

Multiple Intelligences After Twenty Years

By

Howard Gardner

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Address for Correspondence:

Howard Gardner
Harvard Graduate School of Education
Larsen Hall, Room 201
Appian Way
Cambridge, MA 02138

Phone: (617) 496-4929

Email: howard@pz.harvard.edu

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Howard Gardner
Harvard Graduate School of Education

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I am often asked how I first got the idea of the theory of multiple intelligences. Probably the most truthful answer is “I don’t know”. However, such an answer satisfies neither the questioner nor, to be frank, me. With the benefit of hindsight, I would mention the following distal and proximal factors:

1. As a young person I was a serious pianist and enthusiastically involved with other arts as well. When I began to study developmental and cognitive psychology, I was struck by the virtual absence of any mention of the arts. An early professional goal was to find a place for the arts within academic psychology. I am still trying! In 1967 my continuing interest in the arts prompted me to become a founding member of Project Zero, a basic research group at the Harvard Graduate School of Education begun by a noted philosopher of art, Nelson Goodman. For 28 years, I was the co-director of Project Zero and I am happy to say that the organization continues to thrive.

2. As my doctoral career was drawing to a close, I first encountered the neurological research of Norman Geschwind. I was fascinated by Geschwind’s discussion of what happens to once normal or gifted individuals who have the misfortune of suffering from a stroke or some other form of brain damage. Often the symptoms run counter to intuition: for

example, a patient who is alexic but not agraphic loses the ability to read words but can still read numbers, name objects, and write normally. Without planning it that way, I ended up working for twenty years on a neuropsychological unit, trying to understand the organization of human abilities in the brain.

3. I have always enjoyed writing and by the time I began my postdoctoral work with Geschwind, I had completed three books. My fourth book, *The Shattered Mind*, published in 1975, chronicled what happens to individuals who suffer from different forms of brain damage. I documented how different parts of the brain are dominant for different cognitive functions. After I completed *The Shattered Mind*, I thought that I might write a book that describes the psychology of different human faculties—a modern version of phrenology. In 1976 I actually wrote an outline for a book with the tentative title *Kinds of Minds*. One could say that this book was never written—and indeed I had forgotten about it for many years. But one could also say that it eventually arose from the file cabinet and became *Frames of Mind*.

So much for the distal causes of the theory.

In 1979, a group of researchers affiliated with the Harvard Graduate School of Education received a sizeable grant from a Dutch foundation, the Bernard Van Leer Foundation. This grant was designed for a grandiose purpose, one proposed by the foundation. Members of the Project on Human Potential (as it came to be called) were expected to carry out scholarly work on the nature of human potential and how it could best be catalyzed. When we carved

out our respective projects, I received an interesting assignment: to write a book about what had been established about human cognition through discoveries in the biological and behavioral sciences. Thus was born the research program that led to the theory of multiple intelligences.

Support from the Van Leer Foundation allowed me to carry out an extensive research program with the aid of many younger colleagues. I saw this as a once in a lifetime opportunity to collate and synthesize what I and others had learned about the development of cognitive capacities in normal and gifted children as well as the breakdown of such capacities in individuals who suffered some form of pathology. To put it in terms of my daily calendar, I was seeking to synthesize what I was learning in the morning from my study of brain damage with what I was learning in the afternoon from my study of cognitive development. My colleagues and I combed the literature from brain study, genetics, anthropology, and psychology in an effort to ascertain the optimal taxonomy of human capacities.

I can identify a number of crucial turning points in this investigation. I don't remember when it happened but at a certain moment, I decided to call these faculties "multiple intelligences" rather than abilities or gifts. This seemingly minor lexical substitution proved very important; I am quite confident that if I had written a book called "Seven Talents" it would not have received the attention that *Frames of Mind* received. As my colleague David Feldman has pointed out, the selection of this word placed me in direct confrontation with the psychological establishment that cherishes IQ tests. However, I disagree with Feldman's

claim that I was motivated by a desire to “slay IQ”; neither the documentary nor the mnemonic evidence suggests to me that I had much interest in such a confrontation.

A second crucial point was the creation of a definition of an intelligence and the identification of a set of criteria that define what is, and what is not, an intelligence. I can’t pretend that the criteria were all established a priori; rather, there was a constant fitting and refitting of what I was learning about human abilities with how best to delineate what ultimately became 8 criteria. I feel that the definition and the criteria are among the most original parts of the work; but neither has received much discussion in the literature.

When I began the book, I was writing as a psychologist and that is still my primary scholarly identification. Yet, given the mission of the Van Leer Foundation, it was clear to me that I needed to say something about the educational implications of MI theory. And so, I conducted some research on education and touched on some educational implications of the theory in the concluding chapters. This decision turned out to be another crucial point because it was educators, rather than psychologists, who found the theory of most interest.

By 1981 I had drafted the book; thereafter I worked on revisions. The main lines of the argument had become clear. I was claiming that all human beings possess not just a single intelligence (often called “g” for general intelligence). Rather, as a species we human beings are better described as having a set of relatively autonomous intelligences. Most lay and scholarly writings about intelligence focus on a combination of linguistic and logical intelligences—the intellectual strengths, I often maintain, of a law professor. However, a

fuller appreciation of human beings occurs if we take into account spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal intelligences. While we all have these intelligences, individuals differ for both genetic and experiential reasons in their respective profiles of intellectual strengths and weaknesses. No intelligence is in and of itself artistic or non-artistic; rather several intelligences can be put to aesthetic ends, if individuals so desire. No direct educational implications follow from this psychological theory; but if individuals differ in their intellectual profiles, it makes sense to take this fact into account in devising an educational system.

By the time that *Frames of Mind* was published in 1983, I had already published half a dozen books. Each had had a modestly positive reception and a reasonable sale. I did not expect anything different from *Frames of Mind*, a lengthy and (for a trade audience) somewhat technical book. But within a few months after its publication, I realized that this book was different. Not that the reviews were that exuberant or the sales that monumental. Rather, there was genuine “buzz” about the book. I got invited to give many talks, and when I showed up at a site, people had at least heard about the theory and were eager to learn more about it. I sometimes quip that “MI theory” gave me my fifteen minutes of fame. While I have done many things in my professional life, I realize that I am likely always to be known as the “father of multiple intelligences” or, less palatably, as the “MI guru.” (I remember with some vividness an appearance at AERA in the mid-1980s where I described the theory to a packed auditorium. My friend Bob Sternberg introduced me, and, according to one observer, spoke for 22 minutes!)

For the first decade following the publication of *Frames of Mind*, I had two primary relations to the theory. The first relationship was that of a bemused observer. I was amazed at how many individuals said that they wanted to revise their educational practices in the light of MI theory. Within a year or so I had already met with the teachers from Indianapolis who would shortly begin the Key School, the first school in the world organized explicitly around MI theory. I began to receive a steady stream of communications asking or telling me how to use MI theory in various kinds of schools or for various populations. While I tried to be responsive to these communications, I always maintained that I was a psychologist and not an educator, and did not presume to know how best to teach a class of young persons or run an elementary or secondary school.

My second relation was as a director of research projects that grew out of MI theory. The most ambitious effort was Project Spectrum, a collaboration with David Feldman, Mara Krechevsky, Janet Stork, and others. The goal of Project Spectrum was to create a set of measures whereby one could ascertain the intellectual profile of young children—preschoolers and those in the primary grades. We ended up devising fifteen separate tasks that were designed to assess the several intelligences in as natural a manner as possible. We had a great deal of fun devising the Spectrum battery and using it with different populations. We also learned that creating assessments is a difficult task and one that requires a great investment of money and time. I decided, without saying so in so many words, that I did not want myself to be in the assessment business, though I was very pleased if others chose to create instruments in an effort to assess the various intelligences.

Let me mention a few other research projects that grew out of the first wave of interest in MI theory. Working with Robert Sternberg of Yale, another critic of standard views of intelligence, my colleagues and I created a middle school curriculum called Practical Intelligences for School. Working with colleagues from the Educational Testing Service, my colleagues and I developed a set of curriculum-and-assessment instruments designed to document learning in three art forms. There were also collaborative efforts in the use of computers in education.

To my surprise and pleasure, interest in multiple intelligences survived the transition to the 1990s. By that time, I was prepared to undertake several new activities. The first was purely scholarly. Building on the notion of different kinds of intelligences, I carried out case studies of individuals who stood out as remarkable in terms of their particular profile of intelligences. This line of work led to my books on creativity (*Creating Minds*), leadership (*Leading Minds*), and extraordinary achievement, more broadly (*Extraordinary Minds*). You can see that I was getting a lot of mileage by injecting book titles with the term ‘mind’!

The second was an extension of the theory. In 1994-5 I took a sabbatical and used part of that time to review evidence for the existence of new intelligences. I concluded that there was ample evidence for a naturalist intelligence; and suggestive evidence as well for a possible existential intelligence (“the intelligence of big questions”). I also explored much more deeply the relation between intelligences—which I construe as biopsychological potentials—and the various domains and disciplines that exist in various cultures. What we

know and how we parse the world may well be in part a reflection of the human intelligences. I also introduced three distinct uses of the term “intelligence”:

- * A property of all human beings (All of us possess these 8 or 9 intelligences)
- * A dimension on which human beings differ (No two people—not even identical twins—possess exactly the same profile of intelligences)
- * The way in which one carries out a task in virtue of one’s goals (Joe may have a lot of musical intelligence but his interpretation of that piece made little sense to us)

A third activity featured a more proactive relationship to the uses and interpretations of my theory. For the first decade, I had been content simply to observe what others were doing and saying in the name of MI theory. But by the middle 1990s, I had noticed a number of misinterpretations of the theory—for example, the confusion of intelligences with learning styles and the confounding of a human intelligence with a societal domain (e.g. musical intelligence being equated with mastery of a certain musical genre or role). I had also taken note of practices that I found offensive—for example, describing different racial or ethnic group in terms of their characteristic intelligences. And so, for the first time, I began to differentiate my “take” on MI from that of others who had learned about and tried to make use of the theory.

A final feature of this second phase entailed a more active involvement with educational reform. This involvement took both a practical and a scholarly form. On the practical level, my colleagues and I at Harvard Project Zero began working with schools as they attempted

to implement MI practices and other educational programs that we have developed, such as teaching for understanding. We also launched a Summer Institute which is now in its 7th year. On the scholarly side, I began to articulate my own educational philosophy. In particular, I focussed on the importance in the precollegiate years of achieving understanding in the major disciplines—science, mathematics, history, and the arts. For various reasons, achieving such understanding is quite challenging. Efforts to cover too much material doom the achievement of understanding. We are most likely to enhance understanding if we probe deeply in a small number of topics. And once the decision is made to “uncover” rather than “cover,” it is possible to take advantage of our multiple intelligences. Put concretely, we can approach topics in a number of ways; we can make use of analogies and comparisons drawn from a range of domains; and we can express the key notions or concepts in a number of different symbolic forms.

This analysis has led to a perhaps surprising conclusion. “Multiple intelligences” should not in and of itself be an educational goal. Educational goals need to reflect one’s own values, and these can never come simply or directly from a scientific theory. Once one reflects on one’s educational values and states one’s educational goals, however, then the putative existence of our multiple intelligences can prove very helpful. And, in particular, if one’s educational goals encompass disciplinary understanding, then it is possible to mobilize our several intelligences to help achieve that lofty goal.

This, then, is how the first twenty years of multiple intelligences look to me. I am grateful to the many individuals who have taken an interest in the theory—both within my research

group and across the country and the globe. I have tried to be responsive to their inquiries and to build on what they have taught me. And I have come to realize that once one releases an idea—a “meme”—into the world, one cannot completely control its behavior—any more than one can control those products of our genes called children. Put succinctly, MI has and will have a life of its own, over and above what I might wish for it, my most widely known intellectual offspring.

MI turns 20 in the same year that I turn 60. I do not know how much time I will have left to work on the theory, nor can I claim that the theory occupies the majority of my attention any longer. But this moment is an excellent one for me to step back and to suggest some future lines of analysis and practice.

To begin with, there will be efforts to propose new intelligences. In recent years, in addition to the explosion of interest in emotional intelligences, there have also been serious efforts to describe a spiritual intelligence and a sexual intelligence. My colleague Antonio Battro has proposed the existence of a digital intelligence and has indicated how it may fulfill the criteria that I have set forth. And at this conference, Michael Posner has challenged me to consider “attention” as a kind of intelligence. I have always conceded that, in the end, the decision about what counts as an intelligence is a judgment call and not an algorithmic conclusion. So far, I am sticking to my 8 1/2 intelligences but I can readily foresee a time when the list could grow, or when the boundaries among the intelligences might be reconfigured. For example, to the extent that the so-called Mozart effect gains credibility, I might want to rethink the relation between musical and spatial intelligences.

Much work needs to be done on the question of how the intelligences can best be mobilized to achieve specific pedagogical goals. I do not believe that educational programs created under the aegis of MI theory lend themselves to the kinds of randomized control studies that the federal government is now calling for in education. But I do believe that well choreographed “design experiments” can reveal the kinds of educational endeavors where an MI perspective is appropriate and where it is not. To state just one example, I think that MI approaches are particularly useful when a student is trying to master a challenging new concept—say, gravity in physics, or the *Zeitgeist* in history. I am less persuaded that it can be useful in mastering a foreign language—though I admire those teachers of foreign languages who claim success using MI approaches.

Were I to be granted more time and energy to explore the ramifications of MI theory, I would devote those precious gifts to two endeavors. First of all, as indicated above, I have become increasingly fascinated by the ways in which societal activities and domains of knowledge emerge and become periodically reconfigured. Any complex society has 100-200 distinct occupations at the least; and any university of size offers at least 50 different areas of study. Surely these domains and disciplines are not accidents; nor are the ways that they evolve and combine random events. The culturally-constructed spheres of knowledge must bear some kind of relation to the kinds of brains and minds that human beings have, and the ways that those brains and minds grow and develop in different cultural settings. Put concretely, how does human logical-mathematical intelligence relate to the various sciences, mathematics, and computing software and hardware that have emerged in the last few

thousand years, and those that may emerge one year or 100 years from now? Which makes which or, more probably, how does each shape the other? How does the human mind deal with interdisciplinary studies—are they natural or unnatural cognitive activities? I would love to be able to think about these issues in a systematic way.

Second, from the start, one of the appealing aspects of MI theory was its reliance on biological evidence. At the time, in the early 1980s, there was little relevant evidence from genetics or evolutionary psychology; such speculations were mere handwaving. There was powerful evidence from the study of neuropsychology for the existence of different mental faculties; and that evidence constituted the strongest leg on which to justify MI theory.

Twenty years later, knowledge is accumulating at a phenomenal rate in both brain science and genetics. At the risk of seeming hyperbolic, I am prepared to defend the proposition that we have learned as much from 1983 to 2003 as we did in the previous 500 years. As an amateur geneticist and neuroscientist, I have tried as best I can to keep up with the cascade of new findings from these areas. I can say with some confidence that no findings have radically called into question the major lines of MI theory. But I can say with equal confidence that in light of the findings of the last two decades, the biological basis of MI theory needs urgently to be brought up to date.

Whether I will be in a position to do this myself, I cannot say. But I would like to throw out a speculation.

At the time that MI theory was introduced, it was very important to make the case that human brains and human minds are highly differentiated entities. It is fundamentally misleading to think about a single mind, a single intelligence, a single problem-solving capacity. And so, along with many others, I tried to make the argument that the mind/brain consists of many modules/organs/intelligences, each of which operates according to its own rules in relative autonomy from the others.

Happily, nowadays, the argument for modularity has been well made. Even those who believe strongly in ‘general intelligence’ and/or neural plasticity feel the need to defend their position, in a way that was unnecessary in decades past. But it is time to revisit the issue of the relationship between general and particular intelligences.

This revisiting can and is being done in various intriguing ways. Psychologist Robbie Case proposed the notion of central conceptual structures—broader than specific intelligences but not as all-encompassing as Piagetian general intelligence. Philosopher Jerry Fodor contrasts impenetrable dedicated modules with a permeable central system. The team of Marc Hauser, Noam Chomsky, and Tecumseh Fitch suggests that the unique quality of human cognition is its capacity for recursive thinking; perhaps it is recursion that characterizes advanced thinking in language, number, music, social relations, and other realms. Electrophysiological and radiological studies indicate that various brain modules may already be activated in newborns. Neural imaging studies of individuals solving IQ-style problems suggest that certain areas of the brain are most likely to be drawn on for these kinds of problems; and there may be evidence for genes that contribute to unusually high IQ, as there clearly are

genes that cause retardation. And our own case studies of unusually high performances suggests a distinction between those who (like musicians or mathematicians) are outstanding in one area, as opposed to those generalists (politicians or business leaders) who display a relatively flat profile of cognitive strengths.

Were I granted another lifetime or two, I would like to rethink the nature of intelligence with respect to our new biological knowledge, on the one hand, and our most sophisticated understanding of the terrain of knowledge and societal practice, on the other—another Van Leer Project on Human Potential, perhaps! I don't expect this wish to be granted. But I am glad to have had the chance to make an opening move some twenty years ago; to have been able to revisit the gameboard periodically; and to lay out this problematic so that other interested players can have their chance to engage.

Multiple intelligences after twenty years. American Educational Research Association, Chicago, Illinois, 21. Gardner H (2006). The comparison of teaching method on Gardner's multiple intelligences. *Season letter of mathematic training*, 20:1-19. Kornhaber ML, Fierros E, Veenema S (2004). *Multiple Intelligences: Best ideas from theory and practice. Multiple Intelligences After Twenty Years* Howard Gardner Harvard Graduate School of Education Invited Address, American Educational Research Association April 21, 2003
© Howard Gardner, 2003 I am often asked how I first got the idea of the theory of multiple intelligences. Probably the most truthful answer is "I don't know". *Multiple intelligences in the classroom* / Thomas Armstrong. 3rd ed. p. cm. Includes bibliographical references and index. This book has emerged from my work over the past 23 years in applying Howard Gardner's theory of multiple intelligences to the nuts-and-bolts issues of classroom teaching. I was initially attracted to MI theory in 1985 when I saw that it provided a language for talking about the inner gifts of children, especially those students who have been given labels such as "LD" and "ADHD" during their school careers (Armstrong, 1987a, 1987b, 1988, 1997, 1999b).