Preface to the Paperback Edition

In the two years since the first edition of *Five Minds for the Future* went to press, many things have happened in the world, stimulating questions have been raised about my claims, and some new thoughts have occurred to me as well. Issuing the paperback edition gives me a welcome opportunity to update readers on these developments.

First, I will address some frequently asked questions:

1. *What are the five minds?* The opportunity to lecture frequently about a book gives an author a chance to perfect his elevator speech. Nowadays, if asked about the five minds, I can summarize them in a half-dozen sentences or less:

- In the future, individuals who wish to thrive will need to be experts in at least one area—they will need a discipline.
- As synthesizers, they will need to be able to gather together information from disparate sources and put it together in ways that work for themselves and can be communicated to other persons.
- Because almost anything that can be formulated as rules will be done well by computers, rewards will go to creators—those who have constructed a box but can think outside it.

- The world of today and tomorrow is becoming increasingly diverse, and there is no way to cordon oneself off from this diversity. Accordingly, we must respect those who differ from us as well as those with whom we have similarities.

- Finally, as workers and as citizens, we need to be able to act ethically—to think beyond our own self-interest and to do what is right under the circumstances.

2. *How do we measure the five minds?* Almost as soon as my book appeared, I received inquiries from two primary audiences—educators and business leaders. And perhaps not surprisingly, given the world in which we live, I was asked whether I had developed a metric for each of the five minds. In truth I have not, but I hope that the following comments are responsive to this request.

We know the most about assessing the disciplined mind. Experts in nearly every discipline have developed both quantitative and more qualitative (or subjective) ways of assessing individual attainment in the discipline. And indeed, we could not legitimately teach the disciplines in the school, and award licenses or diplomas, without reasonably consensual metrics of evaluation.

Syntheses are best judged by laying out beforehand the criteria for a successful synthesis and determining, by consensus, whether those criteria have in fact been achieved. In my discussion of the writings of Wilber and Bryson in chapter 3, I provide one example of how to do this.

As I formulate it, creativity can be assessed only after the fact. An individual work or product is creative if and only if it changes the ways in which others in the relevant field think and act. Sometimes this judgment about creativity can be assessed quite rapidly (as in the case of a new movie format), but it can take years or even decades. And so, we can assess an individual's potential for achieving

middle *C* or big *C* creativity only by looking at small *c* creativities that have already been achieved.

Which leaves respect and ethics. If I have the opportunity to observe persons in their customary milieu, particularly when no one is aware of my presence, I can readily determine whether an aura of respect pervades. In contrast, ethics can be assessed only if a role (professional, citizen) is characterized by a set of principles. Those charged with determining whether the principles have been upheld may then render judgments about who abides by the principles and who has crossed the line into compromised or bad work.

A friend, Patricia Graham, has made a shrewd observation. She says that those who behave ethically command our respect.

3. *Why use the word* mind*?* Admittedly, for a psychologist interested in mental processes, I am stretching the usual connotation of the word *mind*. One could substitute "five capacities" or "five perspectives." But the word *mind* reminds us that actions, thoughts, feelings, and behaviors are all products of our brain. If we want to nurture these capacities or change these perspectives, we will be trafficking in the operation of the mind.

4. *How does this work on* mind *relate to the* intelligences *discussed in your other writings?* In writing this book, I knew that whatever I said, some readers would want me to relate the five minds to the eight or more intelligences. I had not anticipated that readers would want to know *which* intelligences are involved in each of the five minds. While a full answer would require another book, I can state my conclusion briefly. The disciplined and creating minds can draw on any and all intelligences, depending on the area of work. Thus, whether disciplined or creative, a poet depends on linguistic intelligence, an architect on spatial intelligence, a therapist on interpersonal intelligence, and so on.

Respect and ethics clearly draw on the personal intelligences. Ethics, reflecting a more abstract way of thinking, draws as well on logical intelligence.

As for the synthesizing mind, it poses a problem for "multiple intelligences" or "MI" theory because synthesis often involves the operation of one, two, or even several intelligences. I suspect that gifted synthesizers can achieve their goals in different ways. For example, as a synthesizer, I happen to rely heavily on linguistic, logical, and naturalistic intelligences, but others may use spatial, artistic, or personal intelligences to achieve and convey their synthesis. Think of the synthesis achieved by Pablo Picasso in his all-encompassing work, *Guernica*.

5. *In your discussion of the respectful mind, you embrace some surprisingly conservative conclusions. Have you recovered your sense of civil liberties?* In preparing *Five Minds for the Future*, I surprised myself by becoming a critic of unrestricted free speech. In particular, I criticized the Danish newspapers that in 2005 published cartoons that ridiculed Islam.

I stand by that judgment. Indeed, even three years later, in 2008, there continues to be violence and destruction attendant to that publication. In an increasingly intimate and increasingly connected world, we need to bend over backwards to make sure that we do not gratuitously insult others, particularly those who have very different standards of religion, customs, publication, or humor.

At the same time, I now realize that there is no way in which the circulation of harmful, hurtful materials can be prevented. The Internet guarantees that. I would therefore revise my remarks. I suggest that we honor a distinction between the responsible press and other media forms. On blogs and Web sites, people will continue to write and publish whatever they like. But responsible news outlets (in the United States, the *New York Times* or the *Wall Street Journal*) should hold to a higher standard, not only in accuracy but

also in protecting the sensibilities of various known and potential audiences.

6. *Are there new minds?* I am not yet ready to add any minds to my list, though various interesting ones have been proposed. I readily concede that this work would be enhanced by a fuller discussion of how strategic thinking, judgment, and wisdom contribute to a better future.

NEW THOUGHTS

I began the hardcover edition by giving two cheers for science, technology, and globalization. Since 2005, the costs of globalization, particularly for the more indigent parts of the world, have become increasingly clear; and even in developed countries, the risks of meltdowns in health, climate, resources, and the economy are more evident. There is no way to stop globalization. But we must be ever more vigilant to its costs and the need to maintain highly respectful and ethical standards with respect to all parties. And in the world that so honors the STEM disciplines (science, technology, engineering, and mathematics), we require extra efforts to make certain that the other fields of human knowledge and practice are not ignored.

Nearly everyone on the planet, including me, has a heightened awareness of the dangers of global warming and the part played by human consumption in climate changes. Technology wields a double-edged saw here. On the one hand, much of our consumption is tied to energy-exploiting technologies. Yet it is at least possible that some portion of the human contribution to climate change might be reduced thanks to innovative technologies.

As a citizen of the twenty-first century dedicated to a disciplined mind, I worry particularly about the arts and humanities.

There is less demand for these topics that were once seen as central to a liberal education. Parents, policymakers, and pupils are all pulled toward the professions, and particularly those that have the potential for making one wealthy (preferably quickly). Yet I believe that one cannot be a full person, let alone have a deep understanding of our world (including its epochal changes of climate), unless one is rooted as well in art, literature, and philosophy. Moreover, these should not be rewards available primarily to the harried middle-aged executive, but rather the cornerstone of education for all young persons. In the absence of a strong demand for these topics on the part of consumers, it is incumbent on those of us with influence to make sure that humanistically oriented fields are protected. By the same token, those who would hope to continue teaching literature, music, philosophy, and history need to present these topics in ways that speak to new generations and address issues of current concern, while avoiding "inside baseball" curricula that speak only to those with a professional stake in the field.

In a world that shows no signs of slowing down, no individual can rest on his or her intellectual laurels. I would now add that no organization can afford such sloth either. The future belongs to those organizations, as well as those individuals, that have made an active, lifelong commitment to continue to learn. While the phrase "learning organization" has become virtually a cliché, such entities are still rare and precious (in the sense that even those once on the right track can easily stop learning). Those individuals who can continue to learn and who can help preserve a zest for learning in organizations are at a special premium going forward.

In the study of cognition, it is generally thought that it takes ten years to master a discipline. This trek does not leave much time for multiple forms of mastery. I am now persuaded that, thanks to excellent computer pedagogy, forms of expertise can be attained more rapidly, perhaps in half the time. Also, because of shrewd scaffolding for those of us who have not yet attained fully mastery, there is

hope that we will nonetheless be able to participate in a number of disciplines and to synthesize knowledge obtained therefrom.

In discussing ethics, I have emphasized that respect can begin at birth but that an ethical stance requires the abstract attitude that typically does not develop until adolescence. I'd like to reformulate this position. Even young children are parts of communities—home, school classroom, church—and such young persons can be inculcated into the ideals, attitudes, and behaviors appropriate to their roles within these communities. Indeed, sensitivity to "institutional culture"—the norms of a particular group as manifest in daily operation—is certainly within the ken of the child in the elementary school. (Alas, so is inculcation into unethical frames of mind.) And so instead of saying "wait until adolescence," I would instead argue "embed ethics in the sinews of all important institutions in which the child is involved." A vital step will have been taken toward an ethical career and responsible citizenship.

Initially I thought of synthesis as simply another academic performance—somewhere between disciplinary mastery and creating. I now appreciate that we attribute special value to those syntheses that go beyond the mechanical. A valued synthesis is not simply an algorithmic exercise. Rather, it gains power when it provides that sense of meaning, significance, and connectedness that so many seek today.

Put it another way. If synthesis simply entailed the following of rules, a well-programmed machine would suffice. But if synthesis is to respond to human concerns, to concerns not just of the moment but also concerns *sub species aeternitas*, then (as far as I am concerned) it becomes a distinctly human endeavor. I offer the suggestion that powerful synthesizing builds on the candidate intelligence that I have been studying most recently: "existential intelligence," defined as the "capacity to raise and address the largest questions." And when these questions (and candidate answers) are new ones, synthesizing blends into creating.

Please note that I have fallen short of relating synthesizing to religion or spirituality. For me, that would involve a step too far. But I am not as much bothered as I used to be if people want to relate synthesizing to the human search for the widest possible, most existential forms of meaning.

CLOSING REMARKS

When I wrote *Five Minds for the Future*, I was unaware of a recently published book by Daniel Pink called *A Whole New Mind*. Nor, in his book, does Daniel Pink mention my own work. Ignorance is never to be preferred over knowledgeability. Nonetheless, this state of affairs meant that two writers could each put forth their own views, and readers could judge the extent to which they were actually congruent or in conflict.

Pink is impressively alert to the "softer" sides of cognition—which he calls design, story, symphony, and play. While much of my work focuses on these topics, they are not particularly featured in the current book. That is because I do not consider specific areas of discipline, synthesizing, and creating; a person can choose to work in architecture, dance, or film, as well as in business, finance, or management consultancies. But I agree with Pink that those capacities that can be carried out automatically by machines, or far more cheaply in other parts of the world, will cease to be at a premium in the developed nations. And hence, the so-called "right brain" capacities will come increasingly to the fore.

My work brings out points that are ignored or minimized by Pink. Even though mastery of a discipline seems old-fashioned and "left brained," it is still vital. Those who do not have a discipline, as well as a sense of discipline, either will be without work or will work for someone who does have a discipline. Also, Pink leaves out

how we behave toward others (respect) and how we carry out our roles as workers and citizens (ethical). He might respond that the new mind features "empathy" and that is true enough. Nonetheless, a person who is empathic does not necessarily behave in a desirable way. Empathy can be used to produce hurt—indeed, that is what sadism is, pleasure in the pain felt by others.

I endorse Pink's discussion of meaning. The faster the changes, the weaker the ambient religious and ideological systems, the more isolated the individual, the greater the thirst for meaning. I believe that the newly suggested link between synthesizing, on the one hand, and existential intelligence, on the other, captures Daniel Pink's interest in meaning.

Which brings me, in closing, to what I've been doing since *Five Minds for the Future* went to press. In addition to my day job of teaching, research, and attending committee meetings too numerous to enumerate, I have been working with young people, particularly in liberal arts colleges and secondary schools. My focus has been on ethics and meaning. While our best and brightest take a backseat to few in their mastery of disciplines and in their engagement with the real and the virtual worlds, too many of them lack a concern with the ethical implications of what they are doing and what they are not doing. Through voluntary seminars on the general topic "meaningful work in a meaningful life," my colleagues and I have sought to help students achieve a broader perspective on the decisions that they are making now and the implications of those decisions on their personal and professional lives going forward.

It is way too early to determine the effectiveness of these sessions (for updates, see http://www.goodworkproject.org, particularly discussions of the GoodWork toolkit). But I am learning a lot about how young persons are thinking about the future—how their minds are being prepared for the future. This immersion will contribute to my own understanding of the world in which I live

and should help me to communicate with my grandson Oscar, to whom the hardcover and the paperback versions of this book are lovingly dedicated.

Cambridge, Massachusetts
October 2008

CHAPTER 1

Minds Viewed Globally

A Personal Introduction

FOR SEVERAL DECADES, as a researcher in psychology, I have been pondering the human mind. I've studied how the mind develops, how it is organized, what it's like in its fullest expanse. I've studied how people learn, how they create, how they lead, how they change the minds of other persons or their own minds. For the most part, I've been content to describe the typical operations of the mind—a daunting task in itself. But on occasion, I've also offered views about how we *should* use our minds.

In *Five Minds for the Future* I venture further. While making no claims to have a crystal ball, I concern myself here with the kinds of minds that people will need if they—if *we*—are to thrive in the world during the eras to come. The larger part of my enterprise remains descriptive—I specify the operations of the minds that we will need. But I cannot hide the fact that I am engaged as well in a "values enterprise": the minds that I describe are also the ones that I believe we *should* develop in the future.

Why the shift from description to prescription? In the interconnected world in which the vast majority of human beings now live, it is not enough to state what each individual or group needs to survive on its own turf. In the long run, it is not possible for parts of the world to thrive while others remain desperately poor and deeply frustrated. Recalling the words of Benjamin Franklin, "We must indeed all hang together, or, most assuredly, we shall all hang separately." Further, the world of the future—with its ubiquitous search engines, robots, and other computational devices—will demand capacities that until now have been mere options. To meet this new world on its own terms, we should begin to cultivate these capacities now.

As your guide, I will be wearing a number of hats. As a trained psychologist, with a background in cognitive science and neuroscience, I will draw repeatedly on what we know from a scientific perspective about the operation of the human mind and the human brain. But humans differ from other species in that we possess history as well as prehistory, hundreds and hundreds of diverse cultures and subcultures, and the possibility of informed, conscious choice; and so I will be drawing equally on history, anthropology, and other humanistic disciplines. Because I am speculating about the directions in which our society and our planet are headed, political and economic considerations loom large. And, to repeat, I balance these scholarly perspectives with a constant reminder that a description of minds cannot escape a consideration of human values.

Enough throat clearing. Time to bring onstage the five *dramatis personae* of this literary presentation. Each has been important historically; each figures to be even more crucial in the future. With these "minds," as I refer to them, a person will be well equipped to deal with what is expected, as well as what cannot be anticipated; without these minds, a person will be at the mercy of forces that he or she can't understand, let alone control. I'll describe each mind briefly; in the course of the book, I'll explain how it works and how it can be nurtured in learners across the age span.

The disciplined mind has mastered at least one way of thinking—a distinctive mode of cognition that characterizes a specific scholarly discipline, craft, or profession. Much research confirms that it takes up to ten years to master a discipline. The disciplined mind also knows how to work steadily over time to improve skill and understanding—in the vernacular, it is highly disciplined. Without at least one discipline under his belt, the individual is destined to march to someone else's tune.

The synthesizing mind takes information from disparate sources, understands and evaluates that information objectively, and puts it together in ways that make sense to the synthesizer and also to other persons. Valuable in the past, the capacity to synthesize becomes ever more crucial as information continues to mount at dizzying rates.

Building on discipline and synthesis, *the creating mind* breaks new ground. It puts forth new ideas, poses unfamiliar questions, conjures up fresh ways of thinking, arrives at unexpected answers. Ultimately, these creations must find acceptance among knowledgeable consumers. By virtue of its anchoring in territory that is not yet rule-governed, the creating mind seeks to remain at least one step ahead of even the most sophisticated computers and robots.

Recognizing that nowadays one can no longer remain within one's shell or on one's home territory, *the respectful mind* notes and welcomes differences between human individuals and between human groups, tries to understand these "others," and seeks to work effectively with them. In a world where we are all interlinked, intolerance or disrespect is no longer a viable option.

Proceeding on a level more abstract than the respectful mind, *the ethical mind* ponders the nature of one's work and the needs and desires of the society in which one lives. This mind conceptualizes how workers can serve purposes beyond self-interest and how citizens can work unselfishly to improve the lot of all. The ethical mind then acts on the basis of these analyses.

One may reasonably ask: Why these five particular minds? Could the list be readily changed or extended? My brief answer is this: the

five minds just introduced are the kinds of minds that are particularly at a premium in the world of today and will be even more so tomorrow. They span both the cognitive spectrum and the human enterprise—in that sense they are comprehensive, global. We know something about how to cultivate them. Of course, there could be other candidates. In research for this book, I considered candidates ranging from the technological mind to the digital mind, the market mind to the democratic mind, the flexible mind to the emotional mind, the strategic mind to the spiritual mind. I am prepared to defend my quintet vigorously. Indeed, that is a chief burden of the rest of this book.

This may also be the place to forestall an understandable confusion. My chief claim to fame is my positing, some years ago, of a theory of multiple intelligences (MIs). According to MI theory, all human beings possess a number of relatively autonomous cognitive capabilities, each of which I designate as a separate intelligence. For various reasons people differ from one another in their profiles of intelligence, and this fact harbors significant consequences for school and the workplace. When expounding on the intelligences, I was writing as a psychologist and trying to figure out how each intelligence operates within the skull.

The five minds posited in this book are different from the eight or nine human intelligences. Rather than being distinct computational capabilities, they are better thought of as broad uses of the mind that we can cultivate at school, in professions, or at the workplace. To be sure, the five minds make use of our several intelligences: for example, respect is impossible without the exercise of interpersonal intelligences. And so, when appropriate, I will invoke MI theory. But for much of this book, I am speaking about policy rather than psychology, and, as a consequence, readers are advised to think about those minds in the manner of a policymaker, rather than a psychologist. That is, my concern is to convince you of the need to cultivate these minds and illustrate the best ways to do so,

rather than to delineate specific perceptual and cognitive capacities that undergird the minds.

To put some flesh on these bones, I will get personal and say a bit about my own experiences with these kinds of minds. I write as a scholar and author in the social sciences and education, as a person who has considerable experience in the management of a research group. But the task of cultivating minds goes far beyond the charge of teachers and professors; it constitutes a major challenge to all individuals who work with other persons. And so, as I review these minds, I will comment on how they play out in other careers, notably in business and in the professions.

DISCIPLINED

Even as a young child, I loved putting words on paper, and I have continued to do so throughout my life. As a result, I have honed skills of planning, executing, critiquing, and teaching writing. I also work steadily to improve my writing, thus embodying the second meaning of the word *discipline*: training to perfect a skill.

My formal discipline is psychology, and it took me a decade to think like a psychologist. When I encounter a controversy about the human mind or human behavior, I think immediately about how to study the issue empirically, what control groups to marshal, how to analyze the data and revise my hypotheses when necessary.

Turning to management, I have many years of experience supervising teams of research assistants of various sizes, scopes, and missions—and I have the lessons and battle scars to show for it. My understanding has been enriched by observing successful and not-so-successful presidents, deans, and department chairs around the university; addressing and consulting with corporations; and studying leadership and ethics across the professions over the past fifteen years. Beyond question, both management and leadership are disciplines—

though they can be informed by scientific studies, they are better thought of as crafts. By the same token, any professional—whether she's a lawyer, an architect, an engineer—has to master the bodies of knowledge and the key procedures that entitle her to membership in the relevant guild. And all of us—scholars, corporate leaders, professionals—must continually hone our skills.

SYNTHESIZING

As a student I enjoyed reading disparate texts and learning from distinguished and distinctive lecturers; I then attempted to make sense of these sources of information, putting them together in ways that were generative, at least for me. In writing papers and preparing for tests that would be evaluated by others, I drew on this increasingly well-honed skill of synthesizing. When I began to write articles and books, the initial ones were chiefly works of synthesis: textbooks in social psychology and developmental psychology, and, perhaps more innovatively, the first book-length examination of cognitive science.[1]

Whether one is working at a university, a law firm, or a corporation, the job of the manager calls for synthesis. The manager must consider the job to be done, the various workers on hand, their current assignments and skills, and how best to execute the current priority and move on to the next one. A good manager also looks back over what has been done in the past months and tries to anticipate how best to carry out future missions. As she begins to develop new visions, communicate them to associates, and contemplate how to realize these innovations, she invades the realms of strategic leadership and creativity within the business or profession. And of course, synthesizing the current state of knowledge, incorporating new findings, and delineating new dilemmas is part and parcel of the work of any professional who wishes to remain current with her craft.

CREATING

In my scholarly career, a turning point was my publication in 1983 of *Frames of Mind: The Theory of Multiple Intelligences*.[2] At the time, I thought of this work as a synthesis of cognition from many disciplinary perspectives. In retrospect, I have come to understand that *Frames of Mind* differed from my earlier books. I was directly challenging the consensual view of intelligence and putting forth my own iconoclastic notions, which were ripe, in turn, for vigorous critiques. Since then, my scholarly work is better described as a series of attempts to break new ground—efforts at forging knowledge about creativity, leadership, and ethics—than as syntheses of existing work. Parenthetically, I might point out that this sequence is unusual. In the sciences, younger workers are more likely to achieve creative breakthroughs, while older ones typically pen syntheses.

In general, we look to leaders, rather than to managers, for examples of creativity. The transformational leader creates a compelling narrative about the missions of her organization or polity; embodies that narrative in her own life; and is able, through persuasion and personal example, to change the thoughts, feelings, and behaviors of those whom she seeks to lead.

And what of the role of creativity in the workaday life of the professional? Major creative breakthroughs are relatively rare in accounting or engineering, in law or medicine. Indeed, one does well to be suspicious of claims that a radically new method of accounting, bridge building, surgery, prosecution, or generating energy has just been devised. Increasingly, however, rewards accrue to those who fashion small but significant changes in professional practice. I would readily apply the descriptor *creative* to the individual who figures out how to audit books in a country whose laws have been changed and whose currency has been revalued three times in a year, or to the attorney who ascertains how to protect intellectual

property under conditions of monetary (or political or social or technological) volatility.

RESPECTFUL AND ETHICAL

As I shift focus to the last two kinds of minds, a different set of analyses becomes appropriate. The first three kinds of minds deal primarily with cognitive forms; the last two deal with our relations to other human beings. One of the last two (respectful) is more concrete; the other (ethical) is more abstract. Also, the differences across career specializations become less important: we are dealing with how human beings—be they scientists, artists, managers, leaders, craftspeople, or professionals—think and act throughout their lives. And so, here I shall try to speak to and for all of us.

Turning to respect, whether I am (or you are) writing, researching, or managing, it is important to avoid stereotyping or caricaturing. I must try to understand other persons on their own terms, make an imaginative leap when necessary, seek to convey my trust in them, and try so far as possible to make common cause with them and to be worthy of their trust. This stance does not mean that I ignore my own beliefs, nor that I necessarily accept or pardon all that I encounter. (Respect does not entail a "pass" for terrorists.) But I am obliged to make the effort, and not merely to assume that what I had once believed on the basis of scattered impressions is necessarily true. Such humility may in turn engender positive responses in others.

As I use the term, *ethics* also relates to other persons, but in a more abstract way. In taking ethical stances, an individual tries to understand his or her role as a worker and his or her role as a citizen of a region, a nation, and the planet. In my own case, I ask: What are my obligations as a scientific researcher, a writer, a manager, a leader? If I were sitting on the other side of the table, if I occupied a different niche in society, what would I have the right to expect from those

"others" who research, write, manage, lead? And, to take an even wider perspective, what kind of a world would I like to live in, if, to use John Rawls's phrase, I were cloaked in a "veil of ignorance" with respect to my ultimate position in the world?[3] What is my responsibility in bringing such a world into being? Every reader should be able to pose, if not answer, the same set of questions with respect to his or her occupational and civic niche.

For more than a decade, I have been engaged in a large-scale study of "good work"—work that is excellent, ethical, and engaging for the participants. In the latter part of the book I draw on those studies in my accounts of the respectful and the ethical minds.

EDUCATION IN THE LARGE

When one speaks of cultivating certain kinds of minds, the most immediate frame of reference is that of education. In many ways, this frame is appropriate: after all, designated educators and licensed educational institutions bear the most evident burden in the identification and training of young minds. But we must immediately expand our vision beyond standard educational institutions. In our cultures of today—and of tomorrow—parents, peers, and media play roles at least as significant as do authorized teachers and formal schools. More and more parents "homeschool" or rely on various extrascholastic mentors or tutors. Moreover, if any cliché of recent years rings true, it is the acknowledgment that education must be lifelong. Those at the workplace are charged with selecting individuals who appear to possess the right kinds of knowledge, skills, minds—in my terms, they should be searching for individuals who possess disciplined, synthesizing, creating, respectful, and ethical minds. But, equally, managers and leaders, directors and deans and presidents, must continue perennially to develop all five kinds of minds in themselves and—equally—in those for whom they bear responsibility.

CHAPTER 7

Conclusion

Toward the Cultivation of the Five Minds

THE PROJECT OUTLINED in this book is ambitious, even grandiose. At times, I've felt overwhelmed by the challenge of developing this quintet of minds and then orchestrating their smooth interaction in a person (or a population) who lives in our global world. Yet the effort has seemed worthwhile. It's better for an aim to exceed one's grasp than for one to aim too low or too narrowly.

Now the time has come to take stock—to review the major claims and to clear up some lingering questions. In this book, I've spoken a lot about synthesis. I have not hesitated to praise some syntheses, while expressing reservations about others. And so the challenge of synthesis is in my hands. In the following series of similarly configured boxes, I recapitulate the principal features of each kind of mind. Thereafter, I review some of the obstacles to the formations of these minds, speculate about the order in which these minds might be developed, and then offer suggestions about how the ensemble of minds might best be cultivated.

The Disciplined Mind

Employing the ways of thinking associated with major scholarly disciplines (history, math, science, art, etc.) and major professions (law, medicine, management, finance, etc., as well as crafts and trades); capable of applying oneself diligently, improving steadily, and continuing beyond formal education

Examples (formal education). Mastering of history, mathematics, science, and other key subjects; completing professional training

Examples (place of work). Continuing mastery of one's professional or employment role(s), including the acquisition of additional disciplinary or interdisciplinary acumen

Period of development. Begins before adolescence; continues as lifelong learning

Pseudoforms. Asserting of mastery without a decade or so of practice; following rigidly the letter of procedures without a sense of the purposes and boundaries of the discipline and the areas where thinking needs to be flexible the conventional wisdom is inappropriate; faking one's preparation or performance

The Synthesizing Mind

Selecting crucial information from the copious amounts available; arraying that information in ways that make sense to self and to others

Examples (formal education). Preparing for assignments and tests in school by organizing materials in ways that are helpful to self and others (especially the grader!)

Examples (place of work). Recognizing new information/skills that are important and then incorporating them into one's knowledge base and one's professional repertoire

Period of development. Starts in childhood, under the best of circumstances; becomes more deliberate over time; continues perennially as new knowledge accumulates and needs to be digested and organized

Pseudoforms. Selecting materials in a haphazard way; offering integrations that do not stand up to scrutiny, either by self or by knowledgeable others; inappropriate organizing frameworks; lack of an organizing stance; summaries that feature overly grandiose "lumping" or nitpicking "splitting"

The Creating Mind

Going beyond existing knowledge and syntheses to pose new questions, offer new solutions, fashion works that stretch existing genres or configure new ones; creation builds on one or more established disciplines and requires an informed "field" to make judgments of quality and acceptability

Examples (formal education). Going beyond class requirements to pose new questions; coming up with unexpected but appropriate school products and projects

Examples (place of work). Thinking outside the box—putting forth recommendations for new practices and products, explicating them, seeking endorsement and enactment; for leader, formulating and pursuing new visions

Period of development. Robust personality begins to develop early—informed challenges to orthodoxy await at least partial mastery of disciplined and synthesizing thinking

Pseudoforms. Offering apparent innovations that are either superficial variations of long-existing knowledge or sharp departures that may be novel but are not accepted ultimately by the knowledgeable field

The Respectful Mind

Responding sympathetically and constructively to differences among individuals and among groups; seeking to understand and work with those who are different; extending beyond mere tolerance and political correctness

Examples (formal education). Seeking to understand and work effectively with peers, teachers, and staff, whatever their backgrounds and viewpoints

Examples (place of work). Working effectively with peers, supervisors, employees, irrespective of their backgrounds and status; developing capacity for forgiveness

Period of development. Supportive environment should be present from birth; at school, work, in the media, role models (positive and negative, recognized as such) are crucial

Pseudoforms. Exhibiting mere tolerance, without any effort to understand or work smoothly with others; paying homage to those with more power and status while deprecating, dismissing, ridiculing or ignoring those with less power; behaving reflexively toward an entire group, without attending to the qualities of specific individual

The Ethical Mind

Abstracting crucial features of one's role at work and one's role as a citizen and acting consistently with those conceptualizations; striving toward good work and good citizenship

Examples (formal education). Reflecting on one's role as a student or as a future professional and attempting to fulfill that role appropriately and responsibly

Examples (place of work). Knowing the core values of one's profession and seeking to maintain them and pass them on, even at times of rapid and unpredictable change; with maturity, adopting the role of the trustee, who assumes stewardship of a domain and is willing to speak out even at personal cost; recognizing one's responsibilities as a citizen of one's community, region, nation, and world, and acting on those responsibilities

Period of development. Awaits the time when an individual can think conceptually, abstractly, about the role of a worker and of a citizen; acting in an ethical way presupposes strength of character; may require supportive relations of a horizontal and vertical sort, as well as periodic inoculations

Pseudoforms. Expounding a good, responsible line but failing to embody that course in one's own actions; practicing ethics in a small arena while acting irresponsibly in the larger sphere (or vice versa); compromising on what is proper in the short run or over the long haul

RESISTANCES AND OBSTACLES

Even if my conception of five minds for the future is on the mark, it will scarcely be easy to achieve. People are loath to alter practices with which they were raised and with which they are now all too comfortable. Resistances and obstacles are likely to assume various forms:

- *Conservatism.* We are doing perfectly fine with traditional education and longstanding practices at work—why change?
- *Faddism.* Visionaries and pundits are always calling for something new. Why should we believe that these five minds are any better than earlier calls for other forms of mind?
- *Hidden risks.* Who knows the hidden costs of this regimen? Perhaps excessive creativity will slip into anarchy. Perhaps naive or misplaced respectfulness will make us sitting ducks for terrorists.
- *Impotence.* These goals sound good. But I don't know how to achieve them, and I won't know how to evaluate whether they're actually being realized. Show me what to do, and don't expect me just to assent.

Anyone who seeks to develop minds must take time to ferret out and attempt to understand such resistances. But as a general rule, one is ill advised to confront the resistances directly; such a step typically engenders defensiveness. It makes more sense to begin with areas where a target group feels unsatisfied or frustrated and to suggest ways in which felt deficits, problems, or frustrations can be counteracted. So, for example, if there has been a lot of conflict recently in a classroom or a boardroom, a concern with respect is more likely to gain a sympathetic audience. Or if jobs in the region are being lost due to

outsourcing, and the most capable residents are taking high-tech jobs elsewhere, a focus on the creating mind may become timely.

Those who appear open to change need exposure to models—individuals as well as institutions—that exemplify the desired changes. Sometimes, these models can be paragons—examples whom the advocates may not know personally but whom they can admire from afar. The biologist E. O. Wilson can serve as an example of the synthesizing mind; the dancer Martha Graham exemplifies the creative mind; the environmentalist Rachel Carson illustrates the ethical mind. But the most effective examples are individuals who are known personally and who—while not immune from human foibles—regularly exhibit key features of the desired roles.

These exemplary figures should present a sharply chiseled view of the desired traits. A disciplined person should embody the ways of thinking and acting that distinguish her chosen discipline(s) and not just spew forth a lot of heterogeneous knowledge about the subject. A synthesizer should put ideas together in a way that is cogent and replicable, and not merely offer a convenient or cute package. A creating mind should be both original *and* appropriate—sheer novelty or eccentricity or instant celebrity does not suffice. A respectful mind should transcend mere tolerance, displaying active interest in and affection for those who look different, including those of lower status. An ethical mind must comport itself in ways that support the broader profession and the wider society—even, or especially, when those actions go against one's narrow self-interest.

Needless to say, the ambient society does not always support the propagation of such positive role models. It is difficult to be a disciplined thinker when television quiz shows lavishly reward disparate factual knowledge. It is difficult to be respectful toward others when an "argument mentality" characterizes politics and the mass media, and when bald-faced intimidators morph into cultural heroes. It is difficult to behave ethically when so many rewards—

monetary and renown—are showered on those who spurn ethics but have not, or at least have not yet, been held accountable by the broader society. Were our media and our leaders to honor the five kinds of minds foregrounded here, and to ostracize those who violate these virtues, the job of educators and supervisors would be incalculably easier.

AN ORDER FOR MASTERING THE MINDS?

Let's say, then, that resistances have been muted and a supportive atmosphere has been created. Is there an optimal order in which to introduce these kinds of minds?

I question whether one should first focus on one kind of mind and then the next, in lockstep fashion. (In this way, I differ from educator Benjamin Bloom, with whom I am sometimes compared.)[1] I find it preferable to conceptualize the five kinds of minds in epigenetic fashion. That is, the full range of minds are in the picture in incipient form from the first, but each steps into the spotlight during a specific period of development. (In this way, I resemble my teacher, psychologist Erik Erikson, who introduced the idea of epigenesis in psychological development.)[2] With that stipulation, here are four comments about timing:

1. *Respect.* From the beginning, one must begin by creating a respectful atmosphere toward others. In the absence of civility, other educational goals prove infinitely harder to achieve. Instances of disrespect must be labeled as such; each must be actively discouraged and its practitioners ostracized.

   (An aside on literacy: the first cognitive assignment for all schools is mastery of the basic literacies of reading, writing, and calculation. Because this point is and has long been uncontroversial, I need not elaborate on it here.)

2. *Discipline.* Once one has become literate, by the end of the elementary years, the time is at hand for the acquisition of the major scholarly ways of thinking—at a minimum, scientific, mathematical, historical, artistic. Each takes years to inculcate, and so delays are costly.

3. *Synthesis.* Equipped with major disciplinary ways of thinking, the student is poised to make judicious kinds of syntheses and, as appropriate, to engage in interdisciplinary thinking.

4. *Ethics.* During the years of secondary school and college, one becomes capable of abstract, distanced thinking. One can now conceptualize the world of work and the responsibilities of the citizen and acts on those conceptualizations.

Even the ordering is, at best, rough and ready—very far from a logical or psychological sequencing. Note that I have not placed *creativity* at a specific place in this sequence. An emphasis on creativity in formal education depends on its place in the broader society. In a society like the United States, where creativity is honored in the media and on the streets, there is less of an imperative to focus on creative uses of mind in formal scholastic settings. In societies that are more traditional, an early emphasis on creativity becomes important in schools.

In any event, creativity goes hand in glove with disciplinary thinking. In the absence of relevant disciplines, it is not possible to be genuinely creative. In the absence of creativity, disciplines can be used only to rehearse the status quo. Moreover, creativity itself has different facets. The personality of the creative individual—robust, risk taking, resilient—needs to be cultivated from early on; but apt challenging of disciplinary thinking awaits at least a rough-and-ready mastery of that discipline.

Even the later emerging forms of mind can be anticipated. For example, while ethical thinking proves difficult before adolescence,

it is never too early to model reflection on the advantages and disadvantages of various courses of action, or the wisdom of attending to the opinions of others. Cultivation of these dispositions from an early age smooths the way for later ethical discourse and decision making. Younger persons may benefit from family or classroom discussions of ethical issues, even if they cannot completely follow the logic or abstractness of individual contributions.

No doubt schools, regions, and societies will differ from one another in their emphases on the various kinds of minds, and in the order in which they highlight those minds. Such variations are appropriate and, indeed, welcome. For example, we scarcely know enough to declare with confidence that synthesizing comes before or after creating. Moreover, it is likely that individuals—and perhaps groups or even entire societies—will emerge as stronger in one form than in another.

THE FIVE MINDS AND THE FUTURE

One point stands out. Whatever their importance in times past, these five minds are likely to be crucial in a world marked by the hegemony of science and technology, global transmission of huge amounts of information, handling of routine tasks by computers and robots, and ever increasing contacts of all sorts between diverse populations. Those who succeed in cultivating the pentad of minds are most likely to thrive.

Ideally, of course, teachers, trainers, and supervisors should cherish and embody these kinds of minds. In reality, however, many individuals in positions of influence will themselves be deficient in one or more kinds of minds; indeed, if my own analysis is correct, as a society we have been until recently relatively blind to the importance of these minds. (A focus on subject matter information, standardized testing, and the often arbitrary conventions of the

school day may even desensitize us to the need for such minds.) That situation can only be rectified if, in the future, the training of teachers and other kinds of leaders prioritizes the skills and dispositions entailed in each kind of mind.

How does one know that one is making progress in achieving each of these minds? The answer seems self-evident, and yet it must be stated bluntly: anyone who aims to cultivate these minds must have a concept of what it means to be successful and what it means to fail. It is always prudent to aim for reasonable targets: the young musician or mathematician or marketer should be a better disciplinarian or synthesizer at the end of the year than at the beginning; but improvements will differ between individuals, and periods of stasis or regression can be anticipated. The nurturer needs to have in mind what *better* means, so that both she and her student can critique successive efforts in terms of relevant criteria. The effective pedagogue—whether she's a third grade teacher or the leader of a SWAT team—needs to be cognizant of the resistances and how best to counter them. And both she and her students need to be wary of the pseudoversions that may emerge and that will look, to the uninitiated, like genuine instances of discipline, synthesis, creation, respect, and ethics.

In no sense need these kinds of minds represent a zero-sum. There is no legitimate reason why the cultivation of one kind of mind should preclude the cultivation of others. Yet, as a practical matter, there may be tradeoffs. Too great a focus on discipline may impede creativity; if you come to accept all of the strictures of a discipline, you may be loath or even unable to deviate from them. As a related example, there may also be a tension between respect and creativity. Creativity requires that one be willing to challenge the orthodoxy; but what happens when your beloved mentor embodies that orthodoxy? There may at times be a tension between respect and ethics. An ethical stance may require you to distance yourself from an offending peer, whom you have sought to treat in

a respectful manner. Or, as epitomized in the example of Lincoln, one's designated role may dictate a course of action that is repugnant on a personal basis. As they mature, individuals need to be alert to these tensions so that they do not find themselves flummoxed.

It is up to the educational system as a whole—the educational system in the broadest sense—to ensure that the ensemble of minds is cultivated. In one sense, this is a job of synthesis—making sure that all five kinds of minds are developed. But equally, it is an ethical obligation: in the years ahead, societies will not survive—let alone thrive—unless as citizens we respect and cultivate the quintet of minds valorized here. When I speak of the "broadest sense" of education, I have in mind that schools alone cannot do the job. The burden of education must be shared by parents, neighbors, the traditional and digital media, the church, and other communal institutions. Moreover, societies will differ in the division of responsibilities for the cultivation of such minds. Thus, respect can be nurtured at home, at school, and/or on the street; the mass media may model disciplinary thinking in one society, interdisciplinarity in a second society, or undisciplined thinking in a third. When one party does not participate, others must pick up the ball. When one party (say, the media) sets a bad example, then other parties (say, parents and religious leaders) must compensate. And in those regrettable cases where none of these entities assumes its share, the responsibility almost inevitably falls on the schools—an unreasonable state of affairs.

Of course, the educational imperative transcends the school years. The workplace, the professions, the leaders and foot soldiers of civic society must all do their part—and that obligation cannot be spurned or postponed or fobbed off on institutions that are incapable of picking up the responsibility. Optimally, of course, the shrewd manager or leader selects individuals who already possess these minds; then the challenge is to maintain them, sharpen them, catalyze them to work together, offer them as role models for future recruits. Few executives are so fortunate, however. When one

has hired an individual who proves deficient in one or more of these kinds of minds, the options are clear:

1. Separate the person from the organization as expeditiously as possible. A person incapable of respect or prone to unethical acts can quickly poison an entire division.

2. Assign that individual to a niche where the deficiency poses no threat to the organization. For example, not every worker needs to be a synthesizer or a creator.

3. Make it clear to the worker that he needs to improve with respect to one or more of these competences. Model the desired behavior, and point to clear positive (and negative) models. Create a positive, trusting atmosphere. Set reasonable goals. Provide regular, pointed feedback. If progress is made, rejoice. If progress is not forthcoming, revert to options 1 or 2. And if you find that many of your employees are deficient in a kind of mind, reflect on your recruiting procedure, the ethos of the institution, your own example, and your own teaching.

As I consider educational, political, and managerial systems that might actually nurture these five kinds of minds, I gain confidence that our positive human potentials can be cultivated. Disciplines, syntheses, and creativity can be put to all kinds of ends, including nefarious ones; but such perversion is much less likely if we have also cultivated a sense of respect and an ethical orientation. The five kinds of minds can and should work synergistically.

We might deem as wise the person in the society who cultivates these minds in timely fashion and deploys each when and where it is most needed. Here, again, the preeminence of goals and values must be stressed: an educational system is not worthy of its name unless its representatives can clearly articulate what that system is striving to achieve and what it seeks to avoid or curtail. It may be

the case that computers can achieve literacy and a measure of disciplined thinking. But as we move toward the skills of synthesizing and creating, we move toward realms that are—and may well remain—distinctively human. And at least on my analysis, the terms *respect* and *ethics* only make sense within a community of vital but vulnerable human beings—to refer to a mechanical device, no matter how fast and byte-laden, as "respectful" or "ethical" is to commit a category error.

Perhaps members of the human species will not be prescient enough to survive, or perhaps it will take far more immediate threats to our survival before we make common cause with our fellow human beings. In any event the survival and thriving of our species will depend on our nurturing of potentials that are distinctly human.