was actually pretty simple: Students didn't want to go to schools where they were viewed as not having rights, potential, or intelligence, where they were not respected or expected to succeed and, therefore, where they were not prepared for taking important and powerful roles in their communities and society. Indeed, students and staff quickly realized that every aspect of the school—from governance to counseling to academics—had to be infused with positive images of what it means to be young, capable, and working class. The theme of identity—strong, positive, and hopeful—had to permeate every aspect of school life.

The history and language arts programs explored the role of the working class in the U.S. and elsewhere in struggles for justice and equity. Other courses focused on contemporary life, including what it meant to be working class in public schools, the differences between public schools in urban and suburban settings, the function of the juvenile justice system in society, the complexities of finding meaningful work, and the challenges of college for young people whose parents and siblings had likely not gone beyond high school.

The drama program, in which I was learning to become a teacher, quickly evolved to reflect these same concerns. In our first efforts to introduce students to the world of drama, my co-teacher, Patty Collinge,

and I, brought the playwrights we found most compelling, including Harold Pinter, Samuel Beckett, and Eugene Ionesco. But our students found little in these avant-garde, absurdist plays to connect to. Indeed, our reading aloud sessions with these scripts in class were so lethargic that I wondered what level of reading ability our students could ever achieve.

One day we brought Clifford Odets' depression-era 'kitchen sink' drama of working class life and striking workers, *Waiting for Lefty*. From the first reading it was clear our students connected with this text. I remember being amazed at the fluency of some of the readings that day. Students who had seemed barely able to read suddenly gave impressive performances of parts they were seeing for the first time. The path was set that day for the direction of the drama program over the next 10 years—producing plays that portrayed the experiences of working class people, young and old, contemporary and historical, in a respectful, even if sometimes hard or uncompromising, fashion. In that decade, we had terrific adventures exploring and performing plays by Clifford Odets, Bertolt Brecht, Garson Kanin, Brendan Behan, and others.

The theme of working class identity—with full recognition of the challenges, hardships and proud history of that heritage, as well as the impressive role models in their community—interpenetrated virtually every aspect of the curriculum. This conceptualization of identity served as an animating core throughout the history of the school.

Quality: Ron Berger's 6th Grade Classroom in Shutesbury, MA

For over 25 years, Ron Berger (another contributor to this volume) was a classroom teacher (most of those years with 6th graders) in Shutesbury, Massachusetts, a rural community with only one, K-6 public school. Berger is now known around the country for the exceptional quality of the student work done in his classroom. In his essay, *A Culture of Quality*, Berger describes one of the many complex projects he undertook with his students—researching radon levels in their community (Berger, 1996). In analyzing the success of the project, he notes that they did not have extensive resources at their disposal; the per-pupil expenditures in their rural district were far below state average. His students were not hand-selected or identified as 'gifted and talented.' They were simply the students moving up the grades into his class—a

rich mix of learning styles, strengths, and interests. So why was this project—and so many others they did in his classroom over the years—such a powerful learning experience for students and so appreciated by their community? Berger credits the school's culture:

It [the project] was successful because it was introduced into a *school culture* into which it fit perfectly—a culture of quality. The students with whom I worked had been prepared for years (some for as many as seven years, beginning in preschool) to take on the responsibility of mature, self-directed work and to do that work to extremely high standards. There was a history in this school of students taking on significant original projects and original research. Students were accustomed to presenting their work to the world beyond their classrooms. [italics in original] (Berger, 1996, p. 18).

Berger notes that the staff had many disagreements over the years, but "we share a common vision for the school, one marked by *an expectation of quality, a pride in quality, and a striving for quality* (Berger, 1996)." [italics added]

Over the years, Berger led major projects in virtually all of the academic areas. In the sciences, his students analyzed the quality of surface water and well water in town, the level of radon in private homes, the infiltration of road salt into the ecosystem and the changing demographics of the town population. In the humanities, his students did research with primary source historical documents in town to contribute to a book on town history, interviewed town elders for biographies, and wrote children's books for the school library. In the arts, his students created paintings, drawings and murals that filled the school's hallways, designed and built both dollhouses and full-sized playhouses for younger students, wrote and produced plays. Many projects were interdisciplinary, such as designing homes and buildings and drafting scale blueprints of furnished buildings, or creating a resource book for local schools on the lives and careers of local scientists.

Each of these projects was complex, challenging, required students to do countless drafts, and was shared with a broad community, including experts in relevant fields. As noted above, Berger argues that his was not the only classroom to hold quality as a central concern and

an obsession. Nor was quality only an academic concern. “A school culture of quality connotes a culture of high standards for *all* students in *all* domains: standards for academic achievement, arts, physical fitness, critical thinking, and creativity, but also standards for kindness, integrity, industriousness, and responsibility” (Berger, 1996, p.21).

Today, Berger is the Chief Program Officer for Expeditionary Learning (EL), a national network of 165 public schools in 29 states and DC committed to creating powerful and inclusive learning environments for all students. The EL website captures the focus on quality that was evident in Berger’s 6th grade classroom:

Our approach to curriculum makes content and skill standards come alive for students by connecting learning to real-world issues and needs. Academically rigorous learning expeditions, case studies, projects, fieldwork, and service learning inspire students to think and work as professionals do, contributing high-quality work to authentic audiences beyond the classroom. (http://elschools.org/our-approach/what-we-do)

For almost 25 years, Berger and I have been engaged in dialogue about what can be learned by students, teachers, administrators, and education researchers through the close examination of work created in public school classrooms. Across all of those conversations and our collaborative study of hundreds of pieces of classroom work, I have noted the consistency and singularity of Berger’s focus on questions of quality: Just how good is this work? What makes it good? How did it get this good? Could it be better? If so, what could be done to create a classroom where it could improve?

As an animating core—an idea, a focus, and a commitment—that “interpenetrates” all aspects of the classroom and school, quality gives the curriculum and students’ experiences a distinctive coherence and sense of purpose. I visited Berger’s school, spoke with his students, and studied their work. His classroom passed my basic, but demanding, criteria for demonstrating an animating core: 1. I wished my own students could produce work like the work produced by his; and 2. I didn’t want to leave at the end of my visits.

Research: The Infant-Toddler Centers and Preschools of Reggio Emilia, Italy

For the last 15 years, I've been visiting the Infant-Toddler Centers and Preschools of Reggio Emilia, Italy. I never want to leave these schools either. Widely known as an inspiration to pre-school educators, parents, and many others around the world, the Reggio schools provide a vision of what is possible in pre-school classrooms and schools. Each visit or point of contact with these schools has astonished me anew. Throughout countless conversations and a multi-year, collaborative research initiative that produced the book, *Making Learning Visible: Children as Individual and Group Learners* (Reggio Children & Project Zero, 2001), I've tried to discern the core principles, beliefs, values, and purposes at the foundation of the Reggio schools. It has been thrilling, but it hasn't been easy. No sooner have I tried to pin down one 'secret' than I've come to see another dimension of the complex mixture of elements that yield the precious learning environments created in Reggio.

I thought of my experiences in Reggio as soon as I began to wonder what else, besides the arts, as Albers suggested, might serve to animate and 'interpenetrate' a school's curriculum and culture. As with Berger's classroom, the work produced in Reggio's schools captivates and inspires those who encounter it—in person or in the many books they've produced documenting the products and processes of children's learning.

As central and powerful as the arts are within Reggio's principles and practices, my interpretation of Albers pushed me to consider other possible animating cores in their schools. My first thought was that their core is research. As quickly as that thought formed, I thought of other viable and, arguably, equally strong candidates for this role—documentation, 'the hundred languages of children,' *progettazione* (an approach to designing learning contexts and experiences), the role of the *atelierista* (an artist or designer who oversees an art studio in each school and who collaborates with children and classroom teachers), the idea of the competent child, the role of parents and school-family relationships, "the pedagogy of listening," and more.

To be sure, the processes and principles of documentation were very much at the heart of the Making Learning Visible study. Documentation was seen as essential to the formation of powerful

learning groups in which the intellectual, aesthetic, and practical capacities of the group to solve problems and create products was greater than that of any individuals. At the same time, the group's capacity to learn enhanced the learning experience of each individual. Surely documentation could be considered to "interpenetrate" all that happens in these remarkable schools.

Yet, the idea of research kept reappearing as a possible animating core: research as both the central element of what children and teachers are engaged in throughout the school day and as an image of the learning process itself. Carla Rinaldi, pedagogista in the Reggio schools since 1970, President of Reggio Children, and professor of pedagogy at the University of Modena and Reggio Emilia, argues that research is a process that starts at birth and in which children thus come to school already experienced and highly competent.

In Reggio Emilia, where we have explored this methodology for many years, we place the emphasis on documentation as an integral part of the procedures aimed at fostering learning and for modifying the learning-teaching relationship.... In fact, I believe that documentation is a substantial part of the goal that has always characterized our experience: the search for meaning—to find the meaning of school, or rather, to construct the meaning of school, as a place that plays an active role in the children's search for meaning and our own search for meaning (and shared meanings.) (...)

In this sense, among the first questions we should ask ourselves as teachers and educators are these: How can we help children find the meaning of what they do, what they encounter, what they experience? And how can we do this for ourselves? These are questions of meaning and the search for meaning (why? how? what?). I think these are the key questions that children constantly ask themselves, both at school and outside of school. (...)

Children carry out this search with tenacity and effort, sometimes making mistakes, but they do the searching on their own. We cannot live without meaning; that would preclude any sense of identity, any hope, any future. Children know this and initiate the search right from the beginning of their lives. They know it as young members of the human species, as individuals, as people. The search for the meaning of life and

of the self in life is born with the child and is desired by the child. This is why we talk about a child who is competent and strong—a child who has the right to hope and the right to be valued, not a predefined child seen as fragile, needy, incapable. Ours is a different way of approaching the child, whom we view as an active subject with us to explore, to try day by day to understand something, to find a meaning, a piece of life. (Rinaldi, 2001, p. 78-79)

I often heard Rinaldi talk of "research as a behavior for living" and 'research as a stance" of the individual in relation to the world. As she explains above and in her essay, "Documentation and Assessment: What is the Relationship?," children are engaged in exploration, experimentation, interpretation, and theorizing as they search for meaning (Rinaldi, 2001). Teachers are also researchers, engaged, like children, in a search for meaning, though with particular responsibilities for supporting the work of the children. Indeed, one of my first and most profound memories of visiting Reggio was to hear our colleagues from the pre-schools talk about the "researches" the children were engaged in. Now I accept this idea as true and basic. But, I confess that initially I found it difficult to think of two-year-olds as conducting research! In my 40s at the time, I was just coming to see myself as an education researcher. Throughout my 18 years of teaching high school, nobody had suggested to me that I was a researcher, that I was engaged in research in any sense, or, most remarkably, that I had been a researcher from infancy on. This was, indeed, a different view of childhood, of research, of what it can mean to be a teacher, and of the relationship—indeed, the partnership—between student and teacher.

Just as 'quality' simplifies and reduces the multi-dimensionality of Ron Berger's work, so does 'research' simplify the animating core of the Reggio schools. Nonetheless, when, during a visit to Reggio in 2011, I suggested research as the animating core to Carla Rinaldi, she quietly gave her assent to the idea, confirming it with a kind of "well, research is certainly very important" nod. Later in that same conversation, when I shared my own frustration that I couldn't name the animating core of my own teaching, she thought for a moment and then asked, "what's wrong with research?"

Understanding: Project Zero's Summer Institutes at the Harvard Graduate School of Education

From 1988 to 1994, under the direction of Howard Gardner, David Perkins, and Vito Perrone, researchers at Project Zero (PZ) engaged in a deep analysis of fundamental questions about educating for understanding in public schools: "What does it mean to understand something? How do students develop understanding? What things should they understand? How do we know how well they understand something? How can we consistently support the development of understanding?" (Blythe, 1998, p. xi).

Through work with dozens of classroom teachers, the researchers developed a framework for 'teaching for understanding,' which included four primary elements—generative topics, understanding goals, performances of understanding, and ongoing assessment. The 'performance theory of understanding' was a central tenet of the entire project and deep understanding was seen as "the ability to think and act flexibly with what one knows. To put it another way, an understanding of a topic is a 'flexible performance capability' with emphasis on the flexibility" (Perkins, 1998, p. 40).

In *The Unschooled Mind,* Gardner argues that this flexible understanding should be a goal of all educational institutions, notably schools, even while noting the tremendous challenges involved in teaching for understanding.

Whatever their other cognitive and noncognitive facets, educational institutions—and preeminently schools—ought to seek to inculcate in their students the highest degree of understanding.... In endorsing an education for understanding, I should stress once more that I have in mind here no esoteric meaning; I mean simply a sufficient grasp of concepts, principles, or skills so that one can bring them to bear on new problems and situations, deciding in which ways one's present competences can suffice and in which ways one may require new skills of knowledge.... Nearly every teacher I know would claim to teach for understanding; certainly I would make that claim myself. But if pressed to demonstrate that our students understand—indeed, that we ourselves are able to display convincing understanding—we soon realize how slender is the reed of our confidence. (Gardner, 1991, p. 18)

In that same book, Gardner develops his argument for educating for understanding across the ages, from the early years through adolescence, and across the disciplines, including the sciences, mathematics, the humanities, the social sciences and the arts. Again, noting the profound challenges of "full understanding:"

…I have sought to be clear about my educational goals. Most important from my vantage point are students who possess genuine understanding of the major disciplines and areas of knowledge. The nature of that understanding will vary across ages and discipline; just as a ten-year-old cannot understand science or literature in the same way as a college student can, so too the misconceptions that crop up in scientific discourse are only remotely related to the stereotypes that interfere with the comprehension of historical or literary texts. Moreover, understanding is not an acquisition that clicks into place at a certain developmental juncture. As David Perkins has stressed, processes of understanding involve sets of performances–carrying out analysis, making fine judgments, undertaking syntheses, and creating products that embody principles or concepts central to a discipline. Everyone exhibits fledgling understandings (whether or not these are the ones sought by their teachers), but not even the most distinguished expert ever attains full understanding. (Gardner, 1991, p. 186)

Project Zero researchers have worked with teachers and administrators worldwide on the Teaching for Understanding Project (TfU) ideas and framework to make the goal of understanding an engine of the curriculum, providing conceptual coherence and a sense of purpose. Predictable challenges have attended that work. For example, TfU is intellectually challenging, requiring teachers to think deeply about their subject matter and make difficult choices about what is most important for students to understand. Nonetheless, my colleagues at Project Zero have shared many compelling stories of teachers and even schools that have adopted the framework and the goal of understanding in powerful, transformative ways.

Indeed, I've talked with many of these teachers when they have come over the last 16 years to be participants and faculty at Project Zero's annual institute, the Project Zero Classroom. One common theme in their discussion of their experiences with TfU is how helpful it is simply to have a clear focus that can run through all of their teaching

and can connect their work with that of their fellow faculty. But they also acknowledge that a demanding goal like deep understanding challenges them to seriously question—and clarify—their own understanding of what they were doing in their classrooms. Echoing this sentiment, Bill Kendall, a 9th-10th grade algebra teacher says:

It's difficult to have conversations about teaching and learning because, as teachers, we all come from such different perspectives. While this framework felt awkward at first—a little like learning a new language—I know that it has helped me to become clearer about what I mean when I'm talking with others about my teaching practice. (Blythe, 1998, p. 5)

Kendall captures the same point Ron Berger had made: It is productive and powerful for faculty to share a core goal, value, or purpose despite whatever other differences they may have.

Each year since 1995, over 250 teachers, administrators and other educators come to the Harvard Graduate School of Education to join over 70 institute faculty members for a week-long professional education experience. The faculty includes PZ's past and present directors (with the exception of Nelson Goodman, Project Zero's founding director, who died in 1998) and senior researchers, as well as teachers and administrators from schools, museums, and other educational programs that have collaborated with PZ on research projects over many years. Many participants return multiple times and often schools send teams of teachers every year. Each year there has been a waiting list of applicants from around the world hoping for a chance to participate.

Under the initial direction of Lois Hetland, now a professor of arts education at Massachusetts College of Art and Design, and one of the classroom teachers involved at the start of the Teaching for Understanding project, the Project Zero Classroom embraced TfU. Understanding was chosen as a central focus, a core goal, and a design principle in creating the Project Zero Summer Institutes. Every aspect of the institute—plenary sessions, mini-courses, and study groups—are constructed around a set of common generative questions that focus on key issues in learning and teaching and essential understanding goals for the week. The questions have been refined over the years, the current set reflect the tenor and concerns of these questions since the beginning: How can you best prepare young people for a future that is hard to

imagine? How can you teach for the kind of deep understanding that allows them to solve complex problems and do work that is ethical, excellent and engaging? How can you encourage students to fall in love with learning?

During the institute week, participants arrive each morning for plenary sessions constructed around these questions and then move to active learning experiences (mini-courses) on specific topics related to some aspect of curriculum or instruction. Each day is rounded out with several hours in "study groups," where participants meet with the same people each day to reflect on and practice what they've been studying during the day. The week concludes in study groups with each participant presenting a plan they've produced that captures the ways—small or large—in which their conceptualization of understanding as an educational goal had evolved since the start of the institute and how they plan to bring those new understandings home and explore them in practice. In these ways, understanding understanding—and what it means to teach for understanding—has clearly been the animating core of this long-running, tremendously popular professional education institute.

Conclusion

Certainly, other topics and ideas have great potential as animating cores of the curriculum. I've chosen to focus on those that I have seen in practice and experienced in some depth. They are central features of learning environments in which I would happily work or study and which I would recommend to any student or parent. I have tremendous admiration for all of those educators who have played roles in identifying these animating cores and who have worked to bring them to life in classrooms and schools.

Others come to mind and probably meet the criteria I've suggested for animating cores. Yo-Yo Ma, the master cellist and founder of the Silk Road Project, talks about "passion-driven learning" as being at the heart of Silk Road's educational initiatives, suggesting that the engine of learning can—and should—be an individual's curiosity and intrinsic desire to understand some aspect of the world.

British educator and author Michael Armstrong has asked, "What if imagination was the center of the curriculum?" His essays, notably

"The Pedagogy of the Imagination," raise this question and explore possible answers. (Armstrong, 2010). Similarly, Maxine Greene, the American philosopher and intellectual architect of the Lincoln Center Institute for the Arts in Education, has tirelessly articulated the argument that imagination can illuminate and animate any educational initiative and that an aesthetic education, fueled by educating the imagination, can and should be a primary educational goal (Greene, 2001). It is not difficult to think of more potential animating cores as well as those already realized in excellent and exciting schools and educational programs around the world.

To be sure, Expeditionary Learning, the schools in Reggio Emilia, and Project Zero have never claimed that quality, research, or understanding are the sole animating core of their approach. These are my formulations, and they could certainly be disputed. I wouldn't argue with those educators about their own assessment of what might be at the core of their practice. I know full well that there were numerous elements, besides the powerful and animating core of identity, which made The Group School successful (though certainly never perfect).

The idea of the animating core is not meant to be reductionist. It is meant, instead, to draw attention to an element of successful schools that may elude educators in many otherwise quite fine educational projects. Schools can have experienced and committed teachers, excellent physical facilities, even academic success on traditional measures and still be institutions that fail to fully engage students, build an inclusive sense of community, and/or provide truly transformative learning experiences. The question begs to be answered: What's missing? I suggest one possibility: that the schools may not have a clear animating core that binds and inspires the curriculum, the faculty, students, and the wider community.

"...and school has to be life..."

Josef Albers' essay makes an argument to move the arts "from their decorative sideplace into the center of education." In my reading, Albers also argues in more basic terms that *something*, an animating core, should be at the center of educational practice. Albers, like everyone at Black Mountain College, was influenced by John Dewey (Saletnik, 2007). In Albers' call for school to address "the tasks of daily

life, we can hear echoes of Dewey's famous, "I believe that education, therefore, is a process of living and not a preparation for future living" (Dewey, 1897, 77).

In arguing for arts at the center of the curriculum, Albers points to the parallels between problems taken on by artists and the "tasks of our daily life." As a final test of an animating core, perhaps it is important to ask if those I propose in this essay also meet this dimension of Albers' criteria. Though too many of the schools I attended, worked in, or visited have lacked an animating core that creates this parallelism with the tasks of daily life, I am convinced by the existence of wonderful examples, such as those discussed here, that creating such educational settings is both possible and well worth the effort. Indeed, a quick reflection on the tasks of my own daily life reveals that each of these—identity, quality, research, and understanding—is present, challenging, and central to getting through my day with any sort of grace.

References

Armstrong, M. (2010). *What Children Know: essays on children's literacy and visual art.* Published online at Lulu.

Berger, R. (1996). A culture of quality: A reflection on practice. Providence, RI: Annenberg Institute for School Reform, Occasional Paper Series, Number 1.

Berger, R. (2003). *An ethic of excellence: Building a culture of craftsmanship with students.* Portsmouth, NH: Heinemann.

Blythe, T., et al. (1998). *The teaching for understanding guide.* San Francisco, CA: Jossey-Bass.

Delpit, L. (1995). *Other people's children: Cultural conflict in the classroom.* New York: New Press: Distributed by W.W. Norton.

Dewey, J. (1897). My pedagogic creed. *School Journal, 54*. Retrieved from: http://dewey.pragmatism.org/creed.htm

Expeditionary Learning Schools. (n.d.) Core Practices: Learning Expeditions. Retrieved from http://elschools.org/our-approach/what-we-do

Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach.* New York: BasicBooks.

Greene, M. (2001). *Variations on a Blue Guitar: The Lincoln Center Institute Lectures on aesthetic education.* New York: Teachers College Press.

Horowitz, F., & Danilowitz, B. (2006). *Josef Albers: to open eyes: the Bauhaus, Black Mountain College, and Yale.* New York: Phaidon.

Ladson-Billings, G. J. (1994). *The dreamkeepers: Successful teachers of African American children.* San Francisco, CA: Jossey-Bass.

Perkins, D. (1998). What is understanding. In M. S. Wiske (Ed.), *Teaching for understanding: Linking research with practice* (pp. 39-57). San Francisco: CA: Jossey-Bass.

Rinaldi, C., Reggio Children, & Project Zero (2001). Documentation and assessment: What is the relationship ? In *Making learning visible: Children as individual and group learners.* Reggio Emilia, Italy: Reggio Children srl.

Saletnik, J. (Spring, 2007) Josef Albers, Eva Hesse, and the imperative of teaching. Tate Papers. Retrieved from https://www.tate.org.uk/research/tateresearch/tatepapers/07spring/saletnik.htm

Seidel, S., Tishman, S., Winner, E., Hetland, L., & Palmer, P. (2008). *The qualities of quality: Understanding excellence in arts education.* Cambridge, MA: Project Zero.

Howard's Response to Steve Seidel

We tend to think of organizations in terms of their founders, or the individuals who have led them for a long time. But it is at least as important, and perhaps even more important, that those who succeed the "founders" are able to maintain the strengths of the program and ultimately to improve the program and give it their own unique mark. Steve, you had the large assignment of succeeding Dave Perkins and me after we had led Project Zero for 28 years. And then, at roughly the same time, you were asked to head the Arts in Education program after a powerful and successful launch by Jessica Davis. As one says (or sings) at the Passover ceremony, "dayenu"—either would have been enough. You deserve tremendous credit for maintaining the viability of Project Zero, during the very challenging Summers-Lagemann era, and for giving fresh life, impetus, and direction to the Arts in Education Program. Many of us owe you a big debt of thanks.

From my vantage point, you have always had your feet planted firmly in two camps—the importance, the centrality of the arts in education; and the features of good teaching and good schools, broadly construed. At Project Zero, we believe in our souls that the arts are and should be central in all of learning, and yet, truth to tell, this has been a very "hard sell" in our time, particularly in the American public school sector. We have also searched the globe for examples of schools which we believe conceive of children and education in a positive, progressive, and "possibility" manner. That's why we have been attracted to the schools of Reggio Emilia and to unusually gifted educators like Ron Berger.

For many years, you have conducted "rounds" at the Harvard Graduate School of Education. Many educators have attended these faithfully for a decade or more because they so value the opportunity to look carefully at children's work (artistic or otherwise) and to discuss the work with peers—without the superintendent looking over their shoulders! For almost as many years, you have been the planner, convener, and "major domo" of the Project Zero Classroom, an incredibly successful summer program for educators all over the world. And for the last three years, with the brilliant and inimitable cellist Yo-Yo Ma (and others), you have instituted another distinctive institute on "Passion-Driven Learning."

In your contribution to the Festschrift, you describe the powerful ideas, personages, and institutions that have formed and refined your thinking. I'm all for putting things down on paper—that's what I do for a living! But I think that you'd agree that we need to see these ideas in action, and that is why the specific sites that you mention, and the Institutes that you've choreographed, are vital and essential.

Developing the Respectful and Ethical Minds of Adolescents and Emerging Adults

Scott Seider

In his 2006 book *Five Minds for the Future*, Howard offers his perspective on the "kinds of minds that people will need if they—if *we*—are to thrive in the world during the eras to come" (p. 1). According to Howard, these five minds are the disciplined mind, synthesizing mind, creating mind, respectful mind, and ethical mind. The first three of these minds focus on cognitive skills while the final two—the respectful mind and the ethical mind—focus on the manner in which people interact and relate to others.

Across the fields of education, psychology, and neuroscience, there are literally thousands of research studies about the types of tasks, activities, and lessons that can strengthen students' cognitive skills (e.g. Bransford, Brown, & Cocking, 1999; Glenn, 2007; Schwartz & Heiser, 2006). Far less attention has been paid, however, to the role that schools and educators can play in fostering students' respectful and ethical minds.

In 2004, I began as a doctoral student at the Harvard Graduate School of Education under Howard's mentorship, with the goal of focusing upon the development of the respectful and ethical minds of adolescents and emerging adults—a topic I explored for my dissertation and have continued to investigate in subsequent research projects. In this chapter, I first offer a brief overview of Gardner's work on the development of respectful and ethical minds that draws from "Morality, Ethics and Gifted Minds" an article that Howard and I co-authored with another of his doctoral students, Katie Davis (Seider, Davis, & Gardner, 2009). This overview then serves as a theoretical framework for the ensuing description of my own research efforts, which are, of course, deeply grounded in Howard's work on both the ethical development of young people and the ethical dimensions of doing good work more broadly.

Respectful and Ethical Minds

Individuals with respectful minds embrace differences between themselves and other individuals and groups while simultaneously exploring their commonalities with such individuals and groups. Howard argues that the development of the respectful mind calls primarily upon an individual's interpersonal intelligence and includes learning to reject caricatures and stereotypes of individuals from other groups as well as giving such groups the benefit of the doubt when it comes to reflecting upon their actions, intentions, customs, and practices. One might say that individuals with respectful minds do not merely "tolerate" differences in race, gender, ethnicity, and ideology, but rather learn to value and honor such differences.

The nurturing of an individual's respectful mind, then, is quite different from ignoring or overlooking difference. In fact, scholarship by another of Howard's former students, Yarrow Dunham (2006) has found that even young children tend to express favorable opinions of groups and individuals they perceive to be similar to themselves and more negative opinions of those they perceive to be different or 'other.' Such a tendency may well be rooted in an evolutionary pull to overvalue what philosopher Peter Singer (1981) refers to as "self, kin and clan;" however, Singer also notes that education represents one lever by which we can combat this evolutionary tendency and work to express respect for a much wider population of group and individuals.

As we originally noted in "Morality, Ethics and Gifted Minds," exemplars of the respectful mind are the German citizens who took on extraordinary risks to protect Jews from the Gestapo in Nazi Germany. In their study of what characteristics distinguished these rescuers from other German citizens, the Oliners (1988) found that Germans who served as rescuers were three times less likely than bystanders to offer stereotypes about Jews and two times less likely to offer stereotypic comments about any group. The rescuers in the Oliners study were also twice as likely as bystanders to note similarities between themselves and Jews. Finally, almost 40 percent of the Germans who served as rescuers described their obligation to alleviate the suffering of a stranger as equal to their responsibility to alleviate the suffering of a friend. The Oliners concluded from these findings that German citizens who acted as rescuers during the Holocaust were not blind to the differences between

themselves and German Jews. However, they also recognized their many commonalities with Jewish citizens. These individuals are courageous examples of our ability as human beings to develop a respectful mind capable of expanding our circle of care far beyond Singer's (1981) "self, kin and clan."

The respectful mind is invoked in a person's relationship with other individuals or groups, while the ethical mind allows individuals to recognize and fulfill their responsibilities to the various local, national, and international communities of which they are a part. Just a few of the roles for which a single individual is likely to possess responsibilities include spouse, sibling, family member, worker, and citizen. Beyond simply an ability to articulate their responsibilities to these various roles, however, individuals with highly developed ethical minds consciously act to uphold these responsibilities as they go about their work and lives. When they find themselves tempted to take actions or pursue ends that are in conflict with their responsibilities, they take steps to realign their actions. It is often tempting to shirk one's responsibilities to one or more of these roles or to allow self-interest to overrule one's responsibility to act in ethical ways. However, individuals who demonstrate use of their ethical minds will actually live out the principles they believe to be ethical, or, to borrow a phrase, they will "walk the talk" when it comes to following their principles.

In "Morality, Ethics, and Gifted Minds," we offered tennis great Arthur Ashe as an exemplar of an individual demonstrating use of his ethical mind. In each of the many roles that he assumed over the course of his lifetime, Ashe strove to act in keeping with his principles and to the benefit of others. Ashe was an athlete and an African American, and when he discovered that there was no definitive work on the history of African American athletes, he set out to write the work himself. The fruit of his labor, *A Hard Road to Glory,* was published in 1988. As a citizen of the world, Ashe took it upon himself to campaign against apartheid in South Africa. He founded an organization, Artists and Athletes against Apartheid, to raise awareness of apartheid worldwide and to lobby for sanctions against the South African government.

Finally, when Ashe found himself in the role of one of the world's most famous victims of AIDS, he recognized his obligation to serve as a spokesman for efforts to combat the disease. In the last years of his life,

he founded the Arthur Ashe Foundation for the Defeat of AIDS with the goal of raising money for research the treatment, cure, and prevention of AIDS. In his memoir, Ashe (1993) admitted that, "I do not like being the personification of a problem, much less a problem involving a killer disease, but I know I must seize these opportunities to spread the word." In the many different roles that Ashe assumed over the course of his lifetime, he strove to meet the responsibilities that each role demanded and to consider the needs and well-being of others less famous and less fortunate than himself. He is an exemplar of an individual with an aptitude for many different types of intelligence who sought to use these intelligences in ethical ways and in the service of ethical pursuits.

Gardner concludes *Five Minds for the Future* by offering his own thoughts on the cultivation of each of the five minds. In regards to the development of respectful and ethical minds, for example, he asserts that an individual's respectful mind can start to be cultivated by parents and educators during an individual's childhood years while that same individual's recognition of his or her responsibilities to roles such as citizen and worker (i.e. the ethical mind) may require the abstract thinking skills that typically do not develop until adolescence. And, of course, another source of insight into the cultivation of individuals' ethical minds is the work of Gardner and his colleagues at Project Zero on the GoodWork Project.

The GoodWork Project began in 1996 as a multi-site collaboration between psychologists Howard Gardner, William Damon, and Mihaly Csikszentmihalyi, with the goal of illuminating the supports and obstacles necessary for producing both valuable work and responsible workers. These scholars came to define good work as work that exhibits the three E's: 1) Excellent in quality; 2) carried out in an Ethical manner; and 3) Engaging to its practitioners. Over more than a decade of collaboration, the three principal investigators and their research teams conducted more than 1200 in-depth interviews across a wide range of professions and reported their findings in numerous books and articles (Gardner, Csikszentmihalyi, & Damon, 2001; Fischman, Solomon, Greenspan, & Gardner, 2006; Gardner & Shulman 2005; Verducci & Gardner, 2006).

Perhaps most relevant to this present discussion of the cultivation of students' ethical minds is the GoodWork Toolkit. Developed by Howard

and his colleagues at Harvard's Project Zero, the GoodWork Toolkit seeks to engage secondary and post-secondary students in activities and discussions designed to promote their reflection upon the merits and challenges of pursuing work that is excellent, ethical, and engaging. The Toolkit has now been used with great success by dozens of educators in institutions that range from independent secondary schools to graduate schools of nursing. At each of these levels, the Toolkit has proven a useful lever in the cultivation of participating students' ethical minds.

I am hopeful that my own work has also made a contribution to the development of young people's respectful and ethical minds. Over the past decade, both as a doctoral student working closely with Howard and now as a junior faculty member across the Charles River at Boston University, I have sought to burrow more deeply into Howard's concept of the ethical mind and to consider, specifically, the role of various types of educational institutions in the cultivation of the ethical mind. In the remainder of this chapter, I offer a few of the insights that I believe my work has yielded regarding the most useful levers and challenging obstacles that educators face in carrying out this important work. As Gardner notes in *Five Minds for the Future,* the stakes in this work are high. In his words, "Individuals without ethics will yield a world devoid of decent workers and responsible citizens; none of us will want to live on that desolate planet" (p. 19).

Resisting Obligation

In my dissertation work, under Howard's guidance, I explored the impact of a course on social justice issues offered at an affluent suburban high school upon the adolescents participating in the course. One unit of the course focused on poverty and hunger in the developing world. As part of this unit, the participating high school students read philosopher Peter Singer's (1999) essay entitled "The Singer Solution to World Poverty." In this essay, Singer argues that individuals have a moral obligation to donate *all* of their surplus wealth to hunger relief organizations. He asserts that, "You shouldn't buy that new car, take that cruise, redecorate that house or get the pricey new suit. After all, a $1,000 suit could save five children's lives."

The fact that a significant portion of this study's privileged teens critiqued Singer's argument was not surprising. What was surprising,

however, was the *vehemence* of their critiques (Seider, 2008). For example, one student said of Peter Singer: "I think he just likes to hear himself talk and say how great of a person he is and the rest of us don't help out enough. He should not have the right to tell people what to do." A second student characterized Peter Singer as "quite insane and moronic." A third admitted that Singer's assertions "made me mad."

Reactions like these align with recent scholarship on 'do-gooder derogation'—the discovery that individuals react with suspicion, trivialization, or resentment when they feel threatened by someone else's moral behavior (Monin, 2007). For example, researchers Monin and Minson (in press) have reported that meat-eaters are more likely to treat vegetarians with hostility if they believe that vegetarians negatively judge their decision to eat meat.

In short, then, Singer's essay on moral obligation actually seemed to have had the opposite of its intended effect upon this study's privileged teens. Rather than convincing these teens of their responsibilities as global citizens with an obligation to help those who are less fortunate, Singer's assertions triggered their suspicion, resentment, and desire to trivialize his perspective. While I was not expecting the participating adolescents to express such vehement resistance to the social justice course in general and Singer's essay in particular, Howard warns in *Five Minds for the Future* that "as a general rule, one is ill-advised to confront resistances directly; such a step typically engenders defensiveness" (p. 159).

Recall that Howard characterizes the ethical mind as one which recognizes and fulfills its responsibilities to a variety of roles, including family member, worker and citizen. Gardner might also have added that individuals recognize some of these roles more easily than others. For example, the affluent suburban teenagers in this particular study unequivocally accepted the roles and responsibilities that came with being a student at "Glennview High School" as well as the obligations which accompanied their roles as family members and friends. However, to use Gardner's phrase, these students offered significant resistance to the idea that their responsibilities extended to a wider circle of individuals. As one student explained, "An individual person has two obligations in their life. One is to themselves, and the other is to their family. A person must take care of themselves and their family before

worrying about anyone else. No one is obligated to donate their hard earned money or time to anyone else."

There is currently much discussion in educational circles about the importance of preparing young people to live and work in an increasingly globalized world (e.g. Friedman, 2003; Wagner, 2008). Yet my research suggests that one challenge in this endeavor may be convincing affluent young Americans that they possess responsibilities for the well-being of individuals outside their close-knit circles of family and friends. In a world in which these young people are increasingly unlikely to even know the names of their next door neighbors (Putnam, 2000), educators face a challenge in convincing teens that they possess responsibilities to individuals living beyond the boundaries of state and national borders. In this way, the American tradition of individualism, about which DeTocqueville (1835, 2000) spoke so glowingly, may represent an obstacle to the development of young Americans' ethical minds, in matters of global citizenship.

Changing Minds through Community Service Learning

An increasingly popular lever for engaging college students in reflection upon their roles and responsibilities to fellow citizens is community service learning. The Higher Education Research Institute (HERI, 2009) defines community service learning as "a form of experiential learning where students and faculty collaborate with communities to address problems and issues, simultaneously gaining knowledge and skills and advancing personal development." According to the Higher Education Research Institute, 65 percent of American college students recently characterized their respective universities as offering opportunities for community service learning (Liu, Ruiz, DeAngelo, & Pryor, 2009).

During the 2008-09 academic year, I investigated the impact of the Pulse Program at Boston College upon participating students' beliefs about the American Dream. Hochschild (1995) defines the American Dream as "the promise that all Americans have a reasonable chance to achieve success… through their own efforts" (p. 6). The focus of this study emerged from the fierce resistance (described above) of the affluent high school students at "Glennview High School" to the idea that they possessed responsibilities for individuals outside a tight circle of family

and friends. This resistance led directly to the study of community service learning at Boston College. I hypothesized that an important step in extending the ethical minds of affluent students' beyond a very narrow set of family and friends might first entail contending with the tradition of individualism that represents a deeply embedded meme in American culture (Bullock & Lott, 2001; Kluegel & Smith, 1986; Scott & Leonhardt, 2005). If young people believe that anyone can achieve success through his or her own efforts, then they have little incentive to regard themselves as responsible for the well-being of struggling fellow citizens.

The Pulse Program is a community service learning program that began at Boston College in 1970 as a joint venture between the philosophy and theology departments. According to the program's website, "The mission of the Pulse Program is to educate our students about social injustice by putting them into direct contact with marginalized communities and social change organizations and by encouraging discussion on classic and contemporary works of philosophy and theology." The academic component of the program is a year-long course in philosophy and theology entitled "Individual and Social Responsibility." Students meet twice a week for lecture, participate in a weekly discussion section, and read works by Plato, Aristotle, Rousseau, Foucault, Freire, Malcolm X, Shipler, and Kozol. In addition, all Pulse participants choose a community service project from a menu of more than 50 choices that include tutoring urban elementary school students, volunteering at a suicide hotline, working in an emergency room, helping low-income families apply for affordable housing, and tutoring prison inmates working towards their GED's. Students devote 10 hours a week to their respective placements for the entire academic year.

In a mixed methods study that compared the shifting attitudes of Pulse participants to a comparison group of Boston College students who had been randomly assigned to the program's wait list, I found that Pulse participants demonstrated significant declines in their belief in the American Dream over the course of the academic year. In other words, Pulse participants became less certain that the United States is a country in which anyone willing to work hard can become economically successful.

From qualitative interviews with 30 Pulse participants, I learned that different students attributed different facets of the Pulse Program

with contributing to their increased uncertainty about the American Dream. For example, a number of Pulse participants cited particular readings assigned by their Pulse professor, which had deeply impacted their worldview. For example, one student cited David Shipler's (2004) *The Working Poor* as having profoundly shaken his faith in the American Dream. As the student explained:

I'm not saying every homeless person should be given a house, a job and whatnot, but you cannot throw a blanket down and say, 'Take care of yourself. You have fallen into the hole. Dig yourself out.' Because there are issues around that hole that are going to keep pushing you in it. I think Shipler's book does a really good job of showing that.

Other students pointed to experiences at their weekly service placements as having sowed doubt in their minds about the veracity of the American Dream. A second student explained of her placement at an all-women's homeless shelter:

A lot of the women there work really hard. Like the woman who works at a mental hospital. She works until 10 o'clock every night. Last night she came in, and you could tell she was exhausted… I think a lot of them are really genuinely trying, and the deficits of poverty are just pulling them back.

The fact that these two students were impacted by such different levers within the Pulse Program serves to underscore an important point about the promotion of student's ethical minds that Howard made in his 2004 book, *Changing Minds*. Here Howard characterizes representational redescription as perhaps the most important lever for changing an individual's mind. Representational redescription refers to the use of many different formats to convey a lesson or idea. In other words, educators introducing a complex or controversial issue are well-served by presenting this issue to their students through diverse content such as academic papers, biographies, documentary film, and even fiction, movies, and songs. According to Howard, "New ideas do not travel easily, and it is hard for them to take hold. Because we cannot know in advance which formats will prove effective in communicating a new message, we are well advised to use several alternative formats" (p. 102).

As noted above, a belief in the American Dream—and the accompanying emphasis on individualism—are two of the most powerful

memes in the American psyche. There is much good that comes out of a deep belief in America's opportunity structure; however, one adverse effect is a reluctance to conceive of oneself as responsible for individuals who are struggling to get by. For educators interested in disrupting their students' unquestioning faith in the American Dream, Howard's concept of representational redescription becomes an important one. As was evident in the experiences of a number of Boston College students, the inclusion of several different types of learning experiences within the Pulse Program allowed for the possibility of different types of students being impacted by different facets of the program.

Best Class at Harvard

My interest in the role of community service learning in the development of students' ethical minds also led to my publication in 2010 of a book entitled *Shelter: Where Harvard Meets the Homeless*. The book focused on the impact of volunteering at the Harvard Square Homeless Shelter upon nearly 100 Harvard undergraduates each year.

Located in Cambridge's Harvard Square just a few blocks from the Harvard campus, the Harvard Square Homeless Shelter provides "two hots [hot meals] and a cot" to 30 homeless men and women every winter night, seven nights a week between November and April. What makes the Harvard Square Homeless Shelter unique, however, is that it was—in 2010—the only student-run homeless shelter in the United States. In other words, Harvard undergraduates not only volunteered at the shelter, but were fully responsible for the shelter's operation, management, finances, etc. Notably, there was no single student who served as the shelter's president or chief executive but, rather, a leadership team of approximately 14 undergraduates who divided up the various responsibilities necessary to keep the shelter operating. One student coordinated all of the volunteers necessary to keep the shelter staffed seven nights a week; another student focused on supplies; a third focused on food; a fourth on finances, etc.

During the 2008-09 academic year, I carried out more than 75 interviews with Harvard students volunteering at the shelter as well as Harvard alumni who had volunteered during their undergraduate years and who could speak to the effects of that experience upon their personal and professional trajectories. I also interviewed homeless and formerly

homeless men and women who had stayed at the Harvard Square Homeless Shelter as "guests" and homeless services professionals in Boston and Cambridge who could offer an experienced lens into the work of the college students at the Harvard Square Homeless Shelter.

I believe it would be fair to describe this project investigating the ethical minds of Harvard students as one dear to Howard's own heart (which led him to very graciously offer the blurb which sits squarely on the front cover of the book). Howard arrived at Harvard as a freshman in 1961 and, by his own account, has never left. Certainly a 50-year relationship with Harvard University—and many of those years in the role of teacher, advisor, and mentor—hints at his significant investment in the development of Harvard students. Additionally, however, in the fall of 2007, Howard and and his colleague Richard Light collaborated with Harvard's Freshman Dean's Office on a mini-course for Harvard freshman entitled "Reflecting Your Life: Grappling with Important Questions." The mini-course sought to give Harvard freshman the opportunity to engage in small-group discussions with Harvard faculty and staff about "issues relevant to students' goals, dreams, concerns, and everyday lives" (Freshman Dean's Office, 2011). Faculty likely had differing objectives for participating in this innovative program, but for Howard I believe the impetus was, in large part, to offer young adults the opportunity to reflect upon their roles and responsibilities both in their present lives and in their plans for the future.

My own investigation of the effect of volunteering at the Harvard Square Homeless Shelter turned out to cover similar terrain. I found that Harvard students who served as weekly volunteers at the Harvard Square Shelter came away from the experience with a much fuller sense of the diverse number of circumstances that can lead individuals to become homeless. However, the 14 Harvard students who served on the shelter's leadership team came away from *their* shelter experiences with many additional benefits as well. Perhaps most relevant to the present discussion of students' ethical minds is that the opportunity to play a role in the operation of the Harvard Square Homeless Shelter gave these undergraduates an opportunity to try on significant roles and responsibilities.

Scholar Tim Clydesdale (2007) has argued that one of the problems with teen employment is that it typically "does little to help American

teens identify meaningful future pathways… or to evaluate the deeper, long-term purposes of their work, leisure and financial activities" (p. 113). In contrast to this description, the leadership team of the Harvard Square Homeless Shelter was charged with carrying out roles and making decisions that had deeply significant consequences for the homeless men and women who depended on the Harvard Square Homeless Shelter each night. One Harvard alumnus who had served on the shelter's leadership team in the late 1990's explained:

"I feel like working at the shelter, for all of us, made us wise beyond our years. To come out at age 22 with that set of experiences going onto our next career was just so invaluable…. I think it made all of us a lot more mature than we would otherwise be.

Recall that Howard describes the development of the ethical mind as the recognition and fulfillment of the responsibilities associated with the various roles each individual is expected to take on. Perhaps one obstacle to the development of the ethical mind in the (mostly) upper-middle-class young adults described in these three studies is that they are actually given very few roles or responsibilities throughout their adolescence and young adulthood. Certainly these young adults face significant pressure to earn high marks in school and to win acceptance to a highly competitive university (Pope, 2003). Beyond this pressure for academic success, however, many so-called "helicopter parents" place few responsibilities upon their adolescent children as family members or citizens (Marano, 2008). In an article for the *New Yorker* entitled "The Child Trap: The Rise of Overparenting," Acocella (2008) adds that this pattern of parents sheltering their children from genuine responsibility often extends well into the college years.

For the members of the leadership team, however, the Harvard Square Homeless Shelter provided genuine responsibilities with genuine consequences. As another alumnus of the Harvard Square Shelter leadership team recalled, "As an 18 year old, or 19 year old, or 20 year old, I was determining whether someone was going to sleep inside or not. So that was a [heavy] responsibility." A current student on the shelter's leadership team added that this opportunity for genuine responsibility is what drew him to the work in the first place. In his words:

It contrasted with some other things I was doing in that there was real stuff being done…. Like if I went to class and did well on one of my mid-terms that was great, and that's what I'm here for, but at the same time it was awesome to go there (the shelter) and do something real and substantial.

In short, both Harvard alumni looking back on their experiences leading the Harvard Square Homeless Shelter and the undergraduates managing the shelter now recognize their work to be an opportunity to take on a meaningful role with significant responsibilities. Howard might describe the Harvard Square Homeless Shelter as a cauldron for the development of these young adults' ethical minds.

Conclusion

In this essay, I have sought to describe the ways in which Howard's work has served as the foundation for my own research into the development of young people's respectful and ethical minds. However, I would be remiss to close this essay without noting that the privilege of serving as one of Howard's doctoral students at the Harvard Graduate School of Education also offered me a personal tutorial in what it means for an academic to use his or her own ethical mind.

Because of Howard's substantial reputation in the field of education (and beyond), I am often asked about the experience of working with him. My first response is always that Howard was (and remains) my exemplar of a scholar fully committed to fulfilling his responsibilities to the various professional roles he has taken on. Despite an intensive travel schedule, he makes a point of attending and contributing to Harvard faculty meetings because he sees his citizenship at the Harvard Graduate School of Education as a role that comes with an explicit responsibility to participate in the school's governance. As Howard's teaching assistant for several semesters, I can attest that he pores over his teaching evaluations at the conclusion of each semester and earnestly draws upon these data to make adaptations the following semester. And perhaps it is my biased perspective (or "hat problem"), but I believe that he takes particular care to fulfill his responsibilities to his doctoral students. It is without any exaggeration that I say I gave Howard a 300-page draft of my doctoral dissertation on a Thursday during my final year as a doctoral student, and he returned it to me with extensive

(and valuable) feedback the following Monday. Despite the myriad number of tasks on his plate, he is someone who has always *made* the time to write my letter of recommendation, offer his advice on a draft of an article, or respond to a late-night question via email. In short, Howard is someone who unequivocally seeks to embody the respectful and ethical minds which are also a central focus of his scholarship. As I move forward in my own academic career, he serves for me as both an exemplar of the influence that a single scholar can exert upon a field as well as a model of how to carry out this work with honor.

References

Acocella, J. (2008 November 17). The child trap: The rise of overparenting. The *New Yorker*. Retrieved from http://www.newyorker.com/arts/critics/books/2008/11/17/08

Ashe, A. (1988). *A hard road to glory: The history of the African American athlete.* New York: Amistad.

Ashe, A., & Rampersad, A. (1993). *Days of grace: A memoir*. New York: G.K. Hall.

Bransford, J., Brown, A., & Cocking, R. (1999). *How people learn: Brain, mind and experience at school.* Washington, DC: National Academy Press.

Bullock, H. & Lott, B. (2006). Building a research and advocacy agenda on issues of economic justice. *Analyses of Social Issues and Public Policy, 1*(1), 147-162.

Clydesdale, T. (2007). *The first year out.* Chicago, IL: University of Chicago Press.

Dunham, Y., Baron, A., & Banaji, M. (2006). From American city to Japanese village: A cross-cultural investigation of implicit race attitudes. *Child Development, 77*(5), 1268-1281.

Fischman, W., Solomon, B., Greenspan, D., & Gardner, H. (2006). *Making good: How young people cope with moral dilemmas at work*. Cambridge, MA: Harvard University Press.

Friedman, T. (2005). *The world is flat.* New York: Farrar, Strauss & Giroux.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet*. New York: BasicBooks.

Gardner, H. (2004). *Changing minds*. Boston, MA: Harvard Business School Press.

Gardner, H. (2007). *Five minds for the future*. Boston, MA: Harvard Business School Press.

Gardner, H., & Shulman, L. (2005). The professions in America today: Crucial but fragile. *Daedalus*, Summer 2005.

Glenn, D. (2007). You will be tested on this. *Chronicle of Higher Education, 53*(40), 15–17.

Higher Education Research Institute. (2009). *Resource guide*. Retrieved from http://www.gseis.ucla.edu/~heoc

Hochschild, J. (1995). *Facing up to the American dream: Race, class and the soul of the nation*. Princeton, NJ: Princeton University Press.

Kluegel, J., & Smith. E. (1986). *Beliefs about inequality: Americans' views of what is and what ought to be*. New York: de Gruyter.

Liu, A., Ruiz, S., DeAngelo, L., & Pryor, J. (2009). *Findings from the 2008 Administration of the College Senior Survey (CSS): National Aggregates*. Los Angeles: Higher Education Research Institute, UCLA.

Marano, H. (2008). *A nation of wimps: The high cost of invasive parenting.* New York: Crown.

Monin, B. (2007). Holier than me? Threatening social comparison in the moral domain. *Revue Internationale de Psychologie Sociale, 20*(1), 53-68.

Monin, B., & Minson, J. (in press). Do-gooder derogation: Trivializing morally-motivated minorities to defuse anticipated moral reproach. *Social Psychological and Personality Science.*

Oliner, S., & Oliner, P. (1988). *The altruistic personality: Rescuers of Jews in Nazi Europe*. New York: Free Press.

Pope, D. (2003). *Doing school*. New Haven, CT: Yale University Press.

Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Shuster.

Schwartz, D., & Heiser, J. (2006). Spatial representations and imagery in learning. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 283–298). New York: Cambridge University Press.

Scott, J. & Leonhardt, D. (2005, May 15). Shadowy lines that still divide. *New York Times*. Retrieved from http://www.nytimes.com/pages/national/class/index.html.

Seider, S., Davis, K., & Gardner, H. (2009). Morality, ethics and good work: Young people's respectful and ethical minds. In D. Ambrose & T. Cross (Eds.), *Morality, ethics and gifted minds*. New York: Springer.

Seider, S. (2008). Resisting obligation: How privileged adolescents conceive of their responsibilities to others. *Journal of Research in Character Education*, *6* (1), 3-19.

Seider, S. (2010). *Shelter: Where Harvard meets the homeless*. New York: Continuum.

Shipler, D. (2004). *The working poor: Invisible in America.* New York: Alfred A. Knopf.

Singer, P. (1981). *The expanding circle: Ethics and sociobiology.* New York: Farrar, Strauss & Giroux.

Singer, P. (1999, September 5). The Singer solution to world poverty. *New York Times Magazine*.

Tocqueville, A. (2000). *Democracy in America* (George Lawrence, Trans.; J.P. Mayer, Ed.). New York: Perennial Classics. (Original work published 1835).

Verducci, S., & Gardner, H. (2006). Good work: Its nature, its nurture. In F. Huppert (Ed.), *The science of happiness.* Oxford, UK: Oxford University Press.

Wagner, T. (2008). *The global achievement gap*. New York: BasicBooks.

Howard's Response to Scott Seider

As you and I know from personal observation and from our own research, it is so easy, once you have been admitted to Harvard (and especially Harvard College), to go with the "flow" and with the "pack:" become a banker, an investor, or a management consultant, living high, and perhaps later, as a mark of atonement (or a genuine change of heart), become a philanthropist or devote your remaining days to public service.

Scott, you went to Harvard College and then to the Harvard Graduate School of Education. It would have been so easy for you to choose a career which would bring you fame and fortune—or indeed, to choose a thesis topic that would be trendy and translate into multiple neat experiments en route to tenure, at which point, like the successful investor, you could do whatever you want and never have to worry about getting fired!

But you are made of different stuff. From the first, you have been interested in understanding and in helping the less fortunate members of our society, and in carrying out research that calls attention to ways in which that goal might be achieved. You have done pioneering work in a number of research sites (schools, universities, homeless shelters) in the greater Boston area; and just a few years out of graduate school, you have published two significant and well-received books, as well as long list of gritty essays. And you have done so without in any way sacrificing your idealism or your devotion to the improvement of the human condition.

In your contribution to the Festschrift, you generously place some of your work within the contexts of concepts and arguments drawn from my own publications. I see the connections that you have drawn—and appreciate the acknowledgements—but should admit that I did not think of my own work when I was reading yours. Your thinking and writing have a coherence and a voice that comes quite clearly from experiences that you have had yourself and from your first hand observations of the full spectrum of youth. My writings are certainly not devoid of personal experience or passionate beliefs, but they tend to emerge more from earlier treatments of the topic or from a real or imagined dialogue with

specific writers or schools of thought. Indeed it is from working with younger colleagues like you, Scott, that I have gained more of a first-hand acquaintance with the moral and ethical issues to which you refer… and have been encouraged myself to work directly with younger students. So thanks for prodding your old Professor!

Counting Hearts and Eye Balls: How to Help Adolescents Make Better Decisions Using Entertainment and the New Media (and Know that You Have Succeeded)

Robert L. Selman and Janet Kwok

Preface: The Code of the Triple Helix:

The logo for Howard Gardner's GoodWork Project is a braid of three intertwining strands, representing the virtues of excellence, ethics and engagement. Howard, along with his Project Zero colleagues, studies the individuals who have successfully integrated these virtues into their lives. Today, the project has expanded to consider the impact digital media will have on adolescents' social, civic, and ethical development. What changes have the new media wrought on youth culture, he asks? What ethical and societal supports are needed to engage youth as citizens of the digital age?

In this essay honoring Howard's contributions—past, present, and future—we share some thoughts about the positive contributions that the new media may make to the field of ethical development, and how these contributions might be best realized. We start, however, with some lessons learned from the old media.

Modern Ideas for "Old Media": Television and the Power of Storytelling

Recently, a *Boston Globe* article reported that the remarkable decline in the Brazilian birth rate over the past 40 years (from an average of six to two or fewer children per family) could be explained in part by increased access—across all social classes—to telenovelas (televised serialized soap operas) (Bennett, 2010). A similar phenomenon has occurred in India, another soap opera-obsessed nation: In rural areas where television viewership has greatly increased, women and girls now have more agency and greater participation in village life (Bennett, 2010). Unlike American soaps which are open-ended and air during daytime television to a smaller audience, soap operas in Latin America and Asia

generally air nightly during prime time to maximum viewership—only sporting events can incite greater obsession and attention. Since these programs generally have a predetermined story arc which unfolds over several months, there is perhaps no larger and more captivated audience in the world than these Latin American and Asian soap opera viewers.

While soap opera characters may face seemingly insurmountable and unending challenges, they represent a way of life that had been until recent decades unknown to many of their viewers in less urbanized areas. Female characters on soap operas in Brazil and India tend to live in cities, have fewer children, work outside the home, come from upper-middle class backgrounds, and have more education. These characters, and their way of life, generate a strong aspirational attraction in their viewers. (Similarly, viewers of American soap operas are attracted to the private lives of the wealthy elite and are often treated to portrayals of these intrigues.) While the lowered fertility rate may have been a positive outcome from this inadvertent public health intervention for many Brazilians, the divorce rate has also increased where there is telenovela exposure. The broader effects of being exposed to characters' famously poor decision-making and conflict-fueled lives (necessary for dramatic elements) are unknown. While we know the difference between correlation and causation, we can still attempt to devise strategies where we might more effectively harness the influence of the soap opera narrative to promote more positive behaviors more consistently.

When Mexican writer-producer Miguel Sabido originated the idea of creating "television entertainment with proven social benefits" in the 1970s (Sabido, 2004, p. 61), the phrase was translated to English as "entertainment-education" (E-E). Entertainment-education describes the range of successful interventions (both on television and beyond) that have been designed with this premise in mind: Lure viewers in with the promise of classic telenovela thrills, but infuse characters' bad decisions (and good ones) with lessons about real-life behavior that will benefit the public at large. For over 40 years, the Sabido Method has evolved as a framework for the delivery of pro-social information with the intention of behavioral change through media channels, in Sabido's own case, via the telenovela. All the telenovela series created by Sabido for Televisa were purposefully designed to embed both pro-social messages (e.g. promoting

supportive family environments for children) and valid and useful health educational information (e.g. family planning) directly into the plot lines.

Not only was each of the seven series of Televisa programs able to draw large audiences, but each was also associated with marked effects on audience behavior (Sabido, 2004). Enrollment in adult literacy classes increased by one million students after the broadcast of *Ven Conmigo* (Sabido, 2004), and Mexico's population growth rate decreased from 3.1 to 2.7 percent in the year after *Acompáñame* aired (Poindexter, 2004). Thomas Donnelly, the United States Agency for International Development (USAID) representative in Mexico in the 1970s, observed the far-reaching power of the Sabido telenovelas (Barker, 2005):

Throughout Mexico, wherever one travels, when people are asked where they heard about family planning, or what made them decide to practice family planning, the response is universally attributed to one of the soap operas that Televisa has done.... The Televisa family planning soap operas have made the single most powerful contribution to the Mexican population success story. (p.114)

The strategy Sabido used to develop his brand of compelling programs was created by drawing upon theories from the fields of communication (Shannon & Weaver, 1949), psychology (Bandura, 1977), and neuroscience (MacLean, 1973) and applying these to the central narrative force of the telenovela: characters that the audience could bond with and relate to. The relationships of viewers to beloved television characters are hardly frivolous. People who watch more television believe that they have more friends (Kanazawa, 2002), and these relationships can be protective of one's self-esteem during rejection, just as real friends comfort us (Derrick, Gabriel, & Hugenberg, 2009). We may be well aware that television characters are not real, but their plight and joy are felt deeply, and it is through the visceral nature of our emotions that entertainment-education reaches us.

Collectively, these theoretical and dramatic elements support a framework whereby, without explicit moralizing, the positive or healthy actions taken by the "good characters" (which might include honesty, diligence, and caring, for instance) can be internalized by viewers in a way that enables them to take self-protective and self-compassionate actions themselves. Sabido's telenovela formula provides the audience

with a range of characters with whom they can engage and identify—some admirable, some clearly evil—and follows them closely across a set number of episodes in an intense human drama, filled with all the expected suspense and intrigue. Across the lifespan of each telenovela series, these characters evolve and change, some for better, some for worse.

Change in knowledge, attitudes, and perhaps even behavior and internalized values is a major aim of the Sabido methodology. Characters in the story may begin the episodes exhibiting the antithesis of the pro-social values the producers hope will infiltrate their intended viewers' psyches. By the end of the story, the key pro-social message carriers are usually those transitional characters who, despite their ignorance or less auspicious beginnings, ultimately discover how to make the "right choices" (action that are intended for the audience to emulate), whatever they may be. Through interaction with other characters, twists and turns in the plot, and sometimes even outside intervention, these "transitional characters," often those with the very toughest choices (health, social, ethical, civic) to make, come to understand and ultimately demonstrate the values, educationally and ethically, of the program's underlying pro-social message. A dropout drug addict gets sober and graduates high school, a xenophobic sibling comes to accept her sister's immigrant husband. Perhaps the most valuable message these transitional characters transmit to viewers is the possibility of personal growth and change, in spite of one's past or previous choices. Here, the educational information usually is presented more implicitly than explicitly, (positive "hidden persuaders," rather than the manipulative negative "hidden persuaders" described at the advent of television years ago by Vance Packard [1957]), with factual health and wellness information distributed in ways that do not disrupt the dramatic flow. The producer's pro-social lesson, however, is nevertheless left to the viewer's discovery with the hope and faith that viewer interpretations and internalizations will align with the educational intent of the producers, writers, and directors.

Since the first Sabido telenovela series aired in the 1970s, many health promotion initiatives have used mass media entertainment, radio, and television to promote safer health behaviors. Successful projects that have been created through public health and entertainment production (television and radio) partnerships have included increasing condom

usage to reduce HIV risk in India (Sood & Nambiar, 2006) and challenging culturally entrenched gender inequality in South Asia (McKee et al., 2004). E-E initiatives run the gamut from large-scale focused interventions such as an entire radio program devoted to a specific topic, to a few lines of dialogue inserted each week into a serialized program (Singhal & Rogers, 2004).

Making and Measuring: The Limitations of E-E

The success of E-E evidently relies upon its ability to both educate *and* entertain, but without the viewer detecting and rejecting the education. In order to ensure that viewer does not reject the message because of its didactic nature, any kind of instructive message must not trigger viewer reactance. If we have many possible actions available to us, the action that is removed or restricted to us is perceived as much more attractive (Brehm, 1966). Psychological reactance can result in unintended "boomerang effects" where the likelihood of participating in the risk behavior actually increases as a result of being exposed to a prevention campaign (Moyer-Guse, 2009).

Triggering audience rejection of the intervention is especially problematic given the subjective nature of prosocial content itself (Brown & Singhal, 1993). Cultures differ, even by regions of the United States, in what they consider to be positive behaviors deserving of reinforcement and promulgation. Nevertheless, creating prosocial content is a worthwhile endeavor because television programming's antisocial effects have been shown to be measurable, and combating this with appropriate programming is preventative (Brown & Singhal, 1990).

It is not surprising, then, that the majority of past E-E interventions (including Sabido's telenovelas) focused on those kinds of behaviors that facilitated message insertion and measurement of change. Health promotion messages such as encouraging visits to the doctor are much easier to model in a single episode of a program because they are concrete and generally uncontroversial (Sherry, 2002): Show a character visiting the doctor. Prosocial messages, however, are often about some kind of personal psychological or emotional change, and these are unlikely to be taken seriously or genuinely represented in a short duration of time (Sood, 2002). Some previous interventions that have focused on cultural attitudes—one dimension of prosocial behavior—

have taken place over the entire story arc of a program, but have rarely been attempted in North America (Sherry, 2002).

Consider a drama about a heroine battling cancer. The show weaves information into the narrative about cancer etiology, treatment, and how it affects the relationships among the characters. A brief message at the end of the program may provide information on where to obtain more information or seek treatment for the health issue described in the storyline, such as how to arrange a mammogram (Beck, 2004; Singhal & Rogers, 2004). While reports of measurable impact on behavior from such messages are not uncommon, (Beck, 2004; Hether, et al., 2008; Richardson, Owen-Smith, & Howe, 2002; Sabido, 2004), the pattern typically observed is characterized by short-term, fleeting spikes in the targeted pro-social or wellness behaviors and choices by the audience members (such as visiting a clinic).

Such interventions are designed to teach what can be measured easily—this does not discount the value of these findings. For stories and dramas that have more ambiguous and ambitious psychological and emotional themes, however, there is little information on how deeply the viewers comprehend the story or how powerfully it touches their hearts or souls. Neal Baer's television program, *Law and Order: Special Victims Unit,* often presents more subtle themes enriched with complex medical information. In "Choice" (2003), a pregnant woman learns that her hard drinking may have caused fetal alcohol syndrome in her first child, whom she has never met, and must now make a difficult decision regarding her unborn second child. Viewers learn not only about the causes and symptoms of fetal alcohol syndrome, but also have an opportunity to meditate upon their own beliefs regarding the nuances of individual autonomy (such as choosing to drink heavily during pregnancy). It is the moral ambiguity of the latter "lesson" that engages the viewer's interpretation of what fetal alcohol syndrome and individual responsibility mean for her personally. In spite of the challenges evaluation faces in capturing the impact (Singhal & Rogers, 2004), narratives that make emotional connections between entertainment and information may prove to be the most powerful stimulus to change. After all, as Sabido himself believed, it is the viewer's emotional connection to the characters and their fates that leverages the entertainment in E-E's effectiveness (Sabido, 2004).

The Tween, Front and Center

While some E-E projects have enjoyed tremendous success, many more E-E ventures have had more checkered results (Bouman, 2002), perhaps because they have been shown to the wrong people. Adults (18-48 years of age) and their bad habits have been the typical primary target audience, but what target audience might be more vulnerable to risk behaviors? In a time when television is now the old media, we must also turn our attention to more compelling avenues of communication: Who has already committed to the new media? We nominate the tween as the ideal audience member ripe for behavioral change in the 21st century.

First seen in 1941, "tween" is an elision of "between" and "teenager," describing the pre-teen and early teenage years ("tween", 2012). The transitional years, biologically speaking, between childhood and the teenage-hood, are sometimes referred to as a "post-latency" period. For those who put their health at risk early on, it becomes increasingly difficult just a few years later to rectify or recover from a wrong directional turn in either social or health habits. Youth who begin smoking or drinking as tweens tend to develop more persistent addictions compared to those who delay their substance experimentation for several more years (Iacono, Malone, & McGue, 2008). Violent behavior that starts around this age is very hard to extinguish later on in life (Patterson, DeGarmo & Knutson, 2000). In addition to the rapid hormonal changes occurring at this time, this also can be a difficult period of adjustment because of the challenges posed by social transitions, especially from elementary to middle school, and middle to high school (Alspaugh, 1998; Barber & Olsen, 2004). When this window of malleability and openness to change closes hard by age 15, teens need to choose their friends, fun, and future carefully.

With respect to their views of their social world, tweens growing up under toxic conditions are much more likely to develop an "attitude problem," what in *West Side Stor*y, Riff of the Jets calls a "social disease." Adolescent delinquent behaviors such as substance abuse often follow the emergence of entrenched cynicism about one's personal agency (Bry, 1982; Goldenberg, 1973; Jesse & Jessor, 1977; Kaplan, 1975). The innovative interpersonal theorist and psychiatrist Harry Stack Sullivan (1953) warned that if an individual's social relationships are characterized as either submissive or overbearing at the start of the teen

years, these relationships were likely to calcify into an ominous collection of persistent dysfunctional interpersonal orientations (manipulative, authoritarian, or subservient). This astute observation from past clinical practice is as relevant today as it was in the middle of the last century.

Curiously, the age range 11 to 14 is not only a fertile period in which to target the prevention of negative health outcomes and antisocial behavior (e.g., substance abuse, violence, unsafe sexual practices), but it is also an optimal time for the promotion of pro-social, moral, and civic competencies, especially through media literacy. Experimentation during tween-hood is crucial to building an individual's interpretation of context and the self's role within it (Nakkula & Toshalis, 2006). Ironically, tween brain development is still in progress, leaving the individual vulnerable to miscalculating rewards and consequences (Geier & Luna, 2009). E-E with a focus on psychological, social, and ethical relations might be especially useful for teens because it allows for the rare glimpse into how one's peers are dealing with decisions similar to one's own. Being able to understand and observe how peers make their own moral and ethical choices could make early adolescence a much less lonely and less destructive place. Therefore, tweens are an optimal target audience for what we now begin to call E-E-E, adding Ethical Reflection to Entertainment and Education (echoing the GoodWork trio of Excellence-Ethics-Engagement).

Not only are tweens the heaviest media users under 18 years of age, for better or worse (Rideout, Foehr, & Roberts, 2010), but there is also persuasive evidence that this period of rapid intellectual and social emotional development is an optimal time (cognitively, socially, and emotionally) in which to implement Entertainment-Education-Ethical Reflection approaches (LaRusso & Selman, 2011). Howard Gardner and his team are investigating the uses and abuses of digital tools in the hands of these eager novitiates (James et al., 2009), and we see this scholarship as supporting the natural evolution of E-E to E-E-E. The unprecedented sources of information and social connections that are provided to young people by the internet can contribute to exciting new venues of identity formation (Subrahmanyam & Smahel, 2011), but can also pose significant threats and perils. A 2011 Pew survey suggests that most teens (69 percent) think that the majority of peer communications on social networks are unkind in nature, and that 19 percent of teens

have been cyberbullied (harassment and threats via email, text, instant messaging) in the past year (Lenhart et al., 2011).

To support the growth of E-E-E, the approach must evolve to be distinct from its original passive viewer incarnation in order to successfully integrate and moderate audience participation to keep the connection productive. Yet while the *how* of powerful storytelling looks different with its technological features in flux, the elements of a good story (especially heroes and villains) are inherited from the days of myth and legend.

The Tweens are Different, Their Struggles the Same

While it is exciting to contemplate the possibilities of new media E-E-E, it is crucial not to overlook the power of fiction. How does watching (or hearing a recording about) a fictitious character think things through support real-life choices? More importantly, how might such engaged viewing support young people who are deeply influenced by peers and by perceived behavioral norms, especially with regard to risk behaviors (Olds & Thombs, 2001)? To think through possible ways to overcome some of the limitations of the old EE in promoting a pro-social character or climate, let us revisit the WGBH public television long-running series of *Degrassi* television series, an unusually powerful success story in early adolescent E-E-E. This television show about social relationships emerged under the "old media" regime and has been sustained well into the early years of "new media."

Linda Schuyler and Kit Hood (Playing with Time Productions) have created all generations of *Degrassi*, the first in 1979. The current series, *Degrassi: The Next Generation* is now in its eleventh season. This fourth series, in the tradition of its predecessors *The Kids of Degrassi Street* (1979-1986), *Degrassi Junior High* (1987-89), and, *Degrassi High* (1989-1991), *Degrassi: The Next Generation* (2001-present), follows an ensemble cast of students, their parents, and the faculty at Degrassi Community School. They face various social challenges very similar to those faced by earlier generations: poor self-image, peer pressure, child abuse, sexual identity, gang violence, self-injury, teenage pregnancy, drug abuse, and death. In fact, the most recent episodes now feature adult versions of the characters who were students in the second series, *Degrassi Junior High* (1987-89). For instance, extroverted Joey Jeremiah is now a parent

whose children give him the same challenges he inflicted on his own "back then." (Developmental psychologists like fictional longitudinal data almost as much as they love the real thing.)

Over the several decades that the four generations of *Degrassi* have aired (and certainly in the early episodes when both the plots and the characters were fresh) the story seldom, if ever, strayed into luridness or condescension. Filmmaker Kevin Smith (best known for *Clerks*), whose adoration of the program led to him make guest appearances, perfectly articulates the essence of *Degrassi*'s appeal (Byers, 2008):

These were ordinary-looking…kids like I had been in high school…dealing with real problems—not that 90210 kinda TV problem-crap…I could identify with these kids…. These non-glamorous, unpolished, awkward, age-appropriate-for-the-roles actors made me believe that I was a kindred spirit to the characters they played. (p. 189)

Degrassi Junior High in particular was acclaimed for its sensitive yet realistic portrayal of the kinds of issues faced commonly by the early adolescent viewers in its audience. Using the story arc of one of our favorite episodes, we examine the appeal and instructiveness of strong character development and authentic tween psychology, sociology, and anthropology.

"The Big Dance," originally broadcast in 1987, wonderfully demonstrates the challenges early adolescents face as they begin to negotiate for themselves the dangerous intersection of their own social development and the cultural norms and psychology of their society. This episode focuses on two girls—one introvert and one socialite—as they struggle with finding their social selves. Voula is a reserved second-generation immigrant whose father does not want her going to any social events, let alone a school dance. Stephanie, also a second-generation immigrant, has a mother who allows her to go to the dance but objects to her wearing sexually provocative clothes and makeup.

The girls face what each perceives to be a very tough, potentially intractable, and loosely related set of choices. Voula has spent much of her free time over the last several months of the school year leading a fundraising drive for the support of foster children in the community, and her teacher announces that the funds will be presented to the foster child agency representative at the Big Dance that evening. Voula knows,

however, that whatever the cause and however good the work, her extremely conservative "Old Country" father is not going to let her attend. Aside from wanting to participate in celebrating the project's success, which makes the event personally significant, her disagreement with her father reveals a more global clash over his expectations and the norms of her social world.

How will Voula deal with her father? What will she say or do? How will each respond? From the conversation between Voula and her father, we might interpret Voula's words to mean that she wants to break out of her father's cultural grasp, which feels to her like a unilateral and arbitrary rejection of her request to have greater social autonomy and independence. But is it really (or solely) a unilateral cultural clasp that ignores the importance of the event to Voula's sense of identity as a school leader, or is it also, as her father seems to believe, a caring and protective constraint? This highlights a key challenge to the effectiveness of E-E-E approaches: In powerful stories, audience members often do not agree on what the message of the story is. If we as writers, directors, and research consultants cannot agree on the meaning of the message, how can we expect to know what message teenaged viewers (or viewers at any age, for that matter) are taking away?

Stephanie, meanwhile, also has an investment in the Big Dance. As the incoming class president (she defeated Voula in a hotly contested election in a previous episode), Stephanie will introduce the winner of the fundraising contest during the Big Dance. But this is not the only or even the most compelling or personally meaningful motivation for Stephanie to attend. Earlier in the day, Stephanie summoned up all of her courage and asked her crush, fellow classmate Wheels, to be her date.

The plot(s) thicken across the next afternoon—hours before the Big Dance—for both of these early adolescents.

It is the afternoon of the Big Dance. As her father looks at her fund raising report with approval while he pays the bills at the kitchen table, and Voula dries the dishes at the kitchen sink, he sees a flier for the Big Dance:

Papa: What's this, a dance?

Voula: Can I go?

P. Voula, you are too young to go to dance.

V. (with feeling) No I'm not; everyone else is going!

P. (with emphasis) I don't want my little girl going to dance with boys with only one thing on their mind!

V. Please Papa.

P. Voula, life is like a flower, let it unfold. When you're older you'll thank me.

V. When I'm older it will be too late. The Dance will be over!

Realizing she may need a more subtle (or misleading) strategy, Voula prevaricates to her father in a later conversation: "It's just a school meeting, father." Suspicious, but accommodating, her father relents by giving Voula a strict curfew of 9:00 P.M. to attend the "meeting."

Meanwhile, shortly before the dance is to begin, we see Stephanie making a stop at her friend Lucy's house to change out of the modest wardrobe approved by her mother and into something much more revealing.

Lucy's parents happen to be out of town, which provides not only a private meeting place for her friends to gather before the dance, but also easy access to an unlocked liquor cabinet. Before heading for the gymnasium where the dance has just begun, Stephanie's posse imbibes liquid courage, culminating in a challenge issued to her to chug a bottle of Kahlua. Stephanie takes the dare, claims it tastes just like a coffee milkshake, and commences chugging.

What is happening in the viewers' minds during this scene? Do they see the defiance of parental rules as daring or as dangerous? Do they see these characters as having "fun" or as making ill-advised choices? Emulate or avoid?

Choose Your Own Lesson: Informed Social and Ethical Reflection

Informed social and ethical reflection are crucial links between observing risky behavior and copying such behavior. Ethical reflection, in

particular, coincides with the GoodWork Project's focus on ethics, and we identify the focus of ethical reflection as the viewer's understanding of the forces that influence an individual's (or a group's) "dramatic" choices. In our *Degrassi Junior High* case, ethical issues are present. But how do tween viewers comprehend and interpret the characters' struggles? What do they think of the choices available, made, and dealt with by the characters with whom we hope they will identify? Essentially, we are asking what it means to be "informed."

At the end of the Big Dance episode, Stephanie is throwing up in the girls' room, and Voula's peers are asking her to present the award. ("The fundraiser was your idea, Voula," Lucy exclaims.) It is 9:15, fifteen minutes past her agreed upon curfew. As Voula agrees to present, her father gets in his car and drives to the school. As Voula starts her speech at the podium, her father walks in the gym door, and stares at her, partly in shock, partly in anger.

In the next scene Voula and father are exchanging harsh words as they walk into the night and toward the car.

Papa: Voula, you lied to me.

Voula: Everyone else gets to go to the dance! I have rights.

Papa: There are no rights without responsibilities. You need to act like a big girl.

Voula: How can I act like a big girl when you treat me like a baby?

Watching the Same Show, Hearing the Same message?

As cultural and developmental social psychologists, our approach to "evaluation" begins with two deeply embedded underlying questions that go beyond whether the viewers identify with the characters (entertainment) or learn the intended information (education). First, how deeply do the viewers comprehend the story? Second, what meaning, personal or shared, do they make of the characters' motives, interactions, and choices?

Imagine three sets of stake-holders who want to know the impact of "The Big Dance" on a group of tween viewers, each taking a different approach: First, the script writers, who focus on the characters (Who did

you like? Who seemed like someone you might know?) or the plot (Did you like the ending?); second, the educational evaluators, who focus on how the show conveys information (What are the consequences of binge drinking?), and third, the cultural and developmental researchers focused on how the show's ethical choices are understood and interpreted by the tween audience (What do you think might have motivated Voula to lie to her father?).

Imagine an early adolescent focus group comprising a middle school cohort of boys and girls who are watching "The Big Dance." The script writers (the creative artists) know that without strong characters an audience can identify with, or at least gleefully despise, a show will be unable to gain a dedicated viewership and, consequently, will fail to be a commercial success. Without a strong identification between audience and character, positive or negative, the show will fail. The writers are focused on "emotionally engaging entertainment." For them, the crucial questions about "The Big Dance" are questions such as:

1. Who did you like better: Voula or Stephanie? Why?
2. Do you relate to or were you moved by what happened to them?

However, for the education evaluators interested in what information viewers acquire as a result of watching the show, and how that information changes behavior, their concern is whether the audience learns something related to what the educators have intended for the characters to learn or do (or not do). If there is no directional cognitive or/and behavior change the show has not fulfilled its educational purpose. The aim is to share educationally rigorous content. Actually, there are two types of information to disseminate that are relevant here: valid factual information (roughly, knowledge) and the ability to make the connections among, and evaluate facts distinct from, opinions or claims (inquiry or deep comprehension skills). Examples of valid information are:

1. Yes, Kahlua may taste like a chocolate milkshake but it is loaded with a high percentage of alcohol, disguised by the strength of the chocolate taste. (Factual knowledge)
2. Yes, intense physical movement after you chug the Kahlua may make some of you throw up at an event like the Big Dance. (Factual knowledge)

3. Maybe her friends are not the best source of information about alcohol usage. (Inquiry/Application)

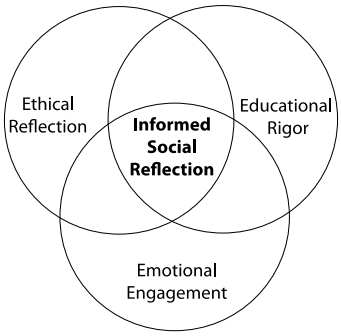
For the developmental/cultural psychologist interested in how the show promotes informed reflection about ethics, yet another kind of question (not asked at all in a typical focus group) must be posed—the ethically reflective question. The questions below might draw out a greater degree of ethical reflection from viewers of "The Big Dance" episode about Voula's choices and their justification.

1) At the kitchen table, Voula's father might seem to some viewers as harsh, unilateral, humorless, and arbitrary, but why might he take this particular position?
2) Voula stays at the dance past her curfew and angers her father because Stephanie is too drunk to present the award, even though Voula has previously refused to speak to Stephanie. Why did Voula make that choice? What would you have done?

Rather than focus solely on the informational base or the specific choices made, these questions probe the viewer's "interpretations" and the characters' motivations or the justifications behind their choices. A heavy investment in questions such as these will best help students, we believe, to develop informed social and ethical reflection when they are aired (discussed and debated) out in the open. The times are right for this approach: With the advent of the digital age, focus groups are no longer the only venue for discussion and debate of questions such as these. Social networks now allow discussion and debate among a wide swath of viewers. We will explore these possibilities as we proceed.

The figure below dramatizes the relation of this third type of question to the other two. The overlap in the figure models the overlap among the three categories of questions. While they are placed in distinct categories on purpose, they can also blend with one another to help generate questions with multiple interests. This model may be applied for measurement and research of E-E-E. It can also serve as the model for the themes of the next generation of E-E-E programming.

FIGURE 1. Informed social reflection and the elements of



understanding

Where we stand

Suppose we are members of a hypothetical E-E-E team whose identities are located largely within this third group of stakeholders. We want to know not only how popular and informative a program like *Degrassi* is but also whether it will have a sustainable impact on youth ethical development, one that lasts long after the episode or the series has been seen. We posit that the personal and shared meaning questions we recommend will help program designers better understand what the social world looks like to adolescents and how well the program's ethical context aligns with the audience's perspective.

Having focused on Voula's relationship with her father, let us apply this framework now in hand to Stephanie. We now return to how other questions along the lines of those listed above can probe how well deeply viewers comprehend (and possibly empathize with) Stephanie's situation.

1. What compelled Stephanie to put prudence aside and to consume so much alcohol?
2. How do you think Stephanie feels at the end of the episode, slumped in the bathroom and abandoning her date?
3. What do you think the other students at the Big Dance will think about Stephanie's behavior?

Moving beyond the script proper, we can also consider questions that link the narrative to a viewer's personal experience. These types of questions approach the issue of how youth become aware of the personal meaning of their choices (Selman, 2003), or what experiences or opinions they choose to make part of their own identity.

1. Is there an age at which young people (you) should be able to decide for themselves what to wear, how late to stay out, and so on? If so, what or who determines that age?
2. Should 8th graders (like you) be allowed to wear any clothes you/they want? What message does a revealing outfit send to your date (or to you, if your date is dressed like that)?

Of course, artists often argue that what message viewers take away from their stories is out of their control, while most market researchers are focused on maximizing viewership. For developmentalists, however, it is essential to understand both what lessons are (thought to be) sent to youth and what lessons are taken away from shows such as *Degrassi*. Does depicting Stephanie drinking send the message that it is OK to drink, dress provocatively, and so on? Or does it send the message that everything in moderation is OK? Don't mess with things you do not know about? Don't defy your parents because they will inevitably find out?

Viewers may understand that a certain behavior (such as using intravenous drugs) is associated with negative outcomes, but they must make the connection between a character's motivations for choosing that action and their own psychological experience. Without linking these two different forms of knowledge, it is not likely that there will be much impact on the viewer's decision-making. A viewer's personal experience of peer pressure may motivate him to recognize Stephanie's choice to chug Kahlua as related to her seeking affiliation with her friends. A viewer who is herself at odds with her parents' values may find it easier to identify a clash of cultural attitudes at the root of Voula's disagreement with her father.

Ethical educational entertainment needs to be based on an awareness of the universe of meanings that the audience may find within the story line, and the story's ability to promote viewers' imagination about the choices possible in that social world. It needs to be designed to promote the development of an adolescent's capacity for informed social

reflection (Selman & Kwok, 2010). If we want to have entertainment that is both ethical and educational, we need to know not only whether the characters are compelling, not only if the facts and information are comprehended, but also the degree to which the author's intended message is interpreted by the audience. And we need to know how well the viewer understands the forces that might influence the choices of the characters and the choices that the viewer herself is likely to make in similar situations. The person best equipped to answer these questions is, of course, an audience member, and perhaps, in this day and age, importantly, an audience member who goes online, maybe to the instant focus groups the social media may provide.

In the quickly emerging future, television-based E-E initiatives alone may not be the optimal choice for attracting large and engaged audiences. Historically, most E-E initiatives that have been successful were targeted to remote areas or those with very restricted entertainment media options (Singhal & Rogers, 1999). Advances in technology, however, have meant that people in remote areas now have many media choices, and the majority of these compete with E-E choices or even dilute or conflict with E-E messages (similar to the state of American entertainment landscape). To paraphrase *Field of Dreams*, "Air it and they will watch" is no longer a viable strategy.

Implications for the New Media, New Social Science Theory, and New Methods of Storytelling through Transmedia

It is here that the possibilities of new media become part of the conversation. It is not only the instant connections possible among people and the infinite information available that make the internet and social media powerful, but the necessity of personal participation, and the value of the already well-explored opportunities that arise from these technologies.

In spite of the serious potential drawbacks, do the new media permit for unprecedented, robust, and sustainable positive effects on health and human behavior? Increased social connectivity requires us to consider redefining "sustainable effects" and the strategies used to measure these. We must also consider whether there are more newly comprehensive theoretical frameworks that can build on what we have learned from the Sabido method, but which take advantage of the

interactive aspects of the primary media source and the new phenomena of "transmedia." Coined by GoodWork affiliate Henry Jenkins, transmedia refers to multiple media platforms (television, internet, digital games, and so on) working together to increase and deepen understanding of a media product. Most importantly, in E-E-E, transmedia require the participation of viewers in the narrative process (Jenkins, 2006).

The new media are interactive, but not necessarily in the ways pundits predicted only a short time ago. It is not so much that actors are coming out of the story or the media platform to interact directly with us as audience members, either to take our viewers' advice on the plot or have an in-depth conversation. It's that audience members are not only talking to the characters through "transmedia" platforms, but also that they are talking to one another.

Tinka Tinka Sukh, a beloved E-E soap opera that promoted gender equality in northern India, was successful in large part because it stimulated audience discussion. Audience members who emotionally identified with the show's characters were more likely to also draw connections from the program to their own lives and concerns and more likely to debate and explore these themes with their social circle (Sood, 2002). Interpersonal discussion is *crucial* to promoting adoption of a social behavior norm, as the enactment of a new social behavior is dependent on its acceptability to one's peers. Far from passively receiving and imitating a novel behavior (from a television program or elsewhere), audience members learn from each other, using their social group as a laboratory to evaluate whether they should adopt the promoted behavior (Singhal & Rogers, 1999). Audience members who emotionally identify with a show's characters are more likely also to draw connections to their own lives and concerns and more likely also to debate and explore these themes with their social circles (Sood, 2002).

With the help of the internet—and the people using it—a similar discussion can now occur on an exponentially greater magnitude. *Tinka Tinka Sukh* was well-written and resonated with the audience, but the discussion that followed occurred because there was a need on the part of the audience to understand and think about the (sometimes controversial or unorthodox) ideas presented.

Transmedia actively challenge the traditional view of media consumption as passive. Consumption is never passive because even mere viewing is far from blank reception as "[i]t involves a range of cognitive and other processes in the act of interpretation" (King & Krzywinska, 2002, cited in Evans, 2008, p. 200). The mainstream adoption of social networking in recent years, as reflected in the results of a recent *TVGuide* survey (Tanner, 2012), shows that the public is now ready to join a two-way experience of entertainment media.

In spite of the perceived weakness of recent E-E initiatives in North America and Europe due to media saturation (Sherry, 2002), transmedia strategies suggest that encouraging and fostering a personal connection between viewer and certain programs is essential to making the message heard through the noise of bloated cable packages and the sprawl of the internet. The central question among the excitement of possibilities is how exactly does a viewer get motivated to take action? A viewer watches the program, goes online to the program's trans-media component which is a discussion board, and then? How does the transformation occur? The power of a community thinking together is one answer: "We share your vision. You are not crazy. Let's do something about this."

The development of social attitudes is both profoundly individual and intimate: how then can a mass media message be made more personal? Media, perhaps counter-intuitively, *are* personal. Adolescents spend an average of more than seven-and-a-half hours a day using media and an average of four-and-a-half hours a day watching television (Rideout et al, 2010). Given this, it is hard to believe that the media exert an influence that is completely separate from individuals' real lives—their real fears, desires, and motivations. Unsurprisingly, communication with peers remains popular and has a strong online component, reflected in the average of 22 minutes a day spent on social networking and 15 minutes a day on user-driven video sites such as YouTube (Rideout et al., 2010).

These patterns in youth media usage suggest that the trans-media platform (working in tandem with television) is not a passing fad, but rather here to stay (at least until the next digital invention that we cannot yet imagine!). If, as Nakkula and Toshalis (2006) suggest, young people use the challenges of adolescence to construct their identities, media that they can relate to are among the influences that they draw

upon. Ignoring how adolescents use media would mean ignoring the opportunities for action and change that come with adolescent engagement with media.

From Watching to Doing: Implications for Theory

A telenovela's or other successful E-E project's influence on choices made and decision making flows from demonstrating the range of choices and trajectories available to the characters (and the viewer), even those the viewer may not have been aware of or may have misunderstood. By giving the viewer the opportunity (through discussion) to understand the motivations behind actions and the consequences, we empower the viewer to consider a wider array of options than before and increase the likelihood of choosing a more advantageous trajectory. This is the power of informed social reflection as a goal and the role of discussion and debate with others as the mechanism to develop this important aspect of deep ethical comprehension.

As we said earlier, however, prosocial values are a moving target. On April 26, 2011, the Fox television program *Glee* was centered around musician Lady Gaga's "Born This Way"—or what one character declared "the queen of self-love's anthem to acceptance." The "assignment" for the glee club's students was accepting who they are—"the best and worst parts"—ranging from noses (Rachel), trouty mouths (Sam), slanted brown eyes (Tina), to their own sexual orientations (Kurt, Santana, and Karofsky).

The immediate reaction was strong on at least two sides. Dan Gainor, conservative media critic, has described the episode as "Ryan Murphy's (creator of "Glee") latest depraved initiative to promote his gay agenda" (Powers, 2011). Simultaneously, *Glee* and other programs featuring teenaged coming-out stories are being hailed for their efforts. Such programs not only present a range of sexual orientations in their programs to reflect reality, but also agitate for acceptance and understanding for the struggles of teens sorting out their sexual identity, especially in a year of highly publicized cyberbullying instances based on sexual orientation (Friedlander, 2011).

For better or worse, both these kinds of reactions are not what we mean by either informed social reflection or ethical awareness. They, like the impact of those telenovelas that briefly move the viewers to quick

reactions, reflect short-term spikes that may or may not have the long-term effects on the ethical development of the audience which we are advocating.

The core excitement of this episode's ripples into the real world is not just about the attention given to previously "fringe" or "minority" concerns, but the reminder that these concerns are shared by so many young people today. If the power of E-E is the emphasis on problems that real people have and showing viewers considerations of real solutions and consequences, then the influence of E-E-E is the focus on how real people arrive at their decisions. This starts with acknowledging what kinds of concerns viewers have, and authentically presenting the different motivations behind the responses to these anxieties. E-E-E is about how we come to live the life that others see, and this is a process that only entertainment can really make visible to us on a large scale. Diversity in entertainment is not just about demographics but about the manifold ways we choose to live our lives. E-E-E programming offers us the opportunity to open a dialogue with others who might have made very different choices than we did through the example of fictitious characters; we may then find it easier to extend our understanding and tolerance to a real person who made similar decisions.

Howard Gardner's GoodWork Project understands the various forces that push each of us away from the "triple helix" of making the excellent and ethical decision that *also* engages us. But rather than dwelling on the *difficulty* of making these decisions, the philosophy behind GoodWork is to work towards mapping the GoodWork genome: figuring out what inspires people to do GoodWork and how we can foster environments that encourage it. The possibility for GoodWork exists anywhere there is more than one person hoping to live the best version of himself.

References

Alspaugh, J.W. (1998). Achievement loss associated with the transition to middle school and high school. *Journal of Educational Research, 92*(1), 20-25.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Barber, B.K. & Olsen, J.A. (2004). Assessing the transitions to middle and high school. *Journal of Adolescent Research, 19*(1), 3-30.

Barker, K. (2005). Sex, soap, and social change: The Sabido methodology. In M. Haider (Ed.), *Global public health communication: Challenges, perspectives, and strategies* (pp. 113-154). Sudbury, MA: Jones and Bartlett.

Beck, V. (2004). Working with daytime and prime-time television shows in the United States to promote health. In A. Singhal, M.J. Cody, E.M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research and practice* (pp. 207-224). Mahwah, NJ: Lawrence Erlbaum Associates.

Bennett, D. (2010 May 2). "Guiding lights: How soap operas could save the world." *Boston Globe.* http://www.boston.com/bostonglobe/ideas/articles/2010/05/02/how_soap_operas_could_save_the_world/ [Accessed January 4, 2012].

Bouman, M. (2002). Turtles and peacocks: Collaboration in entertainment-education television. *Communication Theory, 12*(2), 225-244.

Brehm, J. W. (1966). *A theory of psychological reactance*. New York: Academic Press.

Brown, W.J., & Singhal, A. (1990). Ethical dilemmas of prosocial television. *Communication Quarterly*, *38*(3), 268-280.

Brown, W.J., & Singhal, A. (1993). Ethical issues of promoting prosocial messages through the popular media. *Journal of Popular Film and Television*, *21*(3), 92-99.

Bry, B. (1982). Reducing the incidence of adolescent problems through preventive intervention: One- and five-year follow-up. *American Journal of Community Psychology, 10*(3), 265-276.

Byers, M. (2008). Education and entertainment: The many reals of *Degrassi*. In Z. Druck and A. Kotsopoulos (Eds.), *Programming Reality: Perspectives on Canadian Television* (pp.187-204). Waterloo, Canada: Wilfrid Laurier University Press.

Derrick, J.L., Gabriel, S., & Hugenberg, K. (2009). Social surrogacy: How favored television programs provide the experience of belonging. *Journal of Experimental Social Psychology, 45,* 352-362.

Evans, E.J. (2008). Character, audience agency and transmedia drama. *Media, Culture & Society, 30*(2), 197-213.

Friedlander, W. (2011). 'Glee,' 'Pretty Little Liars' tell younger gay coming-out stories. *The Seattle Times.* http://seattletimes.nwsource.com/html/television/2013855105_gayteens09.html [Accessed March 11 2012].

Gardner, H. (2011). Introduction. In H. Gardner (Ed.), *GoodWork: Theory and practice* (pp.1-25). Cambridge, MA: The GoodWork Project,.

Geier, C., & Luna, B. (2009). The maturation of incentive processing and cognitive control. *Pharmacology, Biochemistry & Behavior, 93*(3), 212-221. doi:10.1016/j.pbb.2009.01.021.

Hether, H., Huang, G., Beck, V., Murphy, S., & Valente, T. (2008). Entertainment-education in a media-saturated environment: Examining the impact of single and multiple exposures to breast cancer storylines on two popular medical dramas. *Journal of Health Communication, 13*(8), 808-823. doi:10.1080/10810730802487471.

Iacono, W.G., Malone, S.M. & McGue, M. (2008). Behavioral disinhibition and the development of early-onset addiction: Common and specific influences. *Annual Review of Clinical Psychology, 4,* 325-348.

James, C., Davis, K., Flores, A., Francis, J.M., Pettingill, L., Rundle, M., & Gardner, H. (2009). *Young people, ethics, and the new digital media: A synthesis from the GoodPlay Project.* The John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning. Cambridge, MA: The MIT Press. http://mitpress.mit.edu/books/full_pdfs/Young_People_Ethics_and_New_Digital_Media.pdf [Accessed January 11, 2011]

Jenkins, H. (2006). *Convergence culture: Where old and new media collide.* New York: New York University Press.

Kanazawa, S. (2002). Bowling with our imaginary friends. *Evolution and Human Behavior*, *23,* 167–171.

LaRusso, M.D., & Selman, R.L. (2011). Early adolescent health risk behaviors, conflict resolution strategies, and school climate. *Journal of Applied Developmental Psychology, 32*(6), 354-362.

Lenhart, A., Madden, M., Smith, A., Purcell, K., Zickhur, K., & Rainie, L. (2011). *Teens, kindness, and cruelty on social network sites.* Pew Research Center's Internet and American Life Project. http://pewinternet.org/Reports/2011/Teens-and-social-media.aspx [Accessed March 10 2012]

MacLean, P.D. (1973). A triune concept of the brain and behavior, including psychology of memory, sleep and dreaming. In V.A. Kral et al. (Eds.), *Proceedings of the Ontario Mental Health Foundation Meeting at Queen's University.* Toronto: University of Toronto Press.

Delivering entertainment-education health messages through the internet to hard-to-reach U.S. audiences in the Southwest. In A. Singhal, M.J. Cody, E.M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research and practice* (pp. 331-350). Mahwah, NJ: Lawrence Erlbaum Associates.

Moyer-Guse, E. (2009). Toward a theory of entertainment persuasion: explaining the persuasive effects of entertainment-education messages. *Communication Theory, 18,* 407-425.

Murphy, S.T., Hether, H.J., & Rideout, V. (2008). *How healthy is prime time? An analysis of health content in popular prime time television programs. Kaiser Family Foundation.* http://www.kff.org/entmedia/upload/7764.pdf [Accessed July 2011].

Nakkula, M., & Toshalis, E. (2006). *Understanding youth: Adolescent development for educators*. Cambridge, MA: Harvard Education Press.

Olds, R.S., & Thombs, D.L. (2001). The relationship of adolescent perceptions of peer norms and parent involvement to cigarette and alcohol use. *Journal of School Health, 71*(6), 223-228.

Packard, V. (1957). *The hidden persuaders.* New York: D. McKay.

Patterson, G.R., DeGarmo, D.S., & Knutson, N. (2000). Hyperactive and antisocial behaviors: Comorbid or two points in the same process? *Development and Psychopathology, 12,* 91-106.

Poindexter, D.O. (2004). A history of entertainment-education, 1958-2000. In A. Singhal, M.J. Cody, E.M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research and practice* (pp. 21-37). Mahwah, NJ: Lawrence Erlbaum Associates.

Powers, L. (2011). Lady Gaga, pro-gay 'Glee' episode slammed by conservatives. *The Hollywood Reporter.* http://www.hollywoodreporter.com/news/lady-gaga-pro-gay-glee-182608 [Accessed March 11 2012].

Richardson, J., Owen-Smith, V., & Howe, A. (2002). The effect of 'Alma's' death on women attending for a cervical smear: A questionnaire survey. *Journal of Public Health Medicine, 24*(4), 305-306.

Rideout, V.J., Foehr, U.G., & Roberts, D.F. (2010). *Generation M² : Media in the lives of 8- to 18-Year-Olds. Kaiser Family Foundation*. http://www.kff.org/entmedia/upload/8010.pdf [Accessed September 5, 2011].

Sabido, M. (2004). The origins of entertainment-education. In A. Singhal, M.J. Cody, E.M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research and practice* (pp. 61-74). Mahwah, NJ: Lawrence Erlbaum Associates.

Schultz, L.H., Selman, R.L., & LaRusso, M.D. (2003). The assessment of psychosocial maturity in children and adolescents: Implications for the evaluation of school-based character education programs. *Journal of Research in Character Education, 1*(2), 67-87.

Selman, R. L. (2003). *The promotion of social awareness*: *Powerful lessons from the partnership of developmental theory and classroom practice*. New York: Russell Sage Foundation.

Selman, R.L., & Kwok, J. (2010). Informed Social Reflection: Its development and importance for adolescents' civic engagement. In Sherrod, L., Torney-Purta, J., & Flanagan, C. (Eds.), *Handbook of research on civic engagement in youth* (pp. 651-683). Hoboken, NJ: Wiley.

Shannon, C.E., & Weaver, W. (1949). *A mathematical model of communication.* Urbana, IL: University of Illinois Press.

Sherry, J.L. (2002). Media saturation and entertainment-education. *Communication Theory, 12*(2), 206-224.

Singhal, A., & Rogers, E.M. (1999). *Entertainment-education: A communication strategy for social change*. Mahwah, NJ: Lawrence Erlbaum.

Singhal, A., & Rogers, E.M. (2004). The status of entertainment-education worldwide. In A. Singhal, M.J. Cody, E.M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research and practice* (pp. 3-20). Mahwah, NJ: Lawrence Erlbaum Associates.

Sood, S. (2002). Audience involvement and entertainment-education. *Communication Theory, 12*(2), 153-172.

Sood, S., & Nambiar, D. (2006). Comparative cost-effectiveness of the components of a behavior change communication campaign on HIV/AIDS in North India. *Journal of Health Communication, 11*, 143-162. doi:10.1080/10810730600974837.

Subrahmanyam, K., & Smahel, D. (2011). *Digital youth: The role of media in development.* New York: Springer.

Sullivan, H.S. (1953). *The interpersonal theory of psychiatry.* New York: W.W. Norton & Co.

TVGuide.com. (2011). *NCIS, Idol* top TVGuide.com's list of most social shows. T*VGuide.com*

Accessed 06/27/2011 http://www.tvguide.com/News/Most-Social-NCIS-Idol-1033024.aspx

TVGuide.com. (2012). Social TV Survey: Social media is making you watch more TV! *TVGuide.com.* http://www.tvguide.com/News/Social-TV-Survey-1044086.aspx [Accessed March 10 2012].

"tween, n.2". (March 2012). *Oxford English Dictionary Online.* Oxford University Press. http://www.oed.com.ezp-prod1.hul.harvard.edu/viewdictionaryentry/Entry/247691 [Accessed April 23 2012].

Howard's Response to Robert L. Selman and Janet Kwok

When it came to inviting colleagues to participate in the Festschrift, Ellen and Mindy made most of the decisions—but when it came to colleagues at the Graduate School of Education (of which I have several dozen), it was clear that we could only invite a very few—the oldest, dearest colleague-friends. Bob, you and I have occupied the same geographical spaces for close to four decades. While we work in similar areas, and have had some of the same mentors and more than a few of the same students, to my knowledge we have never directly collaborated. And yet your insights (and that includes political insights), your warmth, your wisdom, and indeed your wry wit—through bad times as well as good ones—made it clear: we hoped that you would accept our invitation. So thank you!

It's my deficiency that I was not familiar—except in the most general sense—with the work that you and Janet Kwok carefully detail. Of course, as you note, this work entails many streams parallel to work of my colleagues on the GoodWork Project and even in earlier times (see Laurie Krasny Brown's work, described above). Indeed, if you are interested in human development, you will sooner or later be drawn naturally to the area of early adolescence and to the ways in which the "tweens" are affected by the media of the day—once broadcast media, now increasingly online media. Indeed, by the time others read these words, the media best known in "our time" will be on the wane, and the "hot ones" are unlikely to be familiar to you, though they may well be known by your children or grandchildren.

Taking off on the three Es of Good Work (excellence, ethics, and engagement), you focus on the trio of "ethics, education, and entertainment." The similarities and differences seem apparent to me. Our own studies began two decades ago with an attempt to understand what it means for adult professionals to do good work, and we came to identify the triangle of work that is of high quality, personally engaging, and carried out in an ethical manner. Much of our effort has subsequently sought to retro-fit these three properties to the experience of the growing student and the future professional, and our chosen vehicles have been various versions of a "GoodWork Toolkit."

In many ways, your approach is a more natural one to employ with young individuals. You take a look at their media experiences, try to understand how they make sense of the programs and presentations that they watch or stream or create, and then ponder the ways in which good behavior, good work, and good citizenship might thereby be encouraged.[1] Sometimes the media creations are designed with specific ethical or moral messages in mind (in that way, they resemble our Toolkits); and sometimes they are just what the market produces. But of course, that distinction can in itself be simplistic, because something developed chiefly for entertainment value may harbor significant ethical themes, just as a program carefully sculpted to convey moral messages may be seen as sheer entertainment or may even (as Scott Seider has shown) lead to attitudes opposite to those cherished by the creators! As you remind us, many of us can encounter the same media presentation and draw quite disparate conclusions.

So clearly, Bob and Janet, from my point of view, we have been engaged essentially in parallel work-and-play, no doubt abetted by some of the students and colleagues whom we share. Neither of us can know at this moment how much more "research" we have left in us personally. But it seems clear to me that two large challenges lie ahead:

1) What are the pros/cons of a more explicit, targeted approach, like the GoodWork Toolkit, as opposed to a subtler approach, with themes embedded in content that is clearly branded as entertainment?
2) In what ways is the entire problem space reshaped, or even remade, by the meteoric rise of the digital media, with ample opportunity for action, interaction, connection, and quick changes, as well as permanent digital traces?

Clearly, there is lots of work for the next generation, whether or not they happen to park their cars opposite one another in the Larsen Hall parking lot.

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[1] Applications of the Three E theoretical media based framework (The Education-Ethics-Engagement Framework) can be found online at tripleemedia.org. These Resource Guides are open-source and may be downloaded without cost.

On the Intelligence in Children's Making

Kimberly M. Sheridan

We are continually making and re-making our worlds, and our creations give insight into the kinds of intelligences behind them. From songs to sculptures to scientific models, the artifacts children make also give rich insight into how they think and what they know. Howard's conception of intelligence considers the creation of these products as central to intelligent activity and human development. By weaving connections among our neurological structures, children's development in different symbolic representational systems, and extraordinary creative achievements in human history, Howard reminds researchers to work towards theories of intelligence, learning, and development that give insight into the full range of what matters in human activity. While a search for the term "intelligence" would yield few hits in any of my writings (which I hope is not indication of a deeper lack), Howard's broad conception of intelligence has inspired and informed my work studying children's learning through making.

Howard defines an intelligence as: "a biological and psychological potential to solve problems and/or create products that are valued in one or more cultural contexts" (Gardner, 2006). This definition highlights the creation of products as core to intelligence. The study of the kinds of cognition reflected in the planning, designing, and fashioning of products has been relatively neglected compared to the study of problem solving—thus highlighting the need for more insight into the intelligence involved in making within different domains and how such intelligence develops. Howard's definition also acknowledges that while intelligence is a potential of our mind/brains, the problems considered worth solving and the products worth creating are vetted by a community and thus are pluralistic and in flux. Researchers seeking to understand intelligence in the making of products need to attend to the dynamics of how the socio-cultural context, including tools, beliefs, practices, and values, inform how children learn to use their mind brains to create within different symbol systems. In this essay, I look at the self-directed creating children engage in over long periods of childhood and across various domains. This creating is shaped by the contemporary contexts of digital media

tools and the participatory cultures of the internet. I consider what self-directed creating adds to the conversation on intelligence in the making.

Centrality of Creating Products in Learning and Development

The historical record of created products is also a record of the evolution of human thought. Our tools, art, dwellings, and religious- and other artifacts give insight into our evolving species-specific cognitive capacities (Tomasello, 1999). Constructing external representations of one's ideas is also a particularly vivid form of learning and source of insight into children's thoughts. As learners design, create, and revise, they and others can see their changing ideas take form. Foundational research at Harvard Project Zero explored cognitive development in symbolic domains that had been previously neglected by research, such as music, figurative language, and visual art (Gardner & Perkins, 1989). Researchers studying contemporary learners' making in a wide variety of areas, including visual art, game design, digital video, robotics, and engineering, have amassed insights how creating visible objects provides opportunities for learners to envision new possibilities, note inconsistencies, gaps, areas of vagueness in their initial designs or conceptions, test out theories, optimize functioning, revise based on feedback, and reiterate (e.g., Halverson, 2011; Harel & Papert, 1991; Hetland, Winner, Veenema, & Sheridan, 2007; Hmelo, Holton, & Kolodner, 2000; Peppler & Kafai, 2007; Sheridan, 2011). While this research has made strides in clarifying learning and thinking involved in making in different spheres (see Halverson & Sheridan, in press, for a review specific to the arts), excepting Howard's, this work generally stands outside the scholarly discussion on intelligence.

To be sure, as Howard details, there are reasonable arguments for this neglect. Researchers studying intelligence typically work within a psychometric approach where items are carefully chosen and vetted for qualities such as correlation with prior items, predictive value for desired scholastic outcomes, and reliability across contexts. Diverse products from time-consuming experiences in domains where experts argue for different standards of taste do not fit neatly within their frame or goals. Yet, when we look over history, it is hard to ignore that the record of our intelligence is rooted in our creations, and these creations often involve the use of cognitive capacities not well-represented in standard measures of intelligence.

A Case of Learning in the Making

Rather than delve into an analysis of the cognition inherent in cultural artifacts, or discuss my research exploring different aspects of learning in the making, I use this venue to follow a venerable (and perhaps indulgent) tradition in developmental psychology to explore a line of inquiry by looking at my own children. My son, Anton, seems an appropriate case for this essay, in part for personal reasons: Anton grew up as I wrote my dissertation under Howard's guidance, shares a birthday with Howard, and has fond memories of visiting him in his office. More to the point: my daily history with Anton reinforces my belief in the centrality of creating products as key in the cultivation and expression of his intelligence. That these expressions are not well-represented in theories of human development and learning suggests it is a valuable line of inquiry to pursue (or as Howard was wont to respond when his students stumbled on a potentially good idea: "There's gold in them there hills.")

Looking over my transcripts of Anton's language as a toddler, I see a persistent sensitivity to, and interest in, the idea that there is a person who made the objects in his world. At 18 months, standing in his crib, he would frequently ask, "Who made walls? Who made bed?" At two he would ask of nearly every book, "Who wrote these words? Who drew these pictures?" At times, he would over-extend this sensibility to the natural world, such as asking of particularly brilliant sunsets, "Who colored the sky?" By three, he became more sensitized to the particulars of the creators of his world. For instance, he asked me to draw an outdoor picnic scene by a river. When my drawing did not live up to his expectations, he advised, "Pretend you're Arnold Lobel draws *Bear Goes Shopping*" to improve my style. While this shows a charming trust in the power of pretending, it also suggests that Anton attends to how *specific* individuals such as Arnold Lobel make the products he cares about in the world, and that he sees that different individuals make them differently. It also shows that he is developing taste: he values Arnold Lobel's drawing style over mine.

Like many preschoolers, Anton's days were filled with making, particularly building elaborate structures from blocks and other construction materials. He was a frequent writer of books: during my dissertation he wrote multiple "disrtashuns" of his own, mainly about

trains. Anton was also a frequent editor of others' work. He suggested dozens of alterations in books we read and went as far as insisting we actually make a few: he covered drawings he did not like with versions he did and asked us to cross out words he thought upset the cadence in rhyming books and take out details in writing that contradicted an illustration. From early on, Anton saw creating as an integral part of everyday life and revision as an integral part of creation. He saw the made world as malleable, and his role was to make it better—or at least more to his taste.

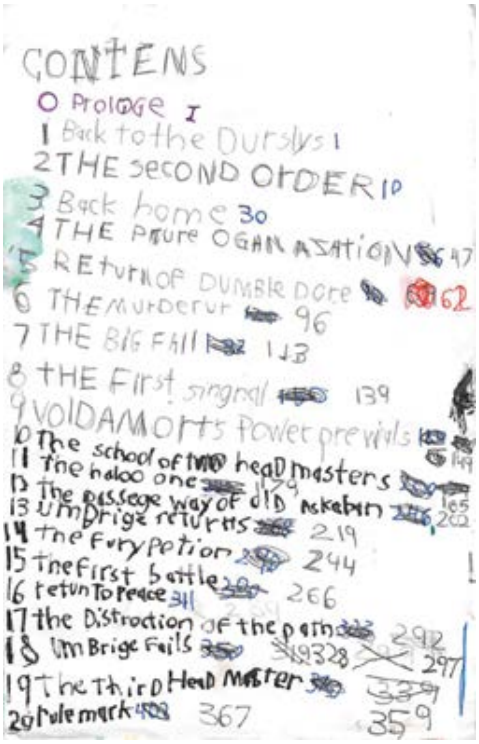
Now at the end of his elementary school years, I see the clearest expressions of Anton's particular profile of intelligences in looking at his long term, self-directed projects. These are projects he has sustained often for years, each reflecting efforts at creating products with different media, such as his several years of designing, building and re-building an elaborate town of Legos, writing multiple books and versions of the same book, designing and tending an elaborate garden, inventing and building machines, and designing interactive computer games. There are many questions that could guide analysis within each of his domains of activity (e.g., what constitutes intelligent game design, what constitutes intelligent gardening?), analysis of general cognitive processes and strategies used across domains (e.g., what kinds of thinking and strategies are involved in envisioning a plan, creating an initial draft, responding to feedback, revising?), and analysis of how his diverse forms of making contributes to his development (e.g., how does he synthesize what he learns? how does self-directed making contribute to his work ethic? to his identity?).

While a full analysis is beyond the scope of this essay, a few key points stand out. First, over the past five years, Anton has clocked thousands of self-directed, self-motivated hours on these projects—during summer and weekends he often works on a given project six or more hours each day. This level of commitment indicates the value this work holds for him, and also suggests that these projects may involve more sustained thinking than do school-related tasks. That these projects are self-selected and self-directed yields insight into how he thinks. They also indicate that he has sufficient access to resources (e.g., the materials to work with, on-line resources and communities in areas of interest, adequate free time) to support his extended making. This

sense of commitment is a well-documented trait of professional creators (e.g., Moran, 2009) and of gifted children (e.g., Winner, 2000). Anton seems to have this level of commitment for diverse activities that involve creating—programming, writing, building—suggesting a general commitment to the activity of designing and making rather than a more domain-specific 'rage to master.'

Second, Anton consistently revises his work—often sustaining a particular project for several years through multiple revisions. For instance, from the ages of 7 to 9, in addition to starting many other books, he wrote multiple related versions (each between 60-120 scrabbly handwritten pages) of his own, next installment in the Harry Potter series, where Harry becomes an instructor at Hogwarts. The title and broad plot stayed the same, but he reworked details within the story arc by first titling chapters in a new Table of Contents, and revising his plan for how many pages to devote to each section as he went along (see Figure 1). He has folders filled with dozens of versions of such tables of contents exploring different ways the broad arc could go. At age eight, after about 110 pages into his first book (and even more time spent entertaining fantasies of getting it published, meeting J.K. Rowling, donating the proceeds from the sales of the book to the poor…), Anton decided that he needed to start over, explaining "I got too caught up in just writing about battle after battle and they're getting over-the-top. When I was younger I don't think I understood that it's the stuff between the battles that makes you even care what happens to the people in them."

Figure 1. Sample of one of dozens of tables of contents for Anton's book (age 8)



At times, Anton seeks feedback from others to inform revisions on projects. For instance, he frequently has ideas for machine designs that he thinks could work, but for which he lacks the skills to enact into a working prototype. For a proposed design for an air-powered car, he began with an idea of a mechanism he thought could speed up air to turn gears fast enough to power a car (see Figure 2). He sought the advice of an engineer (his grandfather) on the potential of his design and learned that his design is akin to what is used in some venting systems and is a functional design for speeding up air and harnessing air power. He also learned that a key design problem of powering a car is storing and regulating the flow of power. In Anton's version of the design six months later (Figure 3), he placed the mechanism in the context of a vehicle and attempted to solve the energy storage problem by having the air-powered gears turn the axle of an electromagnet connected to a battery to store energy.

Figure 2. Anton's initial design for a mechanism that would make an air-powered car, August 2010, 9 years 1 month.

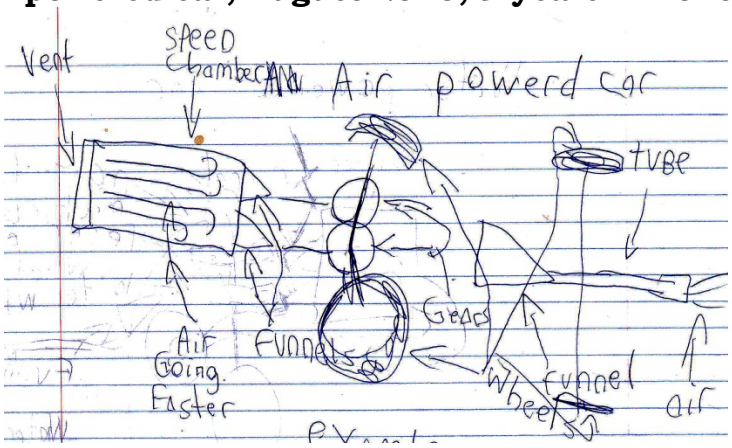
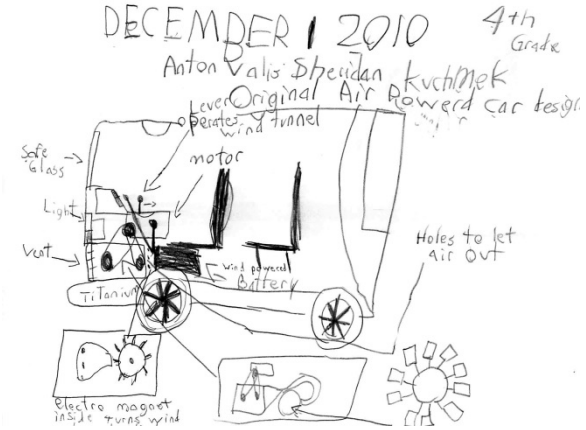


Figure 3. Anton's more elaborated design six months later. He employs the techniques typical of Lego instruction booklets, using arrows pointing to boxes to show layers of "detailed views" on how the internal mechanism works.



Anton sought his engineer grandfather's advice on the functionality of his design and on the problems he should consider, but he did not want advice on how to solve the problems. At 9 years of age, Anton had little formal technical knowledge of how turbines and batteries work, but his design process drove him towards harnessing whatever he gleaned from his experience, drawing on nothing more technically advanced than *Magic School Bus* books, museum displays, and basic construction toys. Rather than seeking out new knowledge about batteries, he preferred to organize insights from what he already knew. These points of revision give us insight into how a learner represents a problem space, evaluates a design in relation to the problem space, and develops strategies for moving the design forward. It is through analysis of the making process

as it evolves that we build an understanding of the intelligence in the making—and an understanding of how to further support this intelligence. I have little doubt that I could pose a structured task to Anton that would likely yield greater understanding of air flow and electromagnets than he shows in his design, but such an approach might not sustain his interest as much as his self-directed design task does, and it might not yield the same kind of insight into the intelligence involved in finding a problem and deciding how to pursue it. A key challenge of understanding how to support this kind of self-directed learning through design and creating may be to know how to balance supporting learners' own problem-finding and solving with thoughtfully placed expert instruction.

Learning and Creating in Digital Participatory Cultures

As Anton has grown older and his making process has become more digitally oriented, his work has diverged quite a bit from my memories of childhood making in 1983. Howard holds that the judgments of intelligence are situated within a system of cultural values: an intelligence "entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community" (Gardner, 2006, p. 6). In recent decades, digital tools and the internet have transformed how products are created, shared, and valued and have expanded what constitutes a cultural setting or community. In what Jenkins terms "participatory cultures," there are lowered barriers to access diverse cultural products, community is developed by niche interests and tastes, and the traditional gatekeeping mechanisms for exhibition and publication have been transformed (Jenkins, Purushotma, Clinton, Weigler, & Robison, 2007).

For children, this cultural shift provides easier access to diverse communities of practice that support learning and creation within domains of interest and increased access to opportunities to share and receive feedback on their creations. In ethnographic studies of youths' participation in on-line communities, Ito and her colleagues document many new domains where learners rapidly move from being sideline participants to active creators within particular on-line communities (Ito et al., 2009). In a recent paper, Howard and I discuss how participatory cultures transform our conception of artistic development to one where awareness of audience and capacity to collaborate may be highlighted

(Sheridan & Gardner, 2012). Even traditional forms of childhood making have become more public: Anton regularly uses the Lego fan site www.brickshelf.com to share his work and get inspired by others' Lego creations. As he has moved to more sophisticated tools, such as programming tools for computer game design, he often works in forums populated by older teens and adults, and his forays into sharing his thoughts or works-in-progress are not met with the usual buffers reserved for giving feedback to children. After receiving harsh, disheartening responses to a half-finished game he posted for critique, Anton has shied away from further sharing on-line. He has shifted his collaborative game-making from participating on-line to a more traditional form—working through design ideas and play testing his games with friends he knows in the neighborhood and school. Part of learning to make intelligently involves knowing when, with whom, and how to share creations with others.

Any medium, set of tools, or chosen problem carries certain affordances and constraints. A key affordance of digital media is that it readily allows a novice maker to work within, and change, an existing product. This represents a meaningful extension of traditional and "cognitive apprenticeships" (Brown, Collins, & Newman, 1989). Whereas previously novice creators may have learned through apprenticeship learning arrangements or even through copying more expert creations, learners working in digital media can now directly enter into the work (e.g. music, 3-D model or simulation, image, video, game program) and see how it is created, manipulate its elements, and create new forms by tweaking the old. For instance, youth learning 3-D modeling and game design often use models created by others and manipulate small elements within the model, import elements created by others into their own designs, or customize existing game engines as a route to completing more complex games than they could create independently (Clark & Sheridan, 2010). Anton has learned to design and program interactive games more through playing around directly within the existing creations of others than through formal tutorials. Posting a version of your game engine for others to adapt is a common practice in his on-line game design forum.

In addition to transforming how novices learn from experts, the affordances of digital media suggest new opportunities for collaboration

and may invite new forms of copyright infringement and plagiarism (James, 2009). In Anton's work in game design, he is careful to differentiate a project that he's "just built with another game engine," meaning he hasn't done main programming or design work, but has adapted aspects of another person's game engine, versus one he has built from scratch. However, much of professional game design often involves building on and revising existing engines. Hence, part of learning to create intelligently in contemporary game design is knowing when and how to repurpose effectively and appropriately.

This repurposing often leads to new forms, and new digital media genres emerge with regularity—often blending borrowed elements from multiple other genres. For instance, a pastime of Anton and his friends is to watch and assess the relative merits of a popular new genre: user-edited and narrated videos of past scenarios of multi-player games. The train of copyright and authorship in this genre is challenging to follow. For instance, in a current favorite series, *Minecraft Hunger Games*, the world and scenario in which the video takes place is built by a set of users inspired by the book series and movie, *The Hunger Games,* using the tools of the existing game, *Minecraft*. The story is built by the playing of people who may not intend to be in a story, but who—through their decisions and actions during game play—create the characters and the plot. Their play is then edited and crafted into a story, perhaps by one of the players or by an onlooker who posts it on-line to be viewed and commented on by others.

To be sure, artists long before the digital age have borrowed from and built upon the ideas of others. In a 1921 critical review, T.S. Eliot wrote:

One of the surest of tests is the way in which a poet borrows. Immature poets imitate; mature poets steal; bad poets deface what they take, and good poets make it into something better, or at least something different. The good poet welds his theft into a whole of feeling which is unique, utterly different from that from which it was torn; the bad poet throws it into something which has no cohesion. (Eliot, 1921, p. 153)

Digital media make the borrowing process more salient, direct, fluid, and a regular part of contemporary children's learning to create. Compared to non-digital forms of making, which value working from

scratch, digital media place more value on the cognitive skills involved in adapting existing creations for new purposes.

Conclusion

In both physical and digital worlds, creating products has been a central activity of Anton's development and has comprised much of his intellectual life outside school. From an early age, he showed an emerging awareness that the world around him is made by others, and he clearly wanted to enter in and add to this world. Most of his childhood making has been informed by the making of others: after reading Harry Potter he wanted to add his own voice to the series, he sought expert advice on the design of his air-powered car, he taught himself game design by participating in on-line forums and entering into the created programs of others and adapting elements. New digital participatory cultures have supported his learning and the entry of his making into a broader more public sphere. The worlds Anton has spent his childhood creating reveal the way he thinks and are the result of exercising his unique profile of capacities in ways his contemporary contexts encourage and value. Howard's conception of intelligence, and his and others' foundational work at Harvard Project Zero, provide a base for researchers to begin to make sense of the intelligences involved in children's making in different domains—including the new digital domains of today.

References

Clark, K. & Sheridan, K. (2010). Game design through mentoring and collaboration. *Journal of Educational Multimedia and Hypermedia*, *19*(2), 125-145.

Eliot, T. S. (1921). *The sacred wood.* New York: Alfred A. Knopf, 1921.

Gardner, H. (2003). Three distinct meanings of intelligence. In R. Sternberg, J. Lautrey, & T. Lubart (Eds.), *Models of intelligence: International perspectives* (pp.43–54). Washington, DC: American Psychological Association.

Gardner, H. (2006). *Multiple intelligences: New horizons.* New York: BasicBooks.

Gardner, H., & Perkins, D. (1989). *Monograph on Harvard Project Zero.* Urbana, IL: University of Illinois Press, 1989

Brown, J. S., Collins, A., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L.B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 453-490). Hillsdale, NJ: Lawrence Erlbaum.

Halverson, E. R. (2011). Digital Art Making as a Representational Process. *Journal of the Learning Sciences*, 1–42. doi:10.1080/10508406.2011.639471

Halverson, E.R., & Sheridan, K.M. (in press). Arts education and the learning sciences. In K. Sawyer (Ed). *Cambridge handbook of the learning sciences* (2nd ed.). New York: Cambridge University Press.

Hetland, L., Winner, E., Veenema, S., & Sheridan, K. (2007). *Studio thinking: The real benefits of visual arts education*. New York: Teachers College Press.

Hmelo, C. E., Holton, D. L., & Kolodner, J. L. (2000). Designing to learn about complex systems. *Journal of the Learning Sciences*, *9*(3), 247–298.

Ito, M., Baumer, S., Bittanti, M., Boyd, D., Cody, R., Herr-Stephenson, B., … Tripp, L. (2009). *Hanging out, messing around, and geeking out: Kids living and learning with new media*. Cambridge, MA: MIT Press.

James, C. (2009). *Young people, ethics, and the new digital media: A synthesis from the GoodPlay Project*. Cambridge, MA: MIT Press.

Moran, S. (2009). What role does commitment play among writers with different levels of creativity? *Creativity Research Journal*, *21*(2-3), 243–257.

Peppler, K. A., & Kafai, Y. B. (2007). From SuperGoo to Scratch: Exploring creative digital media production in informal learning. *Learning, Media and Technology*, *32*(2), 149–166. doi:10.1080/17439880701343337

Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.

Winner, E. (2000). The origins and ends of giftedness. *American Psychologist*, *55*(1), 159.

Howard's Response to Kimberly M. Sheridan

I can't honestly say that there was a single "golden era" of my students; I've been fortunate to have had wonderful students over the decades. But if pinned against a wall, and asked to choose a time and a place where the learning and connections were extraordinary, I would find myself thinking about the time that you were in doctoral studies. And if I had to pick a set of interests that complemented my own—interests in cognition, creativity, the arts, the media, the brain, and how young people learn—I would find myself gravitating to your profile as a student and thereafter.

What's striking is that this co-incidence has little, if anything, to do with me. Kim, you have always had your own interests, marched to your own drummer, and taken what may be "in the air" and made it your own. Your co-authors on the deservedly influential Studio Thinking (now Studio Thinking 2.0) would say the same thing. Indeed that is what all teachers want in their best students: a vital, energetic set of interests, methods for pursuing them, and then the ability and the courage to pursue the topics in their own increasingly personal way. And—I can add—as a bonus, we all crave someone with whom it is a pleasure to co-author articles, as you and I have done a number of times.

In pursuing this line of thought, I was not initially thinking of Anton, with whom I enjoyed interacting when he was a young child but whom I have not seen in recent years. But of course, in your exquisite case study of your now pre-adolescent son, it becomes clear that Anton exhibits some of your many traits—curiosity, self-starting, a sense of where he wants to go, willingness to change course (even more than once), and a healthy dosage of reflectiveness (which some might pompously term "intra-personal intelligence"). You write as a proud mother and a grateful student. But I want to add that this essay is a vital document in its own right, as a wonderful picture of how a young boy pursues a bevy of interests in a rapidly changing world dotted with even more rapidly changing digital media. At this point, no one can anticipate what Anton will be doing in ten or thirty years, but I would not be surprised if your essay will turn out to be an invaluable part of his portfolio—whether or not he ever reads or even knows about it.

Lee Shulman

Dear Howard,

I remember the shock I experienced, a number of years ago, when asked by a youthful colleague whether I remembered when I had stopped feeling like one of the "young Turks" of educational psychology. I wasn't quite sure how to respond at the time. I have always thought of "youngturkness" as a state of mind rather than a chronological stage, and in that sense, I continue to think of you as a member of that elite classification. You continue to enjoy "thinking outside of the box" even when at times you contributed to creating those boxes yourself.

We have had a number of long-term collaborations that have created opportunities for both professional and personal good times. There was nearly a decade we spent together as members of the Spencer Foundation board. I think we devoted more than ten years to working together on the Spencer post-doctoral fellowship selection committee. In both those settings, we were able to disagree affably about both proposals and candidates, while also deepening the mutual respect and affection that we held for one another.

More recently, we enjoyed the collaboration between the Carnegie program on education in the professions and your ongoing "GoodWork" Project with Bill and Mihaly. This partnership resulted in our co-edited issue of *Daedalus* and many delightful conversations.

We have also enjoyed many good meals together. As I recall, we capped off time together in London with a fine English meal (was it at Rules?) and more recently a Sunday brunch with Judy and Ellen at Barney Greengrass, The Sturgeon King.

On the other hand, there was a meal that neither of us associates with feelings of joy. I don't think we'll ever forget the Thanksgiving dinner you spent at our home in Stanford, when you learned of the tragic events that unfolded in India and had to try to manage both communications and emotions under particularly difficult circumstances.

We have also been allied in several battles against the rest of our field regarding the possibilities of assessment. In the mid-80s, we were both told that the idea of assessment by portfolio was utterly unrealistic

in an era dominated by traditional psychometrics. Yet you forged ahead with innovative assessments of students in Project Zero and we moved ahead with portfolio-based assessments of accomplished teachers in the creation of the National Board. Although we can't quite declare victory, the uses of assessment portfolios have flourished in the last two decades and our earlier audacity has certainly been vindicated.

Now, my fellow Young Turk, you have reached the beginning of your eighth decade, a milestone that the Psalmist declared was the length of our days. He erred. As someone who preceded you to that mark five years ago, I can offer some reassurance that it does not mark an end but a new beginning. I hope you will treat the coming decades as a wonderful gift, an endless sabbatical, a walk in the woods (or in Bloomsbury—whichever will bring you greater pleasure), replete with many more opportunities to climb out of the box as well as an open invitation to find a warm and comfortable box where you can relax without any feelings of guilt (that special kind of Jewish guilt that grows even in Scranton), with Ellen, your children, and grandchildren.

Judy and I wish you the most satisfying celebration of this special time in your life.

Howard's Response to Lee Shulman

Even though we are just a few years apart in age, Lee, you were always the senior person—and I don't mean this in terms of chronology, or even with an eye toward your inimitable beard. Part of this is due to education and hard work: you were a masterful student at the University of Chicago, worked with the best educational thinkers of the day, and have played a leading role in so many institutions, ranging from Michigan State to Stanford University to the Carnegie Foundation, various national commissions, and now various global philanthropies. And so of course others (including me) looked up to you, in terms of ideas, stances, and directions.

But there is another other aspect, which won't mean as much to others who don't know you personally but will be instantly understood and assented to by your friends, and that is your wisdom. I don't think anyone is born wise, and indeed many, if not most of us, reach a ripe old age without ever evincing a scintilla of wisdom. I am not even sure that this invaluable capacity is Talmudic, though doubtless your Jewish education sensitized you to the differences between wisdom and superficiality and between depth and balderdash. I think it is your ability to see the big picture—in human as well as scholarly, administrative, or technological terms—and to say or signal or send what is most needed at the moment to bring things to as good a place as possible.

This does not always mean that you were always right or that we always agreed. Indeed, when we sat together on various boards convened by the Spencer Foundation or the National Academy of Education, we certainly had our differences. But never did I feel you were endorsing a point of view out of pique or pettiness—you were trying to discern things clearly and then improve the big picture (and, as appropriate, the details). That it is why I learned from your wisdom, even when or perhaps <u>especially</u> when we did not end up with the same conclusion. Though it is up to others to say, I hope that at such times I absorbed some wisdom from you, and happily, rather than being a zero-sum game, wisdom has the potential to be a growth stock.

On Being a Follower: Howard Gardner and the Teaching of Drawing

Seymour Simmons

Lately, I have come to appreciate opportunities like this one—to write or speak about an admired teacher, colleague, student, or friend—as occasions to reflect, not only about the person being honored, but about myself, as well. Sometimes, however, the realizations that result can be unsettling. As an example, thinking about my relationship with Howard Gardner, I could not escape the fact that I have been following his work for over 30 years, treading paths that he has forged and using his insights to shape and bolster my own. Initially, this flash of self-awareness was accompanied by a not insubstantial dose of embarrassment, especially since I come to academia from the visual arts where even the slightest hint of influence may be met with derision and deprecation. However, on further consideration, I can feel only gratitude for Howard's contribution to my development as an arts educator. Equally, I want to thank him for the personal support and encouragement he has shown me over the years. As my contribution to his festschrift, I will describe the impact of MI on my research in the teaching of drawing.

Howard's influence on my academic interests began when I first entered Harvard as an Ed.M. student in 1980. At the time, I was a drawing instructor at the Cambridge Center for Adult Education and the School of the de Cordova Museum, where my students included at least one Nobel Prize-winning scientist, along with other non-art types—accountants, physicians, lawyers, psychologists, politicians, etc. I was, of course, happy to share my love of drawing with people from domains so different from my own, but I often wondered what brought them to my classes and why so many of them had such trouble learning to draw. With questions such as these, I was excited to discover Betty Edwards' recently published book, *Drawing on the Right Side of the Brain* (1979), which offered some intriguing theoretical answers while providing exercises that helped my students over the hump. Most appealing, however, was her explanation of drawing as a matter not only of hand, heart, and eye, but also of brain. So, one reason for pursuing graduate

studies in education rather than the Master of Fine Art, as I had originally intended, was to learn more about right and left hemisphere research. I began this process as an independent study project with Israel Scheffler, who recommended that I start by reading Howard's *The Shattered Mind* (1973). The book helped place Edwards' ideas in a larger context, but, by revealing the complexity and plasticity of the brain, it left me with more questions than I had before.

In particular, works like Howard's led me increasingly to distrust Edwards' dichotomization of right and left hemispheric functions, and her attempt to isolate drawing on the right side of the brain. This last point was driven home in a brief conversation I had with another HGSE faculty member, a specialist in neuroscience and cognition. When I told him of my interests in investigating right-brained research and its implications for drawing, he dismissed the idea out of hand, saying: "Any skill as complex as drawing has got to use both sides of the brain!" Additional doubts were mounting as I thought about how illustrators and designers actually use drawing in their professions. Both fields often depend on skills with linear perspective, which right-brain theory must reject as being too "left-brained." Nor does the theory account for gesture drawing from the figure, important to both illustration and fine art.

In terms of teaching, Edwards' drawing exercises *did* help my highly intellectual students overcome habits of schematic representation so they could more truly see and more accurately draw what came in through their eyes. But this happened at the expense of their logical/linear thinking skills, attributes that might otherwise have informed their efforts. Such limitations became especially evident when trying to teach landscape design students how to do invented perspective renderings based on plan, section, and elevation drawings, while combining these with schematic representations of botanical elements. Clearly, any attempt to accommodate the range of drawing forms and functions required a more comprehensive theoretical framework, one in which different cerebral systems served different ends. Though I didn't realize it at the time, Howard was in the process of formulating just such a framework with his theory of multiple intelligences.

When Howard presented MI to a large gathering at HGSE prior to the publication of *Frames of Mind* (1983), I was in the audience, and I remember responding most to his inclusion of intra-personal intelligence,

the domain of self-knowledge. Later, upon reading his book, I of course appreciated the justification MI provided for sustaining the arts in schools, as well as its more general potential for democratizing educational achievement. But MI's value to my own research on drawing instruction took much longer to emerge. Instead, I focused on the philosophical foundations underlying different pedagogical paradigms, arguing that these helped explain how drawing served domains outside the arts including mathematics, engineering, and science (Simmons, 1992).

When I finally turned my attention back to Howard's ideas, the first thing that struck me was how well drawing fit within his definition of "intelligence," i.e., the capacity to solve problems and make products of value to a particular culture. In fact, drawing, so defined, seemed to serve each of Howard's multiple intelligences, especially given instructional practices that activated drawing's potential along the various lines. It now remained to identify instructional strategies that served these purposes, connecting drawing not only to right-brained spatial intelligence but also to the other six, seven, or eight as well. My current formulation is as follows:

- The so-called "academic method," influenced explicitly by Cartesian Rationalism (Pevsner, 1973), taught drawing primarily by engaging Howard's logical-mathematical intelligence, thereby connecting drawing with mathematics. In this regard, instruction focused on mastering ideal proportions and perspective, while the curriculum as a whole was organized in a rigidly rational manner. Following this method, drawing began by treating the subject in terms of predetermined schemata: either two-dimensional shapes (circles, ellipses, squares, stars, etc.) or three-dimensional forms (cubes, spheres, cones). These are then combined, refined, and/or modified as needed. This approach has been popularized more recently in how-to-draw books of every type, including Bridgeman's (1999) approach to figure drawing and Mona Brooks' *Drawing with Children* (1996).
- By contrast to the above, observation-oriented art instruction, methods advocated by Betty Edwards (1979) and John Ruskin (1912) before her were grounded in spatial intelligence. "Seeing with an innocent eye," in Ruskin's words, and "drawing on the right side of the brain" both involve largely looking at things the way a camera would, taking in shapes and

spaces, light and shade, color and texture with as much objectivity as is possible. The philosophical foundation for this approach was Empiricism, the process of coming to know through direct sensory perception. This, in turn, is required for Empiricism's paradigmatic field of study: natural science (Scheffler, 1978). Thus, Howard's naturalist intelligence (1999) may also be accommodated by this approach. Indeed, naturalist writer Peter Steinhart (2004) has suggested that one reason artists and non-artists alike are intrigued with figure drawing is because it satisfies our instinct to attend closely to natural phenomenon. In this case, however, seeing with an innocent and spatially-oriented eye is not enough. Instead, one must thoughtfully select the most salient features of the natural object or environment based on the purposes of drawing them, while downplaying or ignoring less relevant details.

- If logical/mathematical, spatial, and naturalist intelligences can contribute to drawing the human form, it takes bodily/kinesthetic intelligence to facilitate the seemingly intuitive connection between artist and model that happens when one draws rapidly, or "gesturally," a core exercise in figure drawing. This method is best described by Kimon Nicolaides in his classic book, *The Natural Way to Draw* (Nicolaides, 1941). As Nicolaides explains, gesture drawing involves empathizing with the model in his or her pose, a process we might equate today with the action of mirror neurons. However, gesture drawing is not only a matter of intuition and sensation. Intelligence is evident in decisions made and marks that are modified as the artist constantly compares what was drawn to what is seen. Intelligence also plays a role in the development of marks that reflect and replicate tactile sensitivity and haptic awareness. The first is needed to suggest surface qualities, differentiating, for example, fleshy from bony sub-surfaces and skin from hair. The second is needed to convey a sense of weight and volume, while capturing the model's energy and intention in the moment. The process of rapid gestural drawing has also been recognized as essential for artistic creativity, as in Picasso's *Guernica,* (Arnheim, 1973) as well as for more "intellectual" pursuits like brain-storming (McKim, 1980). Considering the constant doing, undergoing, and adjusting required for this kind of drawing, I align the method with Pragmatism (Dewey, 1933), in which knowledge is based, not on pure reason, nor on unaided perception, but in messier processes of forming and testing hypotheses. Here, the paradigm is experimental science (Scheffler, 1978).

- I associate Howard's inter- and intra-personal intelligences with expressive art, with portrait and self-portrait drawing, as well as with political cartoons, and especially caricatures (Perkins & Hagen, 1980). All of these modes require one to get "under the skin" of another, or else to probe one's own psyche beneath surface appearances. To capture a genuine likeness, and still more to expressively and appropriately exaggerate it, takes more than the camera-like conception of the innocent eye or the right-side of the brain. It also takes a bit more than just empathy, since sometimes we don't dare empathize with one we are caricaturing. It does, however, take understanding of the other or oneself, which is the hallmark of the personal intelligences. Teaching methods prominent in this period emphasized freedom from constraints in order to facilitate self-expression (e.g. Lowenfeld, 1957). Philosophically, I align this approach with Existentialism, and the sense of isolation and angst often associated with life in the 20th century, the era of abstract expressionism as well as the predominance of psycho-analysis. The word, however, brings to mind Howard's existential intelligence, number eight and a-half (Gardner, 1999). In this case, drawing may be used to pose profound questions about meaning and purpose generally attributed to philosophy, religion, or spiritual traditions (Simmons, 2006). But we need not go so deep to derive existential understanding from drawing. Self-recognition can start with the toddler's earliest "scribbles." As young children gradually connect their sensations of movement to the lines on the paper, floor, or wall, they become aware of themselves as active agents who can make an impact on their environment (Eisner, 1978). In other words: I mark, therefore I am.
- The final forms of intelligence, linguistic and musical, are, at first glance, the least obvious matches with the teaching and practice of drawing. To make the connection, I recall that drawing, like writing and musical notation, is a symbolic system, and was most likely the progenitor of all the rest. Despite the differences among these systems as pointed out by Howard's mentor, Nelson Goodman (1969), they share the common characteristic of being matters of making meaningful marks. On a practical level, drawing serves musical intelligence in invented notation, whether done by children or by composers like John Cage, as well as participating in animated musical scores (e.g., Disney's *Fantasia,* or William Kentridge's more recent "stone age" animations for the overture of Mozart's *Magic Flute* [2012]). In terms of linguistic intelligence, drawing

solves problems and makes products in the context of calligraphy and typography, notably the design of fonts as well as logos. Drawing also complements the written word as well as musical notation in illustrations and diagrams, not to mention comic books and graphic novels. In terms of fine arts, drawing in this regard typically takes the form of abstract or non-objective imagery, for example in the work of Bauhaus artists like Kandinsky and Klee. In terms of teaching, drawing and writing are integrated in the curriculum of another Bauhaus artist, Josef Albers. Albers, in fact, referred to his instructional approach at Black Mountain College and Yale University (Horowitz & Danilowitz, 2006) as "drawing as a graphic idiom." Here, drawing lessons were reduced to the bare essentials, lines, shapes, tones, textural marks, all treated initially as abstractions and developed both as skills and objects of playful and inventive experimentation before later being turned toward representational ends. Implications for this kind of drawing for thinking outside the arts includes the diagrams and schema used by physicists and chemists, among many others, to visualize and communicate (Rocke, 2010).

None among these methods is the "right way" to teach drawing. Each has its strengths and limitations, its arenas of application as well as activities where the method is largely inappropriate. Moreover, some may work more effectively for certain types of learners, those with innate abilities or pre-established interests, or those who happen to be developmentally ready for the particular intervention. It must also be noted that the methods initially arose in a *zeitgeist,* and as such they fit within, reflected, and contributed to their social/historical/educational context. Today, however, the dominant paradigm is pluralism, especially in the visual arts, so that an effective drawing education should at least expose students to the range of possible approaches, allowing them to choose those most relevant to their artistic aims. Using MI as my framework, I have even suggested ways a pluralistic approach can be used to teach particular facets of drawing, such as perspectival space (Simmons, 2001). Aside from their value for art students, however, MI-based drawing skills such as those mentioned above could serve a range of future needs. This is especially so in a world increasingly dominated by visual information, where creative problem solving skills are at a premium, and where globalization requires capacities to communicate across linguistic and cultural divides. With such conditions in mind,

some, including myself, argue for universal and comprehensive education in drawing across the curriculum, K-12 and beyond. Drawing, so conceived, has been labeled in terms of Graphicacy (Garner, 2010), and thus proposed as a complement to literacy and numeracy as core curricular components for education in the 21st century.

If drawing were to find its place in general education, as existed during the Industrial Revolution, for example, its teaching must be grounded in a theoretical framework that, among other things, helps determine what counts for effective instruction and meaningful assessment. Such a theory should also guide instruction so that drawing fulfills its potential to learning within the visual arts as well as across the disciplines. In each of these regards, I would cast my lot with MI. Doing so, however, I admit that the present attempt to align diverse forms of drawing instruction with Howard's full range of intelligences may stretch MI theory in ways its author and/or others might find inappropriate. Yet, even if the idea does appear to have some theoretical credibility, it needs verification through effective instruction. Such instruction must above all meet Howard's primary criteria for any intelligent act: it must involve either making a product or solving a problem of value for this or another culture. Therefore, rote methods of teaching drawing by copying or imitation are out, as are their antithesis: undirected play-time with drawing materials in which anything goes. In between, the study of drawing, as with other kinds of significant arts education, must balance skill development and inventive experimentation, integrating production and reflection.

The challenge to maintain such balances reminds me of other paths down which I have been fortunate to follow Howard. One of these was the Arts PROPEL Project (Winner & Simmons, 1993), which entailed the development of curriculum and assessment appropriate to disciplines involving spatial, bodily-kinesthetic, and musical intelligences, among others. More recently, I followed Howard's lead in studying creativity (Gardner, 1993), reflecting on holistic development (Gardner, 2000), and, as I have just done, considering how to shape the minds of the future (Gardner, 2006). It now remains to track his progress in those most urgent areas: goodness and virtue. I am grateful to Howard for leading the way in addressing all these issues. He has taken responsibility for clearing the undergrowth, providing direction, and establishing

foundations upon which others like myself can build. I hope, in my own work, to extend his legacy and so become a follower worthy of the name.

References

Arnheim, R. (1973). *The genesis of a painting: Picasso's* Guernica. Berkeley: University of California Press.

Bridgman, G. (1999). *Complete guide to drawing from life.* New York: Wing Books.

Brooks, M. (1996). *Drawing with children.* New York: Jeremy Tarcher/Putnam.

Dewey, J. (1933). *How we think.* Boston, MA: D. C. Heath.

Edwards, B. (1979). *Drawing on the right side of the brain.* New York: Jeremy Tarcher/Putnam.

Eisner, E. W. (1978). What do children learn when they draw or paint? *Studies in Art Education, 31*(3), 6-10.

Gardner, H. (1976). *The shattered mind.* New York: Knopf.

Gardner, H. (1983). *Frames of mind.* New York: BasicBooks.

Gardner, H. (1999). *Intelligence reframed.* New York: BasicBooks.

Gardner, H. (2000). *The disciplined mind.* New York: Penguin.

Gardner, H. (2006). *Five minds for the future.* Cambridge: Harvard Business School Press.

Garner, S., (2010). Understanding graphicacy. In E. Norman & N. Seery (Eds.), *Graphicacy and modelling.* Loughborough, Leicestershire, UK: Idater.

Goodman, N. (1976). *Languages of art.* Indianapolis, IN: Hackett.

Horowitz, F. A., & Danilowitz, B. (2006). *Josef Albers: To open eyes.* New York: Phaidon.

Kentridge, W. (2012). *Six drawing lessons.* Eliot Norton Lectures. Cambridge, MA: Harvard University.

Lowenfeld, V. (1957). *Creative and mental growth, 3rd edition.* New York: McMillan.

McKim, R. H. (1980). *Experiences in visual thinking*. Belmont, CA: Wadsworth.

Nicolaides, K. (1941). *The natural way to draw.* Boston, MA: Houghton Mifflin.

Perkins, D. N., & Hagen, M. A. (1980). *Convention, context, and caricature.* Salt Lake City, UT: Academic Press.

Pevsner, N. (1973). *Academy of art, past and present.* New York: De Capo.

Rocke, A. (2010). *Image and reality: Kekulé, Kopp, and the scientific imagination.* Chicago, IL: University of Chicago Press.

Ruskin, J. (1912). *The elements of drawing and the elements of perspective.* London: Dent.

Scheffler, I. (1978). *Conditions of knowledge: An introduction to epistemology and education.* Chicago, IL: University of Chicago Press.

Simmons, S. (1992). Philosophical models of drawing instruction. In David Thistlewood (Ed.), *Drawing: research and development.* London: Longwood Press.

Simmons, S. (2006). Living the questions: Existential intelligence in the context of holistic art education. *Visual Arts Research, 32*(1), 41-52.

Simmons, S. (2001). Multiple intelligences at the middle level: Models for learning in art and across the disciplines. *Art Education. 54*(3), 18-24.

Steinhard, P. (2004). *The undressed art: Why we draw.* New York: Knopf.

Winner, E., & Simmons, S., (Eds). (1993). *Arts PROPEL: Visual arts handbook.* Cambridge, MA: Harvard University.

Howard's Response to Seymour Simmons

Almost everyone who comes to Project Zero and remains there has an interest in the arts, and most of us are able to maintain it, in at least minimal fashion. But you stand out, Seymour. You are fundamentally a visual artist; this is what makes you a "lifer" at Project Zero, rather than someone who just passed through en route to another (perhaps higher!) destination.

You've also been extremely kind and respectful to those of us who might be considered your mentors. One has to read your work carefully to discern areas of disagreement. And so it is important for me to say to you, and for the record, that we've learned at least as much from you as vice versa; and that over the years you have occupied a niche at Project Zero that is crucial and that no one else has been capable of filling.

You have a lifelong interest in drawing and have written compellingly about this amazing human capacity. Your essay focuses on the "domain" of drawing—the set of practices and roles that are part-and-parcel of drawing in our society—and draws out the ways in which the various intelligences play a role. Not only do I find your presentation convincing, it also serves as a model for how one might consider other domains.

For example, in their essays for the Festschrift, both Jeanne Bamberger and Bennett Reimer bristle at the implication that musical performance and understanding involve but a single intelligence. Of course they don't! Once you look at any kind of complex performance (as the professor remarked to you about drawing), it is going to involve many cognitive capacities and many parts of the brain. The issue that you and I should revisit is whether it is better to speak about "drawing intelligence" or about "drawing as a capacity" that draws, so to speak, on a range of intelligences.

As a more general message, let me thank you, on behalf of so many individuals at Project Zero, for bringing our ideas to the attention of the community of visual artists and arts educators—and in the process, often clarifying and improving those ideas.

My Unknown Howard Gardner: Ignorance Inexcusable and Excusable

Dean Keith Simonton

One of my favorite coffee-table books is a handsome volume titled *The Unknown Leonardo* (Reti, 1974). It was one of my first superfluous purchases after I finished graduate school and started earning hard cash as an assistant professor. The book lays out, with graphic flair, the key contents of the Madrid Codices, two volumes that got lost [sic!] in the National Library of Madrid for a few hundred years until found in 1966. To be sure, these manuscripts dealt mostly with mechanics and geometry, and so the contents themselves are perhaps not as interesting as the other famous codices. Only the notorious forged bicycle drawing raised an eyebrow. Yet that was not what I found most appealing. What attracted me to these images was the very idea that something unknown about Leonardo da Vinci still remained to be discovered the very year I had graduated from high school.

Well, I must confess a roughly analogous experience concerning Howard Gardner. To me, he was always synonymous with his books, especially the 1983 *Frames of Mind*, the 1985 *The Mind's New Science*, and the 1993 *Creating Minds*. When I was asked to contribute a chapter to *Howard Gardner under Fire* (Schaler, 2006), I concentrated all my efforts on my favorite in the lot, namely, *Creating Minds* (Simonton, 2006). The only real awareness I had of him outside that book world was a movie I used to show when I lectured on child development in my introductory psychology class. If I remember correctly, the film showed (a rather young!) Howard giving children some (Piagetian?) tasks to perform. Of course, he and I would sometimes run into each other at various conferences, most recently when we were collaborators at the E. Paul Torrance Creativity Lecture at the 2009 meeting of the National Association for Gifted Children.

Once or twice during one of these face-to-face encounters, I referred to Howard's being a book writer. Although Howard would be the first to admit that he prefers writing books to any alternative medium (Gardner, 2002, p. 81), he still felt compelled to correct me: He had also

published a great deal in other professional media, not excluding articles in peer-reviewed journals. I was embarrassed by my ignorance. To rectify matters, I decided personally to set the record straight courtesy of APA's PsycINFO database.

On September 3, 2011, I searched for "Gardner Howard," obtaining 194 results. Because Howard's mind spans across multiple disciplines, I take this number to represent a very lower bound estimate. Indeed, according to Howard's entry in the *Biographical Dictionary of Psychology* (Nucci, 1997), by his early 50s he had already authored "over 20 books and 400 research articles" (p. 223). Hence, I will merely use PsycINFO to establish relative rather than absolute figures. I then obtained the following breakdown: 12 percent (23/194) books, 38 percent (74/194) chapters/essays, and 48 percent (94/194) journal articles. Of the latter, 90 percent (43/48) are placed in more than 40 different peer-reviewed journals! That should be more than enough publications to establish that Howard can indeed write journal articles in refereed journals!

Therefore, I stand corrected! I will never commit that *faux pas* again. The unknown journal article author should have been better known!

Still, I have to observe that Howard was unknown to me in an utterly different manner as well. In thinking about how to pay tribute to him on his 70th birthday, I decided to do a background check using Nucci's (1997) mini-bio. Amazingly, it seems that when I was a graduate student at Harvard in the early 1970s, he and I may have had several opportunities for our life paths to intersect. In 1970, I entered graduate school in Harvard's Department of Social Relations where Howard was also a graduate student. He completed his doctoral dissertation in the program a year later. Perhaps sometime in that year of overlap we may have shared an elevator in William James Hall. Furthermore, shortly before Howard became Lecturer in the Graduate School of Education, I walked over there to attend a moral development seminar from Larry Kohlberg. Would we have ever have had brushed shoulders while walking along Appian Way? In 1971-1972, I also took a yearlong course on visual perception from Rudolf Arnheim. Given what Howard (2008) wrote in his obituary for my old professor, I cannot help but wonder if Howard and I might have at one moment occupied the same room or hallway in the Carpenter Center for the Visual Arts.

Yet because I cannot conduct a lit search to settle these curiosities, such possibilities will remain forever unknown. Perhaps some mysteries should remain so! In the meantime, the known Howard and his contributions can be publicly celebrated and treasured.

References

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1987). *The mind's new science: A history of the cognitive revolution.* New York: BasicBooks.

Gardner, H. (1993). *Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi.* New York: BasicBooks.

Gardner, H. (2002). My way. In R. J. Sternberg (Ed.), *Psychologists defying the crowd: Stories of those who battled the establishment and won* (pp. 78-88). Washington, DC: American Psychological Association.

Gardner, H. (2008). Obituary for Rudolf Arnheim. *Psychology of Aesthetics, Creativity, and the Arts, 2,* 61-62.

Nucci, L. P. (1997). Gardner, Howard Earl. In N. Sheehy, A. J. Chapman, & W. Conroy (Eds.), *Biographical dictionary of psychology* (pp. 222-223). London: Routledge.

Reti, L. (Ed.). (1974). *The unknown Leonardo.* New York: McGraw-Hill.

Schaler, J. A. (Ed.). (2006). *Howard Gardner under fire: A rebel psychologist faces his critics.* Chicago, IL: Open Court.

Simonton, D. K. (2006). Creativity in creating minds: A retrospective evaluation. In J. A. Schaler (Ed.), *Howard Gardner under fire: A rebel psychologist faces his critics* (pp. 143-168). Chicago, IL: Open Court.

Howard's Response to Dean Keith Simonton

Dean, your specific research interests and your overall approach to the study of unusual human achievements are already well known around the world. I predict—at a very high degree of confidence level!—that the Simonton enterprise will become even better known and more widely appreciated in the years ahead. Why is that? Not only have you alighted upon a classical problem in the study of human nature (unusual types and levels of performance), but importantly, you have also developed or adapted methods consistently over the decades that have allowed you to obtain an ever greater mastery of these phenomena (e.g. when and where do extraordinary contributions emerge?), as well as more general theoretical frameworks that help to explain the phenomena that you are probing (how can we best conceptualize the nature of creativity?). A rare occurrence in contemporary social science: a coherent, cumulative body of work that is likely to survive.

I know many individuals engaged in scholarship, and I do not hesitate to ask them questions. In the olden days, when the issue concerned talent, creativity, and genius, I would write to Howard Gruber and to you. Since Howie's death some years ago, you are the person to whom I most often turn when I want to know the answer to questions about human capabilities and possibilities. If the answer exists, you will know it; and if it does not exist, you are the person most likely to find the way to circle in on the answer(s).

As you note, I've taken a different path. While I'm interested in many of the same issues, I've been much more *ad hoc*. Trained in developmental psychology, I've roamed across the social sciences, and occasionally poached in the humanities and the harder sciences. When it comes to methods of investigation, I've been quite *ad hoc*: experiments, surveys, case studies, biographical studies, and, in the recent GoodWork initiative, whichever method seems to work for the question at hand. It's been fun to proceed in that way, and I think we've learned a lot, but it's been much less systematic and cumulative. As I mention in the introduction to this Festschrift, in 1975, after I'd published a few books in developmental psychology, a friend approached me and said, "You know, Howard, there's someone with your name who has just published

a book about 'the person after brain damage.'" Sheepishly, I had to admit that I was the author of The Shattered Mind.

Indeed, one of my motivations for responding to the wonderfully disparate contributions to this Festschrift is to look for throughlines—themes that extend across the body, or at least much of the body—of my lifetime of scholarly work. And thanks to your *ad hoc* research for this volume, there are now some quantitative data on which I can draw.

Three Things which I Admire about Howard Gardner

Nancy Faust Sizer

In 1995 Ted and I were visiting an old friend in Portland, Oregon, at least partly to meet the new man in her life and his eighteen-year-old daughter Kim. Late in the evening we all decided to go for a walk, and I walked with Kim since I was writing a book about the senior year in high school.

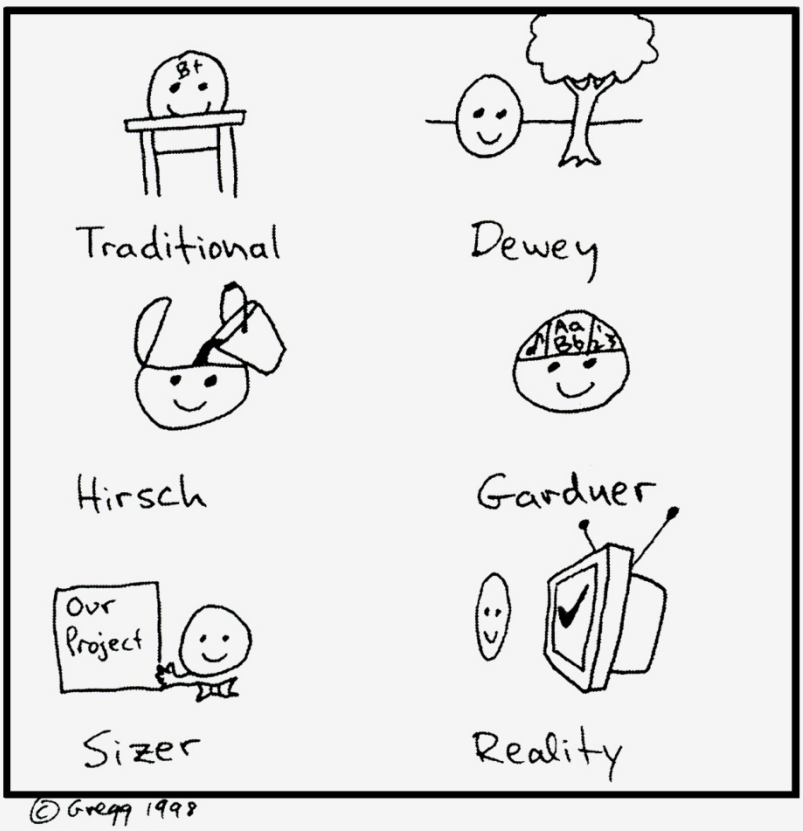
Like so many others, Kim was having a tough time with the year. She had always been a good student, confident, and ambitious, but the switch between high school and college was turning out to be a difficult one. She did well in school: wrote papers, spoke in class, finished up her lab work with a good presentation, a neat lab and a good relationship with her lab partner—all the important stuff, she thought. But her SATs were disappointing and all of a sudden she was feeling like a failure. Why hadn't her teachers warned her that she was never going to be able to get into a good college? What kind of a mind did she have anyway?

Everything she was saying was familiar to me from other senior interviews, but this time I felt compelled to try to make her feel better. Of course I hardly knew her, but walking around in the dark, with no responsibility except to watch those ahead of us so we wouldn't get lost, seemed to unleash our thoughts and help us to move into a new place. So I asked her more about what she liked to do, what projects she had completed, and I learned about a lively young woman who had taken part in a number of different activities with good results.

Finally I asked her if she had ever heard of a concept called "multiple intelligences." When she hadn't, I told her that they were the scholarship of "one of Ted's friends," and I described them. She asked a lot of questions, and though I wasn't able to answer them all, or to find a "solution" for her anguish that night, we had a very good talk, and she told our hostess that she was very relieved to think about herself as a collection of different capacities, all of which had value.

I'm not sure if Kim ever tested well at logic or mathematics, but she snatched her linguistic intelligence back from the jaws of the testers, and made good use of her spatial, bodily-kinesthetic and interpersonal and intra- personal intelligences. It has, of course, been known for centuries that many qualities besides the ability to take standardized tests in a very narrow range of topics are important to help a person get ahead in life, but it was Howard's courage and genius to call those qualities "intelligences" and to stress their dynamic, evolving nature in different contexts.

Our friend, who is now Kim's stepmother, keeps us in touch with the family and has always given me—and especially Howard—credit for the renewal of Kim's courage and energy that night. It is true that she has had a successful college and career, in several different cultural contexts. And it is also true that there are many "Kims" in this world who benefit by being seen with the broader and more thorough perspective which Howard has offered.



Another admirable aspect of Howard's scholarship for us concerned our regret but also admiration when Howard decided that he would write about areas other than education. So many people might have been willing to rest on their not inconsiderable laurels, but it showed Howard's lively mind and restless spirit that he was brave enough to take on new ideas and challenges.

We were especially taken by the talk which he gave with his colleagues Mihaly Csikszentmihalyi and Bill Damon on the subject of Good Work. I read their book again recently—and was intrigued by what Ted had chosen to underline in it—and was especially interested, not only by how they laid out the book's purpose, but in the way they handled the subject of journalism. Not being as intellectually courageous as Howard, I liked their observations not only for themselves, but also because I found so much to remind me of my own profession.

Teachers and journalists are both in professions which are, as the authors put it, “responsible to the citizenry” (p. 159). All professions are, but these two are responsible not to a citizen’s health, or to the ways in which she’s treated fairly, but to the very act of preparing a person to become a citizen. Teachers and journalists both provide information, taking care that it is accurate and unbiased. They give it more or less airtime and written space, more or less clarity or speculation. Most of all, they both model and require that others engage in the practice of thinking, as “the first philosophical act, to go and see something and think about it” (132).

Thinking about the examples they provided—and about my own—helped me to tease out the ethics in our work: the principles which we intend to forward when we join a profession. These are the purposes which we need to remember and struggle to achieve when we come up against what seem like impossible challenges.

Seeing my own work against this broader canvas was, I suspect, what the authors had in mind for their readers. And since a breadth of vision is also part of being a good citizen and worker but also a good human, their focus on it emphasizes their own sense of responsibility.

Finally, it was fortuitous that I happened to introduce Howard’s work to Kim by calling him Ted’s friend. It scared her less: brought the abstractions we were discussing nearer to her somehow. But another outstanding and precious aspect of Howard for Ted and later for me was his capacity for friendship. I had not known much about their relationship during Ted’s days as Dean at the Harvard Graduate School of Education, but I was always impressed by the friendships which the “principals” (Janet Whitla, Jim Comer, Howard, and Ted)

The 25th Anniversary of Project Zero, in May 1993

were forming as part of the ATLAS project in the 1990s. The seminar which they had was amazing to me: they were all considerable thinkers and had established similar but not identical versions of how to improve schools. They all went to foundations and then the government for money to support their projects, and in that sense they were rivals. Yet they believed that if they worked together, they could do a better job—of raising money, but also of helping children, and those who served them. Other attempts at collaboration within school reform had not worked. This one did.

Ted thrived on the discussions in the ATLAS seminar, not only with his fellow "principals" but also with the many bright young people who had been attracted to their cause. He and Howard particularly, or so it was reported to me, enjoyed exploring the ways in which their ideas and practices could be coordinated—or could not. The conversations were lively and direct, but not dismissive. For Ted, much thinking and further reading followed those conversations. The seminar lasted only for one year, but since there were frequent meetings of the "principals" over many years, there were also chances to catch up on their ideas and their progress but also on personal news—the easy and the hard, such as Jim

Comer's wife's illness and death and Howard's concern for his older children when their mother suddenly died.

I learned more about how gracious Howard could be when Ted got sick. I had heard about Howard's "house calls" with his friend Jim Friedman, but since we lived quite far away from Cambridge, I was surprised when he came out to see us. The first time he came, after driving up our long hill, he said, "Well, I guess you don't have to bother with that Martha's Vineyard stuff!"—exactly what we felt about our home, and always had. We thoroughly enjoyed the repartee, the copy of the newest book, the lively gossip from Harvard, and (throat being cleared here) Howard's strongly-held opinions about it. As the disease progressed, we could contribute less and less, but even as Howard filled the gap, he didn't seem disappointed, something which Ted noticed and which meant a great deal to him.

These are only three of the aspects of Howard's work and life which I admire. All in all, I celebrate Howard's accomplishments: work which has been both broad and deep; consideration for all kinds of learners and for his colleagues and friends.

And it's not over yet!

Howard's Response to Nancy Faust Sizer

Ted Sizer was the better known name; he was the person featured on platforms, with publications stacked in libraries around the world. But it is no accident that your name, Nancy, is part of Ted's decanal portrait in the Eliot Lyman Room in Longfellow Hall at the Harvard Graduate School of Education.

I came to HGSE in the middle 1960s when Ted was Dean. Indeed, Project Zero would never have existed, let alone endured, had it not been for Ted's interest in the arts and his uncanny capacity to raise the necessary sums of money from the right source.

But we really got to know each other—Ted, you , and I—in more recent times. Whether it was teaching together, or in tandem, at the Graduate School of Education, trying to get the ATLAS message right, thinking about how best to organize and energize the Coalition of Essential Schools, spending time together at the Francis W. Parker Charter School, or just sitting down and reflecting on the state of pre-collegiate (and, for that matter, post-graduate) education in the US over the last fifty years, I looked forward to breaking bread with you and Ted. And there we huddled, trying to understand what was going on (and Ted had amazing historical knowledge as well as an impressive political sense) and seeing whether there might be something that we could do that would move things in the right direction.

Ted grew ill; he could not travel much, but his mind remained keen. You, Nancy, were the key, indispensable person that kept him connected to the worlds that mattered. That meant so much to Ted, and to the world, and we all owe you an enormous debt of gratitude.

Your essay evokes many memories, personal as well as professional. I cherish the photo of Harvard Project Zero's 25th anniversary celebration, with Ted, Nelson Goodman, and Jerry Bruner, and shiver (though warmly!) to realize that we at Project Zero will soon be celebrating our 50th anniversary. I love the sketch of the different approaches to education of some well-known thinkers, deftly captured in a few caricatured lines. In one sense, the Sizer enterprise—of which I was a part—has not succeeded in overcoming the competition depicted on that cartoon. But when it comes to the deep influence that it has had on

so many splendid individuals and so many meritorious institutions, it is, hands-down, the winner.

Memorabilia: An Education on Education through Notes in a Box

Elisabeth Soep

Howard's books have changed the way the world thinks about intelligence, creativity, ethics, genius, schooling, work, and play. Still, I'd like to consider a genre of his writing that is much less well known than his published body of work. I'm talking about his memoranda—specifically, the one-pagers in Courier font that would periodically appear in the mailboxes of his colleagues at Harvard Project Zero, circa early 90s. Notes like this one:

August 23 1991
To Lissa Soep
From HG

Hi. You probably will be relieved to know that someone reads your memos and likes them. In the minutes for August 15 (clear and complete, as always) you report Urban Gateways as receiving a $3.5 billion budget. It is probably $3.5 million. If they got $3.5 billion a year, they could fund all the community arts centers in America! I don't think you need to memo the other team members but you should correct the 'official memo' in the files. By hand is fine.

I received this note just a month or so into my tenure at Project Zero, my first post-undergraduate job. I was hired as a research assistant on Project Co-Arts, a national study of educational effectiveness and assessment at community arts organizations, for which Howard was Principal Investigator. Everything about the work was very new to me: the trappings of a professional office, with its letterhead and staff meetings and phone extensions; the talk of research sites, methods, data, and analysis; and even—among my chief tasks—the minutes. I took copious notes during every Co-Arts meeting and dutifully filed them in the boxes of my colleagues. (This was 1991, so we're talking literal pieces of paper folded into actual wooden cubbies.) Every once in awhile, I would get a note back from HG.

In one sense, it was a trivial thing Howard accomplished in this particular memo. He delicately corrected my exponential numerical error.

And yet, there's more to it than that. He let me, a very, very junior colleague, know that my work mattered—to the person in charge, no less—and that I'd better, therefore, get it right. He offered information to help me make sense of my mistake and put it in context. And he delivered clear instruction on the proper course of action to fix the error, in a manner that didn't panic even a goodie-two-shoes newbie like me.

At the risk of over-interpreting a small gesture, I would venture to say this tiny textual sample from Howard hints at three themes I have gleaned from his work that have directly informed my own research since my time at Project Zero. First, there is the memo's message that rigorously collected, carefully considered, and responsibly reported data are what distinguish worthwhile research—a theme I explore below through the relationship between meeting minutes and field notes as tools for studying education. Second, there is the content of the work being discussed in that memo—a study of arts learning outside school classrooms. Howard's uncompromising inquiry into the arts as symbol-systems deployed for expressive purposes is the dimension of his thinking that has most obviously shaped my own (Gardner, 1980, 1990, 2011a). I draw out that connection here by building on the groundbreaking work by Howard and his colleagues on portfolio-based assessment as a basis for my subsequent research on peer critique. In that activity, learning and assessment in the arts are spoken out-loud and therefore avail themselves to analysis in some interesting ways.

Third, I move to Howard's study of good work (Gardner, Csikszentmihalyi, & Damon, 2002; Gardner, 2007). Here, again, the memo is germane. It's part of a collection I've kept in a manila folder in various basements for 20 years—a butterfly-clipped stack of papers that tracks the process by which a mentor draws a newcomer into the dynamic and often fraught profession that is academic research. I apply Howard's examination of good work here to situate my own studies of collaboration between emerging and professional journalists, a "borderline" profession in which Howard and his GoodWork Project colleagues have an abiding interest. The form of novice-expert collaboration I have both participated in and conceptualized is a practice Vivian Chávez and I have come to call "collegial pedagogy" (Soep & Chávez, 2010). Upon reflection, I see now that my own first experiences

with collegial pedagogy, before I had a name for it, or had the good sense fully to appreciate it, came through my Project Zero initiation.

From Minutes to Field Notes

Though some might dismiss the labor of taking minutes as one the lowliest of a research assistant's tasks, in my experience it was fine training for what was to come, once I moved from Project Zero into a doctoral program at Stanford's School of Education. It's not all that big of a leap from minutes to field notes, and from there, to coding, analysis, and ethnography.

November 22 1991
To Lissa Soep
From HG

Hi. Just a note to thank you for the rich notes on the [JS] meeting. I was sorry that I could not be there but now I feel that I was. And since I was able to read them in 15 minutes, rather than having to sit still for three hours, I am doubly in your debt.

April 28 1992
To Jessica
From HG

...Special thanks to Lissa for a very complete summary of the meeting with [DS]. I almost feel like I was there!...

"Like I was there." That phrase is among the highest compliments ethnographers yearn to hear, when we thickly describe cultural practices that might seem faraway or mysterious to an outsider, but that take on layers of tacit and explicit meanings for participants. At first, Project Zero itself—a set of linoleum-floored offices inside Longfellow Hall at the edge of Harvard Square—was a foreign cultural experience for me, even though I was no stranger to elite private universities. The transition from student status to professional researcher, with a desk, paycheck, and benefits plan to prove it, was no small matter. I now can see that recording practically everything that was said during our staff meetings, and then preparing those notes to serve as public record, was a way for me to enter and begin to understand the culture of this academic collaborative. The minutes, like the field notes I later learned to produce, were a way both to observe and participate, to stand just outside events

as witness, while also joining the voices quoted on the page, as one of the agents whose actions helped shape what happened next.

Howard used his memos sometimes to correct or praise, as excerpted above, but also to push. In the following note, he responded to my minutes from a meeting where we presented some interview data, through which we hoped to explore, among other themes, community arts center directors' understandings of the relationship between art-making and self-esteem:

To Lissa
From Howard
July 22, 1992

The notes triggered the following thought, which may be worth sharing. In interviewing individuals, it is interesting to find out what they mean by terms like self-esteem. Yet, unless they are extremely thoughtful or philosophically oriented, the uses that they give to these terms are not in themselves very likely to be informative. What we really want to know, I submit, is what the practices are in which they engage and what are their 'mental models' of phenomena like self-esteem, productivity, pro-social behavior, artistry, achievement, and the interactions of these factors. Basically, we have to put all of this together retrospectively, making use of whatever data we can garner. What we should not do is to take statements at face value and assume that they are definitive answers to the questions that we raise.

This short and simple note contained a profound insight for a novice researcher. It was a reminder that interview responses are always information to be interpreted and triangulated, not answers to be submitted as ends in themselves. The even more fundamental shift he was asking for was for me to advance from robotically recording everything being said, to documenting experience as a means to collect data and enable analysis. Field notes are not printouts to be filed into boxes. They are records that force researchers to reckon with the varied meanings their observations might or might not reveal about the practices, structures, and systems that produce cultural concepts such as self-esteem in art making, or, as I would later come to explore, youth voice and aesthetic judgment.

This shift in stance, from record keeping to data collection and analysis, requires, of course, reflecting not only on what one knows, but also on the limits of that knowledge. What is obscured? What are we unable to see? What are we forgetting to ask? Howard's nudge to look beyond face value is a lesson that applies as well to the conceit of research that gives us that feeling of "being there." It's seductive, the desire to nail an authoritative, authentic account, and to take credit, as ethnographer, for conjuring that experience of textual visitation (Pratt, 1991). In my own ethnographic writing, I still do my best to use language to invite readers into a scene, with as much texture and nuance and "insider knowledge" as I can muster. And yet, too often a researcher's telling of a cultural narrative is mistaken for the whole story, for "definitive," as Howard cautions above. What's easily missed is the extent to which an ethnographer's descriptions are always partial and unfinished. I do not mean to imply that all accounts hold equal value, that there aren't truths to guide the telling. I still remember, after all, the first words Howard uttered after I took a stab at describing my dissertation research to him during a visit to Cambridge more than a decade ago: "Can you describe what you're doing in a way that's a little less… post-modern?" he asked. With his work as inspiration, my highest aspiration in using ethnographic and any other research technique is to produce credible, grounded, and responsible accounts that drive further inquiry and uncover new questions.

From Assessment to Critique

Thanks to my work at Project Zero, I made my first forays into ethnographic research with a set of questions rooted in a view of the arts as symbol-systems. Without diminishing the arts' magic, Project Zero researchers insist that to make meaning in and through them requires so much more than a spontaneous release of emotion. Production, perception, reflection and artistic understanding are key processes that define a full-blown arts education, according to Project Zero's Arts PROPEL (Gardner, 1990; Winner, 1991). Students need to learn how to make, discern, and deliberate about art, and to connect it to other spheres of knowledge. This kind of arts learning, I came to understand through Project Zero, sometimes takes place in schools, but also in museums, and in community-based arts organizations that rarely garnered serious academic attention when Howard and Jessica Davis established Project Co-Arts in 1991. We needed ways to describe the

forms of arts learning taking place in off-the-grid educational environments that were effectively serving low-income communities. We also needed ways to assess those activities. It wouldn't work, of course, simply to import school-based measurements or to impose methods cooked up in offices on Appian Way. Moreover, we couldn't ignore the ways in which students themselves incorporated assessment into their art-making practices, and sometimes did so even without teachers making them. Project Zero's approach was therefore to investigate the assessment strategies already in place within these sites, among students and between students and teaching artists. Our goal was to identify best practices and integrate them into a model that would support effective work on the ground as well as inform research and theories of learning in and through the arts (Davis, Soep, Maira, Remba, & Putnoi, 1993).

Not surprisingly, the portfolio was a key resource in this effort. It served as a tool used within the sites of our research and as a metaphor that opened up new and generative ways to frame assessment as an episode of learning. Of course, Project Zero's view of the portfolio went well beyond an individual artist's repository of finished works collected as an end-point in some creative trajectory. Through the notion of a "processfolio," researchers introduced the idea that these collections of work could spur exploration, revision, and other formative artistic processes (Gardner, 1990); that they could contain works in progress, pivotal pieces, and written reflections; that they could be used to anchor penetrating conversations between novice and expert that would deepen understanding for both parties; and that they could apply not only to individuals but to classrooms, and even full organizations.

March 13 1992
To HPZ (in individual boxes) and to the Spencer group (via Joyce)
From Howard

1. The classroom as the unit of assessment: Until now, I have always thought about assessment in terms of the accomplishment of individual students and the understandings and competences exhibited by teachers. But I have been newly struck by the usefulness of thinking of the class as a primary unit of analysis.

Howard circulated this memo to the full Project Zero staff after meeting with a group of expert teachers and a "marathon" session with John Turnbull. He wasn't even talking about the arts. These were emerging ideas related to assessment and school change. However, the expansive view of assessment he alludes to here, which shifts from the individual maker to a larger collaborative context as a viable unit of analysis, turned out to be pivotal for Co-Arts. With leadership from Jessica Davis, we developed the notion of an "organizational processfolio," a mechanism through which community arts centers could document and pursue educational effectiveness as a system. This framing for assessment also laid the groundwork for a set of interests that would drive my own work for years: How can we begin to understand the making of art as a process and product of interaction, a mode of social organization? What are the discursive practices young people use to produce and form judgments through the collaborative work of art? If art-making can be understood as a cognitive activity, how does cognition work not just inside but between individual minds, and where does assessment fit in that picture?

It was with these questions spinning in my head that I started to envision my first post-PZ study of arts learning. In a sense, I wanted to capture the talk that hums and hovers around the kinds of works collected in a Project Zero-style portfolio. If that collection can contain "footprints" of development in and through the arts, as we often said, there must be further insights to glean from the conversations that take place as those artifacts are being produced and assessed by mentors and peers.

These themes, born of my training at Project Zero, led to my study of critique among youth—the process by which young artists assess their own work and that of their peers as they prepare projects for public release. My initial study centered on crits—an often-torturous ritual familiar to most people who've pursued formal arts training in the U.S. In a typical crit, developing artists put their work up on the wall and spend several hours, with peers and often a professor, discussing the strengths and weaknesses of each piece. A single crit can contain periods of banality, cruelty, false flattery, keen observation, discovery, and profound insight.

Captivating as those events can be—I studied a series of crits hosted by a prestigious U.S. university's Masters of Fine Arts program—I longed to understand something beyond the final showcase of a formal crit. I wanted to explore how young people, whose schools were struggling and often lacked resources for arts of any kind, engaged with their communities through art to carry out serious work. So, I stole a page from Project Zero's handbook. Just as researchers there had shifted focus from the portfolio to the processfolio, so too did I turn my attention from formal crits to the process of critique. I returned to the community arts organizations I first learned about through Co-Arts and used ethnographic techniques to trace the organic emergence of peer-to-peer critique under certain conditions (Soep, 2005, 2006a, 2006b). Peer critique would predictably arise when developing artists had no choice but to turn to one another as resources for judgment, when they were working at the edges of their competence and native disciplines, and when standards of excellence were constantly being reworked not by some outside body, but by members of the group itself. I noticed the features that distinguished peer critique as a mode of interaction—for example, its quality of reciprocity (everyone's work is fair game); its embeddedness within real-time interaction (participants come face-to-face with those judging their work, and those whose work they judge), and its future orientation (the act of critique forecasts what the work will do, how it will be received, how it might change).

I spent years pursuing this interest in peer critique as a mode of assessment indigenous to the arts but conducive to learning across disciplines, and I hope that research began to answer some of the questions that first emerged out of my work at Project Zero. But on some level I knew there was a question I was avoiding. "What is needed," Howard argued in 1990 (pg. 47), is "evidence that, in general, a cohort of students is advancing along dimensions of knowledge and practice considered to be important by knowledgeable experts in the field." In my early studies of critique, I was so deeply invested in isolating and honoring a peer-to-peer assessment practice driven by youth that I didn't quite know how to recognize the role that expert, adult professionals play in fostering conditions necessary for high-quality critique to take place. I was drawn to the moments when young people were, apparently, doing it alone. That is, until I started working with young people to create media, at which point the role of experienced colleagues came into relief.

From Peers to Colleagues
October 23 1991
To all Harvard Project Zero
From Howard

Subject: Intensity
The work at HPZ, never known for its lightness, has recently reached a feverish pitch. I see this in myself (more “hyper” and “tense” than usual) and I see it in all of you. I want, first of all, to thank you all for the extraordinary quantity and quality of work that you have been achieving—in the aggregate, it is nothing short of amazing...

What was already a very full plate for me has recently overflowed because of the excitement around the President’s call for New American Schools. We have been contacted by many organizations as potential co-participants, and Joe and I have been attempting to navigate our way along a challenging course. Each time I list the pros and cons I come down to three powerful considerations…

In this memo, Howard opens a discussion about whether Project Zero should join the New American Schools initiative, describing three points in favor, raising possible concerns, and inviting all PZ’ers to share their thoughts. I include this excerpt here not to examine the outcome of this particular decision (that part’s documented elsewhere). Rather, I’m struck by the relevance of communiqués like this one to Howard’s powerful research on good work, and specifically, the insights that research contains for understanding how collegiality can emerge between novices and experts in a given profession. This notion of novice-expert collegiality is what ultimately enabled me to understand the role adult collaborators play in fostering peer critique and other high-stakes, high-impact learning activities as they partner with youth to carry out good work within unsettled professions.

But first, the memo. In it, Howard interpolated all members of the Project Zero staff as colleagues, from the research assistant who was two months into her career, to senior scholars who’d be leading the work with him. There is a transparency in decision-making here that distributes both access to and responsibility for consequential workplace-wide judgment calls. Among the points enumerated in the memo were strategic questions: Would we be spreading ourselves too thin? How could collaboration through the initiative strengthen Project Zero in the long run? There were also, not surprisingly, ethical

considerations: With problems this serious, how can we *not* join an ambitious effort to address them?

In Howard's analysis of good work and citizenship (Gardner, 2013), he talks about the need for "vertical support" through mentorship and institutional frameworks that encourage reflection on ethics in the workplace, and that instill a sense of responsibility for sustaining the future of professions. He also talks about periodic "wake-up calls" spurring professionals to re-visit core values and re-center activity around pursuit of the common good. Isn't that what Howard was doing when he used the opportunity presented by this important decision to open a PZ-wide discussion that came down to—What's important? Where and how can we make the biggest impact? "And if nothing comes of it," he pointed out towards the end of the memo, "At least we tried." I am struck now by the ways in which Project Zero modeled good work practices for newcomers into educational research, by giving each of us a stake in the outcomes of our efforts and instilling a sense of accountability for implications in the broader world.

I am also struck by the insights contained within the GoodWork Project for understanding my own progression from peer critique to the concept of collegial pedagogy between youth and adults. As I've said, my research on critique was initially oriented towards youth-to-youth conversation. Then in 1999, while I was finishing my doctoral research and enjoying the freedom-granting benefits of a Spencer Foundation Fellowship, I began volunteering in the afternoons at Youth Radio, an after-school media education program and youth-driven production company headquartered in the San Francisco Bay Area. The newsroom is staffed by professional journalists who partner with youth recruited primarily from the local public schools to create high-impact stories distributed via National Public Radio, National Geographic, Yahoo!, iTunes, and other outlets. Those youth-authored stories have been recognized with honors including Peabody, Murrow, duPont, and Kennedy Awards for journalistic excellence.

After finishing my dissertation, I worked with adult and youth colleagues at Youth Radio to launch an Education Desk, producing a multi-part series for NPR tracking the effects of standardized testing on students and teachers. All those stories—like everything out of the organization's newsroom—were produced by youth, who initiated plenty

of peer critique around the editorial table, inside the studio, and even after stories aired. But from my new vantage point as a creative collaborator and not just outside researcher, I started to notice the ways in which critique circulated between youth and adults, novices and veterans, both within the newsroom, and with outside editors from some of the nation's biggest media outlets. Out of these events, Vivian Chávez and I began to formulate the notion of collegial pedagogy, through which emerging and established producers jointly create original work for public release, engaging a process that has significant potential to deepen the learning experience for both parties and to enrich the products distributed to the world (Chávez & Soep, 2006; Soep & Chávez, 2010).

Under collegial pedagogy, neither young people nor adults can carry out the work independently. They need each other to ask the right questions, do the right research, discover the right people to interview and scenes to visit, find the right style of reporting, and reach the right audiences. Of course, they are also constantly interrogating what "right" even means, in any given case, and what its limits might be. Collegial pedagogy relies on conditions where projects are framed collaboratively, where those emerging into a profession don't just take assignments but participate in key processes and decisions, and where the whole lot—the newcomers and the vets—stand together and accountable to a public audience and a principle of common good.

Perhaps it is no coincidence that we first described collegial pedagogy within a youth-driven newsroom. Journalism, according to Howard and his colleagues, sits somewhere between a "bona fide profession and an unlicensed, unregulated sphere of work" (James, Davis, Flores, Francis, Pettingill, Rundell, & Gardner 2009, pg. 12), and the GoodWork Project researchers have documented crises that have shaken the profession to its core (Gardner, 2007). And yet my particular pathway into journalism, as practitioner and researcher, has been privileged, in the sense that I get to participate in an environment where the domain's newest members are working furiously, alongside seasoned professionals, to re-invent its conventions while holding to its core principles. Rather than sense that the profession's stature is receding (Gardner, 2013), everyday I encounter ways that young people are striving to reinvigorate it, to claim it, not by commandeering it, but by

digging in and doing it, again and again, deadline after deadline. That said, young people do challenge some fundamental assumptions about what journalism can be. Even Howard's.

"The poet and the journalist may describe the same space launch," Howard argued in 1990 (pg. 10), "But their characteristic uses of language lead the poet to exploit the aesthetic devices and ends that are of only limited relevance to the journalist's mission." I submit that this distinction holds in most cases. But more than once, Youth Radio producers have created stories that inter-cut between verses of youth poetry and reporting, giving accounts of urban violence and resilience that are powerful precisely because they experiment with uses of language that exploit both aesthetic devices and journalistic sensibilities. As is the case with so many instances of innovation, perhaps young people can breathe new life into unsettled professions not by obliterating core tenets but interpreting those values and conventions in unexpected ways that push the public to a new edge of understanding.

Taking it Digital

Speaking of new edges: all of this work is taking place in a context where radical changes in digital technology are utterly transforming both youth and media cultures, creating stunning new opportunities for good work to occur, and erecting new obstacles that can block its realization.

Howard and I are now, once again, working together. These issues related to digital media's effects on learning and citizenship drive our agenda, as part of a MacArthur Foundation Research Network on Youth and Participatory Politics. With a team of others, we are exploring the implications of a world where workplace memos and other forms of consequential communication are likely to be digital and public. Texts like these no longer sit inside folders stashed in someone's basement, but often circulate within a permanent, searchable archive. Young people increasingly take cues from mentors who can be anonymous, and whom they never meet in person, only online. Information comes at them at dizzying rates, through various devices, and from sources whose credibility can be incredibly tough to ascertain.

And so before I get too excited about new possibilities for peer critique enabled by social media platforms, and new contexts for collegial pedagogy cut loose from the limitations imposed by demands for

geographic proximity, Howard's GoodPlay Project team offers critical cautions. "The Internet's potential for learning may be curtailed," that team points out, "if youth lack key skills for navigating it, if they consistently engage with Internet resources in a shallow fashion, and/or if they limit their explorations to a narrow band of things they believe are worth knowing. Left to their own devices and without sufficient scaffolding, student investigations may turn out to be thoughtful and meaningful—or frustrating and fruitless" (James et. al., 2009, pg. 10). While digital spaces open new platforms for youth to access peer feedback, "social harms can result when self-reflection is over-shadowed by self-promotion, or when youth become overly dependent on feedback from others" (James et. al., 2009, pg. 28). While the potential for young people to reach significant digital audiences through their work can democratize media production and distribution, we need to worry if "presenting to an audience becomes more valued and urgent than turning inward to engage in self-examination" (James et. al., 2009, pg. 31).

How do young people exert agency online? How do they deploy digital tools and mobile devices to circulate credible information and mobilize meaningful community engagement? How is technology transforming their pathways into ethical work and ethical citizenship? In addressing questions as far-reaching as these, I take heart in referencing Howard's memo from more than 20 years ago. At that time, Project Zero was facing a decision about whether to launch a new research agenda, knowing all the hard work it would entail. He said:

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There is a national need now that is undeniable and it might be
arrogant to dismiss it or belittle it. To put it Talmudically, if
not us, who? And if not now, when?
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With the national need both to understand and support young people's ethical development more pressing than ever, Howard's insights into good work, good play, and good citizenship have never been more important.

References

Chávez, V., & Soep, E. (2005). Youth radio and the pedagogy of collegiality. *Harvard Educational Review,* 75(4), 409-434

Davis, J., Soep, E., Maira, S., Remba, N., & Putnoi, D. (1993). *Safe havens.* Cambridge: Harvard Project Zero.

Gardner, H. (1980). *Artful scribbles: The significance of children's drawings.* New York: BasicBooks.

Gardner, H. (1990). *Art education and human development.* Los Angeles: J. Paul Getty Museum.

Gardner, H. (2007). *Responsibility at work: How leading professionals act (or don't act) responsibly.* San Francisco: Jossey-Bass.

Gardner, H. (2011a). *Truth, beauty, and goodness reframed: Educating for the virtues in the twenty-first century.* New York: BasicBooks.

Gardner, H. (2013, spring). Re-establishing the commons for the common good. *Daedalus,* 199-208.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2002). *Good work: When excellence and ethics meet.* New York: BasicBooks.

James, C., Davis, K., Flores, A., Francis, J., Pettingill, L., Rundle, M., & Gardner, H. (2009). *Young people, ethics, and the new digital media.* Cambridge: MIT Press.

Pratt, M. L. (1987). Linguistic utopias. In N. Fabb, D. Attridge, A. Duranti, & C. McCabe (Eds.), *The linguistics of writing.* Manchester: University of Manchester Press, 48-66.

Soep, E. & Chávez, V. (2010). *Drop that knowledge: Youth Radio stories.* Berkeley: University of California Press.

Soep, E. (2005). Critique: Where art meets assessment. *Phi Delta Kappan*, 87, 38-40, 58-63.

Soep, E., (2006a). Critique: Assessment and the production of learning. *Teachers College Record*, *108*(14), 748-777.

Soep, E. (2006b). Beyond literacy and voice in youth media production. *McGill Journal of Education*. *41*(3), 197-213.

Winner, E. (1991). *Arts PROPEL: An introductory handbook.* Princeton: Educational Testing Service.

Howard's Response to Elisabeth Soep

As I was trying to tidy up my own records and memorabilia some months ago, I spent a little time looking at writings, photographs, news stories, and objects which had been accumulated, mostly by my extremely well-organized mother, over sixty some years. I was absolutely stunned. In most cases (anywhere between 70-95% of the cases), I had absolutely no memory of the object or photo in question. I don't think that this phenomenon denotes full-blown senility—in most cases, I was able soon enough to reconstruct what the entity was and why someone had chosen to save it. But it made me realize that, with the exception of genuine mnemonists, most of us do not hold onto most of our experiences with any degree of accuracy (I think that there is a whole school of psychology which has documented this fact, of which Plato was also aware).

It was thus with a successive incidence of "déjà vu" that I read through the amazing chain of emails and notes that you have saved and concatenated in your contribution to the Festschrift. A few I actually remember without having to wrack my brains; some came to me with a little effort; and some, I have to admit, could have been written by other suspects, though I am confident that your own files are in good order.

It is not an accident, I think, that you saved the communications and were able to draw on them skillfully for your essay. You are an unusual and unusually wonderful person, and you have an ability—not common in the academy—of attracting powerful and charismatic mentors. I won't speak for myself, and I don't know all of your mentors, but it is not an accident that Jessica Davis, Elliot Eisner, Shirley Brice Heath, and Ray McDermott all count you proudly as <u>their</u> student. And of course, the attraction between mentor and mentee is always mutual. You, as mentee, see someone or something admirable in the mentor; and the mentor, in turn, finds attractive features in the mentee, and sometimes (though this is not particularly desirable) wants to make or remake the mentee in his/her own image.

My colleagues and I coined the term "fragmentoring" as a way of describing how one can take attractive features from different mentors,

while avoiding some of the less attractive features (which, be assured, we all have). You have had mentors of different ages, background, genders, and parts of the country, and I think that ensures that you will not be a carbon copy of any one of us (not that anyone could have seriously worried about that unlikelihood). I trust that you've been able to absorb some of our more beneficent features.

And now, I see you regularly as a fellow member of the MacArthur Network on Youth and Participatory Politics. Not only are you "all put together" as a professional, but you are yourself serving as a full-fledged colleague with individuals much senior to you and as an inspiring mentor for the many talented young persons involved in Youth Radio. For us in the academy, and, I would add, for any of us involved in trying to do good work in any institution, that's how the process continues and endures.

I began my response to you with reference to the emails and want to conclude there as well. Long before anyone had envisioned emails, my communication of choice for most interactions with colleagues, staff, and students was the written word. (I think that this predilection probably goes back to my early childhood—in second grade, I began to produce a little newspaper—but it certainly was true once I began to take a leadership role at Project Zero). There are probably many reasons for this idiosyncratic predilection. It's one so important to my own psychic stability that I ask new workers, "How do you like to communicate?" and "Are you comfortable dealing with a lot of written notes and memos?" This is not to denigrate in-person contacts—whether with students (essential) or with co-workers (equally essential)—but simply to praise the efficiency and effectiveness of well-crafted written messages.

A primary motivation for the shape of this Festschrift and for my decision to write a response to each contribution: I want to give, or perhaps more accurately, to leave a record of how someone of my generation communicated with others, in form and in substance. I have no doubt that in the future, people will find analogous ways to communicate, perhaps ones that are more effective and attractive.... and less wordy! (Are we not in the Age of the Tweet?!) But I am egocentric enough, and historically-oriented enough, to feel that it is worth leaving

at least one record of how one scholar/teacher related to citizens of his various worlds in the period, roughly, 1970-2014.

Howard Gardner's Contributions to Psychology and Education: A Woefully Incomplete Retrospective that is Nevertheless the Best I Can Do

Robert J. Sternberg

It is an honor to contribute to a festschrift for Howard Gardner. It is also frightening to contemplate such a contribution because he is the one scholar I know whose productivity ensures that, by the time this volume is published, all the laudations he receives will be out of date because of still further contributions to the fields of psychology and education. Generally, festschrifts are done at a moment in time after a person's major period of contribution is over. In Howard's case, it is not clear that such a moment will come any time soon; but it is also understandable that the editors did not want to wait until he is on his deathbed before doing the festschrift. Indeed, I am sure that this contribution and others will have to be revised multiple times if they are to take into account Howard's numerous contributions while the volume is in press. I suspect that Gardner, like B. F. Skinner, will be writing and speaking until the end is at hand, assuming that there is an end, which seems likely although, in Howard's case, by no means certain!

Personal Reminiscences

Harriett Zuckerman (1983, 1995) pointed out that it is dangerous for graduate students and postdoctoral fellows to work with Nobel Prize winners *after* they have won the award, because they tend to have done their best work before they win. There is no Nobel Prize for psychology or education, but it is amazing to contemplate that Gardner won a so-called McArthur "Genius Award" *before* almost all his major contributions, including *Frames of Mind.* If that is not humbling, I do not know what is!

As I travel around the country and even around the world, I continually meet people who have visited or studied at Project Zero in the days when Howard was co-director. Certainly Howard's contributions to the development of so many educators rank among his greatest contributions. These contributions have been recognized world-wide, as

shown by the innumerable honorary doctorates and other awards Howard has received. One might expect the winner of so many awards to be something of a nerd. Yet I remember once sitting on the same stage as Howard at some event somewhere, while we all were waiting for questions. What a handsome bunch we were in those days, but it was only Howard who was asked by a member of the audience, "Are you married?"

I first met Howard and his soon-to-be spouse, Ellen Winner—a famous psychologist in her own right and currently Chair of Psychology at Boston College—when they invited me to come up and address a group at Harvard Project Zero about my work on analogical thinking. I remember how impressed I was by the group that Howard had assembled and also recall vaguely that my talk was not one of the more successful I have given. It may be that the Gardner family has some kind of mysterious effect on me. Some years later, Ellen invited me up to give a talk at Boston College. It was in the days when one would lug a folder's-worth of transparencies to show on an overhead projector. I could not remember what talk I was supposed to give, so I lugged up from New Haven to Boston two or three sets for different talks related to intelligence. I remember my horror when I arrived about 15 minutes before the talk and saw a poster stating that the talk I would be giving was on "The Nature of Love." Ellen asked me if I needed some time to prepare and, for the first time in my career, I graciously accepted. I faked my way through the talk and have no idea of whether anyone noticed. Well, maybe they did, as I was never again invited to give a colloquium at Boston College! However, Ellen now tells me that she recalls a great talk filled with emotion as well as humor.

Howard and I appeared together a number of times on the lecture circuit. I was always eager to speak before rather than after him, because I had learned from meetings of the Psychonomic Society the dreadful fate that awaited those who spoke right after people more eminent than they were. The audience started to walk out in droves. I remember one time thinking that it would be helpful if the conference organizers would lock the doors from the outside to prevent major depletion in the audience, but of course no one was up to doing that.

Howard's career and mine followed eerily similar paths, although whatever topic we jointly studied, his work became the far better known.

Like Howard, I first did research in cognitive psychology more narrowly defined, then in intelligence, then in creativity, then in wisdom, then in leadership, and then in moral/ethical development. It truly was uncanny how we followed such similar paths, entirely independently. I doubt that the progression lay only in us. Rather, I think that those who study intelligence, even broadly, realize over time how much more there is to a person than just the strictly intellectual. I suspect also that Howard and I shared the feeling that our society has been plagued by a large number of people whose wisdom is no match for their intelligence, no matter how broadly intelligence is defined.

During our joint intellectual journeys, we actually collaborated on one project, Practical Intelligence for Schools (PIFS) (Gardner, Krechevsky, Sternberg, & Okagaki, 1994; Williams, Blythe, White, Li, Sternberg, & Gardner, 1996; Williams, Blythe, White, Li, Gardner, & Sternberg, 2002). The collaboration was a challenging one because our research styles were so different. We at Yale tended to use a more experimental approach and the group at Harvard tended to use a more field-study-based approach. In later years I heard Howard refer to this project as one of his less successful collaborations, although I thought the program and the empirical results were quite good. But at the same time, it was clear that he and I would never have the same kind of synergy he has had in his career with collaborators such as Mihalyi Csikszentmihalyi, Bill Damon, David Feldman, and Ellen Winner, among others. Our approaches just were too different.

The Trajectory of Howard Gardner's Work

Like myself, Howard's interests started out in cognitive psychology, although he has always been much more neurologically oriented than I and also much more attuned to the arts (e.g., Gardner, 1973, 1980, 1982). My own work, even from its inception, has been more of a mix of cognitive, psychometric, and cultural traditions (Sternberg, 1977; Sternberg, 2004). It is hard to believe that Howard's many early awards were for his work in the arts and for his neuropsychological work (e.g., Gardner, 1975). I say "hard to believe" because what would have been a lifetime *oeuvre* for many others was a bare beginning for Howard. Howard's work in cognitive neuroscience anticipated the great interest in this field that would arrive by the beginning of the 20th century. What early in Howard's career appeared to be quaint later became mainstream.

I suspect that the major researchers in cognitive neuroscience do not fully realize the extent to which Howard anticipated what they would be doing one or two decades later.

Howard has metaphorically hit many balls out of the field, but with *Frames of Mind* (Gardner, 1983), Howard hit the ball entirely out of the ballpark. It is among the most successful works in psychology and education I have seen in my professional life, perhaps rivaled only by Martin Seligman's (2006) *Learned Optimism.* Some of Steven Pinker's books, such as *The Language Instinct* (Pinker, 2007) have perhaps received a similar degree of attention, but I am not convinced they have had the broad-reaching impact of Howard's book.

Howard's greatest gift—and he has many—is perhaps being able to express novel and useful ideas in a way that educators and the general public understand, find compelling, and put into practice. This sounds easy, of course, but there are only a handful of other psychologists in recent times who have had this gift, such as Steven Pinker and Martin Seligman. What has distinguished Howard even from them is the incredible breadth and scope of his thinking. Howard represents the best of what I sometimes think of as the "Old Harvard," when psychologists at Harvard were breathtakingly broad in their thinking. Names such as B. F. Skinner, Roger Brown, David McClelland, Jerome Bruner, Jerome Kagan, and Larry Kohlberg come to mind. These psychologists could see the relevance of their work not only to the field of psychology, but also to society as a whole. Such broad and encompassing thinking is much rare today, at Harvard and elsewhere, as psychologists have taken greater pride in thinking deeply but more narrowly. When Howard retires, it is not clear who will be left of this Old Harvard, at least in the behavioral sciences.

Howard predicted (Gardner, 1992) that the field of psychology was splitting off into various subfields and that, with time, its coherence might be decreased to the point that it would be barely recognizable as a field. Indeed, Howard was among the earliest to recognize how cognitive science was developing as an independent discipline (Gardner, 1985). I don't think things became quite as bad as he predicted. But he was right in foreseeing how psychology would undergo serious splits from which it will be difficult to recover. Some of these are the long-time splits between scientists and practitioners. But cognitive neuroscience has, for some,

split off from the mainstream of psychology, with social neuroscience following. The field of cognitive science has yielded departments in some universities that are distinct from psychology. So Howard anticipated that the Renaissance psychologists of Old Harvard (then split off into Psychology, Social Relations, and Education) might be the last generation of such, and I worry that he might have been right. This is not, to my way of thinking, the way the field should go, and as President of the American Psychological Association, I argued strongly for the unification of psychology (e.g., Sternberg, 2006; Sternberg & Grigorenko, 2001). But I am afraid that Howard was more prescient than I in predicting where the field would go.

In its influence, Howard's book, *Frames of Mind,* was to the end of the 20th century what Spearman's (1927) book, *The Abilities of Man*, was to the beginning of the century, except that Howard's book captured the public imagination in a way Spearman's book never did. Certainly other books have been influential, such as *The Bell Curve* (Herrnstein & Murray, 1994), but for the most part, these books have been a flash in the pan, gaining attention for a few years and then receding in influence. Arguably, Herrnstein and Murray's book was in the end as much a political treatise as it was a scientific work. Howard's book, in contrast, has continued to influence thinking about intelligence even well into the 21st century. There is no place I need less to review the thesis of the book than in this festschrift, so I won't other than to say that Howard proposed multiple intelligences rather than a single intelligence culminating in general ability (*g*)! But suffice it to say that the book opened up thinking about intelligence in a way that others, including myself, just had not succeeded in doing. Moreover, the follow-up on how to put the theory into practice in educational settings (Gardner, 1993, 2006) and then on how the theory was interpreted and put to use in different cultures (Chen, Moran, & Gardner, 2009) ensured that the book could be used by educators and others in a way that would influence the way teaching was done in the classroom.

Howard's theory has certainly come under criticism, from me (Sternberg, 1984) and from others (Schaler, 2006). But in science, the worst fate is not to be criticized but to be ignored. It is a tribute to Howard's theory that it has garnered so much attention. In my early writings, I had a number of concerns, most of which never went away—

that the theory had not been scientifically tested in an adequate way and might even be nondisconfirmable as posed, that it overextended the definition of intelligence, and that it did not adequately characterize an intelligence. For example, in the linguistic domain, reading and writing are very different abilities, as are composing and performing in the musical domain. Gardner would deal with these different skills as "sub-intelligences"; the risk of introducing such sub-intelligences is that the theory begins to look more and more like standard hierarchical theories. But as the years went by, I became less concerned by these issues because I viewed the greater contribution of the theory as opening up a dialogue, which was never intended to end upon the publication of the 1983 work.

In the final analysis, all psychological (and scientific) theories we propose are wrong, or at best, incomplete. The purpose of these theories is to pave the way for the next generation of, hopefully better, theories. Howard's theory of multiple intelligences does that. What has surprised me is that even a decade into the 21st century, no one new theory has come along to challenge Howard's. In psychology, a near 30-year run for a theory is pretty darn impressive! And no one knows how long that run will last.

Moreover, the grand factorial scheme proposed by Carroll (1993), which has perhaps gained greater acceptance among psychometricians than has Howard's theory, was not, in the end, all that different from what Howard proposed. The greatest difference was Carroll's insistence upon the hierarchical structure of abilities topped by general ability (*g*), a concept that it is at odds with that of multiple intelligences. Even so, Carroll (1993) saw MI theory as making a useful contribution to the field, perhaps in part because of its similarity to his own distinctive theory, topped by *g*. At the same time, Howard has acknowledged that there probably is a *g,* which simply is not as general as the psychometricians make it out to be. And with this view I steadfastly agree (Sternberg, 1985).

In sources that described the theory of multiple intelligences as well as my own "triarchic theory of successful intelligence" (Sternberg, 1997), including the first edition of my introductory psychology text (Sternberg, 1985, 1995), the two theories were presented as competing against each other. By the time we engaged in the Practical Intelligence

for Schools (PIFS) project mentioned earlier, however, I realized that the two theories are largely compatible. Howard's theory specifies domains of intelligence; my own theory specifies processes (analytical, creative, practical) operating within those domains. One could imagine a 3 x 8 matrix, with the three abilities of the triarchic theory as rows and the eight intelligences of MI theory as columns. For example, in the linguistic domain, one could write a book review (analytical), write a book (creative), or try to persuade people to buy a book (practical). In the musical domain, one could analyze the musical structure of a composition, create a new musical composition, or record a composition used to help sell a product (as in advertising jingles). So, in the end, the theories really do not compete at a psychological level, and I doubt they much compete in the imaginations of many educators, as my own theory has never gained a great deal of traction with them.

After the landmark work on intelligence, Howard went on to a bit of a side-trip in his research, writing about education in China (Gardner, 1989) and how it was superior in some ways but inferior in others to education in the United States. In particular, it emphasized imitation and failed in some respects to encourage broad creativity. In some ways, this book was the riskiest Howard has written because, although his other books proposed equally bold ideas, none carried the political risks of critiquing an educational system with which Howard's familiarity was somewhat limited (by the length of his visit). In my mind, this book should have received even more attention than it has received. In 2010, Shanghai was identified as scoring at the top international level in a variety of comparisons of PISA results. One might well ask whether, if serious assessments of creativity had been included, Shanghai still would have performed at the top of the heap. Some of our own data might lead educators to suspect not (Niu & Sternberg, 2001).

Creating Minds (Gardner, 1994), a book that viewed creativity through the lens of his theory of multiple intelligences, was another hit. This work has been only slightly less influential than the original work on intelligence. Creativity had been locked up, to some extent, in the narrow conceptualizations of Guilford (1950) and Torrance (1988). These views had emphasized divergent thinking without fully embracing the breadth of the creative mind. Although investigators were not oblivious to this breadth (see essays in Kaufman & Sternberg, 2010; Sternberg,

1998), the Guilford-Torrance view dominated and probably still dominates thinking among educators. Howard's book helped educators and many psychologists break out of this mold. What made *Creating Minds* especially attractive is Howard's showing concretely how creativity operated through the various intelligences in the minds of some of the great creative geniuses of all time.

Howard has always been interested not only in creativity but also in how creativity (and intelligence) can be developed in ways that integrate instruction and assessment (e.g., Gardner, Feldman, & Krechevsky, 1998a, 1998b, 1998c). Project Spectrum provided tools for such integration of instruction and assessment. In our own work (e.g., Sternberg, 1985, 2010a; Sternberg, Forsythe, Hedlund, Horvath, Snook, Williams, Wagner, & Grigorenko, 2000; Sternberg, Jarvin, & Grigorenko, 2011), we have tended to take an approach that is simultaneously more experimental and more psychometric. Our approach probably buys something in rigor and loses something in easy applicability in everyday school settings. Howard's work has been tremendously influential in schools, at a level unparalleled except perhaps for Bloom's (1956) taxonomy. The influence of Howard's work has been much more positive than that of Bloom's, however. It is probably more comparable, and similar in its conceptual foundations, to the work of Dewey (e.g., Dewey, 1938/1997).

In his work on creativity, as in his work on intelligence, Howard was concerned about how the phenomenon could be used to change the world (Feldman, Csikszentmihalyi, & Gardner, 1994). This concern with changing the world has been a common theme in all of Howard's work and distinguishes his work from much contemporary work. Unfortunately, he has been a vanishing breed in this respect.

When I was younger, I noted that Ulric Neisser wrote, in his career, two ground-breaking books: *Cognitive Psychology* (Neisser, 1967) and *Cognition and Reality* (Neisser, 1976). In at least one respect, these books were opposites of each other. The first made laboratory studies of cognition respectable; the second did the same for real-world, out-of-the-lab studies of cognition. They were two classics, but *Cognitive Psychology* proved to be far more influential in the field. The field has turned inward rather than outward, leaving psychologists with Howard's outward kind of focus in the minority. In the end, though, I suspect Howard and some

of the others with the more outward focus will be more influential. And what is especially impressive about Howard is that, in his neuropsychological studies, he looked inward too.

After publishing a number of volumes on creativity (e.g., Gardner, 1997; Gardner & Perkins, 1989), Howard moved on to the study of leadership (Gardner, 1995). His study of leaders revealed that great leaders had various things in common, but most salient is a compelling story to tell. Howard's work on leadership influenced my own work (Sternberg, 2008) and that of countless other scholars studying leadership.

Howard's interest in leadership led him to a practical concern with how leaders, and anyone else, change people's minds (Gardner, 2004). This work led him into a new domain, that of interpersonal persuasion (Cacioppo & Petty, 1979). In his book, *Changing Minds,* Howard argues that seven factors determine how well we are able to persuade others: reason, research, resonance, representational redescriptions, resources and rewards, real-world events, and resistance. Because leadership inevitably involves persuading people to adopt ideas that they formerly had been unaware of or had actively resisted, this phase of Howard's work provides something of a coda to his research on leadership.

The most recent phase of Howard's research is in his work with Mihaly Csikszentmihalyi and Bill Damon on the GoodWork Project (Gardner, 2007; Gardner, Csikszentmihalyi, & Damon, 2001; Verducci & Gardner, 2005). This work corresponds to my own phase of research on wisdom and ethics (Sternberg, 1998, 2003, 2010b).

For me, this recent phase of work is, in some respects, Howard's most important. It recognizes that abilities not used in a socially responsible way do little good to society. I deeply share his concern. Our society and much of the rest of the world have made a tragic mistake in so heavily emphasizing scores on traditional tests of abilities and achievement. The result throughout the world has been an upper class, some of whom are determined to maintain their position for the sake of the financial and power benefits that accrue to them rather than for the sake of doing good. The economic engines that power the economy once involved primarily production, which, even in the age of the robber barons, had the potential to make our country great. Today these same

engines chug along in creating huge profits for financiers and their firms but lesser or even no gains, and frequently, losses for the rest of society.

This is not to say that all people at the very top of the socioeconomic heap are egocentric or selfish. One cannot help but be impressed by the efforts of Bill Gates, Warren Buffet, and other billionaires to give away large portions of their fortunes, following the great philanthropists of the past. But when we consider the number of people in the world and in our own country who cannot eat or who have lost their homes, it is hard not to become depressed by an economic system and by government leaders who have utterly failed to achieve the kind of equitable society so many citizens in the history of this country have hoped for. Perhaps things would have been very different if we had been assessing students for their ability to give back rather than to take from society and if we had been teaching them the importance of giving back. This to me is what the GoodWork Project is about.

Conclusion

When posterity looks back on the career of Howard Gardner, it will see one of the most successful academic careers of the late-20th and early 21st centuries. It is difficult to think of anyone—certainly in the fields of psychology and education—who has achieved more. Howard will be remembered for his prescience in predicting trends, his mentorship of thousands of students and followers the world over, and for the bold originality of his many and diverse ideas.

Howard belies the notion that a successful academic must dig a hole in the ground and then keep digging and digging some more. So many academics have achieved success by having one or two ideas, and then mining them mercilessly in the traditional academic fashion. Too often tenure and promotion committees actually encourage narrowness and dissociation of ideas from the world at large. Work that engages with the world is often seen as somehow impure or suspect. Howard Gardner has shown that it is possible to do work of breathtaking impact on science, education, and society in a wide variety of fields. Unlike many academics, he showed the ability to move on and let others take over when it was time to propose his next set of ideas. In terms of our own theory of creativity (Sternberg & Lubart, 1995), he has “bought low and

sold high" in the world of ideas, and the worlds of science and education have been so much the better for it.

References

Bloom B. S. (1956). *Taxonomy of educational objectives, Handbook I: The cognitive domain.* New York: David McKay Co Inc.

Cacioppo, J. T., & Petty, R. E. (1979). Effects of message repetition and position on cognitive responses, recall, and persuasion. *Journal of Personality and Social Psychology, 37,* 97–109.

Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies.* New York: Cambridge University Press.

Chen J., Moran, S., & Gardner, H. (2009). *Multiple intelligences around the world.* San Francisco: Jossey Bass.

Dewey, J. (1997). *Experience and education.* New York: Free Press. (Originally published 1938.)

Feldman, D., Csikszentmihalyi, M., & Gardner, H. (1994). *Changing the world: A framework for the study of creativity.* Westport: Greenwood/Praeger.

Gardner, H. (1973). *The arts and human development.* New York: Wiley.

Gardner, H. (1975). *The shattered mind.* New York: Knopf.

Gardner, H. (1980). *Artful scribbles: The significance of children's drawings.* New York: BasicBooks.

Gardner, H. (1982). *Art, mind, and brain: A cognitive approach to creativity.* New York: BasicBooks.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: BasicBooks.

Gardner, H. (1985). *The mind's new science: A history of the cognitive revolution.* New York: BasicBooks.

Gardner, H. (1989). *To open minds: Chinese clues to the dilemma of contemporary education.* New York: BasicBooks.

Gardner, H. (1992). Scientific psychology: Should we bury it or praise it? William James Award address, *New Ideas in Psychology, 10(2),* 179–190.

Gardner, H. (1993). *Multiple intelligences: The theory in practice.* New York: BasicBooks.

Gardner, H. (1994). *Creating minds: An anatomy of creativity as seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi*. New York: BasicBooks.

Gardner, H. (1995). *Leading minds: An anatomy of leadership.* New York: BasicBooks.

Gardner, H. (1997). *Extraordinary minds: Portraits of exceptional individuals and an examination of our extraordinariness.* New York: BasicBooks.

Gardner, H. (2004) *Changing minds: The art and science of changing our own and other people's minds.* Boston: Harvard Business School Press.

Gardner, H. (2006). *Multiple intelligences: New horizons in theory and practice.* New York: BasicBooks.

Gardner, H. (2007). *Responsibility at work: How leading professionals act (or don't act) responsibly.* San Francisco: Jossey-Bass.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet.* New York: BasicBooks.

Gardner, H., Feldman, D. H., & Krechevsky, M. (Gen. Eds.). (1998a). *Project Zero frameworks for early childhood education: Volume 1, Building on children's strengths: The experience of Project Spectrum.* (Volume authors Chen, J-Q., Krechevsky, M., and Viens, J. with E. Isberg.) New York: Teachers College Press.

Gardner, H., Feldman, D. H., & Krechevsky, M. (Gen. Eds.). (1998b). *Project Zero frameworks for early childhood education: Volume 2, Project Spectrum early learning activities.* (Volume author Chen, J-Q., with E. Isberg and M. Krechevsky.) New York: Teachers College Press.

Gardner, H., Feldman, D. H., & Krechevsky, M. (Gen. Eds.). (1998c). *Project Zero frameworks for early childhood education: Volume 3, Project Spectrum preschool assessment handbook.* (Volume author Krechevsky, M.) New York: Teachers College Press.

Gardner, H., Krechevsky, M., Sternberg, R. J., & Okagaki, L. (1994). Intelligence in context: Enhancing students' practical intelligence for school. In K. McGilly (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 105–127). Cambridge, MA: MIT Press.

Gardner, H. & Perkins, D.N. (1989). *Art, mind, and education.* Urbana: University of Illinois Press.

Guilford, J. P. (1950). Creativity. *American Psychologist, 5(9),* 444–454.

Herrnstein, R., & Murray, C. (1994). *The bell curve.* New York: Free Press.

Kaufman, J. C., & Sternberg, R. J. (Eds.) (2010). *Cambridge handbook of creativity.* New York: Cambridge University Press.

Neisser, U. (1967). *Cognitive psychology.* New York: Appleton-Century-Crofts.

Neisser, U. (1976). *Cognition and reality.* New York: W. H. Freeman.

Niu, W., & Sternberg, R. J. (2001). Cultural influences on artistic creativity and its evaluation. International Journal of Psychology, *36*(4), 225–241.

Pinker, S. (2007). *The language instinct.* New York: Harper.

Schaler, J. A. (Ed.) (2006). *Howard Gardner under fire.* Chicago: Open Court.

Seligman, M. (2006). *Learned optimism*. New York: Vintage.

Spearman, C. (1927). *The abilities of man.* New York: Macmillan.

Sternberg, R. J. (1977). *Intelligence, information processing, and analogical reasoning: The componential analysis of human abilities.* Hillsdale, NJ: Erlbaum.

Sternberg, R. J. (1984). Review of H. Gardner, Frames of mind: The theory of multiple intelligences. *American Scientist, 72,* 394.

Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence.* New York: Cambridge University Press.

Sternberg, R. J. (1995). *In search of the human mind.* Orlando, FL: Harcourt Brace Jovanovich.

Sternberg, R.J. (1998a) A balance theory of wisdom. *Review of General Psychology, 2,* 347-365.

Sternberg, R. J. (Ed.) (1998b). *Handbook of creativity.* New York: Cambridge University Press.

Sternberg, R. J. (2006). Is there still any hope of a unified psychology? The *General Psychologist, 41*(1), 15-16.

Sternberg, R. J. (1985). *Beyond IQ.* New York: Cambridge University Press.

Sternberg, R. J. (1997). *Successful intelligence.* New York: Plume.

Sternberg, R. J. (2003). *Wisdom, intelligence, and creativity synthesized.* New York: Cambridge University Press.

Sternberg, R. J. (2004). Culture and intelligence. *American Psychologist, 59*(5), 325–338.

Sternberg, R. J. (2008). The WICS approach to leadership: Stories of leadership and the structures and processes that support them. *The Leadership Quarterly, 19*(3), 360-371.

Sternberg, R. J. (2010a). *College admissions for the 21st century.* Cambridge, MA: Harvard University Press.

Sternberg, R. J. (2010b). Teaching for ethical reasoning in liberal education. *Liberal Education, 96*(3), 32-37.

Sternberg, R. J., Forsythe, G. B., Hedlund, J., Horvath, J., Snook, S., Williams, W. M., Wagner, R. K., & Grigorenko, E. L. (2000). *Practical intelligence in everyday life.* New York: Cambridge University Press.

Sternberg, R. J., & Grigorenko, E. L. (2001). Unified psychology. *American Psychologist, 56*(12), 1069–1079.

Sternberg, R. J., Jarvin, L., & Grigorenko, E. L. (2011). *Explorations in giftedness.* New York: Cambridge University Press.

Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity.* New York: Free Press.

Torrance, E. P. (1988). The nature of creativity as manifest in its testing. In R. J. Sternberg (Ed.), *The nature of creativity* (pp. 43–75). New York: Cambridge University Press.

Verducci, S., & Gardner, H. (2005). Good work: Its nature, its nurture. In F. Huppert (Ed.), *The science of well-being* (pp. 343-360). New York: Oxford University Press.

Williams, W. M., Blythe, T., White, N., Li, J., Gardner, H., & Sternberg, R. J. (2002). Practical intelligence for school: Developing metacognitive sources of achievement in adolescence. *Developmental Review, 22*(2), 162–210.

Williams, W. M., Blythe, T., White, N., Li, J., Sternberg, R. J., & Gardner, H. I. (1996). *Practical intelligence for school: A handbook for teachers of grades 5–8.* New York: HarperCollins.

Zuckerman, H. (1995). *Scientific elite: Nobel Laureates in the United States.* New Brunswick, NJ: Transaction.

Zuckerman, H. (1983). The scientific elite: Nobel laureates' mutual influences. In R. S. Albert (Ed.), *Genius and eminence: The social psychology of creativity and exceptional achievement* (Vol. 5, pp. 241–252). New York: Pergamon.

Howard's Response to Robert J. Sternberg

When I was a freshman at Harvard College, I thought that I was a pretty good pianist. Only when I walked through the basement of the Harvard Union, and listened to the motley crew of 17 and 18 year olds practicing their Liszt sonatas or their Bach multi-voice fugues, did I realize that I was in a different (and not, alas, higher) league.

Among academics, I do not consider myself to be a particularly competitive or envious person (though you'd have to check with others to see whether this self-characterization is correct). But anyone (yes anyone!) who is in the general area of psychology, and especially anyone interested in individual differences in cognition, has to stand in awe of your achievements, Bob. You are probably the most prolific psychologist alive (indeed, a competitor to Wilhelm Wundt, your closest rival in the 19th century); you are among the most quoted and honored of psychologists. You have contributed to more subfields than almost anyone else, and, what is not as widely known or appreciated, Bob, you have been an extremely fair editor and moderator of the field—not afraid to be critical and not afraid to sign your name to a negative review, but at the same time never being gratuitously nasty. Rather, I think of you perennially as looking for common ground, for a better answer, for a better understanding of the issues in which we are all interested.

In speaking about your gifts, Bob, I have to let the rest of the world in on a little secret. Your summary of my own work and career is incredible! If overly kind (and that's permitted in a Festschrift), the account is thorough, accurate, and involves considerable synthesis of apparently disparate elements. I would not go so far as to say that I would have been unable to write with such accuracy about myself, but I can say that if I had been asked to write an autobiographical essay and had come up with your account, I would have been more than satisfied with that literary effort.

For the most part, Bob, we have worked in tandem—writing similar kinds of books, reading and sometimes blurbing one another's manuscripts, and sharing students, readings, and gossip. As you note, we did work together on an educational project, initially called PIFS (Practical Intelligence For School), and later adding a branch called CIFS

(Creative Intelligence For School). In a nutshell, the idea was that we would combine the strengths of our well-known theories of intelligence (Triarchic Theory of Sternberg, Multiple Intelligences Theory of Gardner) and attempt to come up with powerful educational interventions.

I've been involved in many collaborations, and I am the first to admit that they have been difficult and not generally successful. Indeed, my own interest in the challenges of collaboration has led to our six year study of "Good Collaboration," which is described at thegoodproject.org. My own belief is that our collaboration would have been more successful if we had imbibed some of the lessons that have emerged from the Good Collaboration project—in particular, spending more time describing our own goals for the collaboration, and then reflecting on what was working and what was not—so called meta-collaboration. That said, I think that we produced some helpful materials for middle school students, and the participants remained on speaking and even friendly terms afterwards; in that sense the collaboration was comfortable if not historic.

I have admired your willingness to become far more of an activist than have most of your fellow psychologists: devising tests and trying to market them; heading various professional organizations including the American Psychological Association; and then holding a series of very high administrative positions as Dean, Provost, and President. You have yourself written about the challenges in each of these positions, as well as what you have learned from those stints (about which most of your colleagues, including me, could only dream). As you return to the ranks of "regular old psychology professor" at Cornell University, I have no doubt that you will build on your learnings and add more pages to your incredibly illustrous biography.

A Call for a Multidisciplinary Approach to the Scientific Study of Teaching: Inspirations from Howard Gardner

Sidney Strauss

I would like to thank Howard Gardner for his friendship and the extremely interesting conversations we have had over approximately four decades and to Juko Ando, Antonio Battro, David Berliner, Susan Carey, Yadin Dudai, David Henry Feldman, Paul Harris, Jill Collier Indyk, David Klahr, Uri Leron, Jin Li, Ulf Liszkowski, Elena Pasquinelli, David Perkins, Miriam Reiner and Margalit Ziv, my wonderful colleague of over 10 years with whom I have worked most closely on the topic of teaching and who will surely disagree with some of what is written on these pages.

Howard and I go back a long way. So long, in fact, that I don't remember when we first met. The bad news is that my memory may be failing. The good news is that it feels like I have known him all my life, a feeling that gives me great pleasure. A characteristic of our memories is that we have snippets of recollections of our past. I will share one with you with regard to Howard.

He asked me to comment on his book *Frames of Mind: The Theory of Multiple Intelligences* when it was in manuscript form and before he submitted it to a publisher. While reading it I recognized it as a *tour de force* and, personally, I felt like I was returning home. Intellectually, I had been brought up in a European tradition. Jean Piaget and Heinz Werner, who were daily staples for me, suggested that developmental psychology should not be restricted to the ontogenetic development of human children, but should also embrace a diverse range of topics, such as comparative psychology, neurology, embryology, anthropology, phylogeny, culture, history, the arts, you name it. When I read Howard's manuscript, I knew that I was in the presence of such a view.

Howard's work has almost always had an interstitial attitude. That clashes with the academy, which is arranged in ways that encourage specialization. Articles in journals are in domain-specific areas. Grants are given to those who think within the confines of a discipline and often

a sub-discipline. Prizes are often awarded to those who contribute to a discipline. There are exceptions, of course, but the rule of thumb is specialization.

Howard would have none of that. His work defies the specialization commonplace. Rare is the person who has such wide-ranging thinking, exceptionally broad knowledge from a bewildering range of disciplines, and an ability to master and harness them to illustrate his ideas.

Much of what appears on these pages draws inspiration from Howard. In fact, he might even say that what I describe here (teaching) is another intelligence to be added to those he presented in the past, e.g., linguistic, mathematical, musical, bodily-kinesthetic, interpersonal, etc. intelligences. And he may be right. But I believe that unlike those he portrayed for us, teaching allows us to pass on knowledge, skills attitudes, understandings, and more to our offspring. It enables humans to have a cumulative culture and, as a consequence, a history.

I am taking a fresh look at the ancient field of teaching, a look that brings many domains into discussion. From ancient times, we have recordings from approximately 4000 years ago, of Sumerian students' feelings about the canings they received when their learning was not up to the standards of their teacher (Cohen, 2007). And around 2400 years ago, Plato described what may have been the first recorded complete lesson when a teacher, none other than Socrates, taught Meno's slave boy how to double the area of a square. In modern times, the lesson has been termed Socratic teaching. It would probably raise cries of protest from Socrates were he here now because he thought, then, that he did not teach the slave, but merely engendered in the slave what the slave already knew.

From its inception, understanding the nature of teaching and its flip side, learning, has had a venerated history. In the 2400 years that have ensued since Socrates helped the slave boy learn how to solve a problem in mathematics, many leading figures have weighed in about education in general and teaching, more specifically. A short list of those who helped propel our thinking about teaching are St. Thomas Aquinas, Rene Descartes, Immanuel Kant, Henri Rousseau, and moderns such as William James, John Dewey, Lev Symenovich Vygotsky, Jean Piaget, Israel Scheffler, George Steiner, and Ted Sizer. And, of course, there were

and are scholars and practitioners who attempt to improve teachers' teaching in education courses for teachers who are already teaching and for those who are preparing to teach.

Although there are exceptions, most of these philosophers and psychologists profoundly enlightened us about the nature of human beings, the goals of education, and the nature of teaching done by professionals within the confines of schools. But human teaching can be understood as more than a profession. It is also a noble calling. It is for those whose hearts have succumbed to the enchantress' song, the one that lures us to those moments of cooperation when inspired teaching and learning join each other. Anyone who has taught knows that a near-miracle repeats itself each and every time excellent teaching and learning conspire to advance our pupils, no matter what their age.

These magical moments are impelled by teachers' altruism, the gift of giving precious knowledge to others so that they can better understand themselves and their world. This happens when a sense of trust is forged between the teacher and her students, one that binds them in the belief that although there is an unequal relation between them, the teacher will behave ethically and will not abuse the power her role bestows upon her. These parts of teaching's mission are deeply embedded in its essence. And when the parts come together that essence feels as if lit by a divine spark.

Cooperation, altruism, and trust. These are fundamental ingredients that underlie teaching. Each sets the stage for teaching. But none of them alone or in concert is teaching.

These magical moments appear countless times every nanosecond around the globe. Most take it as a given. It was right under our noses all the time and was understood that that's what we do. I don't take it as a given. And most don't ask themselves questions about its origins. I do and have gone back to basics.

In addition to professional teaching being a calling, it also occurs outside of schools. I believe it is a remarkably profound essence of human nature. Along with my colleague Margalit Ziv, I have been claiming that teaching is a natural cognitive ability on the part of humans (Strauss, 2005; Strauss & Ziv, 2012; Strauss, Ziv, & Stein, 2002).

One aspect of this claim is that very young children teach without ever having been taught how to teach. I appeal to the reader's sense of wonder in the following ideas. Consider this. It appears that despite research on the development of teaching being conducted in different countries, in different laboratories, and with different tasks, there are converging developmental findings indicating a similar developmental trajectory for the ways children teach over time. Teaching may just be developmentally reliable.

Here's another idea to take into consideration. A youngster is taught how to play a game she had never seen or played prior to having been taught it. In order to play the game with a friend, who doesn't know how to play it, she has to teach him. One might think that, when teaching, she could imitate the experimenter's teaching strategies she had just experienced when she was in the role of learner. But this is unlikely, because in her role as a teacher, the learner she is teaching would almost surely not respond to her instruction in a way identical to the way she, the teacher, did when she was in the role of the learner. This suggests that she'll have to teach under conditions that she hadn't encountered, i.e., she is teaching a game she just now learned to another child who is responding to her teaching in unfamiliar ways. In order to pull that off, this means that she needs to have a representation of how one teaches to cause learning in others' minds, with all its complexity. I am in awe at this profound ability that we find even in children age three.

The present short piece I am writing in honor of my good friend Howard has several parts. First, I call for a wide-ranging multidisciplinary, scientific approach to teaching. From there I present an educational implication that unfolds from that call. That is followed by a presentation of a problem that imbues modern understandings of teaching, but I chicken out because I don't try to solve it. And last, I wrap up what I have been attempting to say.

A Call for a Multidisciplinary Scientific Approach to Teaching

Teaching as an area of scholarship and research has been the focus of many disciplines, but that might escape even the most discerning eye because researchers often work in domain-isolation. A glance at bibliographical references makes the point. Journal articles in a

field, say cultural evolution, often don't include references to articles in other fields, say the philosophy of education, and vice versa.

Despite this situation, I believe we could have, for the first time, a contemporary scientific study of our ancient domain where researchers from a number of fields could attempt in concert to address issues related to teaching. This has the potential to inform a new understanding of teaching and could also have educational implications.

I suggested with my colleague Margalit Ziv (Strauss & Ziv, 2012) that teaching theory and research can benefit from an integrated multidisciplinary effort. Domains that have potential to add to our basic knowledge about teaching include the ontogenetic development of human teaching (Davis-Unger & Carlson, 2008 a, b; Strauss et al., 2002), anthropology (Greenfield, 2004), cultural evolution (Mesoudi, Whiten, & Laland, 2006), cognitive evolution (Arbilly, Motro, Feldman, & Lotem, 2011; Shultz, Nelson, & Dunbar, 2012), nonhuman animal teaching (comparative psychology) (Thornton & Raihani, 2008, 2010), brain sciences (Battro, 2007, 2010; Rodriguez, 2012), artificial intelligence (Dessus, Mandin, & Zampa, 2008), cognitive archeology from prehistoric periods (Chazan, 2012), psycholinguistics (Bartsch, Wright, & Estes, 2010), philosophy (Scheffler, 1965), intelligent tutoring systems (Kopp, Britt, Millis, & Graesser, 2012), computer-human interface systems, silicon-biology interfaces, and more. Scientists from these fields, were they to work in cooperation, could help yield a mother lode for the domain of teaching.

Here is a partial list of what we might be looking for were we to attempt to create a scientific understanding of teaching.

- Describing the range and amount of teaching in various cultures. Although teaching is almost surely universal, it is not uniform. The kinds of teaching found in various societies can help us determine its range. Research can be conducted on teaching in societies in which there are no schools, e.g., some horticultural societies (Greenfield, 2004; Maynard, 2002, 2004) and hunter and gatherer societies (Hewlett, Fouts, Boyette, & Hewlett, 2011). In addition, the amount of teaching that people engage in differs profoundly both across and within various societies (Premack & Premack, 1996). Explanations for variations in the range of kinds and amount of teaching have the potential to help us better understand it.

- Describing teaching's components by examining it in its extremes. A while ago, I suggested we could learn about teaching by gaining a better understanding of uncommon teachers (Strauss, 2005). Some teachers are extraordinary gifted. Were we to learn what they know, what they know how to do, and what they actually do in their astonishing teaching, we might have an avenue into understanding it. At the other end of the astonishing scale are those who have what I coined "teaching disabilities." Some things don't seem to work for them. It would be helpful to understand what seems to be diminished or missing among those teachers. In both extreme cases, we will probably see a magnification of the roles of empathic, interpersonal and emotional aspects of teaching come into play in tandem with cognition and that could expand our understanding of teaching.
- Ontogenetic development in children. As mentioned, my claim has been that teaching is a natural cognitive ability on the part of humans. Although that doesn't mean that we should necessarily see very early signs of teaching's incipient cognitive components, it would be lovely were that to be the case. And it is. Liszkowski and his colleagues (Liszkowski, Carpenter, Striano, & Tomasello, 2006; Liszkowski, Carpenter, & Tomasello, 2008) and Akagi (2012) showed that preverbal children at one year of age act to close a knowledge gap between themselves and an experimenter. Recognizing that there is a knowledge gap and acting to close it are defining marks of teaching. Other cognitive aspects of teaching can be examined from the point of their inception along their developmental trajectories as they reach maturity.

These three domains are among the many I listed above. I elaborated on them slightly so as to convey a sense of where we can go looking in order to create a contemporary scientific view of teaching. Securing this view will not happen tomorrow nor will we see it the day after. But it is a goal we should keep in mind.

Educational Implications of the Scientific Study of Teaching

There are a number of areas where education can gain from the creation of a multidisciplinary scientific vision of teaching. One I discuss here is fitting teaching to individual learners.

I ask the reader to think for a moment about the extraordinary headway being made in basic science research and multidisciplinary

theory-building and product development in biotechnology, genetics, biochemistry, drug development, etc. One exciting pragmatic possibility of scientific advances in these fields is the vision of creating medication that will be tailored for groups of individuals. At present, this vision holds that groups of individuals who have similar genetic patterns respond better to a certain medication protocol than to other protocols. And groups that have the "same" disease but whose genetic patterns are different won't respond to that protocol and will be in need of a different one.

The first part of the equation is diagnosing the differences between groups of people. Research in basic science has been propelling that forward at a rapid clip. The second part, finding differential drug treatments that work for each group, has been moving at a fast pace but it lags behind the diagnostic part.

I believe we can hold a similar vision for teaching. Basic research in a number of fields has the potential to yield the kinds of knowledge we may need so that we can make teaching individualized for types of learners.

Uh oh. I think I hear some nay-sayers. Some are whispering, "Been there; done that. We've been through this already, and nothing came out of it." To be sure, there have been many discussions in educational circles about not having a scientific data base from which to make educational decisions about teaching.

So why is my call different? In the past, the long list of fields I mentioned as potential contributors to a scientific view of teaching were not considered. Perhaps this is a side-effect of domain-isolation. Educators may not have been aware of those fields. Also, it might have been the case that the whole gamut of fields I mentioned were known to the education community, but weren't thought to be relevant to teaching. It could also be the case that these fields were recognized as being of importance for teaching but, at the time, those fields were not sufficiently advanced to be seen as partners in a search for a scientific understanding of teaching. So as to be clear, I believe all those fields, even though they are in different stages of their own development, can contribute to gaining a scientific view of teaching. As a rejoinder to some nay-sayers, I say: "Haven't been there; haven't done that."

Others might object that we have neither the models nor the sophistication of all the sciences that work in concert for achieving individualized medicine. What is there in teaching that comes close to chemistry, biochemistry, genetics, bioengineering, and more, they ask. And they are right, of course.

But the fact that we don't have that sophistication doesn't mean we shouldn't try to achieve it. Rather than despairing at what we don't have, we could view this situation as a challenge to develop that knowledge. That is what stands at the forefront of my call for a multidisciplinary scientific understanding of teaching.

But, you know what? Maybe we actually do have a good starting point for gaining this new understanding of teaching: the cognitive sciences. That domain, writ large, addresses models of the mind and how learning occurs there. Great headway has been made in that domain.

And what about teaching, those acts that are intended to cause learning in others? That domain lags far behind where the cognitive sciences are with respect to the learning sciences. That should not deter us, though, in conceptualizing our ancient/new domain with an eye towards how the cognitive sciences can inform teaching.

Houston, We Have A Problem

So far I have been attempting to provide a map of where we could go so as to create a multidisciplinary scientific vision of our ancient field. Not that you didn't think about it, but there are a whole host of problems that will almost certainly crop up as we move towards that goal. Some are conceptual. Clearly, practitioners of different fields bring different conceptual systems about teaching to the table. Another problem is related to conceptual issues. Proponents of different fields bring different methodologies and tools to bear on understanding their field. And there are also potential interpersonal problems. How can you arrange matters so that people will be open enough to learn about what others think even though that thinking may be jarringly different from their own?

As an example of what considerations could arise when a multidisciplinary approach to teaching is adopted, I now present one problem for your consideration without trying to solve it: what are the relations between theory of mind (ToM) and teaching?

Theory of Mind and Actual Teaching: A Problem

Many, including me, have suggested that there is an intimate connection between theory of mind (ToM) and actual teaching. ToM gets at what children make of others' mental states and allows people to share dispositions and anticipate each other's behaviors. Premack and Premack (1996) noted that teaching is underpinned by ToM in the following way: "To teach effectively, one individual must understand what another *sees*, *knows*, *wants*, and *is trying* to achieve" (italics in original, p. 308). I'm not going to question this received wisdom. It is reasonable as far as it goes. But I believe it doesn't go far enough. Two important pieces are missing that, were they added, we'd have a more complete understanding of how ToM and teaching are related.

To make my point, I briefly present: (1) our current knowledge about children's developing understanding of ToM concerning teaching, (2) what we know about children's developing teaching strategies, (3) empirical relations between 1 and 2, and (4) the problematic nature of claims made about relations between how we understand others' minds and how we teach to cause learning in those same minds.

Children's Developing Understanding of ToM about Teaching

Three aspects of ToM, as they relate to teaching, are: a knowledge gap, intentionality and false beliefs. With regard to understanding the role of a knowledge gap between people in teaching situations, Olson and Bruner (1996) wrote: "no attribution of ignorance, no effort to teach" (p. 12). We teach someone who doesn't know something, not someone who knows it. Strauss et al. (2002) tested this understanding and its development by presenting children stories of the following kind: "Uri is a teacher. He knows how to write. Jonathan knows how to write. Omri doesn't know how to write. Who will Uri teach: Jonathan, Omri or both"? Strauss et al. (2002) found that by age 3.5 children already know that the teacher should teach the child who doesn't have the knowledge or skill in question.

Intentionality is also an important aspect of teaching. The intention to cause learning in another's mind separates teaching from other activities. How is it tapped? A child is presented two stories where someone either intends or doesn't intend to teach someone. In both stories, the child being tested is told that the outcome of the intended or

unintended teaching is learning or its lack. The child being tested is asked if there was teaching in the first and second stories. Here, the stories tap if the child understands the roles of intentionality and learning outcomes in someone else's teaching.

Frye & Ziv (2005) and Ziv, Solomon and Frye (2008) found a developmental course for understanding intentionality about teaching. Similar to the development of understanding intentionality without reference to teaching, they found that children age 3.5 judged whether teaching occurred based on the learning outcomes (if there was learning, teaching occurred even if that teaching wasn't intentional), whereas children age 5.5 thought that if there was an intention to teach then teaching occurred, even if learning did not ensue.

False beliefs about teaching deal with whether or not a teacher would teach based on her belief about the knowledge state of a learner or what that knowledge state actually is. To tap the development of this understanding, Strauss et al. (2002) and Davis-Unger and Carlson (2008 a,b) presented false belief tasks about teaching. Children were told about a situation in which a teacher believes that a child knows how to read, but in fact the child doesn't, or believes that a child doesn't know how to read, but the child actually does. The child being tested is asked if the teacher will teach in those two situations. These tasks tap children's understandings about whether or not teaching will take place based on their false belief or on the reality of what the learner does or doesn't know. Findings suggest that by and large, like with classic false belief tasks, children below the age of five solve these false belief teaching tasks incorrectly and above age 5 they solve them correctly.

These three examples show how ToM is tapped in research on children's understanding of teaching. And it has been shown that their understanding develops at ages that are similar to those revealed when intentionality and false belief are examined without reference to teaching. Other aspects of ToM that have a bearing on actual teaching include the notions that: a person (the teacher) can be a source of knowledge for another person (the learner), learning can occur in others' minds, there is psychological causality in teaching and learning, this psychological causality is of an action-at-a-distance kind and more (Strauss, 2005).

Children's Developing Teaching Strategies

In a fairly comprehensive review of children's teaching strategies and their development, Strauss & Ziv (2012) reported that children display an amazing array of strategies from an early age and that it follows a developmental course.

There is proto-teaching among one-year-olds where they point out the location of an object that an experimenter was looking for. Here, there is a knowledge gap where the infant knows where the object is and the experimenter doesn't, and the infant points to the object's location and, as a result, closes the knowledge gap.

By age three, children's main teaching strategy is demonstration accompanied by explanations. Children age five usually provide verbal explanations for the task at hand, and those explanations are accompanied by demonstrations. Many children around age seven are capable of teaching contingently. In other words, many have a representation of the learner's knowledge state and as that knowledge state changes due to the teacher's teaching, the teachers adjust her teaching based on her representation of the learner's new knowledge state.

Empirical Correlations between Children's Developing Understanding of Teaching and Their Actual Teaching

As mentioned, some researchers stated that there should be a relationship between children's developing understanding of aspects of ToM and their actual teaching (Olson & Bruner, 1996; Wood, Wood, Ainsworth and O'Malley, 1995). However, few actually tested those relations. The first to do that were Strauss et al. (2002) and then Davis-Unger and Carlson (2008 a, b). And, indeed, correlations were found between children's developing understanding of ToM and their actual teaching. With increasing age, more children solved ToM tasks and their teaching also moved from demonstrations to explanations.

Problematic Claims about ToM and Actual Teaching

Despite these correlations, there are two problems. The first gets at inferences from data. The fact that there are correlations between the development of ToM and actual teaching doesn't mean that they are related conceptually. For example, we might be in the presence of two

systems that develop independently. The onus of proof is to show why they should be interdependent developing systems. Data about correlations don't get that job done.

That leads me to the second problem, which is considerably deeper than the first. There is a large problem about how we go from beliefs about something to actually doing it. Teaching is a case in point about this conundrum.

Gergely and Jacob (2012) wrote compellingly about this, and I lean on their analysis. They make a distinction found in the philosophical literature between two kinds of cognitive systems. The first is termed theoretical rationality. This kind of rationality is a property of a person's belief system. An example is a teacher's belief that pupils have information processing constraints on their learning. A belief is thought to be rational if it is consistent with other beliefs held by that person.

The second cognitive system is practical rationality. It is a property of a person's decision system. For instance, a teacher gives a demonstration of how to reassemble a disassembled carburetor and upon seeing that a pupil didn't learn how to reassemble it, the teacher teaches again, this time breaking down the assembling into small incremental steps, checking that the pupil learned each step before proceeding to the next one. A decision system is thought to be rational if it selects an action that is likely to maximize the person's desire or preference. In our case, the desired goal is to cause learning in the pupil's mind.

How can these two kinds of rationality be connected? The main idea here is that the decision made by the decision system (practical rationality) draws on the belief system (theoretical rationality). In the case I presented above, the belief system holds that pupils have information processing constraints. The teaching decision to break the assembling of the carburetor into small parts is based on that belief.

The picture drawn by Gergely and Jacobs (2012) is much more complex than I am making it here, but I believe that the distilled version I just presented honors one of their main ideas. So far so good. Now let's look at what this means for the nature of the relationships between ToM and teaching.

For me, it is unclear why ToM, as currently conceptualized, is related to how children (and adults for that matter) actually teach. Here's the rub: the fact that a child knows that a more knowledgeable person teaches a less knowledgeable one, that the intention to teach is a defining characteristic of teaching, and that teaching is based on what the teacher believes the learner's knowledge state is do not suggest *how* she could actually teach. When teaching, none of these and many other aspects of ToM lead to our explaining and demonstrating nor do they enable a teacher to contingently adapt the many forms of teaching to their representation of the learner's changing knowledge state.

To find ways to describe a cognitive system of how people teach, we are going to need more than these kinds of ToM knowledge. Something big is missing here. In fact, three parts are missing, and they all revolve around learning, which is the goal of teaching.

The first missing part is a ToM about learning. What do children understand about the nature of the mind, what learning is, and how learning occurs in the mind? A developmental question is: how do those understandings change over time? For some reason, we don't have a literature about this for children.

To be sure, there has been considerable work on children's learning of school subject matter (such as science, math, history) concepts. Closer to the point I am making is work on how children understand the mind and representations (false beliefs, deception, desires). Even closer to what I am proposing is work on how people understand that motivation aids learning (Dweck, 1986, 2002; Elliot & Dweck, 1988) as well as what intelligence is (Stipek & Gralinski, 1996).

But as important and interesting as these areas are, and they are, as far as I know, there is no research on children's ToM understanding of the *workings of the mind that leads to learning*, i.e., their understanding of *how* people learn. I believe that were we to get a handle on this area, we would have important knowledge about an aspect of children's belief systems that is central to teaching and that is because learning is what teaching aims to cause.

Researchers have conducted a number of interesting studies that tested various aspects of children's developing understanding of knowledge acquisition. Some of them are their understanding of:

knowledge states of ignorance and knowledge, when they learned, and how they learned. I will reinterpret the aspect of how they think they learn, resulting in what I am looking for, as described above.

By and large, research findings are that children age three have difficulties in what I will describe and by age five or six, these difficulties have more or less disappeared. Let's see what has been tested to date.

Knowledge states were tested by looking at children's understandings of the absence (ignorance) and presence (knowing) of knowledge (Pratt & Bryant, 1990). Young children recognize that someone can be ignorant or have knowledge. Teaching aims to lead a pupil from a state of ignorance (or partial knowledge or false beliefs) to a state of knowledge.

Other studies were conducted to test what children know about when they learned (Esbensen, Taylor, & Stoess, 1997; Tang & Bartsch, 2012). For example, a child was taught something she didn't know and afterwards was asked when she learned that new knowledge. Children age three thought they always knew what they had learned several minutes before.

And finally, I got to the point I want to make. I suggested that it is very important to tap children's understanding of *how* they learn in order to determine the nature of the intertwined theoretical and practical decision systems.

But I have issues with what has been tested under that rubric. When testing children's understanding of *how* they learn, researchers present tasks such as the following: Children are asked if they can know the contents of a drawer when they see the contents, are told about them, or infer them from clues they were given. Tasks of this sort have been thought to test children's developing understanding of *how* they learn (Gopnik & Graf, 1988; Sobel, Li, & Corriveau, 2007).

I reinterpret this and believe that these kinds of tasks get at children's understanding of the *conditions under which learning occurs*. I believe tasks of this type tap what children think the sensory modalities are that, when exposed to the environment, allow learning to occur. For example, under the condition that a child sees the drawer's contents, she will know what is in the drawer.

I reiterate: I don't believe these kinds of tasks tap what children think about *how* they learn. So what is it I am looking for regarding how children understanding that?

For the moment, I ask you to suspend criticism about the above and allow me to take you to adult teachers' understanding of how learning occurs in children's minds. Work I have done on mental models (Mevorach & Strauss, 2012; Strauss, 1993, 2001, 2012) looked at adult teachers' models of the mind and how learning occurs there. Mental models were inferred from the ways they spoke about how they teach and the ways they actually teach.

Adult teachers refer to conditions that are both external to and within the mind that allow learning to occur. A partial list of external conditions includes the physical environment (noise, temperature) and teaching (the pace at which one teaches, how the subject matter is organized in teaching). Internal conditions that set the stage for learning, but are not learning, are those that are within the mind. They include children's knowledge (their prior knowledge about the subject matter being taught) and their emotional/motivational state (if they have math or history phobia, an abiding interest in what is being taught, a sense of efficacy about their learning, etc.).

Note that as important as these (and the other categories that remain unmentioned) are for learning, they refer to the conditions under which learning occurs. They set the stage for learning, but they are not about *how* learning occurs. When adults speak about *how* learning occurs, they speak about it metaphorically. For instance, they say that new *material* gets *connected* to already-learned knowledge that exists in children's minds prior to their being exposed to what is being taught. One way this connection is made is through analogy. Another way that learning happens is when the learner doesn't have prior knowledge about what is being taught. Because there is no way that the new knowledge can get connected to already-learned knowledge, new knowledge gets *driven into* memory through repetition.

As mentioned, their views are metaphorical. They do not speak about the biochemistry of short-term and long-term memory in neurons nor do they mention neural networks. But they do have folk psychology

views about *how* learning takes place in children's minds. And that is closely connected to their actual teaching.

If this is acceptable, then a task we could set for ourselves is to trace the developmental trajectory of understandings about *how* learning occurs from some starting point in childhood through adulthood. Were we to describe that, we would be closer to understanding the nature of the relations between theoretical and decision systems about learning and teaching, and that would bring us closer to having a scientific cognitive understanding of teaching.

You, the reader, might be thinking that what I am writing about is a bit picayune and is merely adding an area to ToM that has been neglected to date. Although it would be nice to know something about it, it's nothing to write home about. I introduce the second missing part of ToM about teaching and then show why the first missing part could be of interest to all of us working in the area of teaching.

The second missing part is a ToM theoretical system about how teaching causes learning in others' minds. This gets at how children understand this causal, action-at-a-distance relationship. It would be of interest to know how children understand why someone's teaching was successful or unsuccessful in bringing about learning in others, what they would recommend to do if their teaching wasn't successful, and more. As far as I know, no research has been done in this area.

The main reason I believe it is of interest to find out how children understand teaching (and what that understanding's developmental trajectory is) is that this kind of belief system (theoretical rationality) of how teaching causes learning is likely to be closely linked to the decision system (practical rationality) of actual teaching. As mentioned above, the decision system rests on the belief system and is considered rational when it works to increase the likelihood of attaining its goal. The goal of teaching is to cause learning in others. Hence the importance of filling in the missing part about children's developing conception of *how* learning occurs, which is the first missing part, and filling in the second missing part about children's developing conceptions of teaching.

A third missing part is related to the first two. We would want to know how children's developing understanding of learning and how

teaching causes learning in others are connected to the ways that these children actually teach.

So here's the claim: theoretical belief systems about learning and how learning is brought about by teaching are missing in the research and theory-building literature. As a result, we don't know how these two are related to how children actually teach. Were we able to describe these three missing parts, we would then be in a better position to determine the nature of the connections between the development of those aspects of ToM (theoretical rationality about understandings of learning and teaching) and the development of children's actual teaching (decision system). That ought to take us a step closer to having a more complete cognitive map of, and a scientific read on, teaching.

An Anecdote and Wrapping it Up

In teacher education, through no fault of our own, we sometimes give the following unintended message to our future teachers: "You are embarking on a noble road. You will be passing on and helping your pupils construct our precious cultural heritage that has developed over the centuries. Through your teaching, you will help children learn about themselves and our world. A large part of your mission is to bring about such learning. Unfortunately, we don't know much about what learning is and how teaching brings it about. But we do salute you and wish you the very best in your important role as a teacher."

I attempted to make a case for the need to have a contemporary, scientific and multidisciplinary understanding of our ancient field of teaching. We are living in exciting times. Fields that impinge on a cognitive understanding of teaching are developing rapidly and ripe fruit is out there ready to be picked. The time for beginning the harvest is upon us. Were we to heed this call, we have the potential to create a paradigm shift in an ancient field. And the new understanding we could eventually create could serve our children and the teachers who teach them.

References

Aguiar, N. R., Stoess, C. J., & Taylor, M. (2012). The development of children's ability to fill the gaps in their knowledge by consulting experts. *Child Development, 83(4)*, 1368-1381. Doi: 10.1111/j.1467-8624.2012.01782.x

Akagi, K. (2012). Development of teaching behavior in typically developing children and children with autism. In S. Watanabe (Ed.), *CARLS series of advanced study of logic and sensibility* (Vol. 5, pp. 425-435). Tokyo: Keio University Press.

Arbilly, M., Motro, U., Feldman, M. W., & Lotem, A. (2011). Evolution of social learning when high expected payoffs are associated with high risk of failure. *Journal of the Royal Society Interface, 8*, 1604-1615. doi: 10.1098/rsif.2011.0138

Battro, A. (2007). Homo educalibis: A neurocognitive approach. In M. S. Sorondo (Ed.), *What is our real knowledge of the human being?* (Vol. Scripta Varia 109, 46-60). The Vatican: Pontifical Academy of Sciences.

Battro, A. (2010). The teaching brain. *Mind, Brain and Education, 4*, 28-33.

Chazan, M. (2012). Handaxes, concepts and teaching. *Mind, Brain, and Education, 6(I* 197-203.

Cohen, Y. (2007). Personal discussion.

Davis-Unger, A. C, & Carlson, S. M. (2008a). Development of teaching skills and relations to theory of mind in preschoolers. *Journal of Cognition and Development, 9*, 26-45.

Davis-Unger, A. C, & Carlson, S. M. (2008b). Children's teaching: Relations to theory of mind and executive function. *Mind, Brain, and Education*, *2(*3), 128-135.

Dessus, P., Mandin, S., & Zampa, V. (2008). What is teaching? Cognitive-based tutoring principles for the design of a leaning environment. In S. Tazi & K. Zreik (Eds.), *Common innovation in e-learning, machine learning and humanoid (ICHLS6)* (pp. 49-55). Paris: Europia/IREEE.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*(10), 1040-1048.

Dweck, C. S. (2002). In A. Wigfield & J. S. Eccles (Eds.). The development of ability conceptions. *Development of achievement motivation* (pp. 57-88). San Diego, CA: Academic Press. doi: 10.1016/B978-012750053-9/50005-X

Elliot, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54*(1), 5-12.

Esbensen, B. M., Taylor, M., & Stoess, C. (1997). Children's behavioral understanding of knowledge acquisition. *Cognitive Development, 12*, 53-84.

Frye, D., & Ziv, M. (2005). Teaching and learning s intentional activities. In B. D. Homer & C. S. Tamis-LeMonda (Eds.), *The development of social cognition and communication* (pp. 231-258). NY: Erlbaum.

Gergely, G., & Jacob, P. (2012). Reasoning about instrumental and communicative agency in human infancy. *Advances in Child Development and Behavior, 43*, 59-94. doi: 10.1016/B978-0-12-39719-3.00003-4

Greenfield, P. M. (2004). *Weaving generations together: Evolving creativity in the Maya of Chiapas*. Santa Fe: School of American Research Press.

Hewlett, B. S., Fouts, H. N., Boyette, A. H., & Hewlett, B. L. (2011). Social learning among Congo Basin hunter-gatherers. *Philosophical Transactions of the Royal Society B, 366*, 1168-1178. doi:10.1098/rstb.2010.0373

Hogrefe, G. J., Wimmer, H., & Perner, J. (1986). Ignorance vs. false belief: A developmental lag in attribution of epistemic states. *Child Development, 57*, 567-582.

Kopp, K. J., Britt, M. A., Millis, K., & Graesser, A. C. (2012). Improving the Efficiency of dialogue in tutoring. *Learning and Instruction, 22*, 320-330. doi: 10.1016/jlearninstruc.s011.12.002

Liszkowski, U., Carpenter, M., Striano, T., & Tomasello, M. (2006). 12- and 18-month-olds point to provide information for others. *Journal of Cognition and Development, 7(2)*, 173-187. doi: 10.1207/s15327647jcd0702_2

Liszkowski, U., Carpenter, M., & Tomasello, M. (2008). Twelve-month-olds communicate helpfully and appropriately for knowledgeable and ignorant partners. *Cognition, 108*, 732-739. doi: 10.1016/cognition.2008.06.013

Maynard, A. E. (2002). Cultural teaching: The development of teaching skills in Maya sibling interactions. *Child Development*, *73*(3), 969–982.

Maynard, A. E. (2004). Cultures of teaching in childhood: Formal schooling and Maya sibling teaching at home. *Cognitive Development, 19*, 517-533.

Mesoudi, A., Whiten, A., & Laland, K. N. (2006). Towards a unified science of cultural evolution. *Brain and Behavioral Sciences, 29*, 329-383.

Mevorach, M., & Strauss, S. (2012). Teacher educators have different in-action mental models in different teaching situations. *Teachers and Teaching: Theory and Practice, 18*(1), 25-41.

Olson, D., & Bruner, J. (1996). Folk psychology and folk pedagogy. In D.R. Olson & N. Torrance (Eds.), *The handbook of education and human development* (pp. 9-27). MA: Blackwell Publishers.

O'Neill, D. K., Astington, J. W., & Flavell, J. H. (1992). Young children's understanding of the role that sensory experiences play in knowledge acquisition. *Child Development, 63*, 474-490.

Pratt, C., & Bryant, P. (1990). Young children understand that looking leads to knowing (so long as they are looking into a single barrel). *Child Development, 49*, 39-57.

Premack, D., & Premack, A. J. (1996). Why animals lack pedagogy and some cultures have more of it than others? In D. R. Olson & N. Torrance (Eds.), *The handbook of education and human development* (pp. 302-323), MA: Blackwell Publishers.

Rodriguez, V. (2012). The teaching brain and the end of the empty vessel. *Mind, Brain, and Education, 6*(4), 177-185.

Scheffler, I. (1965). Philosophical models of teaching. *Harvard Educational Review, 35*(2), 131-143.

Sobel, D. M., Li, J., & Corriveau, K. H. (2007). "They danced around in my head and I learned from them": Children's developing conceptions of learning. *Journal of Cognition and Development, 8*(3), 345-369.

Stipek, D., & Gralinski, J. H. (1996). Children's beliefs about intelligence and school performance. *Journal of Educational Psychology, 88*(3), 397-407.

Strauss, S. (1993). Teachers' pedagogical content knowledge about children's minds and learning: Implications for teacher education. *Educational Psychologist, 28,* 279-290.

Strauss, S. (2001). Folk psychology, folk pedagogy and their relations to subject matter knowledge. In B. Torff & R. S. Sternberg (Eds.), *Understanding and teaching the intuitive mind* (pp. 217-242). Mahwah, NJ: Erlbaum.

Strauss, S. (2005). Teaching as a natural cognitive ability: Implications for classroom practice and teacher education. In D. Pillemer & S. White (Eds.), *Developmental psychology and social change* (pp. 368-388). New York: Cambridge University Press.

Strauss, S. (2012). Folk psychology about others' learning. In N. M. Seel (Ed.), *Encyclopedia of the sciences of learning* (Vol. 3, pp. 1310-1313). Heidelberg: Springer. doi: 10.1007/978-1-4419-1428-6

Strauss, S., & Shilony, T. (1994). Teachers' models of children's minds and learning. In L. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain-specificity in cognition and culture* (pp. 455-473). Cambridge, UK: Cambridge University Press.

Strauss, S., & Ziv, M. (2012). Teaching is a natural cognitive ability for humans. *Mind, Brain, and Education, 6*(4), 186-196. doi: 10.1111/j.1751-228X.2012.01156.x

Strauss, S., Ziv, M., & Stein, A. (2002). Teaching as a natural cognition and its relations to preschoolers' developing theory of mind. *Cognitive Development, 17,* 1473-1487. doi: 10.1016/s0885-2014(02)00128_4

Tang, C. M., Bartsch, K. (2012). Young children's recognition of how and when knowledge was acquired. *Journal of Cognition and Development, 13*(3), 372-394. doi: 10.1080/15248372.2011.577759

Thornton, A., & Raihani, N. J. (2008). The evolution of teaching. *Animal Behaviour, 75*, 1823-1836.

Thornton, A., & Raihani, N. J. (2010). Identifying teaching in wild animals. *Learning and Behavior, 38*(3), 297-309.

Wood, D., Wood, H., Ainsworth, S., & O'Malley, C. (1995). On becoming a tutor: Toward an ontogenetic model. *Cognition and Instruction, 13,* 565-581.

Ziv, M., Solomon, A., & Frye, D. (2008). Young children's recognition of the intentionality of teaching. *Child Development, 79*(5), 1237-1256. doi:10.111/j.1467-8624.2008.01186.x

Ziv, M., Solomon, A., & Strauss, S. (in press). Relations between the development of teaching in early childhood and theory of mind. *Megamot*. (in Hebrew).

Howard's Response to Sidney Strauss

Sid, as you know, we've been personal friends for a solid forty years, and have lived through an amazing series of historical, scholarly, and personal adventures, the stuff for one or more novels, if either of us had the talent of, say, a Mary McCarthy or a John Updike (or, closer to your home, A. B. Yehoshua). You yourself have had a distinguished career at two Israeli Universities, stints at any number of prestigious centers around the world, and an impressive set of publications, lectures, and courses (your summer course at Tufts has gone from success to success over the years).

But from my own perspective, the work that you write about in your essay is the most important of your career (and such a characterization does not usually apply to the writings done by us old geezers). One would have thought, naively, that we know a lot about teaching from a scientific point of view: what cognitive capacities does one need, when do they develop, how do they interact with the characteristics of specific learners, and so on. And yet, once one begins to read your essay, it becomes clear that we are not even in the position of knowing just which questions to ask, and which data are relevant. Or at least we were not until you, and a few others, began to look at teaching with the care that we've looked at learning—across the species spectrum, across the age spectrum, and across a range of tasks.

I am reminded of the reason that Nelson Goodman gave when he christened "Project Zero." Goodman explained, in effect, that there is lots of lore about education in the arts but little if any reliable communicable knowledge, hence the choice of "Zero."

It was in considering your work, and that of a few colleagues like Antonio Battro, that I began to think seriously about the possibility of a separate "Teaching" or "Pedagogical" Intelligence. It would be easy to dismiss that possibility by saying, "Oh, it's just a part of interpersonal intelligence." But I don't find that answer persuasive. The combination of being aware of one's own knowledge, mastering its specific features, being able to place yourself in the mind of the learner, and determining how best to inform that "other mind" is far more complex—and may

indeed merit the positing of a separate 'pedagogical intelligence," largely restricted to human beings.

Sid, you and colleagues are in the process of inventing a field—or, if you prefer, a domain. I don't feel that I can judge whether you have identified the right disciplinary partners, or whether there may be a place, at some point, for pharmaceutical intervention in the service of teaching. But I feel competent to say that you've opened up a galaxy of questions, which should keep lively investigators busy and productive for many years.

Margot Strom

Dear Howard,

I am delighted to be included in your orbit with those who celebrate your big ideas, your friendship, your bold choices, your resilience, and the quality of your attention to the work of others.

I will always remember one particular visit to your office. I came with my son, Adam, not too long ago. He had by then embraced Facing History and Ourselves as the place to which he would contribute good work.

I knew you would welcome and greet Adam with the respect you have for children of all ages—yours, mine, and children everywhere. Within minutes of our arrival, you and Adam were in deep conversation about a worldview that honored his choice to be an educator and demonstrated your belief that children are moral philosophers waiting to be inspired by good teachers like you! It was in that conversation that I witnessed the birth of a tagline. You said: "*If Facing History and Ourselves did not exist we would have to invent it."* In those few words, which I quote liberally, you included us in your good work and in a most profound way said that what we are doing matters.

We admire your passion for deep questions about what it means to live a virtuous life. From explaining that each of us have multiple intelligences to your more recent examination of good, ethical work, your eyes have always been on the future and our lives are better for it.

Hannah Arendt suggests we have two ways to express our work: the industry of our labor and the work of being a citizen.

I thank you for giving meaning to her standard for citizens in a civil society.

Best,

Margot

Howard's Response to Margo Strom

Facing History and Ourselves (FHAO), the organization that you founded decades ago, is world famous, dedicated to arguably the most important set of events and issues of the 20th century. In contrast, Project Zero is small, known only in scattered locales, and, as Nelson Goodman, the founder, used to quip, focused like a laser on the most obscure topic in America—arts education.

And yet. you and I have both sensed some deep affinities that underlie the superficial differences. We are both trying to keep alive issues which many would prefer to ignore, or to trivialize, and to show how they are as relevant today as they were in times past. We are incredibly selective in the individuals whom we hire and with whom we collaborate, and we take great pains to make sure that whatever emerges with our *imprimatur* is of highest quality… or at any rate the highest quality that we can achieve. Since our organizations are but a few miles apart, and since many individuals and projects have been linked both with FHAO and with Project Zero, it is no surprise that we find ourselves sharing our problems, our challenges, and our aspirations.

Almost 15 years ago, Dave Perkins and I turned over the leadership of Project Zero to Steve Seidel, and we have since had two smooth transitions (first to Shari Tishman, then to Daniel Wilson). As I write, you are in the process of relinquishing your long time, founder-leader role in FHAO. I think that you will find that people the world over will continue to look to you for guidance and inspiration. The challenge, to which you will rise, will be to provide those aspects of wisdom without at the same time feeling that it is your responsibility to see that the books are balanced, the IT system is working, and the annual report to the supporters has been proofread… at least three times. Take it from me: it can be done!

Teaching Howard/Teaching with Howard

Marcelo M. Suárez-Orozco

On the week of September 2, 2008 Howard Gardner arrived at New York University in Greenwich Village. At NYU Howard and I would co-teach a seminar entitled, "GoodWork in the Global Era"—the first time we taught together. Our idea was to bring into an interdisciplinary conversation the research tools of cultural anthropology and psychology around a set of empirical and theoretical problems in the general area of globalization. The seminar's point of departure would be the claim that all societies develop culturally shared notions of what constitutes good life, good work, and the good community. These notions, sometimes shared by other societies but often not, are typically codified in cultural models and narratives (embodied in folklore such as myth, legends, and folk tales), rituals, and in social practices such as kinship patterns ('love') and distinct modes of social and economic organization ('work'), and, perhaps above all, in the realm of the sacred—in religious representations. Research in cultural psychology and psychological anthropology had shown that these complex notions, while not always homogenous or coherent, tend to organize human lives by giving meaning and a sense of purpose. They constitute a powerful emotional and motivational framework for human action.

As the forces of globalization reach wider and deeper into every corner of the world, local notions of "GoodWork" are challenged, sometimes coming into direct and sharp conflict with the outer world. Globalization's three M's— "Markets," their integration and disintegration, "Migration," the mass movement of people on a planetary scale, and "Media," the new communication, information, and social media technologies linking the world in intricate ways—generate patterns of social change unlike anything we have seen in recent history. With the forces of global change at work, we postulated, local notions of "GoodWork" might sometimes prove resistant while other times accommodating to economic, cultural, and political forces from abroad. The regulations—rejection and accommodation—could prove instructive to understand social change in the era of globalization.

The idea thus was to bring into a seminar format our respective research projects, Howard's work from The GoodWork Project with the research on Globalization at NYU's Institute for Globalization and Education in Metropolitan Settings. Advanced graduate students from Steinhardt, Gallatin, and elsewhere at NYU would join us on weekly presentations, discussions, and exchanges.

The seminar would mark several firsts. Howard would be the inaugural Jacob K. Javits Visiting Professor at New York University, the seminar would mark the first time Howard formally taught at a college other than Harvard. Above all, a few blocks from our seminar room, on September 15, 2008, just as our students were gathering around the table, Lehman Brothers would file for bankruptcy. Thus began a series of cataclysmic events leading to the first great global recession of the new century. As hedge fund maven Michael Steinhardt would tell Howard later, that moment perhaps represented the end of capitalism as we knew it.

Globalization 2.0 had announced itself and the reverberations were instantaneous, planetary, and severe. Gone was the triumphalism of Globalization 1.0—the globalization that Clinton-era gurus Robert Rubin, Alan Greenspan, Larry Summers, among others, had augured as the foreordained path for global economic and social development moving forward. The logic of unfettered markets required that pesky regulations be overpowered, dismantled, or weakened. Alas this radical form of neo-liberalism—a kind of secular religion officiated by the high priests of the "Washington Consensus" would have a short reign—from roughly November 9th, 1989 (the day the Berlin Wall fell), to September 15th, 2008, or two weeks into our Seminar on Globalization at NYU. Michael Steinhardt was right.

We could not have designed a better laboratory for our course than lower Manhattan in the midst of Wall Street's debacle.

The depth and global reach of the crisis raised multiple issues for the seminar—giving it an edge that is not often associated with graduate courses in the more arcane branches of the social sciences. If New York's other banks followed the path of Lehman Brothers and Bear Stearns, could the entire financial architecture of Wall Street collapse? Would Main Street be next? Would then there be a run on U.S. banks? Could

the U.S. default—just as Argentina had at the start of the decade? Would the Fall of 2008 mark the end of globalization? How long before new walls would be erected to protect the sovereign interests of nations vulnerable to Wall Street's shenanigans?

Students—a healthy mix of Americans and overseas students—spoke with anguish about their parents' lost jobs, wiped out retirement savings, the collapsing value of their houses, and their own very real fears of a rapidly changing job market. One question would recur early on our seminar. How was it that "the smartest people in the room," above all the academic economists behind the policies and practices that brought the debacle, had been so wrong? The fact that many of them were Howard's colleagues at Harvard made the students more insistent and gave their questions a sharper edge.[1] It was obvious that in our initial discussions of globalization we would have to focus extra carefully on the role of economics and economists. Economics was one of globalization's most powerful engines and economists had been among the loudest voices in making the case for globalization.

What, then, was it about economics and economists that needed unpacking? What did the rapid ascendancy of economics in the hierarchy of prestige and resources in the academy said about the times?

In several presentations, some joint and some solo, Howard and I examined how academic economists had gained unprecedented dominance in academia, seduced by ever more abstract mathematical models. Howard once remarked that whereas a century ago, philosophers in the Dewey mold had provided an essential voice for the education issues of the day—just as psychologists in the mold of Jerry Bruner would 50 years ago—economists had now taken center stage. Education provided a fertile field for economists to ply their new tools. Minority students are not learning English and math? Devise a clever payment schedule, and poor immigrant and black kids would do their homework and show up to school in time. And who cares if the kids were doing the work for the money and not for any love of learning? Infant mortality and adolescent homicide in Oakland and Baltimore rival that of Central

[1] They were my former colleagues as well. Before moving to NYU, I was the Thomas Professor of Education at the Harvard Graduate School of Education.

America? Provide market incentives for single mothers and deadbeat dads and watch the problem go away.

Economists, it seemed, suddenly had all the answers for education and beyond. The formula was simple: markets should lead and the state should retreat.

Some proposals proved to be literally radioactive. Harvard's President Lawrence H. Summers, as Chief Economist at the World Bank, would famously argue that burying the accumulating nuclear waste of the high-income countries in Africa was "impeccable" logic: "I think the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable and we should face up to that." The impeccable logic at work is not that African lives are cheaper, but rather that "health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages."[2]

Howard and I had seen all of this up close. In the Fall of 2002 we had invited Harvard President Larry Summers to the Pocantico Conference Center of the Rockefeller Brothers Fund in Tarrytown, New York for a retreat—the first of its kind, on globalization, culture, and education. The Pocantico Conference set the stage for a series of international initiatives on the nexus between globalization and education that would occupy me for years and in the process bring me closer to Howard. At Pocantico, in what would become Larry's signature as President of Harvard, he kept everyone waiting for nearly two hours to then treat our invitees—eminent scholars from throughout the country, foundation officers, and donors to an unforgettable evening. In a meandering and insufferable after dinner speech, with equal amounts of chutzpah, misinformation, and lack of tact, Larry took the persona of the Holy Father of Neoliberalism, pontificating, *inter alia,* on the impeccable economic logic behind the stratospheric salaries of Wall Street executives, the root causes of the Argentine default, and why MacDonald's was the perfect food choice for slum dwellers in India. Never mind that these were not the topics he was asked to address! The President took his prerogatives with full force. Pocantico would prove to

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[2] Lawrence H. Summers quoted in D. Henwood, "Toxic Banking; World Bank's Environmental and Global Policies," (1992) 250 Nation, 257.

be the bellwether of what the Summers presidency would bring to Harvard. As Alejandro Portes, the eminent sociologist at Princeton prophetically reflected after the dinner debacle, "(Summers) cannot last as President of Harvard." At Pocantico the die was cast.[3]

Back in our Seminar room in Greenwich Village the students questioned us about why President Obama brought Summers back to the White House.

Even as the heady days of The End of History and the Washington Consensus came to an abrupt end—globalization was not going away.[4] The facts showed that ongoing processes of intensifying economic, social, and cultural exchanges across the planet seemed irreversible. What lessons, then could we excavate from the collapse of what we came to term in the Seminar Globalization 1.0—roughly from November 1989 (end of the Berlin Wall) to September 2008 (end of Lehman Brothers)? First we had to separate the hubristic and megalomaniac claims at the heart of Globalization 1.0 from the enduring continuities of a world ever more interconnected, miniaturized, and above all, fragile. Second we had to look deeper into globalization's archaeology—the interconnected world had not been born with the collapse of the Berlin Wall and the Washington Consensus.

In a number of seminar presentation we attempted to frame the origins of globalization in an ancient dynamic that perhaps originated

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[3] A few weeks after the unforgettable dinner at Pocantico, Summers called Howard and me into the President's office in Massachusetts Hall to deliver a kind of non-apology apology.

[4] Francis Fukuyama, in 1993 the deputy director of the State Department's Policy Planning Staff, argued that the swift replacement of seemingly durable authoritarian regimes with liberal governments signaled the end of the global 20th century ideological war, and Capitalism won. "A true global culture has emerged, centering around technologically driven economic growth and the capitalist social relations necessary to produce and sustain it." History, which Fukuyama defined as the clash of political ideologies, ended. While Fukuyama's views conveniently meshed with George W. Bush administration's international ambitions, history and competing grand narratives continue apace. As for the Washington Consensus, this is the dominant orientation of the last quarter of a century toward market-friendly international economic policies that was touted by economists (Summers, perhaps above all), journalists, and global institutions like the International Monetary Fund and World Bank. The 2008 global financial collapse brought greater attention to long-standing criticisms of this vision, since its hallmark policies are said to have contributed to the global financial meltdown.

60,000 years ago when humans first embarked on a journey that would take us, as a species, out of the African savanna to explore and transform the globe. Globalization, we argued, is as much about demographic exchanges as it is about market exchanges. Understanding the link between the two was critical. Global economic forces, we argued, stimulate the migrations of people. Globalization was also about cultural exchanges and changes. In our seminar discussions we came to think of globalization as the exchanges of cultures that make the old boundaries as well as the aspired cultural coherence and homogeneity of the nation-state increasingly problematic. We explored the requirements—the technological innovations and new forms of media, for a rapidly expanding internationalization of production, distribution, and consumption of goods and services. In our seminar readings we examined case-studies of local economies becoming integrated into complex webs of global relations. We came to explore the new global networks of production, fueled by increasing levels of international trade, foreign direct investment, migrant remittances, and capital flows—and how they were setting the pace for rapid change in every continent of earth. Production, we argued, was increasingly de-territorialized because whole categories of work could now be done nearly anywhere on earth. Students from Asia and Latin America explored how the insertion of Brazil, Russia, India, and China (the so-called BRIC countries) into the global economy had added nearly 1.5 billion workers to the worldwide labor force. As a result, someone in the seminar quoted from the former head of Intel saying something to the effect that there were now 300 to 400 million highly educated Indians, Chinese, and Russians competing for jobs with graduates from the elite research universities in the Western world.

Global patterns of mobile capital and mobile production had stimulated and accelerated international migration. By 2008 there were over 215 million transnational migrants. Migration was now a phenomenon involving every region of the world. Asia was in the midst of experiencing the largest human migration in history. The insertion of China into the global economy had led to one of the largest migratory chains in human history: over 150 million Chinese were now migrants, most from the rural hinterlands migrating into China's rapidly globalizing coastal cities.

Data from multiple sources suggested that remittances to developing countries had been rising prior to the crash. One student shared a paper suggesting that for Lesotho, Vanuatu, Jordan, and Bosnia and Herzegovina, "remittances represent nearly 25 percent of their GDP" (International Monetary Fund 2006). Indians and Mexicans in the United States, Turks in Germany, and Filipinos and Egyptians in Saudi Arabia were now the economic lungs of the countries they left behind. Their remittances were becoming the oxygen keeping countless individuals, families, and communities in their home countries from asphyxiating. That too was the story of globalization. Would these patterns continue or would they come to an abrupt end?

As the students delved into their own research presentations, they struggled to operationalize the knowable ways new global realities concretely define the contexts in which youth are growing up. Students argued that globalization in its various manifestations—economic, demographic, sociocultural—was a quotidian part of the experience of youth in nearly every setting they researched—from global cities to far away rural areas.

In their presentations and exchanges, the students painted a world in flux where the rate and depth of change seemed at times vertiginous. In cities like Frankfurt, London, and New York, youth live and thrive in contexts where global cultural flows are normative. North and South, East and West, youth are creating and exchanging ideas with others originating in faraway places; whether living in Bangalore, Brussels, or Buenos Aires, they may wear similar clothing and share tastes in music that blend traditions East and West, North and South into new hybrid forms. The students spoke of interviewing Mixtec speaking businesswomen selling traditional tamales at the gates of Columbia University. Another student brought a study suggesting that the most popular snack food in Germany now was the Turkish doner kebab. We read Woody Watson's marvelous work on MacDonald's in China and discussed what it says about culture when Chinese children come to think of the hamburger, Ronald McDonald (and Mickey Mouse!) as Chinese? Lively debates and heated disagreements ensued in our seminar room.

There was no debate or disagreement about the fact that the high-octane fuels that would take Globalization 2.0 to new heights were the

new information, communication, and media technologies connecting us all and facilitating the exchange of ideas, symbols, and tastes across the world. The students kept coming back to a basic point: social media represented to them an altogether new gravitational field with transformational implications for basic cultural categories such as friendship, intimacy, identity, and work. Some of the students in the seminar took episodic and opportunistic journeys to the land of Facebook and "came back" for periodic ethnographic reports. Paradoxes abounded: some students arguing that new social media enabled them to be hyperconnected, yet others reporting that the new connectedness left them unfulfilled—even feeling more isolated. We were by then reading embryonic iterations of what eventually would become Sherry Turkle's masterpiece, *Alone Together.*

We came to argue that schools now needed to inculcate information and media literacy skills that were not on educators' radar screens even a decade ago. We reflected on the ideas of authority and authorship in the era of the remixed—not just in music but also in scholarship and other domains. Of course, we debated whether the internet was facilitating plagiarism or simply made it easier to detect.

Concurrently, we examined how new communication networks, especially high-speed, low-cost connections and the digitization of data, were having global effect. They put a high premium on knowledge-intensive work and make the deterritorialization of entire economic sectors not only possible but also a reality. We all read Frank Levy and Dick Murnane's studies on how computational technologies and outsourcing complemented each other and were at the root of a significant hollowing out of entire sectors of work in the industrial economy. Their research suggested that tasks that are "rule-based," (easily broken down into constituent units) could now be reduced to an algorithm and automated. Hence forth those jobs could be done anywhere in the world: complex data for a tax company based in Boston was now entered in Bangalore, X-rays for a hospital in Brussels were read and analyzed in Buenos Aires—all at a fraction of the cost.

By the mid-point of the seminar, we had made good progress in excavating the ruins of Globalization 1.0 and had begun to imagine the contours of Globalization 2.0. We all had a newfound appreciation of how fragile and threatened the miniaturized world of globalization 2.0 would

be. It is a world where a disaster in Afghanistan echoes instantaneously throughout the globe. And vice-versa: from our seminar room in Greenwich Village we became painfully aware of the catastrophic effect that the Lehman Brothers collapse had on the global stage, with reports suggesting that it added perhaps 90 million people to the 1.5 billion who are already living on less than 1.5 dollars a day.

Under Globalization 2.0 the fortunes of children growing up in Berlin or Bologna, in Toronto or Tokyo would be tied in direct and powerful ways to the fortunes of children growing up in Helmand and Kandahar. All serious problems would now be essentially planetary: deep poverty, increasing and ever more obscene inequalities, environmental degradation, catastrophic climatic changes, and mass migrations simply refuse to respect national boundaries. By the seminar's end we were carefully thinking through how the integration and disintegration of economies and societies demanded a new agenda for education and GoodWork both "here" and "there."

While we lauded the practical results of education, we realized that we were only at the beginning not the end of a discourse on education in the global era. What should be the purpose of a formal education? What are its relationships to the idea of flourishing, eudaemonia, and a happy life worth living? What are its relationships to the "E's" of GoodWork—work that is excellent, engaged, and ethical? How can education be put to the service of human freedom, dignity, solidarity, and life-long engagement? While these essential questions have been part of the archaeology of education in many traditions, Western and other alike, globalization subverts the parochial tendency to limit the conversation to local realities in bounded nation-states. The paradox that animated our seminar is that while education is local, the deep problems that will shape the future—hence our children—are indisputably global. The tensions between these two powerful truths fueled much of our discussions at the Seminar in the Village.

In teaching with Howard, and not just teaching Howard, I came to a near-Jamesian experience of what interdisciplinary work can do and, importantly, what its limits are. Teaching with Howard, I recognized that interdisciplinarity meant a careful coordination of our basic scholarly toolkits. Interdisciplinary work is at its best when it interrupts the taken-for-granted practices that come to dominate work within disciplines.

Interdisciplinary work with Howard taught me to proceed with caution—what I as an anthropologist take as self-evident may be challenged or rejected in other disciplines. Teaching Howard, alas, took considerably less energy than teaching with Howard. Our sharp seminar exchanges over universals versus culturally relative patterns in cultural psychology, I think, made the biggest impressions on our students. As Howard advocated in his legendary hyperarticulated style, there are good reasons why over the centuries the disciplines emerged as lasting modes for organizing knowledge, ideas, and inquiry. Coming together in that seminar room at NYU made us both stretch in our scholarly *habitus* and scientific imaginations. For that, and for our friendship, I am grateful to Howard.

Howard's Response to Marcelo M. Suárez-Orozco

It is difficult for those of us who are professors—perhaps especially long-tenured ones—to point to moments when their professional life changed. But I can. In the late 1990s, due to a no doubt well-intentioned but ultimately foolish vision, a wealthy Harvard alumnus gave a sizeable chunk of change to the Harvard Graduate School of Education so that it could have a well-furnished retreat. And so, for a couple of days, we moved to a hotel on the Charles River and went through various exercises devised by the management consultancy firm that was being very well enriched for leading this retreat.

At the time, I knew and liked you, Marcelo, but we had never really worked together. I taught about human cognitive development, you taught about immigration and culture. At the retreat, I was becoming annoyed by what seemed to me to be the almost exclusive focus on improving our inner city schools—and, as a metonym, I said to myself, "Is GSE simply the R and D wing of the Detroit Public School System?"

Marcelo, you are very gracious and very worldly (and less likely to mutter to yourself in a politically dubious vein). You began to talk about immigration problems as they were emerging all over the globe. You pointed out, I believe, that immigrants constituted the 4th or 5th largest "nation" in the world. And as you were talking, it suddenly clicked for me. Detroit is not just Detroit (remember this was in the late 1990s, not in 2014)—it has some of the problems and opportunities of other big cities in other places, whether they bear the names Jakarta or Delhi or Dublin. And this thought proved to be catalytic for me. It not only increased my interest in what might be done for inner cities in the U.S.; it stimulated me to think about which aspects of education are truly global, which pertain to a certain section of the globe, and which are distinctly local.

In the years following this retreat (which ended up being an "advance" for me!), the Gardners and Suarez-Orozcos became personal as well as professional friends (often joined by our friends Eric Blumenson and Eva Nilsen). And Marcelo, you and I began to meet regularly, to teach together, to apply for research funds together, and to

contribute in various ways to a few flagship schools, such the Ross School in East Hampton, Long Island, and the preschools of Reggio Emilia in Northern Italy. We even found ourselves together at the Vatican—not a place where one customarily encounters a Jewish boy from Scranton!

To our loss, in the middle 2000s, you and Carola left Harvard and began to teach at the Steinhardt School at New York University. You've given a brilliantly detailed description of our co-teaching over a two year period. At one time, it looked like we both would end up teaching there—of course that turned out not to be in the cards.

In my experience, co-teaching, particularly from two different disciplines (in this case, anthropology and psychology), is challenging. Typically it takes several years to click… if it ever does! I hope that I am not fooling myself in saying that our co-teaching worked well, almost from the first. I do not minimize the excitement of holding a seminar in Greenwich Village, mostly with young people who lived and worked in New York, and being able to see and hear the sounds and sights of the world's capital from outside the seminar room. I do not minimize the fact that we already knew each other and liked each other.

But I would emphasize two further points. First, as you point out, we were teaching the topics of "globalization" and "good work," at the very time when these issues were in the air, in the news, and on the wire every single day. Who could possibly have planned a second class on the day that Lehman brothers collapsed and that, shortly thereafter, the economy of the entire world was turned upside down?

No sane person could possibly contend that our course was not relevant.

Second, we had the proper distance from one another, both epistemologically and analytically. (As a sideline, neither of us is enamored of explanations which depend excessively on rational choice theory or biological determinism—in other words, we have some common enemies.) You approach questions as a cultural anthropologist—whatever their similarities and continuities, the closer you peer, the more cultures and their citizens differ from one another in profound and

perhaps even inexplicable ways. As a cognitive developmental psychologist, I am always searching for the universal elements in any human situation—or at the most, for a limited number of principled differences between groups (men/women; left hander/right handers). And when we hone in on specific instances, current or historical, you always want to look carefully at the individual case and figure out what is special about it, leaving any similarities to other cases mostly for another day. Almost instinctively I want to see whether I can find a generalization that encompasses the differences. It was probably the analytical and epistemological tension that most struck the students—particularly when it became quite vivid and vocal—and we should both hope that some of those debates have become part of their cognitive architecture.

I Bought a Used Car from Howard Gardner

Graeme Sullivan

I bought a used car from Howard Gardner. It was January 1992. I was taking up an appointment as visiting scholar at Harvard Graduate School of Education and with my life partner, Mary, we were setting ourselves up for a stay that was to stretch out for 18 months. Howard and Ellen had been very generous and we stayed with them as house guests for about a week before moving into a small, unfurnished apartment within walking distance of the Harvard community. Being resolute, we soon had the basic domestic necessities in place, including a few pieces of furniture borrowed from Howard and Ellen's basement.

As any visitor soon realizes, living in Boston without a car is not an option. It is a city that breathes by the pulse of people moving within it, and the drivers there take seriously their right to a liberal interpretation of road rules. In a conversation about Boston driving, Howard realized that my approach to being a visitor meant that even a mundane experience tapped into an everyday life pulse that offered its own reward, and he cautiously mentioned a possibility with a car he owned. Howard's car was in the shop waiting major mechanical repairs. It had been there for quite some time. His mother, Hilde, had recently relinquished her driver's license, and she was keen for Howard to use her still reliable small car. At the time he had no reason to get his VW Golf repaired. Although nervous about mixing business with friendship, Howard thought the Golf might be an option for us, if the cost of getting it back on the road was reasonable. We were willing. We paid for the repairs and Howard fashioned a receipt, more as a statement to confirm a mutual agreement rather than to record a transaction.

It was when we picked up the vehicle that I realized Howard was color-blind. The Golf was lime green. I remember thinking about this and chuckling at the time over some past quibbles I'd had with Howard's take on visual arts. On the other hand, the Golf itself held other references to personal histories of Volkswagen Beetle experiences as a mobile studio during art school days. As a system it had everything—it was ridiculously inexpensive to run, and for the analytically minded the VW was a deceptively simple car, even if the engine was at the rear. This yielded a

new storage space in the front trunk that could hold a remarkable amount of art supplies and teaching resources. The diagonal distance of the VW trunk and the distance from the cupped hand and the armpit became the two most crucial distances for a young art teacher accustomed to lugging around all manner of materials. But it was the totality of the experience of the VW that trumped any clinical knowledge of its workings. There was always room for one more; it slipped around the city with remarkable ease; although it often seemed to have a mind of its own, it never failed to start on cue; and the intimacy of the interior space meant that feelings of inside and outside became one. All these images flashed back as I peered at the newer version of the reliable old VW.

My road trip with vehicles of creative experience with Howard Gardner, however, began about a decade prior to this encounter in Boston. I came across the imaginative work of Howard and his colleagues at Harvard Project Zero as a foreign graduate student enticed to the U.S. by the enthusiastic post-1970s writing about arts and education and a curious new way of thinking about thinking from Europe called postmodernism. For someone looking for clues to bring together ideas about the richness of thoughts and feelings I understood from the art studio to the relentless mind map drawings of our young sons, I suddenly found someone saying things that opened up my mind. A comment by Howard from 1973 became a highly annotated quote for me at the time. He suggests, “the integration of affect and cognition is most likely to be realized if one focuses on pursuits where feeling and knowing are recognized as being intertwined, such as the arts” (1973, p.7). The idea that to know something, and to know it fully and differently could be embodied in the arts experience explained something I felt but did not know. Howard explained:

To participate fully in the artistic process, one must be able to embody within an aesthetic object significant knowledge or understanding of one’s own life, and to discern such knowledge when confronted by such an object. (1973, p. 36) [1]

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[1] Gardner, H. G. (1973). *The arts and human development.* New York: John Wiley & Sons.

Perplexed by the mindful workings of the thoughts and artful activities of seven year olds, my research path became a partial echo of the symbolization studies undertaken by Howard and his colleagues, David Perkins and Dennie Wolf. They were explaining the importance of visual knowing as a way for many children to make sense of their worlds. My curiosity got the better of me at a crucial point in my studies, and I sent Howard a letter to sound out my ideas and questions about the intriguing differences, inventive logic, and naïve wisdom to be found in the edgeless, unstoppable mindspace of the young. My letter was sent more in hope than in expectation. Yet, as many others have come to find, Howard is a most disciplined correspondent. For a struggling doctoral student looking to focus a lifetime of intuitions the response I received from Howard within a few days was life affirming.

It was the rich descriptions of individual differences in the mindful workings of young artists that kept me fully engrossed. This is how Howard described what I was seeing in the youngsters I was working with.

While patterners cling to the activities of drawing, modeling with clay, and arrangement of numerical arrays, the dramatists prefer to engage in pretend play, in storytelling, in continuing conversation and social interchange with adults and peers. For them, one of life's chief pleasures inheres in maintaining contact with others and celebrating the pageantry of interpersonal relations. Our patterners, on the other hand, seem almost to spurn the world of social relations, preferring instead to immerse (and perhaps lose) themselves in the world of (usually visual) patterns. (1980, p. 47) [2]

In the midst of my work with the magical minds of over 200 7 year olds and their storytelling, drawing, and clay making, I had a chance to visit with Howard and his colleagues at HPZ. I was warmly welcomed as someone with a serious intent and common interest. This opened up opportunities and access to a community of questioning minds that was a revelation. To be able to sift among the field notes, marvel at the ideas captured in the images of things made, to read the drafts of emerging

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[2] Gardner, H. G. (1980). *Artful scribbles. The significance of children's drawings.* New York: BasicBooks.

thinking, and to note things I would do differently was to visit something I knew and to come to know it for the first time. It was like visiting the studio of an artist when you're familiar with the work as it is shown on white walls, but here the thumbprints of thoughts are smudges found around the walls, in newspaper clippings, on postcards, and in sketches that hint of things to come. This is the part of scholarly experience that can't be delivered through peer-reviewed articles and published texts. These ideas have to be seen and felt.

Ultimately, the meaning-making practices of the young couldn't be made to fit within the limits we imposed. Even if the theories gave new vision to the complex simplicity of these negotiated realities, these were worlds we were still to come to know. And Howard was already anticipating how we might think about the various ways our minds might function.

I argue that there is persuasive evidence for the existence of several relatively autonomous human intellectual competences, abbreviated hereafter as "human intelligences." These are the "frames of mind" of my title. The exact nature and breadth of each intellectual "frame' has not been so far satisfactorily established, nor has the precise number of intelligences been fixed. But the conviction that there exist at least some intelligences, that are relatively independent of one another, and that they can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures, seems to me to be increasingly difficult to deny. (1983, pp. 8-9) [3]

Howard's passion for challenging and critiquing consensus has understandably attracted its own industry of critics. But perhaps more importantly, his deft analytical incisions and crisp curatorial excursions across fields of schooling, creativity, leadership, and ethics have given many others permission to think differently. Educators, for example, responded with genuine enthusiasm to Howard's way of framing individual potential, and this set in motion a sustained period of imaginative thinking about how children learn and how schools might teach. This was at a time when a new functionalism was turning schools

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[3] Gardner, H. G. (1983). *Frames of mind. The theory of multiple intelligences*. New York: BasicBooks.

into standardized chunks where the indirect outcome was to measure children's learning by what they did not know. For someone whose job it was to excite others about art, I found Howard's perceptive understanding of the power of human potential to affirm my unfettered belief in the importance of the creative and critical practices found in the arts. In his 1991 text, *The Unschooled Mind*, Howard reinforced the primacy of what it is to 'make something' and how generative this process is for giving new form to thoughts and feelings.

In the arts, production ought to lie at the center of any artistic experience. Understanding involves a mastery of the productive practices in a domain or discipline, coupled with the capacity to adopt different stances toward the work, among them the stances of audience member, critic, performer, and maker (1991, p. 239).[4]

The central role of making that's at the heart of art has never been far from how I think about what we do as artists, researchers and teachers. For me, the quirky, quarrelsome field of contemporary art never fails to reveal the insights I need to shape arguments in any forum, from debates about research, theory and practice, or policy and politics. The balance between the intriguing uncertainties of contemporary art and the sustained encouragement evident in Howard's writing that I've come to know over the past 30 years has long been a perspective that helps frame the journey.

In 1993, when my time as visiting scholar and research consultant at Harvard Graduate School of Education came to a close Mary and I planned to drive across the U.S. before returning to Australia. The idea was to bypass the interstate highways and explore the towns on route—it was to be our discovery road trip and a reality check on the U.S. pop icon landscape we grew up with as kids in a different space. We were confident that the lime green Golf could make the trip; after all it had taken us to Ohio, New York City, and all over Massachusetts. And we figured we could give it to someone in LA. But a colleague at HPZ was moving back to the West Coast and needed her vehicle transported there. So we did a swap, she could have the Golf and we would drive her car

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[4] Gardner, H. G. (1991). *The unschooled mind. How children think and how schools should teach.* New York: BasicBooks.

across the country. After all, it seemed highly appropriate that Howard's Golf remain around Cambridge, to be seen as a green glimpse carrying someone else along the way.

Howard's Response to Graeme Sullivan

It is quite wonderful, and not that common, when individuals and families from halfway around the world connect both professionally and personally, and the connection endures for decades. But that's what happened to the Gardner and Sullivan clans. And so a connection forged initially in Cambridge not only led to encounters in various parts of the U.S. but to a wonderful family trip to Australia, where the Sullivans introduced the Gardners to the cultures and to the culture, in the way that only true natives can.

Graeme, you choose to write about the funny episode involving the VW. And your wry account brings back some vivid memories. But I also saw the VW as a metaphor. After all, it is not the most expensive, or the fastest, or, for many, the most beautiful car (though I still drive a VW and I still think it is beautiful). Rather, the VW has survived through the decades, and through regimes both despicable and admirable.

You and I come from different national backgrounds; your training is more in quantitative analysis while I am a fundamentally a qualitative researcher. My artistic predilections—while probably quite adventurous compared to those of the average viewer—are conservative compared to yours. Indeed, we have had many discussions about how to create arguments in the area of arts education, what are the relevant data, and what relationship should obtain between art making and art research (these echo some of my discussions with Elliot Eisner)—whether indeed there should be a line at all, and if so, how fluid and flexible should it be. I have benefited from these exchanges over, now, decades, and I hope that you have as well.

But in the end, neither of us wants to score a knockout or even to win on points. We want to advance the discussions and deepen our understanding, and we are open, as appropriate, to changing our minds. Certainly I have learned from you, over the years. And in that sense, we are both "Volkswagen" types—in it for the long and hopefully safe run, little wasted time or motion, and don't worry too much about the frills.

Deborah Tannen

Dear Howard,

I'm delighted to add my voice to the chorus of those honoring you on your 70th. What a difference your groundbreaking work has made to countless students and educators—and to contemporary thought.

On a more personal note, knowing you and Ellen has been a privilege. Every December, as our yearly reunion nears, I look forward with eager anticipation to seeing you both.

Congratulations, my friend!

Warmly

Deborah

Howard's Response to Deborah Tannen

I have spent more than a few moments around opinion makers as they voice—typically quite vocally!—what they have been thinking about. Often, those ideas are of interest, but rarely are they memorable. It was different in the middle 1990s at one memorable Renaissance Weekend. You were the speaker, Deborah, and the audience was filled with various worthies, including both Bill and Hillary Clinton. You introduced a term which was certainly not familiar to me—and I suspect that you may have created it for the occasion—"the culture of critique."

The moment was right, the word was right, and your presentation was compelling. Over the course of the weekend, I heard several people invoke your phrase "the culture of critique." It was not long before there was a New York Times op-ed, a book based on this concept with the title *The Argument Culture*, and—as inevitably happens—people invoking the phrase without the slightest knowledge of its provenance.

Finding the right phrase, and then being able to convey it to large numbers of people, is no easy task. Many of us so aspire, very few of us achieve. And you have the special genius of both discerning an important phenomenon (one missed by nearly everyone else) and then describing it so that others have an "aha" experience.

Like thousands, perhaps millions of people all over the world, I've had experience with your ideas on a number of occasions. And I plead guilty to sometimes sharing the insight without giving you credit. So this note gives me the chance, on behalf of a great many people, of thanking you for helping us understand the world of human communication better; and for giving us hints about how to improve our skills of saying what we want to say, listening carefully to the words and pauses of others, and actually coming to understand one another more precisely.

Learning to Look Closely: Observing Distinctions that Matter

Shari Tishman

When I first read *Frames of Mind* in the summer of 1985, it changed my life. At the time, I was considering applying to graduate school, and one of the places that attracted me was Harvard Graduate School of Education. *Frames of Mind* so impressed me that the possibility of studying at an institution where Howard Gardner was on the faculty clinched my decision. I applied, and in the fall of 1986 I was fortunate enough to enter a doctoral program there. I arrived on campus full of energy, short on cash, and in need of a job. When a work-study position opened with Project Zero Co-Director, David Perkins, I eagerly applied for it. The work, and the company, was a perfect fit with my interests, and Project Zero quickly became my intellectual home. One thing led to another, and 26 years later I still work at Project Zero and it still feels like home. Over the years Howard has become a valued friend as well as a colleague. It is a pleasure to work alongside him at Project Zero, where I am continually inspired by his vision, awed by his intellect, appreciative of his ethics, and amused by his wit.

Frames of Mind was a landmark book. It distinguished seven distinct modes of intelligent behavior that had previously been murkily separated or understood, it described these differences with clarity and rigor, and it provided a powerful lens—the theory of multiple intelligences—through which educators and others might look to see these differences themselves. Look they did, and continue to do. More than a quarter century later, "MI theory" is known by educators in every corner of the globe, and interest in it continues to grow.

One could argue that the making of important distinctions is a theme across much of Howard Gardner's work. For example, in *Five Minds for the Future (*2007), he distinguishes five mental dispositions that are crucial for leadership in the future. In his long-term project, *GoodWork* (http://www.goodwork.org/), he and his colleagues identify three distinct dispositions that intertwine when people do good work. In this treatment of the virtue of beauty in his recent book, *Truth, Beauty*

and Goodness, Reframed, he addresses the theme of distinction-making directly. Commenting how to help young people learn to appreciate art, he argues that what's important is to "help young people notice distinctions that matter." But he advises that we shouldn't do this by comparing two works of art and asserting "which is better, which is more valuable, which is more beautiful." Rather, "we should encourage young people to notice, and to articulate, the differences they can discern between various "tokens" of the "type"—for it is the *capacity to distinguish* that truly matters." (p. 136)

In recent years, much of my work at Project Zero has focused on developing ways to teach young people to think through looking at art. I've become increasingly struck by how much is gained, from the standpoint of understanding, when learners are given modest scaffolding and ample time to simply look closely at what's in front of them and describe what they see, temporarily holding judgment and interpretation at bay. I've noticed that the gains in understanding that come about as a result of close observation aren't limited to art, though works of art have a special kind of complexity. Yet when learners take time to look closely and observe everyday objects and artifacts, the gains can be just as striking. This essay takes as its starting point the idea that if we want to develop people's capacity to distinguish differences that matter, a good way to start is to develop their capacity to observe the world carefully and describe what they see.

Whether you're looking at an object in an art museum or an object in nature, if you want to see distinctions that matter, most of the time a passing glance won't suffice. Close observation takes time and effort, and there are tools and techniques to aid the eye. Physical tools such as a microscope or telescope provide aid by mechanically enlarging or reducing the degree of scope. Cognitive tools aid the eye by providing advice that shapes attentional focus in various ways. The advice can be broad, as in, "look with fresh eyes," or more targeted, as in "look closely at the brushstrokes." Targeted observation techniques usually operate at the level of a specific discipline. For example, archaeologists use categories to help focus their attention on specific set of features in a landscape that may indicate the presence of buried artifacts. Physicians use categories to help them seek typical symptoms of illnesses. Additionally, there are some broad, easily-recognizable observation

techniques that are widely in many disciplines and in everyday life. Often these strategies are so embedded in the way we look at the world that we are hardly aware we're using them. This essay looks at a handful of these everyday strategies. Drawing mainly on examples from art and science, I try to show how they are used in diverse setting to help observers make distinctions that matter.

Categories to Guide the Eye

A 3rd grade class is on a field trip to a local art museum. The museum guide brings the group to a large painting of a landscape in a traditional European style. The children sit in a circle on the floor and the guide asks them to look quietly at the painting. After a moment she begins to speak. "I have three questions for you," she says: What colors do you see? What shapes do you see? What lines do you see?[1] Let's start with colors." Immediately several hands shoot up. "I see red," one child says. "I see blue," says another. After several more observations, a discussion ensues about the color of the water. At first the children identified it as blue, or blue-ish green. But someone points out a streak of silvery purple, and suddenly the children began seeing a variety of hues and tones in the water that they hadn't seen at first. They notice that the color of the water is reflecting the color of the sky, and they begin to notice colors in the sky as well.

By asking the children to look for three kinds of things—colors, shapes and lines—the museum guide is using a version of a common observation strategy: guiding the eye through the use of categories. The categories she chooses name types of formal elements of the painting. While there is certainly more to be seen in the work than is captured in these elements, they provide a good starting point. By directing the children's attention to them, and—very importantly—by asking them to describe what they see, she encourages discriminating observation in several ways. First and foremost, she provides categories that tell the children what to look *for*—colors, shapes, and lines—which straightforwardly heightens their awareness of these elements in the painting. Secondly, searching for these elements provides the children with a goal, which, at least for the time being, anchors them to the work and keeps them engaged. Thirdly, because there are plenty of colors, shapes, and lines in the painting to see, and seeking them out takes time, the exercise encourages the children's eyes to linger longer and see

more. Finally, the challenge of accurately describing what they see encourages the children to make increasingly nuanced observations, such as when they identify the color of the water as blue and then go on to notice its more subtle coloration.

Using categories to guide the eye is common practice in settings where there is more to be seen than can be captured in a passing glance, and there are variations of it in any discipline that depends on empirical observation. Categories work by selectively drawing our attention to certain features rather than others. By virtue of being selective, they communicate ideas about value and importance. Debate about which categories should be used to guide observation is part of the discourse of a discipline or profession. For example, recall the "color, shape, line" strategy the museum guide used with the children. A formalist art theorist might argue that the strategy is inadequate because it fails to guide the eye to other important formal features of the painting, such scale and proportion or color value. Yet another scholar might argue that a strategy for helping children look closely at art shouldn't emphasize formal elements at all, and should instead direct children's attention to other kinds of things, such as the objects and people depicted in the painting, or how the painting makes them feel, or what they see going on in it. Debates like this animate a discipline, and they don't always get settled easily, or at all. But sometimes a set of categories advances observation in a field so rapidly that the strategy quickly becomes standard practice.

Turning to science, a good example comes from the work of Joseph Grinnell, the first director of the Museum of Vertebrate Biology at UC Berkeley, and one of the developers of the idea of "ecological niche." In his early training as an ornithologist and naturalist, Grinnell travelled widely to observe birds and other animals in their natural habitats, and he recorded his observations in field notes. Following the note-taking conventions of the time, his notes consisted of lengthy lists that recorded species of birds seen and number of birds seen, but not much else. Though this was standard practice in the field, Grinnell came to see that limiting the scope of field notes to two categories—species and number—failed to encourage observers to pay close attention to other important features, such as weather and habitat. So he developed a more rigorous system that required note-taking in numerous categories. The system,

which he required his assistants to use scrupulously, encouraged the collection of much richer environmental data than had been previously collected, and his method is often credited with fueling the huge growth of environmental field research in the United States in the early part of the 20th century. Developed more than a century ago, the "Grinnellian method" is still standard practice for naturalists today.

Open Inventories

The field notes of Grinnell and his associates have been preserved by the Museum of Vertebrate Zoology and made available for study. Scholar Cathryn Carson has looked at them carefully and notes an interesting change over time (Carson, 2007). She observes that when Grinnell first established his method, he maintained it fairly rigorously. Over the years, however, his notes became more relaxed to include extensive subjective descriptions and wide-ranging observations. As a mature scientist, Grinnell came to believe that it was impossible to know in advance what would be important to science in the future, and his later notes reflect this. Though he always required his assistants to adhere strictly to the note-taking system he developed, in later years he expanded the system to require extra notebook pages for capturing seemingly unimportant observations. He had good foresight: Today, scientists are examining the notes of Grinnell and his associates for clues about contemporary climate change—something Grinnell could not have anticipated.

Observation strategies are heuristics—rules of thumb to be applied when they are useful and to be set aside when they are not. Like scientific observers, connoisseurs of art understand this as well. The renowned 20th century cellist Janos Scholz was almost as famous an art collector as he was a musician. Much of his collection of Italian drawings can now be found at the Morgan Library, and most of the rest of his vast collection of photographs, prints, and drawings is scattered across well-known museums in the United States. Known for his connoisseur's eye, Scholz wrote about how to observe quality in an artwork. Like our museum guide, he emphasizes elements of form: "Experience will teach the connoisseur to establish a routine for examining various components, like spontaneity of line, imitation of substance, the sensation of visual depth…." But, he urges, equally important is "breaking the eye." "[l]ook always at everything, everywhere! This is a

cardinal rule, basic and sacred for the connoisseur-curator" (Scholz, 1960).

Of course it is impossible to see "everything, anywhere" in any objective sense. But what the stories of Scholz and Grinnell illustrate is that good observers try to notice as much as they can, in any way they can. Using categories to guide the eye is a useful strategy, but so, too, is the strategy of intentionally "breaking the eye" to see beyond them. This brings us to another observation strategy commonly used in art and science: the making of open inventories.

An inventory is an itemized list that aims to record every item of a certain kind or in a certain location. Naturalists take inventories of flora and fauna; businesses take inventories of merchandise. Encyclopedias are a kind of inventory, because they aim to represent comprehensively all aspects or instances of a particular kind of thing. Inventories can be narrow in scope, such as a count of owl species in a limited area or an encyclopedia of chess moves (which, for all its narrowness of scope, fills several volumes). Inventories can also be dazzlingly broad, as in the *Encyclopedia of Life,* an online initiative with the goal of creating a digital inventory of all the life-forms on earth.

Often the entries in an encyclopedia fall easily into a single category (chess openings, life-forms). But sometimes they don't, and it is this latter sort of inventory that the term *open inventory* is meant to capture. Consider the *Encyclopedia Brittanica,* which aims to represent the entire range of human knowledge. In the print edition (although not the online version) the entries are arranged alphabetically. This provides an aura of orderliness, but the alphabet is simply a convenient container for wildly heterogeneous content. Open to the "R" pages and you can find entries under Rutabaga, Religion, and Roman Road Systems.

As an observation strategy, open inventorying eschews categories in favor of taking encyclopedic-like stock of all observable features. Its purpose is to capture the rich, often category-defying jumble of features that make up a whole, and it cultivates a different kind of discriminating perception than the use of categories. Categories help us make perceptual discriminations by directing our attention to certain characteristics of a feature that make it part of a set—the way a circle is part of the set of shapes in a painting, for example. Compiling an open

inventory of features draws our attention to the particularity of each individual feature itself, and ultimately to the complex coalescence of disparate features into a larger whole.

What does open inventorying look like in practice? Let's return to our museum guide. Continuing the tour, she leads the children to a similar painting in the same gallery. The painting shows a pastoral scene of farmland and rolling hills dotted with a few farms. "This time we're going to do something different," she says. "Take a look at this painting. Let's look at this painting and make a list of every single thing we see." The children dive right in.

"I see a house."

"I see people working in the fields."

"I see a farm."

"I see puffy clouds."

"I see a warm day; people don't have coats on and it looks like they're hot."

"I see a lot of white everywhere."

"I see someone who looks sad."

"I see a picture frame."

"I see a lot of gold and fancy carving on the picture frame."

"I see the artist's signature at the bottom."

The list continues to grow as the children identify more and more features of the work. Their observations vary widely in type; some are about the formal features of the painting—the whiteness of the clouds, the patchwork pattern of the farmland. Some are about the feel of the painting—the warmth of the sun, the sadness of a face. Some are about the narrative—the story the painting seems to be telling. Some are even about the painting's frame and the artist's name. While the children's observations don't parse neatly into categories, the inventory they collectively create captures something of the complexity of the painting—

the multiple interacting ways in which the work makes itself vivid and meaningful.

Very important to this process is the fact that the children are *describing* what they see. Description is an act of observation, and putting their observation into communicable form helps the children to see more details. Also, their descriptions are *evocative;* listening to each others' descriptions helps them see things more vividly as well.

Evocativeness is the name of the game in poetry, and inventorying can be a powerful descriptive technique. Few poets love a good list as much as Walt Whitman. Here are some lines from stanza 8 in *Song of Myself.*

The blab of the pave, tires of carts, sluff of boot-soles, talk of
the promenaders,

The heavy omnibus, the driver with his interrogating thumb, the
clank of the shod horses on the granite floor,

The snow-sleighs, clinking, shouted jokes, pelts of snow-balls,
The hurrahs for popular favorites, the fury of rous'd mobs,
(Whitman: Online)

Whitman's inventory of the winter scene skates across categories. The incongruent juxtaposition of the "blab of the pave" and "the rumble of the crowd" and the driver's "interrogating thumb" asserts the particularity of each feature, while the profusion of perceptions as a whole conveys the complexity or a world that is jumbled but not random. This sense of jumbled connectedness is the yield of a good open inventory. We can see it in the children's list, as well as in Whitman's lines. Articulating this quality in his poem *Windsor-Forest*, Alexander Pope describes the jumble of wild elements in a forest scene, and notes how they hang together,

Not Chaos like together crush'd and bruis'd,
But as the world, harmoniously confus'd.
(Pope: Online)

Visual artists like open inventories, too. Pieter Breughel's paintings (both the elder and the younger), offer an exuberant visual inventory of the wide sweep of activities at a single moment in village life. Open inventories have a collage-like quality, and artists who favor the strategy sometimes use collage as a medium. Works like The Dove, by Romare Beardon, use collage to depict the profusion of images and activities that capture the immediacy of an urban street scene. Robert Rauschenberg's Combines take collage into three dimensions and feel inventory-like in the way they bring together a profusion of distinctly different elements to create a sense of immediacy. With a double use of the strategy, they communicate a sense of jumbled connectedness, and are themselves a physical instance of open inventory, comprised as they are of wildly disparate objects—the head of an Angora goat, a tire, printed images, paint splotches, battered strips of wood.

Scale and Scope

The observation strategies I've mentioned so far—using categories to guide the eye, and making an open inventory of disparate items—are a kind of pair, because they work in opposite ways and are often used as correctives to each other. Another pair of observation strategies is *scale and scope.* These strategies tend to work in conjunction with each other rather than in opposition. The strategy of scale involves observing and describing things from close up or from far away, in order to bring certain features into relief. The strategy of scope brings features into relief by adjusting breadth of view.

Contemporary artist Vija Celmins uses close-up scale along with narrow scope in her stunningly detailed drawings of the surface of waves, drawing attention to the fluid geometry of moving water. Photographer Yves Althus-Bertrand takes wide-scope pictures from above the earth that draw attention to painterly patterns of topography indiscernible at ground level. Artist Chuck Close's over-sized portraits, made up of seemingly pixilated shapes inside shapes, require viewers to make their own adjustments of scale: One must stand back from the painting to bring the shapes into focus, and look at it close-up to see how the individual shapes form a grid.

A common strategy of scope involves using a frame. It can be the frame of a camera lens, the frame around a painting, or the frame you

peer through by creating a circle with your index finger and thumb. A beautiful example of framing as an observation strategy is the photographer David Littshwager's "one cubic foot" project. The project involves inserting the open frame of a 12- inch cube into variety of natural environments, from Central Park in New York to Table Mountain in South Africa, and photographing every living creature that lives in or moves through the framed space. In an example that uses the descriptive strategy of open inventory to describe the results of the strategy of framing, here is entomologist E.O. Wilson writing about what kinds of things Littschwager finds (2010):

There are the insect myriads creeping and buzzing among the weeds, the worms and unnameable creatures that squirm or scuttle for cover when you turn garden soil for planting. There are those annoying ants that swarm out when their nest is accidentally cut open and the pesky beetle grubs exposed at yellowed grass roots. When you flip a rock over, there are even more: You see spiderlings and sundry pale unknowns of diverse form slinking through mats of fungus strands. Tiny beetles hide from the sudden light, and pill bugs curl their bodies into defensive balls. Centi-pedes and millipedes, the armored snakes of their size class, squeeze into the nearest crevices and wormholes.

How might our museum guide use strategies of scale and scope with the children? The most straightforward thing she can do is to have them change their physical perspective. For example, they can lie on the floor and look up at sculpture. They can stand close to a painting and describe how it looks when their eyes are six inches away. They can use a viewfinder, or a scope made with their thumb and forefinger, and use it as a frame to to isolate a section of a painting to look at. Any of these strategies will engage the children and help them see the paintings in new ways.

Juxtaposition

The last observation strategy I'll mention is *juxtaposition*. This observation technique, which consists of placing objects next to each other with the purpose of bringing forward certain features through comparison, is so common that it almost begs being called a strategy. But it functions as a strategy when we purposefully juxtapose objects in order to more clearly see the specific features of each one. A

straightforward example of the strategy at work is in the research collections of zoology and botany, in which specimens of species of fauna or flora are juxtaposed so that scientists can discern differences and similarities. Museums, of course, are repositories of collections, and the strategic juxtaposition of objects is a linchpin of museum display. Whether a collection of plant specimens or paintings or potsherds is on display, the adjacencies of objects are usually designed by curators to draw visitors' attention to particular features. Often the difference between juxtaposed objects is clearly visible, such as in an exhibition of different paintings by the same artist. But juxtaposition can be strategically used to draw attention to hidden differences as well. A clever display in the Art of the Americas wing of the Museum of Fine Arts in Boston shows a row of 18th century chairs. The chairs are all made in exact same style, and at first glance they look almost identical. But upon close inspection, and with some gentle encouragement from a wall placard, one begins to notice subtle ways that different cabinetmakers interpret the features of a standard design. For example, all the chairs have ball and claw feet—a common design of the time in which the foot of the chair leg consists of a carved bird claw clasping a wooden ball in its talons. One cabinetmaker favors a tightly gripped claw that seems to cause the ball to bulge between the talons. Another shows the claw resting lightly on the ball, as if a bird had just alit there. Discerning this distinction leads to more discoveries, and soon what initially looked like a bland grouping of chairs becomes quite intriguing.

The children in the museum probably have museum fatigue by now. But supposing the museum guide refreshes them with a quick trip to the museum cafeteria, how might she use juxtaposition as a strategy to help them look at a few more paintings? The possibilities are numerous and known to any educator who instructs through the use of comparisons. For instance, the children could identify two paintings that seem alike, then describe how their features are similar and different. They could look at the gallery as a whole and look for similar and different features across all the works. They could propose their own juxtapositions by choosing two or three paintings they'd like to place next to one another, and explain why. All of these strategies would work. But it's time to let the children go. Otherwise we risk overloading them. This brings us back to the question of how best to develop people's capacity for observation, so that they learn to see distinctions that matter.

Three Design Criteria for Instruction

Three criteria should guide the design of learning experiences that aim to develop people's capacity to observe the world closely and describe what they see. The first is to create opportunities in which student have ample—really ample—time to look at one thing closely, whether it is a painting, a square of the natural world, a historical artifact, or an object from everyday life. There is much to be seen in these sorts of objects, as long as one doesn't rush. There are layers to be uncovered, nuances to be noticed, complex relationships to be discovered, that can only be discerned slowly. Time is the one of our most precious educational resources, and we must spend it lavishly if we want to cultivate young people's capacity to distinguish differences that matter. This means opting for depth over breadth. The museum guide has to make a hard choice: Should she give the children a tour of the entire museum, making sure to point out its many highlights, as perhaps the children's teachers and parents expect? Or should she resist expectations and give them real time to look? She rightly makes the second choice.

The second criterion for designing experiences that help people learn to look closely is to provide modest but optimal scaffolding. This is especially true for children but also important for us adults. It's hard for anyone of any age to look long at something with no structure at all. The general strategies I've mentioned in this essay scaffold the process of observation in specific and accessible ways. Using categories to guide the eye provides things to look *for.* Making an open inventory provides a structure for capturing disparate observations. Varying scale and scope provides opportunities to see things from fresh perspectives. Juxtaposing objects makes distinctions discernable by bringing forward similarities and differences

The third requirement for cultivating a capacity for observation is to allow young people to look for themselves. This sounds good in theory but it is surprisingly hard to do in practice. Most educators I know care passionately about helping people learn. How hard it is not to freely impart the knowledge we have to share! How hard for a museum educator not to step in and tell the children what scholars have determined are the important things to notice in a painting. How hard for the science teacher not to tell the budding naturalist which features of the environment matter most. I don't want to argue that we should never

impart information to students—of course we should, and there are plenty of good times to do so. But teaching people to be good observers means convincing them that it is worthwhile looking at things for themselves. Otherwise we give them no incentive not to default to secondhand perceptions. Perhaps a good way to develop young people's capacity to see differences that matter is to give them the time and the tools to observe the world closely on their own, and stand back and listen to what they find out.

Note

1. This strategy is one of several "thinking routines" found in the Artful Thinking Program, http://www.pz.harvard.edu/at/

References

Carson, C. (2007). Writing, writing, writing: The natural history field journal as a literary text. *The Doreen B. Townsend Center for the Humanities*. http://townsendcenter.berkeley.edu/article11.shtml

Gardner, H. (2007). *Five minds for the future*. Harvard Business School Press: Cambridge, MA.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the 21st century*. New York: BasicBooks.

Scholz, Janos (1960). Connoiseurship and the training of the eye. *College Art Journal, 19*(3), p. 228.

Whitman, W. (1881) http://www.princeton.edu/~batke/logr/log_026.html

Wilson, E.O & Liittschwager, D. (2010). National geographic. http://ngm.nationalgeographic.com/2010/02/cubic-foot/wilson-text

Howard's Response to Shari Tishman

Shari, there are a few of us at Project Zero who have earned the moniker "lifer," and clearly you are one of them. Now I know that you were not born on Brattle Street and that you actually had a childhood and a college education before you arrived in Cambridge. I can't say for sure that it was "love at first sight" when you came to Project Zero (wherever it happened to have been located that particular week) and encountered the ideas of Nelson Goodman, David Perkins, Israel Scheffler and other major thinkers about the arts and cognition.

But it seems that the ideas stuck. And as much as anyone in our by now quite expanded and venerable organization, you have "kept the faith." Several people involved in the Project have pondered how we look at and make sense of works of art. But you have made this enigma central in your research enterprise over two decades, and your insights are important and powerful.

In your essay, you foreground well the skills and approaches in the air at Project Zero that you have made your own—on which you've put your distinctive stamp. You indicate the kinds of experiences and questions that open the eyes and minds of young persons, as well as those that come to be favored by experts of various disciplines. You put forth various strategies, like using a frame around a work, or changing one's own physical perspective on the work, or putting two seemingly disparate (or perhaps eerily similar) entities next to one another and then reflecting on what is similar and what is different and what matters.

I've seen you carry out exercises like these numerous times, with audiences ranging from young children to quite sophisticated graduate students. You do it masterfully! What's important to note is that, in untutored hands, these "thinking tools" can be quite mechanical—just exercises to go through, en route to the next thinking routine. But when properly handled, they are subtle and powerful methods of enabling the individual to get closer to the work or whatever the display is; to notice what might otherwise have been missed; to think about what it might mean; to make unexpected comparisons and distinctions; and then—long after the teacher and the tools have disappeared from the scene—bring to future encounters newly opened eyes and freshly opened minds.

Sherry Turkle

My relationship with Howard Gardner is professional. My appreciation of him is personal. He has given me the kind of encouragement that professional colleagues, at their best, can give: support that nurtures one's work and helps one do better.

I first met Howard at a formal meeting in New York in 1984. It was early days in the nascent computer culture and a group of social scientists had been called together to consider how we could contribute to studies of digital life. As I recall, we were convened at an elegant hotel, fed a beautiful lunch, and asked to imagine the great things that lay ahead. But by the time of this formal meeting, Howard had been my secret tutor for over a decade, an inspiration to me but unaware of his role. Howard conducted our tutorial sessions through his writings. It was my good fortune that Howard Gardner's curious mind was interested in problems that consistently touched upon my own concerns.

In 1973, I was living in Cambridge, a graduate student preparing to go to France on a somewhat improbable assignment: to interview French psychoanalysts about an intellectual mystery. Through the mid-1960s, there was no Standard Edition of Freud in French and not much of a psychoanalytic movement. While postwar America had taken up Freud with relish, French attitudes toward psychoanalysis remained more or less where they had been before the war: hostile or at best uninterested. What had made France so resistant to psychoanalytic ideas? And why, at around the time of the student/worker uprising of 1968, had there been an explosion of interest in psychoanalysis—what I came to call a French "infatuation" with Freud? That post-1968 interest was through the work of a French analyst, Jacques Lacan, whose linguistic and Cartesian spirit is captured in the advice he gave to a young analyst about the best preparation for psychoanalytic training: "Do crossword puzzles."

In 1973, to prepare for my dissertation fieldwork, I was reading books that might help me interview French psychoanalysts about this intellectual mystery. My favorite reading spot was Radcliffe Yard, where I had studied as an undergraduate. There, I read Howard's just published, *The Quest for Mind: Piaget, Lévi-Strauss, and the Structuralist Movement.* It spoke directly to my problem. Howard's discussion of structuralism helped me think about what was distinctive about the intellectual

landscape on which psychoanalysis had met such profound resistance. And it helped me consider what psychoanalysis might have to become for the French to accept it. Reading *The Quest for Mind* made it clear that Lacan was making headway in France by becoming a "French Freud." Howard, not yet an acquaintance, supported my first approach to my dissertation.

My work on psychoanalysis in France reflected my interest in a larger question: How are ideas about mind taken up by larger cultures? How do ideas from "high science" get played out in everyday life? For me, this question led to an interest in a new science of mind unfolding closer to home: How were personal computers—just hitting the home market in the late 1970s carrying computational ideas about mind into everyday life? I took a job at MIT and threw myself into the study of computers and people, particularly young people. How did working with computers change how people thought, especially about themselves? So, for example, if you began to see mind as program, what happens to your ideas about human intentionality and free will? About emotion and identity? In my exploration of how computers change our minds, one of the things I studied was children learning to program. Did this new skill, which entailed learning to "think like a computer," change the way children thought about other things?

At the time that I was studying children and programming, most people assumed that programming was an activity that could only be approached "engineer style," in a top-down, divide-and-conquer manner. I actually found something different. Children learned to program in a range of styles. Their teachers might instruct them to make a flow chart and map out a problem hierarchically, but when children were on their own, they tackled problems with a great diversity in approach. What "everyone knew" about programming was wrong. And what was true for children learning to program was also true for experts: the great computer "hackers" had a style that could not be further from "canonical" approaches.

Among child programmers I found the canonical "engineering style" of work, but I also found children I called "soft mastery" programmers. I likened them to *bricoleurs* or tinkerers. They came to programming with a painterly attitude, as though they were in negotiation with craft materials. The bricoleurs (I named them so in honor of Claude Lévi-Strauss's "scientists of the concrete") worked with

computational objects as though they stood before a canvas. They approached a programming problem and said, "I'll try this," and then they stood back, reassessed, and if that first thing hadn't worked, they tried something else. Then, they took stock once again. They were in continual dialogue with their material.

Beyond their characteristic style of interaction with computational objects, the bricoleurs had a characteristic relationship with them. This was to see them not as abstract but as concrete and to want to stay "close" to them. So, when working in the programming language Logo, with computational objects called "sprites," the "engineer-style" programmers tended to see sprites as being at their command while the bricoleurs saw sprites as something to identify with, body-to-body. The bricoleurs put themselves in the place of the sprites; they imagined themselves moving as the sprites moved. Anything more than a superficial understanding of children and programming required a theory of multiple styles of attachment to knowledge.

So, eight years after the summer when I was reading up on how to approach French Freud, I was on that same Radcliffe lawn, reading up on how to think about children's diverse cognitive and emotional styles so that I could better understand how they approached computer code. I had changed fields: now I had data on how hundreds of children learned to program. And it seemed that Howard Gardner had changed fields as well. He, who had guided me through French structuralism, was now doing work that helped me think through how children could program computers by thinking like painters.

And as before, it was good to get Howard's help. This time, as a junior faculty at MIT, I felt under a lot of pressure to describe my "soft master" programmers as going through a stage rather than having a legitimate style. Computer scientists seemed to be most comfortable saying that the "painterly" programmers were really novice programmers. Teachers of computer science seemed most comfortable saying that what I saw as a range of styles was really a hierarchy of stages of expertise. In other words, bricoleurs would learn the error of their ways. They would no longer "persist" in thinking about formal systems by thinking about the concrete. They would move on to thinking about formal systems by doing it the "right way," by thinking in abstractions.

It was the mid-1980s, a time when formal, abstract thinking was taken as the royal road, certainly for thinking about things scientific. In

that context, Howard's theory of multiple intelligences supported my efforts to respect diversity in ways of knowing and learning. One didn't need to judge different ways of knowing by sorting them on a hierarchy and saying that some ways were stepping stones to others of higher value. One could simply respect diversity. A notion of *epistemological pluralism* in styles of knowing would become central to how I reported my work on children and programming in my 1984 *The Second Self: Computers and the Human Spirit*.

It was the publication of *The Second Self*, ten years after I had first read Howard on the Radcliffe lawn, that led to my meeting with him at that New York event on the future of how to study digital culture. I have a vivid memory of this meeting, although I have learned to be modest when I recall events over decades.

As I remember it, Howard came up to me and introduced himself as though we were in mid-conversation about something vexing. It turned out that I was vexing *him*. Howard confided that he had reviewed my new book on computers and people several months ago for the *New York Times,* and he wanted to know why his review had not yet appeared.

I knew why. I was a nervous and anxious author holding up the book. I was reworking, indeed, rewriting the book long after it should have been already published. The book had gone out to reviewers in bound galleys and while this was happening, I had gotten a last chance to make final, small revisions. Instead, I was making final, massive changes. As I recall, my publisher was tolerating this highly unprofessional behavior because my book title had been stolen, and we were all madly trying to think of a new one.

Howard was suspicious about the delay. Suspicious and knowing. He asked: "Are you rewriting your book in galleys?" I sputtered. He frowned. And then he smiled. Broadly.

This is where my recollection ends. I knew that I wasn't supposed to know that my book was being reviewed in *The New York Times*. I knew that I wasn't supposed to know that my book had been reviewed by Howard Gardner. *The* Howard Gardner, by now one of America's best known psychologists, which meant that the review would be, well, probably on page one of the book review. And I *certainly* wasn't supposed to know that Howard Gardner was smiling about my book.

But now I *did* know! I am convinced that the confidant tone of the final, published version of *The Second Self* had everything to do with that encounter with Howard in New York. In writing, state of mind counts for a lot. And I threw myself into my final revisions with these thoughts: Howard Gardner had reviewed my book for *The New York Times* and he was *smiling*.

What was important about Howard's gracious review of my work was that he understood my project. He understood that I was trying to go beyond asking what computers do for us to ask what computers do to us, to our ways of looking at the world, to our ways of thinking about the self, to our relationships with each other. My assertion for digital culture was simple. We think with the objects we love. We love the objects we think with. Howard's appreciation of my work helped to open a space for these questions.

From our perspective today, when we are so ready to admit to our love for our iPhones, it is hard to remember that for a very long time, that space was a contested terrain. Through the mid-1990s, there were many who simply said, "The computer is just a tool. Why should we study the 'subjective side' of something whose function is simply to get a job done?" Any serious response to such critics had to acknowledge that while the computer is a tool, we are made and shaped by our tools. Winston Churchill once said of buildings, "We make our buildings and our buildings make and shape us." Similarly, we make our technologies and our technologies make and shape us. But in practical terms, part of my response to those who wanted to dismiss the study of the effects of computers on the self was the support of influential psychologists such as Howard who believed in the effects of objects on the inner life.

And indeed, when I asked Howard to help me on a project about what I called "evocative objects," he responded with enthusiasm. For years I had wanted to edit a collection that brought together my favorite authors to write personally on their experience of the psychology of the object world. I wanted a dream team to reflect on things and thinking. Of course, I turned to Howard. He did not disappoint. He wrote a most beautiful essay about his own "object to think with." He chose keyboards and wrote about pianos and typewriters. He wrote of himself as someone always thinking at a keyboard, relaxed at a keyboard, happy at a keyboard.

Howard made it clear that at the keyboard, his mind is on his message, trying to make it clear and pleasing to read. And yet, he added, "even with my focus so intently on the message, the experience of my fingers on keyboards feels like more than simply a means to a desired end. In the creation of both music and text, if I could bypass the keyboard and directly transmit mental signals to an instrument or to the computer, I would not want to do so." In other words, part of the experience of the keyboard is not instrumental. He wrote of memories of being with his mother and his sons at piano keyboards. "And in the case of writing, the sensations of fingers on keys are soothing in a way that goes beyond my pleasure in what I write."

I dedicated *Evocative Objects* to Seymour Papert, an MIT colleague, who had written about how he had fallen in love with the gears on a toy car when he was two. Seymour, like Howard, stressed that thinking about objects was not a purely cognitive exercise: he had *fallen in love* with the gears and through them had fallen in love with thinking about formal systems.

In Howard's work, like Seymour Papert's, the cognitive and emotional are always entwined. What Howard made clear when he wrote about his life at keyboards was that there, thinking and feeling are one. And of course, what he was able to describe as true in his own work, he was able to do for psychology as a field. One of Howard's signal contributions has been to remind us that psychology can and should be grounded in a humanistic appreciation of the whole person, the whole child, the whole learner.

Howard was trained at a time when holistic social sciences were in fashion. Both he and I were at Harvard at the tail end of a tradition of "Social Relations." This was a discipline designed to bring together different strands of the social sciences into one program. Personality psychology, clinical psychology, sociology, social anthropology, physical anthropology cognitive science—all of these would be housed in one tall, white, I.M. Pei building, poetically named William James Hall.

But life in William James Hall was not to be so simple. By the time I completed my graduate studies in 1976, the inclusive Social Relations department was no more; the people who studied the psychology of thinking were on one floor of William James Hall and the people who studied the psychology of feeling were on another. Howard's work has

consistently refused such boundaries. In his view of the child, thought and feeling come together.

More than this, Howard brings psychology together with the study of ethics and politics. Just at the moment when the trend in the social sciences was to go "small" in the sense of pursuing the narrow and professionalized, Howard went big. What values are worth pursuing? How do we decide? What brings satisfaction? What are ethics in the digital age? What legacies do we want to leave for the next generation? These are Howard Gardner questions.

In my work, several themes first explored in *The Second Self* continued to connect me to Howard. First was the importance of recognizing and embracing pluralism in learning. Exploring diversity in paths toward science, both for women and men, put me in greater contact with Howard's work on pedagogy.

In the late 1990s, Howard encouraged me to become a mentor at the Ross School in East Hampton New York. He had already worked there for several years and the school was deeply influenced by his theory of multiple intelligences. Traditional "remedial" programs in science education focus on providing instruction, a lot of it using computers, a lot of it rather abstract. At the Ross School, science and art, aesthetics and mathematics were not put into different silos. There, it was possible to take inspiration from the concrete style of the bricoleurs and offer all children evocative objects as a path into science. It was a place whose very DNA facilitated those students whose paths to science are made smoother by the presence of objects that become part of the fabric of their scientific selves.

At the Ross School, Howard's emphasis on the whole child as learner encouraged me to take a step backward and look more closely at issues of objects, science, attachment, and love.

Ever since I had come to MIT as a young faculty member I had been thinking about the issue of science and objects. Indeed, from my earliest days at the Institute, I had asked my students if there was an object that had made them comfortable with science. Most said yes, absolutely. Some said no. But then, usually within a week, so many of those "Nos" would turn to "No, but" and I would get a narrative about playing with mud of different consistencies, or with sets of old, discarded

keys that could be sorted and resorted, or of having a fascination with baking and everything molten.

By the early 2000s, I had collected over 250 student essays, 25 years of student writing about the objects that drew science students into science. I began to study them in detail, looking for patterns that might inform science education. Inspired by the essays, I asked several dozen working scientists to reflect on the same question I had asked my students: Was there an object that had led them into science, technology, or design? Predictably, many spoke of chemistry sets, crystal radios, and Lego blocks. But less predictably, and against prevalent stereotypes, they also spoke of cameras, colored crayons, lengths of straw. These objects, too, are described as integral to the development of scientific passions. Students and mentors focused on how the experiences of working with such things as clay, paints, and musical instruments (including tin whistles and music boxes) become woven into a scientific identity. Art materials become "objects-to-think-with," for thinking about technical ideas even as they are indissociably linked to emotionally charged narratives of self discovery.

Recollections about the birth of scientific curiosity are romances. Young people fall for science, but science, in its turn, catches them, offers them something personally and intellectually sustaining. Putting children in a rich object world is not just a theoretically good idea. It is essential to giving science a chance. Giving science its best chance means guiding children to objects they can love. In rich object worlds, children make intimate connections that they need to construct on their own; what educators can provide are the conditions for their doing so. The Ross School was a place where these ideas were made real for me. Howard's involvement with the Ross School insured that this would be the case.

Most important in my thinking about evocative objects in education, as both Howard Gardner and Seymour Papert had always stressed, was that thinking about the objects that sparked cognition—about science as about other things—was never a purely cognitive exercise. Seymour fell in love with the gears on his toy car and through them had fallen in love with thinking about formal systems. Howard, too, had stressed that in the world of multiple intelligences thought and feeling were not dissociated. When one studies learning, one studies a whole person, not a learning machine. One studies a person with a

history, with passions and anxieties. I find this deeply humanistic concern to be central to Howard's more recent critique of postmodernism as a guidepost for education. Where Howard is most critical of postmodern ideas is when they challenge the humanistic subject—a thinking, feeling, and ethically judging subject. A subject who is called to act on these judgments.

When Howard speaks on such matters, his voice is never shrill. He has commitments. He believes in history. He believes in the possibility of action. When he determined that digital life had its own set of ethical dilemmas, he set out to write a curriculum to help students find their way through it. Nihilism offends him. People make a difference.

More recently, Howard has turned his professional attention to the ethics and responsible pedagogy for the digital age and we are more directly engaged as colleagues. In my experience, it is easy for productive and successful people to get so busy that they stop listening to each other. Howard makes it a point to listen, engage with ideas, and offer the most meaningful kinds of encouragement.

Most recently, I spoke at an education conference and Howard came up after my talk to say that he had enjoyed it. He began by evoking a time that we both miss: the heady days of the Social Relations department. Those were the days of teachers such as Erik Erikson and David Riesman and Jerome Bruner, and he spoke about them, too. These were scholars who would have felt remiss if they had led only within the academy. This was a time when the academy would have felt remiss if it did not encourage them from taking leadership roles outside of it.

He spoke of those days, and then he said that those days were gone but that in my talk on learning in digital culture I had recaptured something important about them. It is one of the compliments I most cherish.

Howard's Response to Sherry Turkle

You were in my wife Ellen's class at Radcliffe/Harvard rather than mine (which makes you much younger, because the Vietnam War intervened and that changed everything!). And yet, I feel that we have been "classmates" *sub species aeternitatis* for many years. As you point out, part of this comes from similar education (undergraduate and graduate); part of this comes from intellectual role models that we shared (Erik Erikson, David Riesman). But I think the larger part comes from a fascination with the new worlds of technology (digital and otherwise); a desire to understand those worlds and how they impact all of us, but especially the young; and yet a profound conviction that in itself technology cannot and should not contain all the answers.

Indeed the new media are important more for the questions that they raise about the human condition than for the answers that they may appear to provide. I do not invoke the phrase "human condition" lightly. Your first book, laying bare psychoanalytic and structural thinking of the Gallic variety, addresses directly *la condition humaine*. (And for my part, my first trade book was also about two scholars of French background—anthropologist Claude Lévi-Strauss and psychologist Jean Piaget.) I doubt that anyone else in our respective departments at Harvard were as likely to have effected a "French connection."

Of course, to compare my interest in technology with yours is like comparing a random breeder of pigeon's knowledge of evolution with the insights and perspective of Charles Darwin. You have the keenest insights of all analysts and writers about the changes being wrought by the new technologies and their amazing potentials as well as their stark warning signs. I freely admit, as I have elsewhere, that you've generally gotten there first and that a good deal of my (and my colleagues') writing about the digital world is largely a "riff" on what you've already said. I appreciate your comment that some of my broader perspectives about the kinds of issues that one can study and how one can and should go about studying them have motivated and even inspired you. I'm relieved if our relationship is not overly one-sided.

I did want to comment on the comparison with Seymour Papert. Of course, you know Seymour far better than I do, and he was, for me, always a somewhat forbidding figure, seemingly in his own world. But you have identified points which seem on the mark, and these also apply, I believe, to Jerry Bruner, a third role model whom you also mention in your essay.

All three of us were strongly influenced by Piaget; indeed much of our work can be seen as a response to Piaget, sometimes respectful, sometimes more confrontational. All three of us felt that Piaget's work was a brilliant description of what one can expect from any normal young person who lives in a reasonably adequate environment. However, Piaget's enterprise was not particularly sensitive to educational possibilities across the socio-economic spectrum, especially those that characterize our increasingly rich and ever changing media era. And so all three of us have tilted toward education; toward interactions with others (online or off line); toward what is possible with good support, including the relevant technologies; and not just toward those actions and operations that will emerge inevitably simply on account of common species membership.

The final point is one to which you are especially sensitive. Education in the narrower sense, let alone learning in the broadest sense, is unlikely to be successful in the absence of passion, emotion, motivation, and caring. One is unlikely to learn, let alone want to continue to learn throughout life, unless one wants to be in the place of the learner, gets "flow" from that experience, and desires to share it with others. We've each written something about this; in fact, Piaget wrote about motivation as well. What comes through, in the three educational gurus I've been characterizing, is our own continuing excitement at learning. As I said of Jerry Bruner some years ago, "At age ninety, he is still the youngest person in the class." And I'd like to be able to say that about people whom I so admire, like you.

Learning to See Learning

Shirley Veenema

It's hard to feel like a good teacher with all the buzz of standardized tests, test prep, teaching to the test, waves of educational reform, and comparative rankings of nations. In our classrooms a plethora of digital devices, new forms of communication, and social networks hold both promise and potential for distraction. No wonder we, like our students, sometimes find it hard to focus on what students learn.

As an art teacher I find it useful to think of similarities between teaching and photography. Some photographers seem to be naturals at the job, with an innate sensitivity to capture what the photographer Cartier Bresson called "the decisive moment." But for many sensitivity doesn't come naturally—in fact, it requires hard work. With experience a photographer learns to frame the shot and focus the camera lens to bring particular areas into sharper focus. Similarly, teachers develop sensitivity to what works well for particular students, where to focus their teaching, and what assessments give the best indication of student learning. This on the job training takes time. What about students in the meantime? Is there a fast track for teachers? To answer these questions let's go back to the photographer.

Photographers make choices based on intent. They choose their relationship to the subject—a point of view, what to include in the frame, where to focus—and closely attend to the way light reveals the subject. They choose a lens for their camera. A wide-angle lens can emphasize the landscape, a telephoto lens a particular element; a macro lens works for a close-up, a zoom lens for a quick change in perspective. Like the photographer, a teacher needs to make choices of subject and tools: what to teach and how to teach. In any discipline there is so much from which to choose! Is more really more?

Advertising often seduces the amateur photographer into thinking more megapixels will produce better photographs. While equipment is important, in the end it is the eye of the photographer that matters and how that eye frames what is seen for others to see. In teaching, the more-

is-better mentality is similar to equating coverage in a discipline with learning. But covering more material in class or having more tests doesn't mean students learn more. Like photographers, teachers have to train their eyes and decide what to include in the frame; they have to learn what is important to include in their courses and what to leave out. In both photography and teaching it also takes training to evaluate what is seen, whether it be which photograph is best or what a student has learned.

I was fortunate to work at Project Zero for many years while at the same time teaching art. I remember at one project meeting Howard Gardner urging me to take a closer look at my conclusions and consider other possibilities. In retrospect I realize the invaluable benefit his probing questions had on me as both a teacher and researcher. I consider myself particularly lucky to have been at Project Zero when teachers were an integral part of project teams developing frameworks to help other teachers more clearly see learning. For me, two frameworks developed at Project Zero have been especially useful in my teaching. The Teaching for Understanding Framework clearly focuses my teaching and assessments on understanding, and the Studio Thinking Framework helps me identify what is important to teach and assess in the visual arts.

The Teaching for Understanding Framework helps teachers more clearly identify areas likely to support student understanding (generative topics), goals for a course (throughlines) and goals for particular units or projects (understanding goals). Using this framework I have been able to see more clearly what my students produce as evidence of their learning (performances of understanding) and assess more clearly what students understand—because I am clearer about what I intend them to learn. I teach several courses in video, a medium loaded with technical wizardry. Given the cafeteria of options available in editing programs, students too often equate learning to tell a time-based story using video with learning to use a camera or editing software. While becoming comfortable with the tools is certainly important in any medium, tools need to be in the service of story. As a teacher it is easy to slip back into teaching the software program. Frameworks help refocus on what I intend students to learn. For example, this year when I used the Teaching for Understanding Framework to evaluate my courses, I realized that I

should make changes to help students find ideas for stories and support them as they develop their ideas

I find it particularly challenging to teach visual arts foundation courses. Every year I worry about finding engaging projects to introduce concepts and build students' facility with a variety media. The Studio Thinking Framework helps me design courses that focus on students' thinking at the same time I cover central disciplinary concepts and help students build facility with craft. The Framework describes eight *studio habits of mind* (develop craft, engage & persist, envision, express, observe, reflect, stretch & explore, understand art world) that teachers in the visual arts intend their students to learn, and three *studio structures* (demonstration-lectures, students-at-work, and critique) used to organize classroom instruction. This year I realized that I was not doing enough with envisioning in my classes and added specific envisioning tasks to all my projects. The year before I added more opportunities for students to reflect on their work.

Planning my classes for this year reminded me why I find frameworks useful. I spent most of the summer in the studio working on my own work. When it came time to prepare my classes, I was struck by how I, as an artist, think when working on an image, and how differently a student who is not as expert must think—someone who is taking a beginning art course, someone who has no background or who is anxious and feels lacking in ability. If I have a clearer definition of artistic thinking, then I can teach more explicitly in ways that develop students' ability to think as an artist.

Recently, an article in *The New York Times* reminded me how important the trained eye of the photographer will continue to be in photography, a field forever changed by technology. The article describes a lens-less camera that uses reflected light to "see" around corners. The article described a researcher interested in designing a camera that uses computation to create "a new kind of picture." While marveling at all the wonderful promise of the tools described in this article, I was struck by how important it will still be for a person to determine the position of the camera and the parameters for the picture. Despite increasingly sophisticated technology, there will still be no substitute for the trained eye of the photographer. Similarly, regardless of how future reforms or rankings may shape classrooms of the future, the trained eye of the

teacher will be necessary to encourage and evaluate student learning. Teachers will also continue to learn on the job, a process in which frameworks can help them to focus on learning. During my years at Project Zero I benefitted from Howard's example and the opportunity to better train my eyes to see learning. I continue to be grateful for both.

Howard's Response to Shirley Veenema

Fifty years ago, in Scranton, Pennsylvania, my parents and I realized that I was not learning much at the local public school. And so, after having me "tested" (at considerable expense and with few insights as a result), they decided that I should attend Philips Academy, Andover, probably the only private school that they had heard of other than those near our home.

Probably because I did not like the idea of leaving home and hearth, we decided not to apply to Andover. Instead I spent three years at Wyoming Seminary, a local private school—better than Scranton Central, but no Andover! When I went to college, and had TWO roommates from Philips Academy, Andover, I realized—as quickly as I realized that other classmates played the piano much better than I did—that others had had a much stronger education than I had. (Indeed, we undergraduates pored over an article called "The Exeter Syndrome" about how students who went to your sister academy found education at Harvard an intellectual comedown from the vaunted "Harkness method" at Phillips Exeter.)

Little did I know that, decades later, when you joined and became an active and valued member of Project Zero, I was finally getting some of the Andover education that I might have gotten as an adolescent.... had I been less of a Pennsylvanian homebody.

In the writings of individuals who identify primarily as school teachers, I often encounter a sense that entering the university, particularly a research university like Harvard, or a self-defined research organization like Project Zero, can be intimidating. I suppose that is neither surprising nor inappropriate. At the very least, these are different kinds of entities which operate according to different rules, have different reward systems, and have distinct "institutional cultures."

What may be less evident is that this sense of "apartness" operates in both directions. Often when researchers, even well-known researchers, go into schools and actually try to teach students, or engage teachers, or affect parents, we feel equally like fish out of water. And I would add that at Project Zero, where education has been at the forefront for decades, we value and seek out those classroom educators like you: ones who have been successful with their students and from whom we believe we can

learn, and perhaps create curricula, programs, or processes that are of higher quality than either we or you could do on our own. As one example, consider the talents of Lois Hetland, just to mention another contributor to this Festschrift and one of your co-authors of Studio Thinking.

Shirley, you have been completely enmeshed in Project Zero, so much so that folks would not ask, “Is she a teacher?” or “Is she a researcher?” but rather, “What are you working on and how it is going?” Indeed, via your deep immersion in projects like “Studio Thinking,” “Teaching for Understanding,” or “Interdisciplinary Studies,” we see you as a wonderful and indeed invaluable member of the team. I am personally indebted to you for helping me to see better, early on, the ways in which digital technologies could significantly enhance the understanding of a subject like history and how a historical topic can be insightfully intermeshed with well-chosen art works and artifacts. Nothing is more thrilling to a researcher than to see in action the ideas that he may have had, but was close to clueless about how to implement them. And if we in turn can on occasion offer some useful terminology and frameworks, it is a win-win situation.

"Doubting" Howard Gardner

Susan Verducci[1]

Introduction

In *Truth, Beauty and Goodness Reframed* (*TBGR*) (2011), Howard Gardner writes, "Those [people] with flexible minds, with open minds, are at a distinct advantage overall…" (p. 183). The advantage he refers to derives from the possibility that an open mind is responsive to change, influence, and evidence and will be more likely to learn than one that guards against these things. He emphasizes the increasing importance of learning in the context of a continually changing landscape. Lifelong learning, triggered by an open mind, allows for engagement with the challenges and opportunities that postmodernism and the digital landscape pose for traditional conceptions of truth, beauty, and goodness.

But what is an open mind? And will it do what Howard claims? Educational philosopher William Hare (1979) describes open-mindedness as a stance that exists when we are willing to have our views influenced by "evidence and argument as objectively and as impartially as possible" (p. 9). It is an attitude characterized by "a willingness to revise and reconsider one's views" (p. x). Wayne Riggs (2010) draws on Jonathon Adler's (2004) account of open-mindedness to elaborate. "The idea here is that open-mindedness is primarily an attitude toward oneself as a believer, rather than toward any particular belief" (p. 180). It is a disposition toward one's self, not toward this or that particular belief. Moving beyond epistemological terrain, Hare (1993) connects an open-mind to morality; "[o]pen-mindedness is a virtue for fallible and limited human beings whose attempts to achieve knowledge are often frustrated and always open to challenge" (p. 81). Riggs (2010) concurs, claiming open-mindedness to be an epistemic virtue in which believing and disbelieving are ethical processes.

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[1] My gratitude goes to Michael Katz for his help in thinking and writing about doubt.

In fact, we often consider closed-mindedness to be a vice. Howard lays out conditions that close a person off from change. "An individual is least open to changing his or her mind when three conditions obtain: (1) One has a long-term adherence to a particular view; (2) that view contains a strong emotional or affective component; and (3) one has taken a public position on that view" (Gardner, 2011, p. 182). This makes intuitive sense; the level of commitment to a belief under these conditions is high, and the personal cost of changing equally so. Convictions are inherently difficult to dislodge. We see the intractability of belief illustrated in some of the West's most cherished narratives. We see it in Oedipus Rex's refusal to stop pursuing his father's murderer despite the warnings of Tiresius and Jocasta. We see it in the feud between the Montagues and the Capulets. We see it in King Lear's blindness to the meaning behind Cordelia's blunt words to him. The closed mind is the stuff of our tragedies and moral lessons. It is the "refusal of the call" in Joseph Campbell's hero's journey (1949), the inability to see beyond one's own certainties and habits. These stories dramatize the pain involved in changing one's mind under the conditions in which long-standing, emotional, and publicly held beliefs are challenged by others, by experience and by evidence.

In the face of these difficulties, I again ask: is open mindedness enough? Howard offers examples of circumstances under which change can occur. A dramatic event, such as a homophobe discovering her child is gay, can challenge our convictions. Less dramatic are meetings and conversations with people holding different opinions, stances and positions in the world. Being alert to the experiences of others can allow empathy and imagination not only to open but also to change minds (*TBGR*, p. 182-3). Finally, the possibility of noticing accumulating evidence can also affect our beliefs. Howard writes, "Sometimes, nearly everyone happens to be wrong.… Accumulating experiences that one has been wrong, or that others have been wrong, may make one more willing to consider alternative descriptions of reality" (*TBGR*, p. 183). This last possibility is one that Wayne Riggs (2010) takes up: "[t]o be open-minded is to be aware of one's fallibility as a believer, and to acknowledge the possibility that anytime one believes something, one could be wrong" (p. 172). Yet, in all Howard's examples of open-mindedness, we do not *pursue* evidence and influence. We openly wait for an external "something" to engage us. We wait patiently. We wait receptively. We wait

with a clear mind. But, we wait for something outside ourselves to appear or something within ourselves to pile up. Some event, emotion, evidence, or argument must come to our attention.[2]

Is this receptive open-mind enough? I harp on this question because we may need something more active, more directive than open-mindedness in our inquiries toward truth, beauty, and goodness. The appeal of open-mindedness pertains to its receptive and rational stance; it relies on external forces and a clear mind. But these characteristics also limit it. Many of our beliefs, especially the intractable ones Howard describes, are deeply held and emotionally tied to a network of other beliefs. Some are even tied to our identities, our religions, and our spiritual beliefs. We do not hold them with a clear mind. These beliefs shape our attention, our perceptions, and our responses to the world in ways that hinder our ability to notice realities that suggest we should reconsider our beliefs. It may even be that our mental processes favor or confirm what we believe. Psychological studies show us that confirmation bias, bias in which we tend to prefer information that supports our beliefs, influences the way we phrase questions, search for information, attend to and remember facts, test ideas, consider alternatives and arrive at conclusions (Westen, 2006; Hastie, 2005; Oswald & Grasjean, 2004; Baron, 2000; Kunda, 1999; Nickerson, 1998; Lord, et. al., 1979; Mynatt et. al., 1978). Because of the ways in which beliefs influence what we see and how we see it, a receptive open mind may not be enough for lifelong learning.

My thoughts about this difficulty come directly from my experiences with Howard as a mentor and colleague. Howard is a master at "doubting." Although doubting is commonly conflated with a lack of self-confidence, the doubt I consider in these pages means "to be uncertain about, to hesitate to believe or trust; to call into question"

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[2] In *Changing minds: The art and science of changing our own and other people's minds* (2004), Howard outlines seven "levers" that influence people to change their minds. The levers include: reason (logical argument); research (facts); resonance (connecting emotionally or spiritually); representational redescriptions (multiple and diverse representations of an idea); resources and rewards (positive and negative reinforcement); real world events; and resistances (identifying and countering longstanding contrary beliefs). He explores these levers primarily in relation to changing other's minds.

(Oxford English Dictionary http://www.oed.com/). What follows is a tribute to Howard's skepticism and an attempt to connect it to the open-mindedness he recommends. It aims to deepen and strengthen the concept and its connection to learning. I argue that doubt can help us achieve a more proactive and ethical openness of mind, because it motivates inquiry and is connected to humility. Doubt possesses both epistemological and moral force—and it has implications for a lifelong pursuit of truth, beauty and goodness.

Doubt and Inquiry

Charles Sanders Peirce characterizes doubt as an "irritant" that motivates us to inquire. Inquiry is commonly understood to be the direct and intentional search for understandings.

[D]oubt is an uneasy and dissatisfied state from which we struggle to free ourselves and pass into the state of belief; while the latter is a calm and satisfactory state that we do not wish to avoid, or to change to a belief in anything else. On the contrary, we cling tenaciously, not merely to believing, but to believing just what we do believe. Thus, both doubt and belief have positive effects upon us, though very different ones. Belief does not make us act at once, but puts us into such a condition that we shall behave in some certain way, when the occasion arises. Doubt has not the least such active effect, but *stimulates us to inquiry until it is destroyed.* Belief and doubt have an opposing relationship with each other. Belief is habitual because it is comfortable: we like to believe. Doubt, on the other hand, is caused by surprise or the contradiction of belief. It is irritating or uncomfortable. *It provokes inquiry or investigation*. (Hartshorne and Weiss, 1931, p. 230, italics added)

Doubt instigates inquiry. It values the pursuit of understanding and provides a motive for it.

But Peirce's conception of doubt as an "irritant" caused by "surprise or the contradiction of belief" (Hartshorne and Weiss, 1931, p. 230) also requires the same sort of external impetus for initiation that makes open-mindedness problematic. James Hullet (1974) challenges Peirce's view and points out that inquiry that leads to learning can be best seen "as the *deliberate* instigation of doubt rather than as the attempt to escape from it" (p. 420, italics added). He uses scientific

investigation to illustrate his point about the value of "institutionalized skepticism" (p. 423). He calls Peirce's theory "dubious" and writes:

if having a doubt is such an unpleasant affair, then why should we permit ourselves to have doubts? Though some are, in Peirce's words 'thrust upon us' and unavoidable, there is too often no difficulty in avoiding doubt; indeed, there are countlessly many ways in which we can prevent ourselves from having doubts: we can circumvent them, repress them, suppress them, and sometimes just ignore them. And if we modify our purposes sufficiently, obstacles—and with them, doubts—disappear. (p. 422)

Hullet uses the example of scientific inquiry to support his claim that doubt does not necessarily have to be an irritant to induce inquiry. He claims that "[w]here there is inquiry—in the sciences, e.g.,—there is no fixity of belief, but rather an institutionalized skepticism and doubt" (p. 423). Hullet does not see doubt as categorically something to escape from, as something to be avoided. In some domains, doubt is fundamental to the structure of the endeavor. In this way, doubt is methodologically salient to inquiry.

Regardless of whether doubt is an irritant to escape or a systemic and institutional sort of skepticism, it motivates inquiry. Paradoxically, just as it leads us to pursue understandings of truth, beauty, and goodness, it helps us remain simultaneously wary of the results.

Doubt and Learning

Doubt can be tightly connected to learning. In education, we make doubting a valued exercise. In schools, we encourage critical thinkers to consider seriously the best arguments against their opinions and beliefs so that their positions can be strengthened, modified or rejected. We don't allow students to wait for doubts to form from exposure to another's argument; we require they doubt themselves—questioning assumptions, authorities, and hierarchies. We institutionalize skepticism and doubt in many academic areas. We even study it directly in philosophy. In education, inquiry requires doubt and can entail both irritation (Peirce) and institutionalization (Hullet). Professor Kingsfield, a character in the *The Paper Chase* (Osborn, 1971/1973), dramatically manifests doubt's educational colors in his dogged Socratic questioning. In the film version of the novel (1973), he says to his first year law

students, “You teach yourselves the law, but I train your minds.” He goes on to tell them:

Through my questions you learn to teach yourselves. Through this method of questioning, answering, questioning, answering we seek to develop in you the ability to analyze that vast complex of facts that constitutes the relationship of members within a given society. Questioning and answering. At times you may feel that you have found the correct answer. I can assure you that this is a total delusion on your part. You will never find the correct and final absolute answer. In my classroom there is another question, another question to follow your answer.

In lifelong learning, we are students and teachers, engaged in questioning and answering, questioning and answering. By internalizing the “doubt-full” stance that Professor Kingsfield articulates, we engage ourselves more deeply in learning and teaching. We cultivate a doubting disposition, one that values pursuing understandings of truth, beauty and goodness, and paradoxically makes us wary of the answers we find.

What Should We Doubt about Ourselves as Believers?

One form of doubt salient for those intractable long-standing, emotionally connected and publically held beliefs is self-doubt—calling ourselves directly into question.[3] This kind of doubt does not receive nearly enough attention in the academy and in the public domain (particularly politics). Yet, self-doubt can be aimed at many areas in our efforts toward lifelong learning.

First, we can doubt the assumptions we hold to be true. As noted above, critical thinkers find and challenge assumptions in their own and other’s arguments. A salient point for self-doubt is that our assumptions

[3] Many forms of doubt exist. Although doubting a propositional statement and doubting another person’s ability to perform a task may share some features, they are significantly different in ways worth exploring. Each form may be derived from its object; the object of propositional doubt may be a fact or belief; the object of self-doubt is the self. These forms may be constituted and function differently. This line of thinking needs further exploration. However, I stipulate self-doubt as one form and treat it as a unified concept within these pages because of the definition of open-mindedness I developed earlier and the scope of this essay, not because I think there isn’t more work to be done (elsewhere) on developing a full taxonomy of the concept.

shape what we attend to, what we perceive, and how we interpret the world. Assumptions can be remarkably powerful influences and, as such, become prime targets for self-doubt. We can see how this works by imagining ourselves seeking medical treatment from both western and eastern traditions. Doctors from each tradition presuppose radically different views of the human body, illness and treatment. The western-trained doctor sees the patient with different "eyes" than does the eastern-trained doctor. Western-trained doctors are likely to organize information in different ways using different understandings. The beliefs and presuppositions underlying these medical models form the interpretive foundation from which a doctor's attention, perception, and interpretation follow. Because of this, our assumptions can be seen as a fundamental target of self-doubt.

We can also doubt ourselves at the levels of attention and perception. Martha Nussbaum (1990) describes the "the incompleteness and inadequacy of our attention" (p. 144) in our response to narratives. Although she is writing about Henry James' *The Golden Bowl*, her point applies to reflecting on all perception.

> We notice the way we are inclined to miss things, to pass over things, to leave out certain interpretative possibilities while pursuing others. This consciousness of our own flaws and blind spots….recalls to us the fact that our path is only one path and that we cannot humanly follow all paths through these tangled lives at all times. The authorial voice also reminds us that, even when we do attend, our attention, like all human attention, is interested and interpretive. (Nussbaum, 1990, p. 144)

Surgeon and National Book Award winner, Atul Gawande, connects Nussbaum's point about our attention and perception to our experience as he describes his encounter with a patient in *Complications: A Surgeon's Notes on an Imperfect Science* (2002). Gawande had treated another patient a few weeks earlier for necrotizing fasciitis, a quick and deadly disease aptly portrayed by tabloids as flesh-eating bacteria. He describes that patient's death as "among the most awful cases I have ever been involved in" (p. 233). When he sees a new patient with a leg infection, although a diagnosis of necrotizing fasciitis seems a slim possibility (there are only 1000 cases in the United States each year compared to three million cases of an infection called cellulitis), he feels compelled to pursue the possibility with a biopsy. His current patient

also had the necrotizing fasciitis. Clearly, this patient's luck in receiving a quick diagnosis depended upon Gawande's recent experience which predisposed him to attend to the possibility of the disease more seriously than statistics would normally warrant. Our attention is necessarily selective, and thus partial. In this example, we see how our experiences filter and frame our attention and perceptions, helping us to "see" certain things and "not see" others.

Nussbaum (1990) also describes our perception and attention as "interpretive" (p. 144), and interpretation is a third target for self-doubt. We can doubt our interpretation of facts, situations, people, and so on. In some ways, we are like the character Truman Burbank in the 1998 film, "The Truman Show." Truman stars in a world-famous 24-hour reality show without knowing it. He believes he lives a fairly ordinary life—works at an insurance agency, has a wife and family, and so on. He does not know that he lives inside the set of a television show; he does not know that all the people in his life are actors and under the control of a director. After bumping into the set's catering area by accident, Truman becomes suspicious and sets out to discover whether his new perceptions track with reality. He begins to doubt and proceeds to inquire. As a result, his attention shifts, and he begins to see anew and to interpret the same reality more accurately. He was blind to all that was there for him to see before because he did not have the proper experiences or frame with which to see it.

The central epistemological and existential questions at the heart of *The Truman Show* have a long history. They can be found in Plato's (469-399 BC) Allegory of the Cave, in Chinese philosopher Chuang Tzu's (369-286 BC) questions about whether he was a man dreaming he was a butterfly or a butterfly dreaming he was a man, and in René Descartes' *Meditations on First Philosophy* (1641). A year after *The Truman Show*'s release, the film *The Matrix* showed us, yet again, that we might be, and often are, interpreting what we see inadequately. We might be plugged into the Matrix, stars of a reality show, prisoners in a cave, butterflies, or brains in a vat. Although this sort of radical skepticism seems, well … doubtful, it does point to serious problems with our ability to interpret what we see. This sort of doubt surfaces again and again in human imagination because it correlates with human experience. We interpret the world in ways that that flow from our assumptions, attention,

perceptions, experiences, beliefs, and values. These color our interpretations of truth, beauty, and goodness. For this reason, we can and ought to aim our doubt at the level of our interpretation.

And given that our attention, perceptions, and interpretations are potentially flawed, can we be certain that our judgments are correct? Evaluation and judgment become additional targets for self-doubt. Doubts about them can arise from their content and their processes. Gawande (2002) points to ways that the mind distorts judgment.

Three decades of neuropsychology research have shown us numerous ways in which human judgment, like memory and hearing, is prone to systematic mistakes. The mind overestimates vivid dangers, falls into ruts, and manages multiple pieces of data poorly. It is swayed unduly by desire and emotion and even the time of day. It is affected by the order in which information is presented and how problems are framed.... A variety of studies have shown physician judgment to have these same distortions. One, for example, from the Medical College of Virginia, found that doctors ordering blood cultures for patients with fever overestimated the probability of infection by four- to ten-fold. Moreover, the highest overestimates came from the doctors who had recently seen other patients with blood infection. (p. 238)

Part of the power of Gawande's memoir lies in his ability to show us that fallibility, mystery, and uncertainty form the ground state of medicine, a field commonly considered a science. Distortion in judgment takes place in many ways and for many reasons and, because of this, doubting our judgments seems a sensible stance to take in our pursuit of understandings of truth, beauty, and goodness.

We can also doubt our motives. We can be motivated to see, interpret, evaluate, and act by a number of important reasons we may or may not consciously understand. We can be motivated by personal benefit. We can be motivated by physical, psychological, or emotional comfort. We can also be notoriously obtuse about how our own needs, desires, concerns, and commitments shape the direction and results of our inquiry and understandings. Freud's 19th century conceptions about the workings of the "unconscious" mind introduced us to the idea that the level of self-awareness and self-understanding necessary to live a doubt-free existence may not be possible. Not only might we be blind to

our motives, but we seem remarkably able to reframe them in ways that make them conveniently acceptable to our best selves. We rationalize overweening ambition and greed by connecting these to a desire to provide for our families. We rationalize cheating by telling ourselves that "everyone's doing it" and if we don't, we will be unfairly left behind (Callahan, 2004). We masterfully manipulate our understandings of our motives to suit our purposes, making motives another prime target for self-doubt.

Even assuming infallibility at the levels of attention, interpretation, evaluation, and motivation, we are still left with the question: What is the best course of action? Here, Hamlet, the paradigmatic doubter, illustrates doubts that arise in determining how to act or whether to act at all. After learning of his uncle's treachery from his father's ghost, Hamlet sets out to gather evidence corroborating the ghost's version of events. Many consider Hamlet's tragic flaw to be his self-doubt, his inability to take decisive and courageous action. There are, however, those of us who applaud his distrust of the spirit and his desire to have more corporeal evidence before taking a man's life. Regardless of the value of his self-doubt, Hamlet does not (and cannot) accurately anticipate the consequences of his (in)actions. He does not foresee the numerous deaths that follow: Polonius, Ophelia, Rozencrantz, Gildenstern, Gertrude, Claudius, Laertes, and, finally, Hamlet himself. *Hamlet* dramatizes how and why deciding how to act can have tragic (but unforeseen) consequences.

All forms of inquiry entail assumptions, attention, perception, interpretation, and evaluation. Some entail action. All are areas in which humans are fallible and targets of self-doubt. Beyond these targets of doubt, "[e]ven a thinker who is sober, careful, conscientious, thorough, and the like, can still be subject to things like bias, overconfidence and wishful thinking" (Riggs, 2010, p. 184). Self-doubt, whether it be an irritant (Peirce) or systematic (Hullet), actively acknowledges fallibility and motivates questioning. It can help us negotiate the areas that make us fallible. It also helps us recognize what Nietzsche (1882/1974) calls "the whole marvelous uncertainty and interpretive multiplicity of existence" and connects us to Nietzsche's notion of intellectual conscience. It does this in several ways: a) by helping us acknowledge and negotiate the partial, situated and positional aspects of human

knowledge; b) by redirecting us to attend to what Martha Nussbaum (1990) calls "certain interpretive possibilities" (p. 144) that can be shut down when doubt is absent; and (3) by helping us recognize what Barbara Thayer-Bacon (1995) suggests, that "[w]e can never get out of our skins, and lose our 'I.' We can never stop filtering what we know through our contextuality of time and place" (p. 59). Self-doubt addresses these obstacles to our understandings of truth, beauty, and goodness by helping us acknowledge and negotiate our human epistemic limitations. Although open-mindedness may assist us in recognizing these limitations, given its receptive stance and the power (and comfort) of belief, it does not necessarily help us act to negotiate them.

The Goodness of Doubt

In helping us negotiate individual human epistemic limitations, doubt can connect a person to the virtue of humility. The practice of doubt protects against the blindness brought about by certainty and arrogance. One cannot easily be doubting and arrogant. It is here that self-doubt connects with humility. David Hansen's (2001) concept of "tenacious humility" as something that ought to orient and guide behavior is useful. Although he refers to tenacious humility in the context of teaching, it can be generalized to serve as a regulative ideal for anyone interested in lifelong learning. He describes humility as an active process that "entails a refusal to treat [others] as less worthy of being heard than the teacher him- or herself. It means retaining a sense of [others'] as well as one's own humanity" (p. 167). I would add that it acts in this way not only with other humans but also with ideas. "Humility attests to a grasp on the reality of human differences, institutional constraints, and personal limitations" (Hansen, 2001, p. 167). Tenacious humility is not simply a position on being right in this or that case; it is a stance that can make us more wary and careful in how we exercise our control over others and ideas.

Aristotle and Christianity both connect humility with temperance, with the ability to restrain our desires and appetites, to moderate our ego. When humility refers to modesty and a healthy respect for human limitations, it disconnects from concerns for greatness, honor, and pride, as well as to their opposites—self-disgust, low self-regard, or low self-confidence (Emmons, 1999). A doubt-full stance connects us to tenacious humility, a staying of the humble course, a continuous

recognition that human, personal and institutional constraints and limitations require us to assume "I may be wrong" *and* to look outside ourselves for questions to ask and answers to pursue. Like open-mindedness, this stance allows us to be receptive in a way that belief and certainty cut off. Doubt can spark the receptive stance characteristic of an open mind, and at the same time it can motivate us to move beyond receptivity toward active inquiry.

The Dangers of Doubt

Doubt, however, is not an unadulterated good. Two significant issues are worth mentioning. First, excess, misdirected and misapplied doubt can result in paralysis or the inability to act. Peter Lom (2001) writes of the dangers of "never-ending open criticism," never-ending doubt (p. 92). Skepticism is an, "inherently unstable position … not a place where we may always remain" however much we "strive to continually return" (p. 91). Peter Elbow (1986) explains why doubt is problematic when action is called for; "[d]oubt implies disengagement from action or holding back, while belief implies action. When we doubt, we tend to pause; and by pausing—by disengaging or standing on the sidelines—we doubt better. When we believe fully, we tend to act" (p. 265). Responsible action may be necessary despite the existence of doubt.

Barbara Thayer-Bacon (1995), Lom (2001) and Elbow (1986) frame another significant problem with doubt, namely prioritizing it within inquiry itself. In their view, doubting and believing remain necessary and complementary. In other words, they require each other for either to be valuable. Elbow writes:

[M]ethodological doubt is only half of what we need. Yes, we need the systematic, disciplined, and conscious attempt to criticize everything no matter how compelling it might seem—to find flaws or contradictions we might otherwise miss. But thinking is not trustworthy unless it also includes methodological belief: the equally systematic, disciplined and conscious attempt to believe everything no matter how unlikely or repellent it might seem—to find virtues or strengths we might otherwise miss. Both derive their power from the very fact that they are methodological: artificial, systematic, and disciplined uses of the mind.

As methods, they help us see what we would miss if we only used our minds naturally or spontaneously. (p. 257-8)

Echoing Hullet's criticism of Peirce, Elbow focuses on doubt and belief as methodologies that remain useful in thinking about inquiry. Both Thayer-Bacon and Elbow emphasize the importance of not prioritizing doubt over belief, or belief over doubt. They also emphasize the "practice" aspect of doubt and support Hullet's valuing of its conscious and methodological instigation.

Lom, Elbow, and Thayer-Bacon show us that reasonable objections exist for prioritizing doubt in inquiry, including inducing paralysis and minimizing its critical connection to belief. Clearly, doubt in inquiry is not a position in which to settle; but this does not mean that we should neglect its study and practice. Inherent in the practice of doubt is the active pursuit of understandings of truth, beauty and goodness within the context of our human epistemic fallibility. As Peter Elbow (1986) asserts, doubt is paradoxically linked with the quest for (if not the attainment) of certainty; "when we want to be as sure as it is humanly possible to be, we usually resort to logic which relies on contradiction and doubting" (p. 265). Doubt does not shut off or control inquiry in the way belief and certainty can. Nor does it need to wait for stimulation like open mindedness. It challenges the comforts of these three in its initiation and extension of inquiry and provides protection from the epistemic and moral consequences of certainty and arrogance. Whether it happens upon us and irritates us (Peirce) or whether we consciously and methodologically induce it (Hullet), doubt signals us to reach toward understandings of truth, beauty, and goodness. Moreover, it helps us acknowledge the possibility of falling short and the dangers of doing so when we can harm others. It helps to keep us both epistemologically and personally humble.

"Doubting" Howard Gardner

What do these comments have to do with Howard? Although the section of *Truth, Beauty, and Goodness Reframed* (Gardner, 2011) that inspired this essay is not central to the argument in the book, I believe it undergirds Howard's stance in the world. Howard is a doubter. I learned this when, just a year after earning my Ph.D., I returned to Stanford to become a research manager in the GoodWork Project. Howard was one of

the three principal investigators; William Damon (Stanford) and Mihaly Cziksentmihalyi (Claremont Graduate University) were the others. All three are luminaries in their fields but very different sorts of thinkers. During our first cross-site meeting, I began piecing together the particular intellectual strengths and styles of each. I found Howard's style to be characterized by an inexorable and rational skepticism. His questioning brought important and innovative thinking to the table. As his body of work suggests, he takes little for granted, especially when it comes to commonly accepted claims. My experience working and writing with Howard is that he doubts and invites others to doubt with him. It is not that he has the most doubt, but that he has the sort of doubt that makes him receptive to possibilities that others cannot see and proactive in seeking answers. He has the sort of attitude about himself as a believer that allows him to be available to the ideas of freshly minted Ph.D.s and people he meets on the street. But Howard has not simply been open-minded; he has not simply been waiting patiently for ideas to cross his path. He actively pursues them.

As he turns 70, he continues to be the lifelong learner that I strive to become. His determined and rigorous pursuit of questions and answers requires the sort of energy and stamina that leave me, 20 years his junior, breathless. It is not unusual to receive emails from Howard written in the middle of the night or from far-flung corners of the world. His updates overflow with news of things he has heard, people he has met, books that he has read and ideas that challenge and intrigue him. They overflow with doubts and potential responses to them. Although doubt is commonly thought of as, "a thing to be dreaded; danger, risk" (Oxford English Dictionary, http://www.oed.com/), Howard's stance in the world uncouples the notion of dread from doubt; it embraces the positive connotations that risk has for the sort of learning he writes about in *TBGR* and models in his work. His is a mind that welcomes the freedom to doubt, and rejects the pursuit of freedom from doubt. Through his work, we can see how his mind has been open to the opportunities that our continually changing landscape provides. He doubts in the best sense of the word: his doubt combines rational skepticism with tenacious humility in ways that have inspired insightful thinking and changed many minds, including mine.

References

Adler, J. (2004). Reconciling open-mindedness and belief. *Theory and Research in Education, 2*(2), 127-42

Callahan, D. (2004). *The cheating culture: Why more Americans are doing wrong to get ahead*. Orlando, FL: Harcourt.

Campbell, J. (1972). *The hero with a thousand faces*. Princeton, NJ: Princeton University Press.

Descartes, R. (1641/1996). *Meditations on first philosophy: With selections from the objections and replies*. (J. Cottingham, Trans. and Ed). New York: Cambridge University Press.

Emmons, R. A. (1999). *The psychology of ultimate concerns: Motivation and spirituality in personality*. New York: Guilford Press.

Elbow, P. (1986). *Embracing contraries: Exploration in learning and teaching*. New York: Oxford University Press.

Gardner, H. (2004). *Changing minds: The art and science of changing our own and other people's minds*. Boston, MA: Harvard Business School Press.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the 21st century*. New York: BasicBooks.

Gawande, A. (2002). *Complications: A surgeon's notes on an imperfect science*. New York: Metropolitan Books.

Hansen, D. T. (2001). *Exploring the moral heart of teaching: Toward a teacher's creed*. New York: Teachers College Press.

Hare, W. (1993). *What makes a good teacher: Reflections on some characteristics central to the educational enterprise*. London, Ontario: The Althouse Press.

Hare, W. (1979). *Open-mindedness and education*. Montreal: McGill-Queen's University Press.

Hartshorne, C., & Weiss P. (Eds.) (1931). *Collected papers of Charles Sanders Peirce*. Cambridge, MA: Harvard University Press.

Hullett, J. (1974). Conditions of inquiry. *Philosophy of education: Proceedings of the annual meeting of the Philosophy of Education Society, 30*, 432-438.

Lom, P. (2001). *The limits of doubt: The moral and political implications of skepticism*. Albany, NY: State University of New York Press.

Nietzche, F. (1974). *The gay science (Books I-IV: 1882; Book V: 1887)*. (W. Kaufmann, Trans.). New York: Vintage Books.

Nussbaum, M. C. (1990). *Love's knowledge: Essays on philosophy and literature*. New York: Oxford University Press.

Riggs, W. (2010). Open-Mindedness. *Metaphilosophy*, *41*(1-2), 172-188.

Thayer-Bacon, B. J. (Winter, 1995). Doubting and believing: Both are important for critical thinking. *Inquiry: Critical Thinking Across the Disciplines, 15*(2), 59-66.

Wachowski, A. & Wachowski, L. (Directors). (1999). *The Matrix* [Film].

Bridges, J. (Director). (1973). *The Paper Chase* [Film].

Osborn, J.J. (1971). *The Paper Chase*. Boston, MA: Houghton Mifflin.

Weir, P. (Director). (1998). *The Truman Show* [Film].

Howard's Response to Susan Verducci

As usual, Susan, you bring up a topic which we think we know about and indeed may have made up our minds about; and you shake us up, stimulating us to think about it in new, different, and more profound ways. I had written about "open-mindedness," thinking that it was inherently a good thing, that no one would raise any questions, and that I could easily label as enemies those who were opposed to "open-mindedness" or partial to "closed-mindedness."

But as philosophers like you never fail to remind us, few things are as simple as they initially appear. For one thing, almost no one considers herself to be closed-minded. Indeed, if I were to engage in a discussion with one of Jonathan Haidt's prototypical conservatives, it would appear to her that I was closed-minded on the very issues that I think I am open-minded on, rather than vice versa. As an example, for me, open-mindedness means taking into account the views of people from very different backgrounds. For a Haidtian conservative, the open-minded person is one who recognizes the special place of family, country, and religion and does not squander attention on forces or folks that might be alien or frankly destructive.

The term "doubt" has an unsettling connotation in English (and related languages). For some people, it refers deliberately to uncertainty about religious claims. To others, it refers to a demand for palpable evidence. Descartes, it will be recalled, confirmed his identity by saying, according to some translations, "I doubt, therefore I am."

You have, in effect, labeled me as "Doubting Howard." I take this descriptor seriously, freely admitting that it is new to me. I like to make the distinction between being a "skeptic," to which I plead guilty, and being a "cynic," to whose ranks I would prefer not to be relegated. And I think that you are right that this tendency is deep in my intellectual DNA.

If I were to ask why, I'd point to at least three potent factors. First of all, coming from a Jewish, if not a particularly religious background, I learned from an early age to argue, to question, and to challenge, and this is a proclivity, despite the fact that I did not go to a *cheder* where I would have learned *pilpul*. (Contrast this with a fundamentalist Christian

background where I might have learned to acknowledge and to obey.) Second, in my chosen field of psychology, one is expected to carry out experiments. In an experiment, as we have learned from Karl Popper, all that we can ever hope to do is to demonstrate that some assertion is not supported by the evidence (e.g. the null hypothesis is not sustained; the bold hypothesis does not hold up). Anyone trained in this field, when he/she hears an assertion, is likely to ask, "What's the evidence?" and "How can it be disproved?"

The third factor is perhaps less widely appreciated but, for those who knew Nelson Goodman, it was very powerful. As a dyed-in-the-wool philosopher, Nelson was always challenging conventional wisdom—you might say that was how he made a living (and it was a good living, both in the academy and in buying and selling art!). And so he undermined common views of induction, challenged realist accounts of phenomena, and argued against the customary division between arts and sciences, amid dozens of other philosophical *tours de force*.

If you spent time with Nelson, it became second nature to be a doubter. How many times have I repeated Nelson's injunction to me: "When I read a paper, if I come to something that does not make sense, I stop reading." Now, this is not doubting, exactly, but it is an injunction to be very careful about how you express yourself and be sure to provide the strongest evidence that you can.

There was a limit to the power of Nelson's doubting. Sometimes he would make a case that seemed a "slam dunk" within philosophy but with had little force for the rest of the world. As an example, in his essay "Seven Strictures Against Similarity," Nelson argues convincingly that there are not solid grounds on which to declare any two entities more similar to one another than any two other entities. And yet, if one were to take this injunction literally, one would have to ignore the enormous accumulated evidence that <u>all</u> species, including human beings, are predisposed to consider certain elements more similar to each other than other ones. This is not to say that the perceived similarities cannot be overthrown; that was Nelson's great insight. But it is to say that in our search for philosophical purity, we cannot or should not ignore a mountain of empirical evidence.

One final point. Until reading your essay, I had not thought about the importance in good work of the doubting impulse. Yet, when we describe the good professional and the exemplary professional, we always have in mind that she is never overly certain that she is right. Indeed, she embodies the opposite traits: open to questioning, ready to discuss with others, and prepared to learn from mistakes and do better next time. What we want to avoid, as you indicate, is a doubt that becomes paralyzing and thus undermines any kind of work at all.

And so, Susan, I happily say “two cheers for doubt” and am pleased to have as a nickname “Doubting Howard.” But I want to leave a place for open-mindedness and the chance to establish certain assertions as closer than others to truth.

Julie Viens

We know Howard is brilliant, prolific, a great speaker and thinker. Perhaps something everyone doesn't already know about him—and what I would like him to understand—is that I and many others know and appreciate his loyalty and support to those of us who worked with and for him. Whether it is a reference, a conversation, advice ... he has a place in his heart that will always make space in his head and time in his calendar to help support our work and well-being long after we've left Project Zero. That means so much to me and it always will. Thank you Howard!

With love and gratitude,

Julie

Howard's Response to Julie Viens

Julie, you have had numerous roles and connections over the years to Project Zero, and to related enterprises, some of which you initiated and/or brought to our attention. And you have always approached these assignments with seriousness, dedication, and—to our pleasure—a sense of humor as well. I want to thank you for being a stalwart in our ranks over the years and assure you that, whether in Cambridge, New York, China, or Latin America, you've given as much or more than you've received. Keep up the good work!

Another Letter to Howard—
30 Years After "THE" Letter

Connie Wolf

Dear Howard,

It amazes me that you still remember THE letter I wrote you nearly 30 years ago. Quite honestly, I don't even remember writing it—but I know it existed because you have never let me forget it. Over the decades, you have told the story of THE letter whenever you introduce me to a friend or colleague. The retelling is both uncomfortable and comforting: I remain slightly embarrassed by my boldness yet extremely grateful and honored that THE letter somehow earned your respect (as you tell it) … and that it launched a vital friendship.

It was the summer of 1984. I was 25 years old, full of confidence, full of dreams, and motivated by my love for education and the arts. One morning I saw your ad for a new position and I can still remember that feeling—knowing that it was perfect for me even though the name of the place was really perplexing (Project Zero). I wrote a letter (not THE letter) and you called me for an interview.

I remember everything about that day: what I wore, the hot and humid weather, the smell of Longfellow Hall as I walked in for the first time. And I still remember how my confidence was compromised on my way to the interview. I ran into a friend who asked why I was dressed up. When I explained, she exclaimed, "THE Howard Gardner? The one who won the Genius Award?!" I was suddenly really nervous. Though I knew about the MacArthur Foundation Awards, I definitely didn't know anything about you. (Remember, this was in the pre-Google era.)

My first image of you is exactly how I picture to this day: sitting in your rocking chair surrounded by towering filing cabinets. Not one, not two, not three, but what seemed to be dozens of filing cabinets circling the room, leaving barely enough space for the windows and a desk. Your hair is a little disheveled, your glasses are a bit crooked, and your clothes are perhaps over worn. As you rock back and forth, I can feel your mind at work … and I quickly realize that your mind never stops. You smile,

you laugh, you listen (charismatically), you ask questions that challenge me to think differently. And while I am still often intimidated by your intelligence and insight and fresh analysis, I am always buoyed by your warmth and generosity. In that first meeting, I left having learned something and 30 years later, I still seek out every moment I can to be in you company to keep learning from you.

My job interview with you and Ellen went well, or at least I thought it did. I left feeling confident that I was indeed perfectly suited for the job. However, I soon received the dreaded call: you and Ellen informing me that you decided to hire another candidate who had her Ph.D. Aside from my lack of degree, you told me I was otherwise perfect (my word, not yours).

After I hung up the phone, I sat down to write THE letter. The unsolicited letter. The passionate letter. The ridiculously bold letter in which I articulated why having no Ph.D. didn't matter at all.

I often wonder what the conversation was between you and Ellen when you received the letter. Did you argue with incredible love and respect, as you do so well? What mattered to me then—and now—is that you called me a few days later to tell me you would create a part-time position so I could join your research team. You soon made the position full-time. The researcher with the Ph.D. ended up leaving, yet I remained part of the Project Zero community for several extraordinary, life-changing years.

I am forever grateful that you were open to THE letter and recognized something in me that I never knew I had. The chance you offered me has been one of the most invaluable lessons of my life. Now whenever I meet a talented and energetic job candidate who doesn't meet every qualification, I imagine how you would assess the situation. This is one way I reciprocate your gift to me: I give an unexpected candidate a chance. And those are decisions that I never regret.

Howard, you taught me many life-long lessons at PZ—so many that it would take multiple pages to acknowledge them all. You taught me the value of treating everyone with respect and to never equate what you wear with intelligence. I learned not to apologize for working hard and long hours. I now know the importance of drinking a Diet Coke before (or while) delivering a public talk. I discovered that empty cereal boxes can

have a renewed life holding some of the most innovative research documents long after the sugary contents are finished. Most importantly, you taught me that believing in someone means supporting them even after they stop working for you, that being an effective leader isn't a popularity contest, and that posing the right question is far more important than the having the "right" answer. And the time we drove your old VW Rabbit around Boston, hopelessly lost, you handed me the map and I helped find our way, and you gave me the best compliment of all: "you have good spatial intelligence." At the time I barely knew what that meant, but since you had invented the concept, your anointing me with one of the 7 intelligences felt great and still does.

You have left a strong and lasting imprint on me. You influence me every day because you reinforced my desire to do better, to challenge myself, to take risks and to lead a life full of passion and commitment, and to strive to make a difference even when the obstacles seem overwhelming or impossible. You taught me to persevere. I have a long way to go, but I enjoy adding new experiences and new accomplishments to my "portfolio," and I always eagerly await your assessment.

When I first came to PZ, my orientation included phone training. Above every phone in every office was a list of VIPs. "Always be helpful to anyone who calls," I was reminded. "However, if anyone on THE list calls, put the call through to Howard immediately!" I didn't recognize many names on the list, but I was always enamored by the concept of THE list. (The first name was Alberta Arthurs, who you introduced to me years later—and who also has become my invaluable mentor and friend.) I remember thinking who might be on my list someday. And from that first week on the job to this very day it is you, Howard, who holds the spot at the very very top of my list.

Thanks for taking my letter 30 years ago and making it THE letter. I am forever grateful, forever humbled, forever inspired.

With love, with admiration, with enormous gratitude,

Connie

Howard's Response to Connie Wolf

Occasionally in life, one meets someone who makes a very strong impression on you—extremely favorable in this case. And even if the particular niche for which he or she has come on to the scene does not quite fit, one remembers the person (in this case, you, Connie) and tries to think of ways in which one might be able to continue the relation.

I'm quite sure that is what happened with respect to the episode of "the letter." At first Ellen and I wanted to hire someone who had a higher degree and a better mastery of Chinese, but with some reflection, we realized that having the chance to work with someone of high quality and healthy ambition was at least as important.

Subsequent events have proved us right. After carrying out fine research at Harvard Project Zero, including indispensable help with the Gardners' adventures in China, you have gone on to an illustrious career: a founding Warren Weaver Fellow at the Rockefeller Foundation; director of Education at the Whitney Museum; director of the Jewish Museum in San Francisco at a time when that Museum assumed a new physical and museological identity; and now, director of the Cantor Center for Visual Arts at Stanford University. You've learned a lot along the way—including how to be a tough negotiator, how to deal with difficult staff, and how to handle temperamental donors—but you've retained throughout your healthy set of values, your sense of humor, and your genius for bringing into the artistic world individuals who did not think of themselves as connected to the arts. Perhaps that is a part of Project Zero that has remained with you over the decades.

Good Work, Howard

Mark L. Wolf[1]

F. Scott Fitzgerald seems to have anticipated Howard Gardner when he wrote in 1936 that:

The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time and still retain the ability to function. One should, for example, be able to see that things are hopeless and yet be determined to make it otherwise.[2]

I met Howard at Renaissance Weekend in 1995. He had already been certified as a genius by the MacArthur Foundation for developing the theory of multiple intelligence. After we were on a panel discussing whether the morality of their personal conduct should affect the assessment of public officials, I sent Howard an essay by Warden John Sparrow of Oxford, "The Press, Politics, and Private Life," and the correspondence between United States District Judge Charles E. Wyzanski, Jr. and Sparrow concerning that piece in 1968. Howard responded, two years before we ever heard of Monica Lewinsky, by writing that:

The exchange reminds me of my own nightly discussions with my wife Ellen. Ellen is of the Sparrow persuasion—feeling, for example, that the Clinton's respective peccadillos are unimportant and ought to be ignored; I being unsure that they should be ignored and being as upset by the "cover-ups" as by the allegations.[3]

In that statement, I discerned in Howard some of the qualities displayed by the best judges, particularly the capacity both to recognize the validity of competing considerations and, despite not being certain, to condemn nevertheless what should not be tolerated. This exchange of letters launched a conversation that continues and a friendship that has enriched my life.

In his first message to me Howard manifested the integrity that has characterized his life as a public intellectual. Despite sharing the discomfort that caused his colleagues to remain quiet, in the tradition of

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[1] Mark L. Wolf is a United States District Judge for the District of Massachusetts.
[2] F. S. Fitzgerald, *The Crack-Up,* Esquire, Feb. 1936, *available at* http://www.esquire.com/features/the-crack-up (Jan. 28, 2013).
[3] Letter from Howard Gardner to Mark Wolf (Jan. 16, 1996).

the prophets in the Hebrew Bible, Howard has repeatedly criticized conduct at his beloved Harvard that has been unworthy of a great university. He has decried the gentle treatment of plagiarism by famous law professors when comparable misconduct would have caused a student to be seriously sanctioned, and the exploitation of Harvard's prestige to make a profit by a well-known Business School professor. Howard also challenged Lawrence Summers when he realized that the President's disrespectful treatment of colleagues was destroying confidence in the capacity for civil discourse, and indeed disagreement, that is critical in a community of scholars and teachers. Disputing another distinguished professor's defense of the President, Howard wrote in the *Harvard Crimson* that, "[t]he most effective academic leaders do not rule by fist, fiat, furor, or fear but rather by listening, building consensus, and creating a context for the institution to thrive."[4]

In a 2012 *Washington Post* op-ed piece concerning Harvard's "largest cheating scandal in living memory," Howard reported that his studies had shown that the "best and brightest students" were "articulate, thoughtful, even lovable," but often also "hollow[] at the core."[5] Howard placed much of the blame for the scandal on fellow faculty members who were unworthy examples for students, who:

all too often see professors cut corners—in their class attendance, their attention to student work, and most flagrantly, their use of others to do research. Most embarrassingly, where professors are caught—whether in financial misdealings or even plagiarizing other's work—there are frequently no clear punishments. If punishments ensue, they are kept quiet, and no one learns the lessons that need to be learned.[6]

Such public expressions of honest indignation about students and colleagues are not a prescription for popularity on campus. Rather, they require what William James, in 1897, called "a lonely kind of courage."[7]

The events that repeatedly called for that lonely kind of courage have dispirited Howard but have never caused him to lose hope, in the sense that Vaclav Havel defined hope—"not the conviction that something will turn out well, but the certainty that something makes

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[4] Howard Gardner, *Leaders who Listen*, The Harvard Crimson, Feb. 23, 2006, *available at* http://www.thecrimson.com/article/2006/2/23/leaders-who-listen-as-harvard-begins/

[5] Howard Gardner, *When Ambition Trumps Ethics*, The Washington Post, Aug. 31, 2012, *available*

[6] *Id.*

[7] William James, *Robert Gould Shaw,* in Memories and Studies 26, 36 (2008).

sense, regardless of how it turns out."[8] And despite all of the disappointments, Howard was able to write me that a new member of the Harvard Corporation I had introduced to him was "very special and brought some optimism to my typically pessimistic mood."[9]

Significantly, it has never been enough for Howard merely to criticize. Rather, he has always strived to educate and elevate. With his first letter, Howard sent me a description of the project to promote humane creativity that Mike Csikszentmihalyi, Bill Damon, and he were then starting. I now realize that undertaking represented another quality I much admire. In my chambers I am surrounded by depictions of Supreme Court Justice Louis D. Brandeis, Dr. Albert Schweitzer, and Moses. Brandeis, Schweitzer, and Moses were accomplished individuals who left privileged positions to dedicate themselves to trying to make the world more just. Each was able to endure being widely misunderstood and criticized, and to grow throughout their lives. Howard is like Brandeis, Schweitzer, and Moses. He could have comfortably and, if he wanted to capitalize, profitably continued to devote himself to multiple intelligence. However, he instead took the risk of investing his time and talent in the uncertain humane creativity initiative that ultimately became the acclaimed GoodWork Project.

From the outset, I appreciated Howard's "determination to find living examples of creative leaders whose work has been conducted through moral means and dedicated towards humane ends."[10] I also applauded his desire to study how models and mentors influence younger people. However, I told Howard that I thought his proposal was imperfect in failing to recognize the important, often realized potential that young people have to revitalize the idealism of their elders and improve the professions. Howard proved to be a good student as well as teacher, and added the study of that phenomenon to the GoodWork Project's research.

GoodWork has long provided the framework for my teaching and speaking to students in the United States and throughout the world. I encourage them to seek fulfillment in the law by dedicating themselves to doing work that is of the highest craftsmanship, is performed ethically, and is in service of humane values. I have learned that it is a message that resonates everywhere.

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[8] Vaclav Havel, Disturbing the Peace 181 (1999).
[9] Email from Howard Gardner to Mark Wolf (Sept. 30, 2010).
[10] Mihaly Csikszentmihalyi, William Damon & Howard Gardner, Human Creativity: The Urgent Response 20 (Aug. 1995) (unpublished manuscript).

While my many communications and conversations with Howard have provided me with valuable professional insights, his friendship, and Ellen's too, have been even more important. In 1997, when I began conducting controversial proceedings that eventually exposed the corrupt relationship between the Federal Bureau of Investigation and its notorious Organized Crime informant "Whitey" Bulger, I received the first of the supportive messages and calls from Howard that regularly arrived when the media reported that I was most embattled.

Howard, and also Ellen, have taken a deep interest in my sons, who are each proof positive of the value of an education based on the theory of multiple intelligences. It has been rewarding for me to be a mentor to their son Ben, and I look forward to performing his marriage later this year. Howard and I have particularly enjoyed exchanging anecdotes as his mother at age 101, and mine at age 94, recently became pals and bridge partners at their Orchard Cove life-care community.

I take hopefully pardonable pride in having contributed to Howard's profoundly meaningful relationship with Jim Freedman. Howard also met Jim, who was then the President of Dartmouth College, at Renaissance Weekend in 1995. Howard has said they really bonded during a drive to my home for dinner which was prolonged when they got lost. Howard, Jim, and I spent much happy time together before Jim's cancer recurred in 2002. The three of us then started meeting for lunch, often joined by Alan Dershowitz, at Casablanca in Cambridge and later in Jim's room at Massachusetts General Hospital. As *The Boston Globe* reported, however, Howard was Jim's closest and most faithful friend.[11]

I have long believed that a person can be measured by what he admires. In a talk to the American Philosophical Society in 2008, Howard said that:

Jim Freedman stood out as a remarkable human being, distinguished by his judgment, wisdom, deep concern for others, ability to express important ideas and cherished values in memorable words, and status as a "trustee" of the realm of American higher education.[12]

This accolade is equally applicable to Howard.

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[11] Patrick Healy, To Him, Leading Is Academic: Ailing Ex-Dartmouth Chief Wants College Presidents to Speak Up, The Boston Globe, Jan. 24, 2003, available at 2003 WLNR 3429201.

[12] Howard Gardner, James O. Freedman (Biographical Memoirs), 152 Proc. Am. Phil. Soc. Vol. 152, 401 (2008).

I do not mean to suggest, however, that Howard is perfect. At times I think that his judgments are not adequately tempered by an empathetic understanding of human frailty. They also occasionally seem to be based on austere logic, insufficiently influenced by emotion. For example, in his admiring eulogy, Howard described his father as a man of "four paradoxes and six strong qualities."[13] And I have more than once accused Howard of being elitist, most recently in challenging his assumption that Harvard students should be expected to be more ethical than those at Ohio State.

Nevertheless, Howard has uniquely given me what he described in his memorial for Jim Freedman as "the gift we get from friends and mentors—the exacting standards and cherished values that they embodied."[14] It has been, and remains, a privilege to be Howard's friend.

I know many accomplished people. However, Howard is among the very few who are, in the words of the poet, "truly great:"

[T]hose who in their lives fought for life
Who [wear] at their hearts the fire's center
Born of the sun they travel […] a short while toward the sun
And [leave] the vivid air signed with their honor.[15]

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[13] Howard Gardner, Eulogy for Ralph Gardner (June 1999).
[14] Gardner, supra note 11.
[15] Stephen Spender, The Truly Great, in Collected Poems 30 (1986).

Howard's Response to Mark L. Wolf

In the 1990s, several of us who live in the Boston area made it a practice to travel south late in December, to an institution called Renaissance Weekend. One of the purposes of these trips was to meet individuals from different parts of the country and from different walks of life—personal and professional. It is a paradox, then, that at Renaissance Weekend, I met two lawyers from the Boston area, each of whom because very close personal family friends and intellectual sparring partners. As you point out, one person was our late lamented friend Jim Freedman; and of course you were the other.

Mark, I have to admit that at the time, I did not realize that, while our "day jobs" were quite different, our underlying concerns and methods had so much in common. Indeed, it's been a twenty year education for me to come to appreciate these common themes. I suspect, and I hope, that this education (dare I call it mutual education?) will continue for many more years.

Despite the fact that I am meeting mostly with students and fellow faculty, while you are confronting individuals suspected of crime or huddling with other judges, I discern three strong parallels in our ways of being, which is why you've been such a source of sustenance for me.

First, a deep belief that our most important contributions are to our students, our mentees, and our young assistants or clerks. We talk a lot to them (perhaps too much), we explain what we are doing and why—but, I think most importantly, we model a certain way of being. This way of being is not for everyone, and even those who like it may not be able to emulate it, but for those who have been genuine mentees of Judge Mark Wolf, it is a life-transforming experience.

Second, a belief that we have a definite professional role, and it is our job to realize that role as faithfully as possible. Much has written about what it means to be a good teacher, and more has written about what it means to be a good judge, but the most important challenges cannot be looked up in a directory or simply picked up from an idle conversation or a random tweet. You have to think deeply about what the judge <u>should</u> do in this circumstance, even if it won't be popular, or politically correct, or sustained at a later time. I do not know all of your

judicial history, but I am confident that when it is written, a theme will be, "Judge Wolf sought to say and to do what was the right thing for a judge at his time and under those circumstances."

Third, a commitment to being exposed to different persons, different points of view, different literatures, and different philosophies. It would be so easy for a judge, essentially appointed for life, to sit in his or her chambers and simply grind out the opinions. But nothing is as likely to guarantee INjudicious opinions as a reliance *solely* on one's own thoughts and reflections. I have been impressed throughout by the breadth of your friendships, the wide gamut of your reading, your attendance at so many different events, your ever increasing travels to the far corners of the world, and (perhaps least expected in a judge) your love of poetry and desire to recite it and to speak about it to others.

Cosmopolitan is an apt opposite to parochial, but it does not quite capture the wonderful open-mindedness that characterizes your intellectual horizon. And I am very indebted to you for broadening mine as well. As you sensitively point out at the conclusion of your essay, you encourage me to be a little more tolerant, a little more diverse in my daily preoccupations, and a little more empathic.

Alan Wolfe

One of the most famous distinctions of the 20th century belongs to the Oxford political philosopher Isaiah Berlin, although he borrowed it from the Greek poet Archilochus. I refer, of course, to the parable of the hedgehog and the fox, the contrast between the thinker who insists on one explanation for everything and the one who finds variation everywhere. Ironically, Berlin himself defended multiplicity—but in single-minded fashion. The best society, he insisted in nearly all of his writings, is the one that does not try to impose one definition of a good society on all its members.

I always think of Howard Gardner the way I think about Isaiah Berlin, and not just because of each them are seminal thinkers. Howard is the most pluralistic person I know. And I mean that without qualification.

As must be true for many, the first work of Howard's that came to my attention was his conception of multiple intelligences. I can think of two reasons why. One is that my own SAT scores were so abysmally low that I opted not to apply to any far-off colleges and attended instead my local "commuter" school, Temple University, pretty much the only one that would have me. Since we were told in those days that intelligence was one thing only, and since I obviously did not possess it, I accepted my limits. My major was neither English nor political science, but accounting, and then again, I did not do very well in that. When asked by a vocational guidance person from B'Nai Brith what I wanted to do, I blurted out "historian," which was not a bad reply—even though the interviewer laughed at me and explained to my parents that this was beyond my reach. (So much for psychology in the days before Howard.) It was only later, much later, that I discovered that perhaps not all forms of intelligence were amenable to multiple choice testing. Actually, some of my teachers at Temple saw something in me, including a terrific instructor in speech, as well as one in history, and off I went. (Why speech, you may ask? Because the schools found me hard of hearing.)

I also learned from reading Howard that it was possible to be musically intelligent. (Only later did I discover that Howard was.) This came as a great relief to me, not because I am musical—I have no aptitude for playing anything well, not even my stereo equipment—but

because I love listening. If doing music makes one intelligent, perhaps hearing music does the same. One area where I may be as pluralistic as Howard is in my musical taste, which runs from *"Ombra mai fu"* to Clifford Brown.

Howard and I met when he invited me to sit with him and answer a few questions—in front of 500 or so people, including my cousin Judy. (When Judy heard of this event, she could not stop raving; I was a favorite cousin and Howard was a favorite guru). That event was one of the highlights of my intellectual life. Here was the master of multiple intelligence telling the audience that I was intelligent after all. If only those folks at B'Nai Brith could see me now. And on top of all that, Howard and I got to talk about ethics, academia, politics, and society, although, to my regret, not music.

From this encounter I learned something else about Howard's pluralism. Whatever the big idea you study, in the academic world you are expected to study it only one way. Methodological monism is the defining feature of so many academic departments, even, if not especially, in fields of study with a humanistic orientation. And so we have all these wonderful creatures called people, with all their complexity, contradiction, and chaos, reduced to one thing and one thing only. Once it was called rationality and now, with behavioral economics all the rage, it is called irrationality. Either way, science is supposed to find the laws that govern how we behave. I never liked this very much in my own discipline, political science, but at least we had—and thankfully at Boston College still have—political theorists trained in the great classics. I knew from my first course in psychology in college that other fields were ever singularly scientistic than my own.

What a joy, then, to meet a psychologist who read widely and deeply and could apply all that learning to understanding the kinds of creatures we are. It is of course the case that Howard practices his craft in the Graduate School of Education, not the Department of Psychology. But I had already begun to learn that many of the academics I admired most had found homes not in liberal arts departments, but in schools devoted to the improvement of professional competence and expertise. Such places, grounded in real world practice, find less value, it would seem, in the theoretical fads and modeling techniques so popular elsewhere in the rest of the academy. No wonder my cousin Judy was so impressed. As someone dealing with the problems facing real people—at

the time she worked in the Belmont, Massachusetts schools—she had an interest in ideas relevant to their lives. People like that are the ones I always hoped to reach. Howard was actually doing it.

Howard and I now have a very special relationship: we blurb each other's books. So let me say for the record that I am not a promiscuous blurber. Whenever asked, I let the editor or publicist know that I must read the book first, usually as a way of saying I am too busy to take this one on. With Howard's book, my excuse remains an excuse—but for turning to his latest project before others on my list. Reading Howard not only makes me feel that I have learned something, it makes me feel that moral improvement is a real possibility. As the politics in our country sink lower, my respect for Howard's work is raised higher. We need people to remind us of what Lincoln called the "better angels of our nature." Reading Howard makes me remember Lincoln, not a bad thing to do when his party was—well, the Republican Party of today.

Howard and I were both born in Pennsylvania. There is, however, one difference between us. I turned 70 before he did. The difference in our age in not much, but it gives me the right to call him my junior. So speaking with the wisdom granted by being on this earth 11 more months than he has been, let me say to Howard how much he has meant to me, how much he means to me now, and how much he will continue to mean to me in the coming decades.

Howard's Response to Alan Wolfe

Sometimes there are individuals who live far away from you, but you manage to see them quite regularly, by accident or design. In contrast, there are people like you Alan, whom I only see periodically, and yet you play a very important part in my life—not only educating me by your myriad books and articles, but also by supplying (if unwittingly) internal conversations of the sort, "What would Alan say?" or "But in his last article Alan said…" or "I think Alan has changed his mind about this and I think I agree with him but I can't remember why." As my wife is a colleague of yours at Boston College, in any serious conversation about the school, sooner or later I say, "Well, Alan would probably have the best sense of what's going on… though he also has enough sense not to get too involved."

You describe me as being pluralistic and fox-like. I think that this is an accurate characterization. I also think it applies to you—though I think that when you speak and write (and perhaps also when you think!), you express yourself more firmly and more authoritatively. And so, to my eyes and ears, you sound somewhat less pluralistic and somewhat more hedgehog-like. I have to confess that not infrequently, I wish I were more hedgehog-like. I have a certain envy for individuals who explore one topic in extraordinary depth and can then speak with total authority on that topic… I just don't happen to be cut out that way.

Where I would like to think that we are similar (and I have mentioned this in reference to a few other contributors to the Festschrift) is that we try to judge things as they come, and we are willing to change our minds and even to say that we have changed our minds. I always want to read what you write because I am never quite sure where you will come out (unlike, say, the run-of-the-mill op-ed writers in the New York Times or the Wall Street Journal). And I expect to learn from where you end up, and sometimes to my surprise, I end up in the same place!

Aphasia Research: Contributions from the 14th Floor of the Boston VA Hospital

Edgar Zurif

Howard is a public intellectual, internationally known for his work on human development, especially with respect to his theory of multiple intelligences. But for more than 20 years, he shared this interest with an interest in neuropsychology or cognitive neuroscience as it's now called. To handle the two, he spent mornings at the Aphasia Research Center; afternoons, at Project Zero.

The Aphasia Research Center is a division of the department of neurology at Boston University School of Medicine and is housed at the Boston VA Hospital. Staffed by neurologists, neuroradiologists, psychologists, linguists, and speech pathologists, it fosters a program of research that seeks to uncover the neurological underpinnings of a variety of complex cognitive capacities. Howard and I both became members of the center in 1971. Right off, Harold Goodglass, its director, put us together in the same office as a matter of convenience. For one year we shared the largest office at the center; for the next 20-plus years, because of an influx of post-doctoral students and neurology residents, we were moved to the very smallest—a tiny, quite crummy space with, of all things, an attached shower stall. But even though crowded together, we became good office mates. We tended to have the same likes and dislikes regarding TV personalities, movies, and colleagues—especially colleagues. And gossip and jokey comments were part of our morning schedule. Howard's a smart and funny guy; I laughed a lot during the years of mornings that we shared our office.[1]

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[1] A joke by Howard: The problem of finding space for incoming residents and post-doctoral students persisted even after our inglorious office switch. Harold Goodglass called a special staff meeting to address this problem. "Put on your thinking caps," he requested. There was total silence for about a minute while we all thought hard about the problem. Howard broke the silence. His suggestion: "Staggered lunch hours." I didn't stop laughing for a week. But maybe you had to have been there.

We also, of course, found time to work together. Our research partnership was for me a privilege and a pleasure: We co-authored papers, jointly organized seminars, attended meetings together, and early on, successfully applied for a sizeable NIH grant—a shared grant that ran uninterruptedly for close to 20 years.

Our research interests were complementary. I carried out research on linguistically-specific topics, especially on the capacity to form syntactic representations in real-time. Howard's research dealt with the more general cognitive capacities in which language is embedded. Our aim was not simply to chart linguistic and cognitive changes brought about by brain damage so as to inform remediation efforts. Rather, influenced by Norman Geschwind's analyses of the relation between language organization and neuroanatomical organization (Geschwind, 1965; 1970), we also sought to contribute to the understanding of how aspects of language and other cognitive systems were represented in the normally functioning brain. The bet was that the selective manner in which a mental function broke down due to a circumscribed brain lesion bore an interesting relation to the manner in which the constituents of that function were normally neurologically organized. And that still seems a fairly safe bet.

Communicative Capacity and its Neural Implementation

Howard's first studies focussed on language skills at the word level and sentence level, and in the context of speaking, understanding, comprehending, repeating, and reading—all of which were shown to be crucially dependent on left hemispheric function. But he also went beyond linguistic-specific concerns by exploring how brain lesions affect humor, sensitivity to metaphor, painting style, and music. In effect, he started to document the role of the right hemisphere—a role he later expanded upon in his studies of gesture and discourse.

Working in these various areas, Howard and his colleagues produced a body of research of stellar quality. Among his contributions, he was one of the first researchers to advance our understanding of brain-language relations in terms of the Piagetian notion of operativity. Operative thought allows the possibility of mental, sensory-motor transformations of perceived configurations; in figurative thought, by contrast, perceived configurations remain in static form, not being mentally transformable. Building on this framework, Howard and his

colleagues showed that aphasic patients were more successful in naming objects and knowing the referents of words—even in reading single words aloud—when the items signalled operative concepts rather than when they designated figurative concepts. In effect, he showed that words tapping into conceptual networks rich in sensory-motor representations appeared, relatively, to resist left hemispheric damage, possibly because such conceptual structures were bilaterally represented in the brain (e.g., Gardner, 1973; Gardner, 1974).

Howard's programmatic analyses at the discourse level clearly serve as another example of his contribution to cognitive neuroscience: In a series of studies carried out collaboratively with Hiram Brownell and in some instances with Nancy Foldi, he demonstrated the crucial role of right-brain systems in forming inferences, integrating propositions, and in appreciating non-literal meanings, particularly those entailing sensitivity to a speaker's attitude (e.g., Brownell, Potter, Bihrle, & Gardner, 1986; Gardner, Brownell, Wapner, & Michelow, 1983; Foldi, Cicone, & Gardner,1983; Winner & Gardner, 1977).

Howard also initiated a research/therapy program called Visual Communication that grew to involve many other investigators (including me for a short while). The program made use of simple arbitrary (geometric) and representational (ideographic) forms. Admittedly, the lexicon in this system was sparse and made reference to a restricted set of familiar objects and actions; moreover, the system's syntax consisted simply of a left-to-right ordering of elements, and conjunction was its sole source of recursion. Still, an impressive number of severely aphasic patients with remarkably widespread left-hemispheric damage were able to master this system, showing a retention of the willingness and the capacity to communicate in the face of virtually no natural language competence (Baker, Berry, Gardner, Zurif, Davis, & Veroff, 1975; Gardner, Zurif, Berry, & Baker, 1976). To my mind, equally as important as the tantalizing theoretical implications of this work for brain/language relations is the fact that, in various guises and with a number of technical improvements, the system is still being used clinically.

Brain Correlates of Syntactic Processing

I was as influenced by Norman Geschwind's work as was Howard, but my work was much narrower in scope than Howard's. I did research mainly on one topic: brain organization of relevance to comprehension at

the sentence level, and even more narrowly, on the compositional operations involved in retrieving syntactic and semantic information at this level.[2] To this end, I focussed on the syndrome of Broca's aphasia and the contrast it offered to Wernicke's aphasia.

These two syndromes are easily distinguishable in the clinic; moreover, they are associated with different lesion sites. Clinically, Broca's aphasic patients show relatively normal comprehension. But their speech is effortful, syntactically limited, and "agrammatic" such that grammatical morphemes, both bound and free are often omitted. In contrast, Wernicke's aphasic patients speak fluently and effortlessly and their phrasal constructions are largely intact. Yet their speech tends to be empty, marked by the use of vague filler words ("thing" and "this" and "that"). And, strikingly, they show impaired comprehension (Goodglass & Kaplan, 1972).

As for site of damage, Broca's patients have left-hemispheric a*nterior* lesions (typically, in the inferior frontal region), whereas Wernicke's patients have left-hemispheric *posterior* lesions (typically, in the posterior superior temporal area). To be sure, the two lesion sites, respectively referred to as Broca's area and Wernicke's area, are only imprecisely established. In particular, there is no one small, left-sided, anterior lesion site that always yields Broca's aphasia. To the contrary, the lesions producing this form of aphasia tend to be large and somewhat variable—most often including the classically defined Broca's area (Brodmann Areas 44 and 45), but certainly not restricted to it. Yet, the fact remains that this imprecisely bounded left inferior frontal region *is* clearly distinguishable from the left posterior region implicated in Wernicke's aphasia. (For details see, e.g., Alexander et al., 1990; Benson, 1985; Naesser et al., 1989; Vignolo, 1988.)

Given these neurologically produced lines of linguistic cleavage, Geschwind (1970) proposed that the anterior region of the language zone (Broca's area) contains the rules by which language is coded into articulatory form for the purpose of speaking, whereas the posterior

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[2] By syntax I'm referring to a system built up out of a *hierarchical* arrangement of nouns, verbs, adjectives, and the like ; by semantics, to a system based on lexical information about such entities as conceptualized objects, events, properties, and quantities.

region of the language zone (Wernicke's area) is critical for the recognition of spoken language. So damage to the former will lead to speech disorders without affecting comprehension. By contrast, damage to the latter will result primarily in comprehension problems. But, since the programming of speech requires that the auditory form of words be relayed from Wernicke's to Broca's area, disordered output will also result from damage to Wernicke's region.

Geschwind's model, emphasizing the distinction between the activities of speaking and listening, was compelling for two reasons. First, it captured a certain clinical reality. After all, Broca's patients do present with nonfluent speech but relatively good comprehension, whereas Wernicke's patients do show poor comprehension but fluent (even though empty) speech. Second, the model had commonsense force. Broca's area lies just in front of the primary motor zone for the muscles serving speech; Wernicke's area is adjacent to the cortical region involved in hearing. So the roles Geschwind attributed to them were entirely reasonable.

But Geschwind's explanation made scant contact with the notion that the capacities of speaking and listening depend, not only on sensory-motor systems, but also on a body of rule-based (grammatical) knowledge.[3] And it was this disconnect that I and others in the early 1970's began to focus upon. In effect, the effort to establish this link involved a move away from the "periphery"—from a focus on the directly observable activities of producing and understanding sentence-level utterances to a concern with the processing of their underlying structures, these being abstractly specified and thereby removed from their physical embodiment in utterances. And in the remainder of this essay I'll summarize some of this effort.

Although clinical descriptions of Broca's aphasia emphasized the output disorder, it was, nonetheless, recognized that comprehension, too, was not entirely normal—the working phrase was "*relatively*" normal. But the results of a series of experiments in the 1970's and 1980's belied

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[3] Even though Geschwind, in his writings, never emphasized the need to seek such a connection, he actually endorsed the effort with great enthusiasm. He frequently discussed research with Howard and me, and he always provided us with detailed notes on the manuscripts that we sent to him.

even this characterization (e.g., Caplan & Futter, 1986; Caramazza & Zurif, 1976; Zurif, Caramazza, & Myerson, 1972). Using simple sentence-picture matching tests (the patient hears a sentence and tries to choose its correct depiction) the Broca's patients' comprehension was shown to be as syntactically limited as their speech output. With syntactic structure as the sole guide to interpretation, the patients understood only canonically-ordered sentences—i.e., sentences in which the noun phrase preceding the verb is mapped as the agent of the action. So, for example, they correctly identified who was chasing whom for the sentence, "*the girl chased the boy*" but not for the sentence, "*the boy is chased by the girl*"—the former, but not the latter, permitting the non-syntactic—linearly ordered—agent-first strategy. But when interpretation could be guided by plausibility constraints, as in "*the rat is chased by the cat*" they understood non-canonically ordered sentences as well.

Not surprisingly, not all Broca's aphasic patients show this pattern—no more so than ten coin tosses always yield five heads and five tails. But just as a large series of coin tosses yields a binomial distribution around five heads and five tails, thereby revealing the true nature of the coin, so, too, do the many published reports of comprehension in Broca's aphasia attest to this contrast between canonical sentences that allow normal syntactic analyses to be by-passed via the use of an agent-first strategy and non-canonical sentences that don't allow such short-cuts, but rather require a normal syntactic analysis in the absence of semantic and plausibility clues. (For evidence on this matter see Grodzinsky, Pinango, Zurif, & Drai,1999; Zurif & Pinango, 1999; Drai, Grodzinsky, & Zurif, 2001; Zurif, 2001 and references therein.)

This contrast is important for theorizing about brain-language relations. To know that *the boy* in the passive sentence, *The boy is chased by the girl*, is not chasing *the girl* but is being chased by her, the listener must appreciate that *the boy* is the direct object of *chased* even though it is at the beginning of the sentence instead of after the verb. Linguistic theories generally account for this appreciation by positing a link termed a syntactic dependency—a link between the actual appearance of the direct object in the sentence and its canonical position immediately after the verb. In the particular account offered in Government-Binding theory (Chomsky,1981), the direct object is represented as having been "moved" from its canonical position, leaving

an abstract (phonologically empty) "trace" (t) of its movement in the vacated position. The trace receives the role of theme (the entity acted upon) and the displaced constituent, or antecedent, receives this role only indirectly, via the dependency link it forms with the trace. Again using our example, this link is shown by coindexation—viz: *The boy$_i$ is chased (t)$_i$ by the girl*.

Grodzinsky (1986, 2000), the first to demonstrate the relevance of this analysis for thinking about aphasic comprehension, argues that although Broca's patients appreciate hierarchical syntactic organization, they cannot represent syntactic dependencies involving traces, and, therefore, cannot grammatically assign the role of theme to a moved constituent. He further argues that, faced with a thematically unassigned constituent, the Broca's patient applies a linearly ordered (non-grammatical) "agent-first" strategy, incorrectly interpreting the first noun phrase as the agent of the action. But since this strategy is applied in an otherwise normally elaborated syntactic representation, the structure ends up with two agents, leading the Broca's patient to guess at the interpretation. There are variations on this account (e.g., Hickok, Zurif, & Canseco-Gonzales, 1993; Mauner, Cornell, & Fromkin, 1993). But what must be emphasized is that all these accounts agree that the Broca's sentence comprehension deficit is minimal and syntactic, and that it implicates the formation of syntactic dependencies.

To my knowledge, comparable analyses have not appeared for Wernicke's patients. Although these patients, too, have considerable difficulty understanding noncanonical constructions, the canonical-noncanonical pattern is less clear for Wernicke's patients than for Broca's patients. The Wernicke's sentence comprehension problem seems not to be a purely syntactic one, or at least, to be less syntactically focussed than the Broca's problem with dependency relations.

However, the difference between Broca's and Wernicke's patients can be clearly seen when syntactic processing—specifically the formation of an antecedent-trace link—is studied online. The relevant fact here is that traces appear to have real-time processing consequences (Swinney & Fodor, 1989 and articles therein).

Among the several ways of showing this, the work with which I was involved relied on a commonly used low-tech paradigm called priming, whereby the activation of a word's meaning is revealed by the facilitating

effect it has on the processing of a following word (Meyer, Schvaneveldt, & Ruddy,1975). So, if in a lexical decision task, the word "*cat*" is followed by the related word "*dog*" in one instance and the unrelated word "*bank*" in another, it will take less time to decide that "*dog*" is a word than that "*bank*" is a word. In effect, the meaning of the preceding word "*cat*" has been activated to facilitate the processing of all words (including "*dog*") within its semantic/associative network.

To see how this is used to study the formation of antecedent-trace links, consider the annotated sentence, "*This is the cat$_i$[1] that the young girl[2] followed (t)$_i$[3] last night in the dark*." As in the earlier example, the subscript *i* shows the syntactic dependency existing between the moved constituent (here "*cat*") and the trace (*t*). The superscripts show the location of the visual probe sites—that is, the sites at which the experimenter examines if the word "*cat*" has been activated (to prime the probes). The subject's task is two-fold—to listen to the sentence, and while listening, to decide if a letter string flashed on a computer screen (the probe) is or is not a word. And when this sentence is spoken at a normal rate, what routinely happens with neurologically intact subjects—whether college students or elderly adults—is that lexical decisions for *dog* are faster than they are for *bank* when the probe appears at positions 1 and 3, but not at position 2 (the baseline position). In the normal case then, the meaning of *cat* is active just after it is heard in the sentence; it is no longer active and, therefore, cannot serve as a prime several seconds after it is heard (at the baseline position); and it is active again at the trace position, or more precisely, it is *re*activated at the trace position—a phenomenon referred to as gap filling. In effect, the syntactic dependency has been formed in real time, during the course of comprehension. (See Swinney & Fodor (1989) for a review of this literature.)

It is this fleeting operation that Wernicke's aphasic patients with posterior temporal lesions carry out but that Broca's patients with anterior lesions do not—a fact established in three separate experiments (Love, Swinney, & Zurif, 2001; Swinney, Zurif, Prather, & Love, 1996; Zurif, Swinney, Prather, Solomon, & Bushell, 1993). In these experiments my colleagues and I found that, in line with normal performance, neither of the two groups of aphasic patients showed priming at the baseline (position 2 in the above example). That is, at this position, lexical decisions for "dog" were no faster than for "bank." But

then the two groups diverged: The Wernicke's patients showed priming at the gap position (position 3), the Broca's patients did not. And since the Wenicke's patients showed no residual activation for the moved constituent at the baseline, they were, therefore, demonstrating *re*activation at the gap site. Like neurologically intact subjects, they were constructing a link between antecedent and gap in real time.

To be sure, the Wernicke's patients are not likely to be entirely normal here. For one thing, their ability to prime should not be taken to indicate that they access word meanings in the same manner as do neurologically intact adults. The priming indicates only *initial* contact with lexical representations; it does not rule out "coarse-coding" (Beeman et al., 1994), and therefore, it does not rule out less detailed or less elaborated word meaning representations than are normally achieved. For another, so far as I know, no one has as yet determined how structurally precise gap-filling is in Wernicke's aphasia. Like neurologically intact subjects, do these patients reactivate only structurally appropriate constituents (e.g., Nicol, Fodor, & Swinney, 1994)? Or do they abnormally reactivate any constituent, appropriate or not? We don't yet know. We know only that the brain region implicated in Wernicke's aphasia is not crucial for sustaining the syntactic reflex of recognizing and filling gaps. But given this group's difficulty understanding all types of sentences—canonical and noncanonical—Wernicke's area clearly does have some functional commitment to language; it just seems to be directed elsewhere.

At any rate, the point to be emphasized here is that the Wernicke's patients' success at constructing syntactic dependencies could not have been inferred just by examining comprehension end-points. The fact is, they construct these dependencies for sentences they often ultimately do not understand. Moreover, it is only when research isolates the early—and evanescent—gap filling operation, that we see how starkly the Broca's and Wernicke's patients diverge from each other. To restate my earlier remarks, Broca's patients, in direct contrast to Wernicke's patients, are unable to form antecedent-trace linkages in real time—a disruption that straightforwardly parallels the difficulty they have understanding sentences cast in a noncanonical form.

We've gone further—we've discovered that the Broca's patients' difficulty results, not from a loss of syntactic knowledge, but from diminished processing resources. In particular, we can explain part of

their inability to construct syntactic dependencies as a consequence of the slower-than-normal rise time in lexical activation found for these patients—a time-based alteration that exists quite apart from sentence processing (Prather, Zurif, Stern, & Rosen, 1992; Prather, Zurif, Love, & Brownell, 1997). The syntactic linking operation described here is one that is implemented under strict time constraints. Indeed, to emphasize the speed of this operation, it's been described as "reflexive"—a moved constituent is normally reactivated as soon as syntactically licensed, that is, as soon as the canonical position—the gap or trace site—is encountered (Swinney & Fodor, 1989). So with slower-than-normal lexical activation, it is not surprising that Broca's patients fail to form syntactic dependencies in real time for sentences spoken in a normally rapid manner.

In fact, two studies carried out not long before I retired have provided fairly direct evidence for this view. In one study, we probed for priming, not only at the antecedent and gap positions, but at other locations in the spoken sentence as well, including a location downstream from the gap position. Consider in this respect, our earlier example, but this time with an additional probe position placed 500 milliseconds after the gap and indicated by superscript *4*, *This is the cat$_i$[1] that the young girl[2] followed (t)$_i$[3] last night in[4] the dark*. I've already mentioned that neurologically intact subjects and Wernicke's patients show priming for a word related to "*cat*" at the gap (position 3). By contrast, what we observed for Broca's patients was that they didn't prime for a word related to "*cat*" until 500 ms *after* the gap, (at position 4). So by widening the temporal window in this way, we found that the Broca's patients did, in fact, reactivate the moved constituent, but not within the normal time frame—not in time, that is, to fill the gap. Returning to the above example, by the time the link between the antecedent "*the cat*" and the trace was formed—the link that allowed the antecedent *cat* to be interpreted as the theme of the action—the agent-first strategy had more than likely already incorrectly assigned agency to the antecedent, leading to a representation for that sentence in which the action has two agents (Love, Swinney, Walenski, & Zurif, 2008).

The second study also makes the point that the Broca's failure to form syntactic dependencies is a result of a temporal alteration in their ability to process words—of their slower-than-normal lexical activation. The evidence here is straightforward. Quite simply, when (noncanonical)

sentences were spoken more slowly than is usual—when the input rate of the sentences was decreased by one-third (from a normal speaking rate of six syllables per second to one of four syllables per second)—Broca's patients *did* reliably reactivate the displaced constituents at the gap positions (Love, Swinney, Walenski, & Zurif, 2008).

On the evidence from these studies, it seems reasonable to claim that a syntactic limitation statable in the abstract terms of linguistic theory can be connected to a change in cortically localizable processing resources. Thus, the failure to form syntactic dependencies can be explained, not as a loss of relevant syntactic knowledge, but rather as the consequence of a disruption to the resources that sustain the speed of lexical activation necessary to implement syntactic knowledge in real time. (See also Zurif, 1996.) And these elemental resources appear to depend crucially upon the integrity of the left anterior region associated with Broca's aphasia, but not upon the left posterior region associated with Wernicke's aphasia.

As might be expected, there's more to the functional commitment of the left anterior cortex—even with respect to the narrowly defined operation of constructing syntactic dependencies in real time. There is evidence that this cortical area also sustains the necessary memory resources for the formation of antecedent-trace linkages (eg, Stowe et al., 1998; Cooke et al., 2001). And I must emphasize, too, that the formation of a syntactic dependency is only one among many syntactic operations necessary for sentence interpretation. So it's premature to conclude that the left posterior brain region implicated in Wernicke's aphasia plays no role in syntactic processing whatsoever. Still, so far as I know, a precise description of its functional commitment along syntactic lines has yet to emerge.

By contrast, I think we have some interesting information concerning at least part of its semantic commitment at the sentence level—findings that indicate that tempoparietal cortex is not only crucial for maintaining and organizing single word meanings but also for supporting within-sentence combinatorial semantic operations (Pinango & Zurif, 2001; Shapiro & Levine, 1990; Shapiro et al., 1993). Accordingly, we have a double dissociation within the language region of the left hemisphere for a *specific* linguistic activity—namely, for the comprehension of *sentence*-level utterances: a semantically-based compositional role reliant upon left posterior cortex that can be set

against the role of syntactic composition which requires the integrity of the left anterior cortical region.

Within the past 15 years, inquiry of the sort I've described has largely shifted from aphasia research to research based on functional neuroimaging—the charting of sites of brain activity via PET and fMRI in neurologically intact subjects while they process linguistic material. And though I've not yet seen PET or fMRI reports concerning sentence-level semantic composition, I have seen many imaging studies of syntactic operations at the sentence level—even studies of the precise syntactic dependency operation described here. And these studies show good agreement with data from aphasic patients concerning the special role played by the left inferior frontal region of the brain.

Neuroimaging provides, of course, a view of the neuroanatomical correlates of linguistic processing that cannot even be inferred from charting the consequences of a particular lesion site. Thus, although sites of brain damage in aphasia indicate regions crucially involved in a particular linguistic process, neuroimaging provides an elaborate view of the neuroanatomical system in which these regions are located, and it also provides a finer-grained view of the crucial regions, themselves. Still, there is no current imaging technique that fully replaces the need for aphasia research in the formation of brain-language theories. As noted just above, neuroimaging can sharpen the data provided by aphasia research and also, of course, elaborate upon it, but the latter remains important to the interpretation of neuroimaging patterns—guiding the imager's search for regions of interest in the first instance, even as it ultimately distinguishes which active imaging sites are crucial and which participatory.[4]

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[4] My participation in neuroimaging research was late in coming and in the two studies in which I was involved (e.g., Cooke et al., 2001; and one still be to written up), I can only be described as a distant user—that is, I helped create the stimulus material, and I suggested regions of interest for the imaging analyses, nothing else. Actually, however, I had the opportunity to be one of the pioneers in the use of functional brain imaging in neurolinguistic research. At some point in the early- to mid-80's, years before the first brain-language imaging studies appeared in the literature, I was invited to attend a meeting at which a Harvard neuroradiologist floated the idea of using PET to study neuroanatomical correlates of processing in different cognitive domains. When I was asked how it would do for language processing, I pooh-poohed it for reasons that turned out to be very silly. We all make mistakes.

Acknowledgment

It was my great pleasure and honor to have had Howard Gardner as my office mate and colleague for over 20 years. He remains a valued friend, and I'm delighted to take part in this celebration of his 70th birthday.

References

Alexander, M., Naeser, M.A., & Palumbo, C. (1990). Broca's area aphasias: aphasia after lesions including the frontal operculum. *Neurology, 40*, 353-362.

Baker, E., Berry, T., Gardner, H., Zurif, E.B., Davis, L., & Veroff, A. (1975). Can linguistic competence be dissociated from natural language? *Nature, 254,* 509-510.

Beeman, M., Friedman, R., Grafman, J., Perez, E., Diamond, S., & Lindsay, M. (1994). Summation priming and coarse semantic coding in the right hemisphere. *Journal of Cognitive Neuroscience, 6*, 26-45.

Benson, D.F. (1985). Aphasia. In K. Heilman & E. Valenstein (Eds.), *Clinical neuropsychology.* New York: Oxford University Press.

Brownell, H., Potter, H., Bihrle, A., & Gardner, H.(1986). Inference deficits in right brain-damaged patients. *Brain and Language, 27*, 310-321.

Caplan, D., & Futter, C. (1986). Assignment of thematic roles by an agrammatic aphasic patient. *Brain and Language, 27,* 117-135.

Caramazza, A., & Zurif, E.B. (1976). Dissociation of algorithmic and heuristic processes in language comprehension: Evidence from aphasia. *Brain & Language, 3,* 572-582.

Chomsky, N. (1981). *Lectures on government and binding.* Dordrecht: Foris.

Cooke, A., Zurif, E., DeVita, C., Alsop, D., Koening, P., Detre, J., Gee, J., Pinango,M., Balogh, J., & Grossman, M. (2001). Neural basis for sentence comprehension: Grammatical and short-term memory components. *Human Brain Mapping, 15*, 80-94.

Drai, D., Grodzinsky, Y., & Zurif, E. (2001). Broca's aphasia is associated with a single pattern of comprehension performance: a reply. *Brain and Language, 76,* 185-192.

Foldi, N., Cicone, M., & Gardner, H. (1983). Pragmatic aspects of communication in brain damaged patients. In S. Segalowitz (Ed.), *Language functions and brain organization*. New York: Academic Press.

Gardner, H., Zurif, E.B., Berry, T., & Baker, E. (1976). Visual communication in aphasia. *Neuropsychologia, 14,* 275-292.

Gardner, H., Brownell, H., Wapner, W., & Michelow, D. (1983). Missing the point: The role of the right hemisphere in the processing of complex linguistic materials. In E. Perecman (Ed.), *Cognitive processing in the right hemisphere.* New York: Academic Press.

Gardner, H. (1973) The contribution of operativity to naming in aphasic patients. *Neuropsychologia, 11*, 213-220.

Gardner, H. (1974). The naming of objects and symbols by children and aphasic patients. *Journal of Psycholinguistic Research, 3,* 133-149.

Gardner, H., Brownell, H., Wapner, W., & Michelow, D. (1983). Missing the point: The role of the right hemisphere in the processing of complex linguistic materials. In E. Perecman (Ed.), *Cognitive processing in the right hemisphere.* New York: Academic Press.

Geschwind, N. (1965). Disconnexion syndromes in animal and man. *Brain, 88,* 237-294 & 585-644.

Geschwind, N. (1970). The organization of language and the brain. *Science, 170,* 940-944.

Goodglass, H., & Kaplan, E. (1972). *Boston diagnostic aphasia examination.* Philadelphia: Lea & Febiger.

Grodzinsky, Y. (1986). Language deficits and the theory of syntax. *Brain and Language, 7,* 135-159.

Grodzinsky, Y. (2000). The neurology of syntax: Language use without Broca's area. *Behavioral and Brain Sciences, 23,* 1-71.

Grodzinsky, Y., Piñango, M., Zurif, E.B., & Drai, D. (1999). The critical role of group studies in neuropsychology: Comprehension regularities in Broca's aphasia. *Brain and Language, 67,* 134-147.

Hickok, G., Zurif, E., & Canseco-Gonzalez, E. (1993). A structural description of agrammatic comprehension. *Brain and Language, 45,* 371-395.

Love, T., Swinney, D., & Zurif, E.B. (2001). Aphasia and the time course of processing long-distance dependencies. Paper presented to the

Academy of Aphasia. Boulder, CO. (abstract, *Brain and Language,* 2001, *79,* 169-170).

Love, T., Swinney, D., Walenski, M., & Zurif, E. (2008). How left inferior frontal cortex participates in syntactic processing: evidence from aphasia. *Brain and Language , 107,* 203-219.

Mauner, G., Fromkin, V., & Cornell, T. (1993). Comprehension and acceptability judgments in agrammatism: Disruptions in the syntax of referential dependency. *Brain and Language, 45,* 340-370.

Meyer, D., Schvaneveldt, R., & Ruddy, M. (1975). Loci of contextual effects on visual word recognition. In P. Rabbit & S. Dornic (Eds.), *Attention and performance, Vol. 5.* New York: Academic Press.

Naeser, M., Palumbo, C., Helm-Estabrooks, N., Stiassney-Eder, D., & Albert, M. (1989). Severe non-fluency in aphasia: Role of the medial subcallosal fasciculus and other white matter pathways in recovery of spontaneous speech. *Brain, 112,* 1-38.

Nicol, J., Fodor, J.D., & Swinney, D. (1994). Using Cross-Modal lexical decision tasks to investigate sentence processing. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 20,* 5, 1220-1238.

Pinango, M., & Zurif, E.B. (2001). Semantic operations in aphasic comprehension: Implications for the cortical organization of language. *Brain & Language, 79,* 297-308.

Prather, P.A., Zurif, E., Stern, C., & Rosen, T.J. (1992). Slowed lexical access in nonfluent aphasia: A case study. *Brain & Language, 43,* 336-348.

Prather, P., Zurif, E.., Love, T., & Brownell, H. (1997). Speed of lexical activation in nonfluent Broca's aphasia and fluent Wernicke's aphasia. *Brain & Language, 59,* 391-411.

Shapiro, L., & Levine, B. (1990). Verb processing during sentence comprehension in aphasia. *Brain and Language, 38,* 21-47.

Shapiro, L., Gordon, B., Hack, N., & Killackey, J. (1993). Verb-argument structure processing in complex sentences in Broca's and Wernicke's aphasia. *Brain and Lnguage, 45,* 423-447.

Stowe, L., Broere, C., Paans,A., Wijers, A., Mulder, G., Vaalburg, W., & Zwarts, F. (1998). Localiuzing components of a complex task: Sentence processing and working memory. *NeuroReport, 9,* 2995-2999.

Swinney, D., & Fodor, J.D. (Eds.) (1989). *Journal of Psycholinguistic Research (Special Issue on Sentence Processing), 18(1).*

Swinney, D., Zurif, E., Prather, P., & Love, T. (1996). The neurological distribution of processing resources underlying language comprehension. *Journal of Cognitive Neuroscience, 8,* 174-184.

Vignolo, L. (1988). The anatomical and pathological basis of aphasia. In F.C. Rose, R. Whurr, & M.A. Wyke (Eds.), *Aphasia.* Amsterdam: North Holland.

Winner, E., & Gardner, H. (1977). Sensitivity to metaphor in organic patients. *Brain, 100,* 719-727.

Zurif, E. (1996). Brain regions of relevance to syntactic processing. In L. Gleitman & M. Liberman (Eds.), *An invitation to cognitive science, 2nd edition. Volume 1.* Cambridge: MIT Press.

Zurif, E., Caramazza, A., Myerson, R. (1972). Grammatical judgments of agrammatic aphasics. *Neuropsychologia, 10,* 405-417.

Zurif, E., & Pinango, M. (1999). The existence of comprehension patterns in Broca's aphasia. *Brain and Language, 70,* 133-138.

Zurif, E., Swinney, D., Prather, P., Solomon, J., & Bushell, C. (1993). An on-line analysis of syntactic processing in Broca's and Wernicke's aphasia, *Brain & Language, 45,* 448-464.

Howard's Response to Edgar Zurif

It was the morning of Saturday, September 28, 2013. Both Ellen and I were a bit apprehensive about the Festschrift celebration that evening—so many items and persons and steps to keep in mind. Over breakfast, Ellen told me that a photographer was coming to our home at 10AM and I had to be dressed and present, even if the photographer turned up late.

Not that I ever get irritated, but this announcement irritated me. I did not see the necessity for a photographer; and I had lots of other things to do that day and did not want to have my hands tied to home for the better part of the morning.

10AM came and went, my blood pressure went up a bit, and then, a spell later, Ellen called upstairs, "The photographers are here." I came to the front door. Nothing was visible at first, and certainly nothing that signaled "photographer," explicitly or implicitly. Then, with my nearsighted non-improved vision, I discerned two somewhat older persons making their way to the front door. "Doesn't look like a photographer to me," I said under my breath. The door open, there was a moment of non-recognition, and then I immediately deduced that the whole photographer story was a ruse. The couple was you, Edgar, and your wife Francoise, who had flown over from Paris to surprise me.

It was the only time that day that I cried—I was so happy to see you, so relieved that you were well, and completely forgiving of the photographer ruse.

Edgar, you play a unique role in my life. For a solid twenty years, we occupied the same—dare I say cubicle-sized—office on the 14th floor of the Veterans Administration Medical Center on South Huntington Avenue in Jamaica Plain. We did lots of things together. We secured a large number of joint research grants, in the days when it was not so difficult to get grants; we hired and occasionally fired assistants together; in our own way, we each helped to define the emerging field of cognitive neuroscience. So we were intellectual soul mates.

But also much more. At least speaking for myself, you were the unique combination of workmate, friend, and soul mate. Our backgrounds and intellectual styles were not that similar. But we saw

things similarly, and—to reduce many years and thousands of episodes to a phrase—we had much the same "view of life," found the same things funny, and shared so many experiences, including the sad ones of a painful divorce, followed by a happy remarriage. You were always there for me, and I tried to be there for you.

Your essay captures well the complementarity in our work. You say kind things about my own research at the VA, and perhaps some of it may even be true! But it is you who pursued a continually deeper exploratory path, beginning with the simple surface differences in the linguistic competences of the two major varieties of aphasia, but ending up with an ever-deepening knowledge of where these differences comes from; which syntactic and semantic skills are involved; and what consequences they have for our understanding of cognitive and linguistic mechanisms, more broadly speaking. With the research that you and your colleagues have pursued, we can not only anticipate how an individual aphasic will perform on a given task but also the reasons why he speaks and understands in the way that he does.

As with our intellectual marriage over the two decades, I don't feel that I can add substantively to your line of work. I hope that I can occasionally raise a question that is relevant rather than embarrassing. For example, as one who has studied language difficulties in patients with right hemisphere disease, I wonder whether there is any analogue to the double dissociation that you have discovered in the semantic comprehension in the left hemisphere. And perhaps, every once in a while, I can request a more felicitous phrasing of your precise thinking. For example, for those of us who are untutored in linguistic theory, could you paraphrase "this canonical-non-canonical contrast in the absence of semantic and plausibility constraints"? You are welcome to respond, "Sorry, that's the best—or even the only—way to say what I mean."

One closing thought. Because of our common age and somewhat similar background, we had read many of the same books, known many of the same songs, and laughed at many of the same jokes (even when everyone else remains stone faced). There is not a week that goes by where I don't muse, "Edgar would get that, but I don't know anyone else who will." So please keep that phone and that email account active for a long, long time.