The Disciplined Mind

What All Students Should Understand

HOWARD GARDNER

Simon & Schuster

CHAPTER 1

A Personal Introduction:
An Education for All
Human Beings

From the Parochial to the Universal

As a psychologist with a deep interest in education, I have been gratified by the growing concern about educational issues throughout the world. Whether I am traveling in the United States or visiting Europe, Latin America, or the Far East, I find a surprising consensus: the belief that the quality of a nation's educational system will be a chief— perhaps *the* chief—determinant of its success during the next century and beyond.

Yet I often feel frustrated as well. Everywhere, much discussion about education remains mired in the parochial. Frankly, I am tired of writings by educators that focus on the instrumental or the momentary: Should we distribute vouchers so that youngsters can attend private schools? What are the advantages of charter schools? Are teacher unions the problem? The solution? Should teaching degrees be granted at the college level, only in graduate school, or only for those trained "on site"? How much education should take place at the computer or over the Internet? Should we have local control, national standards, international comparisons? And I am equally weary of debates that array one educational philosophy against another—traditionalists versus progressives, proponents of phonics versus advocates of "whole language."

These discussions, while not unimportant, skirt the most fundamental question. They avoid consideration of the purposes of education— the reasons why *every* society should devote monetary and human resources to the education of its young persons. During my years of studying education, writing about education, and visiting hundreds of

schools throughout the world, I have come to my own conclusions about this question. These conclusions are personal; in a sense, I am addressing this book to my own four children and their descendants. At the same time, however, I intend this book to be universal, to speak to individuals all over the world who care about education: indeed, as the title of this chapter states, my concern is the education of all human beings. Not that I think there is only one ideal education; that idea is naive. Still, I've come to believe that certain features ought to characterize good education—or, more properly, good *educations*—everywhere in the world.

An Uncluttered Perspective:
The True, the Beautiful, and the Good

I want everyone to focus on the content of an education—the meat and potatoes: on how that content should be presented, mastered, put to use, and passed along to others. Specifically, I believe that three very important concerns should animate education; these concerns have names and histories that extend far back into the past. There is the realm of *truth*—and its underside, what is false or indeterminable. There is the realm of *beauty*—and its absence in experiences or objects that are ugly or kitschy. And there is the realm of *morality*—what we consider to be good, and what we consider to be evil.

To make clearer what I include in these realms, let me mention three topics that I would like individuals to understand in their fullness. My example in the realm of truth is the theory of evolution, as first articulated by Charles Darwin and as elaborated upon by other scientists over the last one hundred and fifty years. This is an important area of science, with particular significance for a developmental psychologist like me. Unless one has some understanding of the key notions of species, variation, natural selection, adaptation, and the like (and how these have been discovered), unless one appreciates the perennial struggle among individuals (and populations) for survival in a particular ecological niche, one cannot understand the living world of which we are a part.

The processes of evolution are fascinating in their own right, as countless budding scientists have discovered. But such understanding has also become necessary if one is to participate meaningfully in con-

temporary society. Absent a grasp of evolution, we cannot think systematically about a whole range of topics that affect human beings today: the merits and perils of cloning; the advisability of genetic counseling, gene therapy, and various forms of eugenics; assertions that "lifelike entities" have been created computationally and that these entities evolve in a manner similar to organic matter; claims that human behavior is best explained by sociobiology or evolutionary psychology.*

As my example in the realm of beauty, I select the music of Mozart: to be specific, his opera *The Marriage of Figaro.* This choice begins in the personal. I love classical music, and in particular the works of Mozart; for me, at least, they represent the pinnacle of beauty fashioned by human beings. I believe that everyone ought to gain an understanding of rich works like *Figaro*—their intricate artistic languages, their portrayals of credible characters with deeply felt human emotions, their evocation of the sweep of an era.

Again, such understanding is its own reward; millions of people all over the globe have been enriched by listening to Mozart or immersing themselves in other artistic masterpieces from diverse cultures. Moreover, a sophisticated grasp of Mozart's achievement can be brought to bear on unfamiliar works of art and craft and perhaps also inspire beautiful new creations. And such understanding also proves relevant to the decisions that we make as citizens: which arts, artists, and other creative individuals to support; how to support them; how best to encourage new works; whether there are artistic creations that ought to be censored or regulated, and, if so, by whom; whether the arts should be taught in school, after school, or not at all.

Finally, as my example in the realm of morality, I would like individuals to understand the sequence of events known as the Holocaust: the systematic killing of the Jews and certain other groups by the Nazis and others, before and especially during the Second World War. This event has personal significance, since my family came from Germany and several of its members were victims of the Holocaust. But every human being needs to understand what it is that human beings are capable of doing, sometimes in secret, sometimes with pride. And if the Holocaust is mostly an account of unprecedented human evil, there are scattered incidents of goodness and heroism even in that grim chapter.

*Specific references are found at the end of this book.

Like the study of science and art, accounts of historical events can be intrinsically fascinating. But they have a wider significance. I believe that people are better able to chart their life course and make life decisions when they know how others have dealt with pressures and dilemmas—historically, contemporaneously, and in works of art. And only equipped with such understanding can we participate knowledgeably in contemporary discussions (and decisions) about the culpability of various individuals and countries in the Second World War. Only with such understanding can we ponder the responsibility of human beings everywhere to counter current efforts at genocide in Rwanda and the former Yugoslavia and to bring the perpetrators to justice.

The understanding of striking examples of truth, beauty, and goodness is sufficiently meaningful for human beings that it can be justified in its own right. At the same time, however, such an understanding is also necessary for productive citizenship. The ways of thinking—the disciplines—that have developed over the centuries represent our best approach to almost any topic. Without such understanding, people cannot participate fully in the world in which they—*we*—live.

One might think that at least some understanding of these well-known topics is widespread. It is therefore sobering to discover that the theory of evolution is considered to be false by one out of every two Americans, and even by 20 percent of science educators. According to the noted scientist Carl Sagan, only 9 percent of Americans accept that humans have evolved slowly from more ancient beings without any divine intervention. As for the Holocaust, about one-third of all Swedish high school students believe that the Holocaust did not take place. Comparable skepticism (if not outright denial) is expressed by various American groups; 20 percent of Americans admit that they do not know what happened in the Holocaust and 70 percent wish that they were better informed about it. Robert Simon, who teaches philosophy at Hamilton College, reports that anywhere from 10 to 20 percent of his American students cannot bring themselves to say that the Nazi attempt at genocide was wrong.

It is not difficult to anticipate a response to this trio of topics: How can one call this an education for all human beings? It is time-bound (the modern era); it is place-bound (Western Europe and places influenced by it); and it is even linked to the author's personal concerns.

"Right and not right," as they say. I would indeed be pleased if all

human beings became deeply immersed in the themes of evolution, Mozart, and the Holocaust. There are worse ways to enlarge one's universe. *But—note well—these choices are not privileged, and certainly not uniquely so.* Within the West, there are numerous other scientific theories of importance (Newtonian mechanics and plate tectonics, to name just two examples); other singular artistic achievements (the works of Michelangelo or Rembrandt, Shakespeare or George Eliot); other morally tinged historical events (the French and Soviet revolutions; the American struggle over slavery). And within other cultural traditions, there are abundant examples of the true (these would include folk theories about healing or traditional Chinese medicine); the beautiful (Japanese ink and brush painting; African drum music); and good and evil (the precepts of Jainism, the stories of Pol Pot and Mao's Cultural Revolution; the generosity of bodhisattvas).

I am not contending, then, that everyone needs to be able to explain what constitutes a species or to discern the development of melodies and the intermingling romances in a work like *Figaro*, or to analyze the reasons why so many Germans were complicitous in the Holocaust. Rather, what I claim is that "an education for all human beings" needs to explore in some depth a set of key human achievements captured in the venerable phrase "the true, the beautiful, and the good."

Another possible objection. Aren't the categories "true," "beautiful," and "good" themselves time- and culture-bound? Again, this is a valid point, but not a decisive one. The articulated concepts of "truth," "beauty," and "goodness" reflect a philosophically oriented culture; indeed, our first records of explicit discussion of these virtues are the dialogues recorded by Plato in Greece nearly 2500 years ago. Other cultures have developed similar notions, although how they parse the three domains may well differ. However, the beliefs and practices of cultures—the beliefs and practices that they value, transmit, punish, or prohibit—reveal that each culture harbors specific views of how the world is and how it should (and should not) be. And these views embody implicit senses of truth, beauty, and morality.

There is another, more important reason for my endeavor. In the end, education has to do with fashioning certain kinds of individuals—the kinds of persons I (and others) desire the young of the world to become. I crave human beings who understand the world, who gain sustenance from such understanding, and who want—ardently, perennially—to

.lter it for the better. Such citizens can only come into existence if stu-
lents learn to understand the world as it has been portrayed by those
who have studied it most carefully and lived in it most thoughtfully; if
they become familiar with the range—the summits, the valleys, the
straight and meandering paths—of what other humans have achieved;
and if they learn always to monitor their own lives in terms of human
possibilities, including ones that have not been anticipated before. No
doubt there are various routes to this wisdom; in this book, I lay out my
preferred path.

I've selected my three textbook examples because they are familiar to
me, and because they will be familiar to many readers. But I must
repeat: there is nothing sacrosanct about this trio. Another book, on
another day, could focus upon relativity, revolutions, and the ragas of
southern India. And I would devour such a book.

About This Book

Though this is a personal book, I would like to think that it is not an idio-
syncratic one. It is based on my analyses of educational efforts in the
past, and, equally, on what the sciences have learned about the human
mind and human culture. In the next two chapters, I survey that past
and identify new pressures on education today. Indeed, never has the
world changed more quickly. We need an education that is deeply rooted
in two apparently contrasting but actually complementary considera-
tions: what is known about the human condition, in its timeless aspects;
and what is known about the pressures, challenges, and opportunities of
the contemporary (and the coming) scene. Without this double anchor-
ing, we are doomed to an education that is dated, partial, naive, and
inadequate.

Following this look at the timeless and time-bound aspects of educa-
tion, I move to an account of what we now know (from recent scien-
tific and humanistic research) about the human mind, the human brain,
and human cultures. Each of these vantage points is crucial and irre-
ducible. Studies of the mind/brain (reviewed in chapter 4) tell us
about how human beings come to know and understand. For example,
they reveal the different ways in which individuals acquire knowledge
and represent that knowledge mentally; and such researches indicate

the difficulties of changing early understandings of the world, even as
they suggest possible approaches for effecting needed transformations.
Studies of human cultures (reviewed in chapter 5) convey the array of
educational routes that human beings have followed. In some societies,
education is prescribed in the finest detail, while in others, students are
encouraged to "construct" knowledge for themselves or in tandem with
a group of peers.

Jointly considered, the mind/brain and the spectrum of human cul-
tures define both the possibilities for education and the constraints on it.
Alone, the topic of education refutes the naive opposition between
nature and nurture. An education for all human beings needs to be con-
structed upon these foundations, even as it must incorporate the
remarkable knowledge that has been achieved in this century.

In the latter half of the book, I turn directly to issues of education in
and outside of classrooms. Much has been established about the diffi-
culty of achieving deep understanding in the classroom; and much has
been learned recently about which educational practices are likely to
succeed in cultivating such understanding. It is timely to review these
findings and to craft an education that builds upon the most powerful
insights.

Yet it is often frustrating to read about effective education in the
abstract. Examples are at a premium. As my primary illustrations, I
revisit the three areas of study that I've already introduced. I show how,
building upon new insights, one might craft an education that yields
deep understanding of questions and issues as important as evolution,
Mozart, and the Holocaust: an understanding that is worth achieving in
its own right, and that permits meaningful participation in today's (and
tomorrow's) world.

My survey of these three topics represents a sustained effort to bring
together the two most powerful ideas with which I have worked.
Specifically, I draw on findings about *the attainment of understanding* and
findings about the *multiple intelligences of human beings*. I contend that
educators can reach many more students, and affect them much more
deeply, by activating the multiple intelligences of their students, in ways
spelled out in chapters 7, 8, and 9.

In the final pages of this book, I confront the difficult question of how
to achieve, on a large scale, the kind of education that I would like for
all. I draw on certain promising educational experiments in which I

others have been involved in recent years. Clearly, I have my own preferred educational approach; this book stands, in a sense, as a brief in favor of that regimen, as well as a guide to how it might be realized.

At the same time, because of the huge differences in value systems found *across groups and cultures, I doubt that it will ever be possible to* develop one ideal form of education and to implement it throughout the world. Perhaps that is just as well; a world with a single educational system—or, for that matter, a single culture—might be a dull place. It seems far more feasible to design a limited number of powerful approaches, each of which can meet the needs and desires of a significant portion of the world's population. Accordingly, I describe how one might develop six distinct educational pathways, including the one I prefer, each with its own set of standards. And finally, I return to the indispensable issue of values: which educational values we cherish, and how to make sure that a good education is also a "humane education" for all human beings.

Signposts

That, in short, is what this book is about. Let me now erect a few signposts that signal my beliefs—or, to adopt an even more basic metaphor, let me lay my educational cards on the table.

First, education consists of more than school. Much of what I write about concerns what does—or should—occur in classrooms. But education took place long before there were formal institutions called schools; and today, other institutions—for example, the media—vie with schools in their educational scope and power.

Relatedly, discussion of education has often been restricted to the cognitive realm, even to specific disciplines. My own scholarly and applied work has often been viewed as being restricted in this way. Yet I see education as a far broader endeavor, involving motivation, emotions, and social and moral practices and values. Unless these facets of the person are incorporated into daily practice, education is likely to be ineffective—or, worse, to yield individuals who clash with our notions of humanity.

Much of education occurs implicitly rather than explicitly. One can certainly mount specific courses in how to think, how to act, how to

behave morally. Some didactic lessons are appropriate. Yet we humans are the kinds of animals who learn chiefly by observing others—what they value, what they spurn, how they conduct themselves from day to day, and, especially, what they do when they believe that no one is looking. Continually, I will call for schools—more properly, *school communities*—that embody certain values, and for teachers who exhibit certain virtues. Ditto with respect to the media, the family, and other influential educational institutions.

I turn next to labels. Much of what I write about can be identified with the educational tradition of John Dewey—with what has been called progressive or neo-progressive education. I reject the baggage that has (inappropriately, I believe) come to be associated with this label. One can be progressive while also espousing traditional educational goals and calling for the highest standards of work, achievement, and behavior. In the words of Dewey himself: "The organized subject matter of the adult and the specialist . . . represents the goal toward which education should continuously move."

What about the canon? Given my examples of evolution, Mozart, and the Holocaust, it may seem as if I have taken up the cause of Western thought, or even championed the controversial legacy of the Dead White Male. I am indeed dedicated to in-depth study of the most important human achievements, topics, and dilemmas. I think that everybody should have heroes and that we can learn even from those figures who, like all heroes, are flawed. But unlike those who define an a priori canon, I believe that decisions about what is important are best left to a specific educational community; that all such decisions are tentative at best; and that they should be subject to constant negotiation and reconsideration.

To put it in the terms of my endeavor, I do not believe in *singular or incontrovertible* truth, beauty, or morality. Every time period, every culture will have its own provisional favorites and tentative lists. We should begin with an exploration of the ideals of our own community, and we should also become acquainted with the ideals of other communities. We may not endorse the aesthetics of postmodernism or the morality of fundamentalist Islam or the truths of the Vatican Council. But we live in a world where these preferences exist, and it is necessary and proper for us to learn to live with them—and for them to learn to live with us.

It should be evident that I believe even less in "core knowledge" or "cultural literacy"; not only is this 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. Hirsch calls for a sequenced K–12 curriculum in which students cover a large number of specified topics and concepts for each year of school. To be sure, I cherish individuals who are familiar with their own and other cultures, but such literacy should come as a result of probing important issues and learning how to think about them in a disciplined way—not as a consequence of mastering fifty or five hundred predetermined topics each year.

On my educational landscape, questions are more important than answers; knowledge and, more important, understanding should evolve from the constant probing of such questions. It's not because I know for certain what the true and the beautiful and the good are that I call for their study. In fact, I distrust people who claim that they know what is true, beautiful, or good. I organize my presentation around these topics because they motivate individuals to learn about and understand their world, and because, frankly, I reject a world in which individuals cease to pursue these essential questions just because they do not permit unequivocal resolution.

No one likes jargon, especially other people's jargon, and few bodies of professional lingo are less beloved than the argot of educators. I try to keep "ed talk" to a minimum and to introduce and illustrate terms when I use them. Still, the study of education is itself a discipline; it would be foolish to ignore its insights, disingenuous to censor its vocabulary. And so, with a tinge of regret, I will on occasion speak about educational goals (why we want/need to educate); curriculum (the topics and contents that one chooses to emphasize); disciplines (which subjects and, more critically, which ways of thinking are important to inculcate); pedagogy (the strategies, tactics, and "moves" made by those formally charged with responsibility for education); and assessment (the means, formal and informal, by which educators and the wider community establish what has and has not been mastered by the "student body").

A final concern. If readers know my work at all, they are likely to be familiar with my claim that human beings have at least eight separate forms of intelligence, and that we differ from one another in our "pro-

files of intelligence." Others, as well as my own associates, have devoted a great deal of effort to investigating the educational implications of this theory, and I'll touch on some of that work later on.

My psychological work on multiple intelligences has had an unanticipated consequence. This is the assumption on the part of some critics that I am unsympathetic to a rigorous education, and that I eschew high standards. I suppose that is because the idea of multiple intelligences is rightly seen as a critique of the notion of a single intelligence, and of a school curriculum targeted exclusively to linguistic and logical capacities and concerns. Also, my critique of traditional standardized testing, with its almost total emphasis on linguistic and logical skills, has also led some to conclude that I am uncomfortable with assessment more generally.

A belief in multiple intelligences, however, is in no sense a statement about standards, rigor, or expectations, and it is certainly not a rejection of these desiderata. On the contrary: I am a demon for high standards and demanding expectations. I do not always succeed in my own life and work, but it is not for lack of trying. It pains me to see my work aligned (I could have written "maligned") with that of individuals who are apologists for low standards, low expectations, "anything goes."

Perhaps there is little that I can do to correct such a misrepresentation. But I can state, as emphatically as I know how, that an education for all human beings is an education that demands much from all of us—teachers as well as students, societies as well as individuals, and (if I may) readers as well as writers. Moreover, an education for all human beings cannot succeed unless we have ways of ascertaining what has been understood and what has been mildly or fatally misconstrued. I envision a world citizenry that is highly literate, disciplined, capable of thinking critically and creatively, knowledgeable about a range of cultures, able to participate actively in discussions about new discoveries and choices, willing to take risks for what it believes in.

This statement of values may confound both friends and foes. "Progressives" may fear that, in my talk about truth and standards, I have left their fold. "Traditionalists" may welcome these "confessions of middle age" but will continue to quarrel with my focus on individualized education and my resistance to a fixed canon. I hope that this book will stimulate partisans of both stripes to examine and reexamine their unexamined assumptions.

So far as I know (this is a surmise about truth), we only come to this planet once (at least in a precloning era). Let us make as much of our brief appearance as we can. I hope that most of us will use this opportunity positively, building on what has been established in our culture about the true, the beautiful, and the good. I believe that the educations for understanding described here can yield rewards for the individual as well as for the communities in which we must live together.

CHAPTER 2
Educational Constants

An Educational Montage:
The Transmission of Roles and Values

Let's say that, as a television director, you were asked to prepare a montage of education over the course of human history. You would need to consider a stunning variety of settings and an astonishing array of "subjects" and "practices," some still available for filming, others in need of re-creation or dramatization. You might begin with early humans as they proceed on a hunt across the savannah; the young boys (perhaps strapped across their fathers' backs) are watching closely as their fathers hunt. Then these boys help carry, divide, and share the game, while the young girls watch from afar and then aid their mothers in cleaning, cooking, and serving the meat. Perhaps that evening, the children gather around a fire as their elders relate heroic stories about the gods, or cautionary tales about perilous fires, pernicious villains, and predatory neighbors. You might then pan to an agricultural setting. There, youngsters awake at the crack of dawn to help their elders tend to the animals and plant, till, and harvest the main foodstuffs; later in the day (or the year) individuals of different ages participate in rituals or carve amulets designed to ensure favorable weather, abundant crops, or long lives for their relatives and allies.

Initially, one may think of these examples as remote, exotic. But one can discern reverberations of such long-standing practices in the lives of children today. Our televised survey might include children playing hunting games with elders or peers; accompanying a parent to work; helping with repairs, cooking a family meal, or shopping with a parent; watching a movie or a live performance in the company of their family;

assuming roles in a religious ceremony or collaborating in the creation of works of art. While little may be said overtly on these occasions, the practices of the adults often signal clear beliefs about how the world is and how it should be. And these beliefs include notions about truth, beauty, and goodness.

Indeed, the two major goals of education across time and space could be called the modeling of adult roles and the transmission of cultural values. Every society must ensure that the most important adult roles—leader, teacher, parent, priest—are properly filled by members of the next generation. Whether the culture depends upon hunters, preparers of food, sailors, weavers, priests, lawyers, merchants, or computer programmers, it is important that a certain proportion of youngsters be able to perform these roles skillfully and, eventually, transmit their key features to succeeding generations. By the same token, every society must ensure that its most central values—valor or peacefulness; kindness or toughness; pluralism or uniformity—are passed on successfully to those who will themselves one day transmit them.

In the past, both roles and values have evolved very slowly. In many societies, means of transmission scarcely changed over the centuries. Nowadays, values change more rapidly, but still at a measured pace. Roles, on the other hand, are changing considerably from one generation (or even decade) to the next, placing considerable pressure on the institutions of education.

Formal Schooling:
Mastering Notations and Disciplines
in a Remote Setting

Of course, nowadays we associate education primarily with formal school settings rather than with informal observation or work at home, in the fields, or at the fireside. Formal instruction comes about chiefly under specific circumstances. A procedure—such as sailing a craft over long distances in turbulent waters—may be too complex to be apprehended simply by observing. A notational system—such as those that convey verbal propositions, numerical relations, or geographical loci—may require careful study over sustained periods of time. A body of lore—often religious or legal lore—may need to be studied, committed memory, drawn upon when appropriate, and transmitted eventually

to the next generation. And finally, there are likely to be formal academic disciplines that reflect the culture's procedures for confronting questions about the physical, biological, and personal worlds.

Around the world, schools have gradually evolved to serve such functions. There are "bush schools" in Africa, where children learn about the past of their tribe. There are informal compounds in the South Seas where youngsters memorize information about the craft of sailing, as well as the names and locations of the hundreds of islands around which they will have to navigate. In communities with a written religious text, whether in Greek, Hebrew, Latin, Arabic, or Sanskrit—schools spring up so that students can learn to decode the sacred text, write out portions, and, perhaps, adapt the written language for secular purposes. And in societies where formal academic disciplines have evolved, schools transmit at least the rudiments to those who will need to use those disciplines at work or in their roles as citizens.

These institutions differ from informal educational settings in one crucial feature: they transmit material in a setting that is typically remote from where it will ultimately be used (for example, sailing in the South Seas, or arguing in the law courts, or handling commerce in the marketplace). To use the current jargon, school is largely a "decontextualized" setting. Indeed, as our hypothetical television show might document, schoolrooms around the world resemble one another. For while education all over the world has long featured the transmission of roles and values in appropriate settings, "decontextualized schools" have been devised primarily for two more specific goals: the *acquisition of literacy with notations* and *the mastery of disciplines.*

Humans have used notation to record numerical, calendrical, and religious events for tens of thousands of years. But it is only in the last few thousand years that more sophisticated notational systems have come into widespread use. If individuals are to be able to read, write, and carry out calculations of any complexity, they must spend several years mastering the elements of these literate systems and learning how to use them fluently and flexibly.

While some individuals in each society may experience particular difficulty in mastering the literacies, most societies have devised pedagogical systems that can effectively transmit "the three Rs" to their young people. Continuing illiteracy in the world is due not to ignorance about how to teach reading, 'riting, and 'rithmetic, but rather to the failure to devote adequate resources to these tasks. In China and Cuba, where (as

it happens, under Communist regimes) literacy has become a high priority, it has proved possible to raise the entire population's level of literacy within a few decades.

The use of schools to inculcate the disciplines entails more complex considerations. It is important that the history of the group, its religious and moral precepts, and its technical knowledge (about hunting or cooking, weaving or sailing, selling wares or settling disputes) be passed on to succeeding generations. Sometimes such transmission can be done informally, through demonstrations and casual talk "on the scene"; sometimes, as in the case of cultures that have lengthy oral epics in verse, a more formal network of lore must be committed to memory; and, in more recent times, disciplines have arisen in which formal knowledge is preserved in written and illustrated texts. Within religious settings, these texts are often committed to memory and recited ritualistically; in secular settings, it is only necessary that the student be able to read the text, derive meanings therefrom, and draw on this knowledge when needed (at least, for the test; ideally, for life beyond school, as well).

Single texts can be memorized; a single discipline can, perhaps, be learned through an informal apprenticeship. But where familiarity with a family of literacies and disciplines is at a premium, the formal school comes into its full glory. Mere "literacy in decoding" does not suffice. The capacities to read a variety of texts fluently, to be able to write down one's own summary and reactions, to calculate rapidly and accurately, and to use numerical systems for measurement or experiment— all of these require more than a year or two of informal study. (To be sure, a few talented individuals have managed to master these pursuits without much formal guidance; and in milieus where education was available chiefly to boys, girls have traditionally had to learn to read and write surreptitiously or with help from a caring relative.)

Our conception of school has been closely linked to the existence of formal written systems, whose mastery was deemed necessary for religious, economic, and social purposes. And as schooling has extended beyond the "basic" primary years, formal education has become equally associated with the mastery of scholarly disciplines ranging from history to theology to science. We have come to assume that mature adults must be versed in several disciplines—able not only to pass written examinations but also to use these disciplines' ways of thinking in their vocations and as citizens.

It would be misleading, however, to think of traditional educational institutions as merely, or even primarily, instrumental in a narrow sense. To do so would be to commit the sin of presentism—reading back into earlier institutions our current beliefs (or concerns). Rather, such institutions have traditionally foregrounded clear notions of what one should believe, what one should value, and how one should live.

Consider, for example, the apprenticeship. An individual enters into a formalized relationship with a specific master and is required to pass through a set of stages before he himself achieves the status of master. In contrast to school, apprenticeship does not merely consist of spending a few hours each day with the master; rather, the apprentice commits himself fully to a single dominant authority figure, signing a contract with the master and even living in his home. He is drawn fully into the hour-to-hour life of the master and his family. Through these contacts, he comes to absorb an entire worldview—what the master believes to be true about the world, what standards a work must meet if the master is to consider it acceptable, and what behaviors are desired, tolerated, and strictly proscribed in and outside the workplace.

Or consider the traditional religious school. Typically, the master of the school is a man, often unmarried, who has been selected by the community in part on the basis of his presumed moral virtues, and who is given considerable intellectual and ethical authority over the students. He is expected not only to pass on the culture's beliefs and traditions bu also to embody them in his own being. Even as he has the power to disc pline the students, he will be held accountable if his own behavior do(not conform to communal standards.

The special nature of school is well conveyed by the rituals that accompany it. In Jewish tradition, for example, the boy's first day at the *cheder* is a joyous occasion. The whole family dresses up and accompanies the lad to school. He is served bread in the shape of letters that have been dipped into honey; the sweetness of learning is coded deeply into the youngster's limbic system.

Let me hasten to add that I am here discussing ideal situations. We know that some masters ruthlessly beat their charges, and some teachers blithely ignore their students' moral failings—and their own, for that matter. Such less-than-perfect realizations have not, however, challenged the fundamental, broad educational vision: a featuring of the true, the beautiful, and the good. This vision, like its intriguing variations, should be captured in my hypothetical educational montage.

A Virtue-Filled Education in the Disciplines

The delineation of these three virtues, and the extent to which they are distinguished from one another, differ significantly across cultures. Traditionally, the most important truths have been religious ones—the culture's beliefs about what human beings are, what place they occupy in the cosmos, how they relate to deities and other spiritual figures, and which divine forces determine one's fate. Even truths that may seem mundane—for example, the names and identities of particular individuals or species—are often tinged with totemic significance.

Gradually, as empirical discoveries are made, the number of truths increases, and their relation to religious orthodoxy may prove problematic. Divine theories of conception and birth, for example, may comport with daily experience and common sense; but then again, they may not. (What does one conclude, for example, when a child looks suspiciously like the farmer or the warrior in the next village?) Sometimes, religious and empirical truths exist side by side with little tension. Sometimes, however, one side in this struggle must make concessions.

The rise of the scholarly disciplines represents a long-standing effort to add to our knowledge of the world. The biological sciences tell us about the nature and processes of the living world; the physical sciences describe the material world and forces governing physical objects; the more recently initiated social sciences inform us about human nature, actions, motives, and possibilities. And—if less decisively than the scientific disciplines—the humanistic and artistic disciplines also furnish information and knowledge. They add significantly to our understandings of the varieties of beauty and morality; they familiarize us with the multifarious ways in which individuals over time and space have conceived of themselves, their worlds, their options, their fates.

There is also a convenient division of labor between these spheres. The sciences strive to discover patterns that obtain across objects, species, people; the arts and humanities dwell on the particularities of individual persons, works, and experiences. Clearly, as a scientist, Darwin wanted to understand the laws that govern all species; in contrast, those who immerse themselves in a single scene in a Mozart opera are reveling in the specifics of a character, a situation, a melody, a phrase,

a pause. Historians of the Holocaust can be divided, informally, into those with a scientific cast of mind, who look for parallels with other genocides; and those of a humanistic persuasion, who explore the particular events that marked the Nazi Holocaust.

The relationship between the virtue of truth, on the one hand, and the virtues of beauty and goodness, on the other, is a vexed one. In modern secular society, we tend to see these as separate domains—loosely speaking, as science, art, and morality. Enlightenment and post-Enlightenment thinking has designated a separate, autonomous realm comprising reason, science, knowledge, and truth; aesthetics and morality are cleaved off or minimized as emotional, subjective, or particularistic; and the relationship between "goodness" and "beauty" is seen as problematic at best. Many (including those of contrasting political persuasions) see morality as the concern of the home and/or the church and seek to dissociate it altogether from the school. Religion, once seen as the final arbiter of truth, now cedes ascertainment of truth to the sciences, and takes the moral sphere as its central concern. And of course, some postmodern thinkers challenge whether such historically tainted terms as "true," "beautiful," or "good" are useful at all.

In times past, the links among these realms were not seen as complex. The ancient Greeks evolved a sense of the virtuous person, the individual who was fully developed. Such individuals cultivated knowledge; were courageous, loyal, just, physically strong and supple; and evinced a developed sense of beauty in matters of body and spirit. The purpose of education (*paideia*) was to ensure that as many individuals as possible achieved such rounded excellence.

In the Confucian view, which evolved around the same time, it was important that the youth become a gentleman: skilled in the arts—graphic, musical, military; loyal to the family and the state; humble, gracious, kind, just, and courteous in all company. Again, this ensemble of qualities could only come about through an ideal education, one that endured through life and that fostered continuing self-transformation. In Confucian society, beauty and goodness were seen as fused: the notion that an object or person might be beautiful and yet morally corrupt could not be countenanced.

To aid people in the process of becoming virtuous human beings, classical cultures looked to certain figures in literature, in history, and in contemporary life who embodied desirable features: the Homeric heroes, for example, or the person of Confucius himself. There were

also negative examples—individuals notorious for their weakness, cowardness, arrogance, selfishness, or for a "tragic flaw." One could judge oneself with reference to these human (or superhuman) landmarks, and teachers could help students see how they approached these ideals, and how they fell short.

Classical cultures also looked to certain disciplines as particularly important in the formation of the whole person: thorough knowledge of certain key texts; the mastery of music and poetry; the training of the body (through gymnastics or riding or marksmanship, for example); and at least the rudiments of rhetoric, measuring, medicine, music, and astronomy. The curriculum, so to speak, may have differed across region and era; but the virtues embedded in its mastery remained remarkably constant through the Middle Ages in the West and the feudal era in China.

In attempting to understand these classical views of virtue, we must grasp one point. The ancients did not see the individual as a set of virtues that might or might not be connected. Rather, they took a determinedly *holistic* view of the person. One attempted to achieve excellence in all things, continued to strive throughout life, and sought, as well, to be an integrated and balanced human being. Either a person represented an integration of these intellectual, physical, ethical, and aesthetic features, or a person did not. The acquisition of knowledge and skill was seen as the necessary handmaiden for the attainment of moral virtue—the highest good—in the service of one's society.

Many of us today find it difficult to see the true, the good, and the beautiful as integral parts of the same ensemble. The spheres have become separate. Yet we can still be moved by the concluding lines of John Keats's "Ode on a Grecian Urn":

> "Beauty is truth, truth beauty"—that is all
> Ye know on earth, and all ye need to know.

Over time, then, educational institutions have had the primary task of conveying to a culture's young its current take on what is true (and not true); what is beautiful (and what lacks beauty); what is good (and what is evil). More controversial, nowadays, is the proper compass of education. Few would deny to the school the primary role in the inculcation of knowledge and truth. However, whether schools should be the principal communicators of beauty and goodness is much less certain. In

cultures where considerable agreement can be found on these issues, their transmission is often ceded to the school; thus, in those European countries with relatively homogeneous populations, students study religion in school and also master formal curricula in the arts.

In American society, however, there are both constitutional and cultural reasons to bifurcate or trifurcate the educational obligation. Many individuals who readily send their children to community schools balk at the notion that those schools might impart religious or moral instruction; that, they contend, is the task of the home, the church, or the relevant institution elsewhere in the community. Organizations like the Boy and Girl Scouts, after-school clubs, and summer camps often step into this breach. And a growing number of Americans are so intent on transmitting their own *personal* value system that they spurn the public schools altogether, preferring religious or home schooling. These customized forms of education may include a direct rejection of the community's notions of truth. For example, some parents would challenge generally agreed-upon views about evolution (that it is the best explanation of human origins) in favor of the fundamentalist biblical version of human creation.

I perceive the situation this way. Once, it was relatively unproblematic to inculcate truth, beauty, and goodness through scholastic institutions. The consensus that made a "virtue-oriented" education possible has frayed throughout the world, and is especially tenuous in modern and postmodern societies like the United States. Some would conclude that the mission was forlorn anyway and that we are better off not looking to schools to transmit these ancient virtues. Here I undertake a sustained meditation on the opposite alternative: education must *continue* to confront truth (falsity), beauty (ugliness), and goodness (evil), in full awareness of the problematic facets of these categories and the disagreements across cultures and subcultures. The concerns may be ancient, but they must be perennially revisited and refashioned. And the academic disciplines remain the best way to pursue this mission.

Perennial Choices

So far, I have stressed the quartet of purposes that spans educational time and space: to transmit roles; to convey cultural values; to inculcate · literacies; and to communicate certain disciplinary content and ways of

thinking. And I have emphasized the trio of virtues that have long animated education: a search within one's culture for what is true, what is beautiful, and what is good. It is important to recognize, however, that educational institutions have implemented these in various ways. Over time, the pendulum has oscillated between a number of polarities:

• Between breadth and depth. In general, the push has been toward covering as much information, conveying as many truths, as possible. However, the advantage of pursuing a smaller number of topics in far greater depth has also been recognized intermittently. The British-American philosopher Alfred North Whitehead maintained: "Let the main ideas which are introduced into a child's education be few and important, and let them be thrown into every combination possible." Today, in the United States we see the tension between educators like Theodore Sizer, who argue that "less is more," and those like E. D. Hirsch, who specify the considerable quantity of core knowledge needed to be culturally literate. Everywhere from Italy to Singapore, the same debate rages.

• Between accumulation and construction of knowledge. The majority of schools over time have stressed the importance of accumulating a great amount of knowledge that is prized by the society. The teacher lectures, the textbook is read, knowledge is absorbed, retained, spat back. Indeed, medieval texts often devoted considerable attention to how to memorize the material faithfully—how best to fill the mental vessel.

However, a rival "constructive" or "transformative" stance toward knowledge dates back to classical times; it is exemplified in the colloquies of Socrates. Some educators call for the tackling of enigmatic questions, and place a premium on struggling with alternative responses, and on the student's effort to construct a personal conclusion as the result of sober reconsiderations of the question.

• Between utilitarian outcomes and intellectual growth for its own sake. There have long been pressures on educators to communicate the utility of their teaching—if not for making more money, or "staying ahead of the Japanese," at least for smoothing one's entry to heaven. But an alternative tradition, associated particularly with English educators like John Cardinal Newman and, anciently, with Cicero and Confucius, argues for the importance of knowledge in its own right. In this view, exploration of the world and development of the spirit are important virtues, whether or not they lead to greater material goods. And, in a

perhaps surprising corollary, some (including some American corporate executives) maintain that the best preparation for a rapidly changing world remains a classical liberal education.

• Between uniform and individualized education. Most schools have been uniform, in the sense that they have taught and assessed all individuals in essentially the same way. This approach is embraced by East Asian societies, but also by centralized ones elsewhere, such as France and other Francophone communities. One argument in favor of uniform education is that it appears to be the most equitable variety.

Standing in opposition is an individualized perspective that highlights the vast differences among individuals' strengths, needs, goals. It makes sense to construct an education that takes into account these differences among persons. Perhaps, indeed, such an education is fairer; it does not valorize a certain kind of mind but rather meets each student where he or she is. Nor does such an education mandate that each person should come to resemble others in the community. In contrast to a Lockean view, that the individual should be shaped according to the designs of the community, this "Rousseauian" view would allow the natural inclinations of the human individual to unfold and endure.

• Between education by many private parties and education as a public responsibility. Historically, education was largely a private affair; the American common school, the first public school in the world, was conceived only in the middle of the nineteenth century. Mass public schooling is a distinctly twentieth-century phenomenon. Nowadays, public education is under attack from many quarters, both by those who favor independent nonprofit secular or sectarian schools and those who would like private enterprises (like corporations) to run schools. The alternative Jeffersonian perspective argues that education should be a public responsibility—paid for by the community, open to the community, and dedicated to the preservation and transmission of communal ideas and values. While this point of view seems to have originated in America, it is now accepted in most nations of the world, where, indeed, it often extends to the university level.

• Between an education that ignores or fuses disciplines and an education that stresses disciplinary mastery. Today, in many places, the disciplines are under fire. They are seen as old-fashioned, controlling, out of step with problem-based or theme-based learning, the province of "pale, stale males." Better to ignore or cordon off the disciplines, at least

until students enter the university, and to allow students to follow their curiosity wherever it leads.

The contrasting point of view stresses that the disciplines represent human achievements of significance; in an evocative phrase, they "separate us from the barbarians." Much of what is crucial about truth, beauty, and morality has been encoded in one or more scholarly disciplines—particularly in how they frame and approach questions. Students should master the disciplines and crafts of their time even if, in the end, they detect the disciplines' shortcomings and succeed in surpassing or circumventing them.

• Between an education that minimizes or critiques assessment and one that is rooted in assessment and evaluation. Few students, teachers, or school administrators like tests; the general public, too, generally regards them as a necessary evil. Nowadays, there is considerable controversy about testing within and beyond the academy. Some feel that assessment is necessarily invidious; it should be done as little as possible, as carefully as possible, and as individually as possible.

A sharply contrasting perspective construes assessment as an essential and positive aspect of all learning. All skilled practitioners (including teachers) are involved perennially in assessment, and such experts find that assessment can often be a rewarding experience. For instance, they discover problems and are able to invent solutions on their own, and over time they can observe their own increasing skills. On this perspective, students ought from the first to be introduced to assessments; assessment ought to be a regular part of education; and as soon as possible, students should themselves join in the processes of (self-)assessment.

• Between relative, nuanced standards and high universal standards. Nowadays, no one dares oppose standards altogether—and perhaps that unanimity is a good thing. Politicians, businesspeople, parents, and educators vie to see who can invoke standards (and utter the words) most frequently and enthusiastically. But disparate strands exist within the standards camp. Those who worry about invidious standards or crippling loss of self-esteem ask that standards be spoken of softly, or that they be constantly adjusted in light of students' abilities and goals; or that "opportunities to learn" be equalized across schools and communities before any consequences (for teachers or students) are attached to the failure to meet standards.

A less flexible, more universalist approach stresses the need to enunciate clear, high standards for all students; to maintain focus on those standards; to make strenuous efforts to help students to master them; and to establish clear consequences when those standards have not been met. (There may, however, remain different views on how students should be prepared for and judged by these standards.)

• Between an education that showcases technology and an education that highlights the human dimension. Especially among businesspeople and politicians, technologies are often seen as saviors—as instrumentations that are finally going to professionalize education and make all our students eager—or, at least, effective—learners.

Many humanists fear technology. Already, they say, society is being dehumanized, and computers will simply hasten the demise of the human dimension. Education must build upon and preserve the precious bonds between human beings and the unique properties of the human spirit. Technology, say these present-day Luddites, must be kept firmly in its place.

With reference to each of these antinomies, I have a perspective or bias. To put it crisply, I favor depth over breadth, construction over accumulation, the pursuit of knowledge for its own sake over the obeisance to utility, an individualized over a uniform education, and an education that is public in character. I favor student-centered education over teacher-centered education, and I support an education attentive to developmental and individual differences. In all these dimensions, I might be seen as on the liberal or progressive side of the educational playing field.

At the same time, however, I also favor education that is rooted in the disciplines, that employs regular assessment, and that applies high standards to student work. In that sense, I align myself with the traditional or conservative camp.

Finally, with respect to technology, I find myself squarely in the middle: the new technologies hold tremendous promise, but they must be seen as means rather than ends. A pencil can be used to write Spencerian sonnets or to poke out someone's eye. A computer can deliver drill-and-kill curricula or stimulating scientific puzzles; it can educate, enlighten, entertain, and instruct, or it can dull perceptions, stimulate consumerism, and reinforce ethnic stereotypes. The Internet can help create vigorous and constructive communities; it can isolate

and desensitize individuals to their fellow human beings; it can even fo-
ment hatred.

On my better days, I hope that this modulated position will allow me
to make common cause with a wide range of educators and parents; at
hotter moments, I fear that the wrath of all may fall upon me. So be it.

Looking backward across time, and looking, with 360-degree perspec-
tive, across wide spaces, we can discern important universal aims of
education: transmission of values, modeling of roles, mastery of nota-
tions and disciplines. The identification of these aims is important; it is
foolish to disregard them as we look ahead to new times and new
worlds. However, it is equally myopic to ignore the many enormous
changes that are already patent in the world and that will unquestionably
affect education and schooling in the years to come.

CHAPTER 3
Education in the Future

An Understandably Conservative Institution

"Manners are always declining," quipped the Roman play-
wright Plautus. He could have added, "and the world is always
changing . . . faster and faster." The vast changes under way in today's
world are familiar to all. In every realm—the professions, business,
other places of work, agriculture, transportation, the media of commu-
nication, the family, and the home—conditions are palpably different
from those of a century or even a quarter-century ago. Downsizing,
restructuring, reengineering are fixtures of today's commercial world;
tomorrow's world will presumably feature these and other as yet
unknown innovations.

It would be an exaggeration to maintain that schools have not
changed in a hundred years. Both in the United States and abroad, there
are new topics (such as ecology), new tools (personal computers,
VCRs), and at least some new practices—universal kindergarten, spe-
cial education for those with learning problems, efforts to "mainstream"
students who have physical or emotional problems. Still, apart from a
few relatively superficial changes, human beings miraculously trans-
ported from 1900 would recognize much of what goes on in today's
classrooms—the prevalent lecturing, the emphasis on drill, the decon-
textualized materials and activities ranging from basal readers to weekly
spelling tests. With the possible exception of the Church, few institu-
tions have changed as little in fundamental ways as those charged with
the formal education of the next generation.

Contrast this continuity with children's experiences outside the

school walls. In modern society children have access to a range of media that would have seemed miraculous in an earlier era (and that still astonishes members of less industrialized societies): televisions, cellular phones, personal computers with CD-ROMs, fax machines, videodiscs, personal stereos, and still and video cameras, to name just a few. Youngsters can get in touch instantly with friends, families, and even kind or malevolent strangers all over the world. Youngsters' habits, attitudes, and knowledge are influenced not only—and perhaps not primarily—by those in their immediate surroundings, but also by the heroes and heroines presented in the media, particularly those larger-than-life figures who populate the worlds of entertainment and athletics. The visitor from the past who would readily recognize today's classroom would have trouble relating to the out-of-school world of a ten-year-old today. I confess that I often experience such difficulties myself.

Schools—if not education generally—are inherently conservative institutions. In large measure, I would defend this conservatism. Methods of instruction that have evolved over long periods of time have much to recommend them; and all too many trendy practices prove vapid if not useless or damaging. Educational experimentation has never been wholly absent, but it has occurred chiefly on the margins. In roughly the last century, important experiments have been launched by such charismatic educators as Maria Montessori, Rudolf Steiner, Shinichi Suzuki, John Dewey, and A. S. Neill. These approaches have enjoyed considerable success; indeed, they might impress our hypothetical visitor from 1900. Yet they have had relatively little impact on the mainstream of education throughout the contemporary world.

Six Forces That Will Remake Schools

It may be risky to say so, but I believe that the present situation is different. Changes in our world are so rapid and so decisive that it will not be possible for schools to remain as they were or simply to introduce a few superficial adjustments. Indeed, if schools do not change quite rapidly and quite radically, they are likely to be replaced by other, more responsive (though perhaps less comfortable and less legitimate) institutions.

There is precedent for such sweeping change. Three hundred years ago, schools served only an elite and were primarily religious in character; but over the next two centuries, they came to serve the wider population and to take on a primarily secular coloration. These changes came about because urbanization and industrialization required a reliable, functionally literate workforce; concomitantly, there emerged centralized educational ministries with explicit educational plans and powers.

Demands have once again shifted dramatically. One hundred years ago, it sufficed to have a highly educated elite and a general population with basic literacy skills. Nowadays, however, almost any function that can be executed through the application of regular procedures will sooner or later be computerized. To be attractive to employers, an individual must be highly literate, flexible, capable of troubleshooting and problem-finding, and, not incidentally, able to shift roles or even vocations should his current position become outmoded. Nor will societies be able to neglect large portions of their population. To remain competitive in a fast-changing world, they will have to deliver a good education to a sizable majority of their future citizens. And they will have to be responsive to at least six sets of trends.

Technological and Scientific Breakthroughs. The most important technological event of our time is the ascendancy of the computer. Computers already play a prominent role in many aspects of our lives, from transportation and communication to personal bookkeeping and entertainment. Scarcely oblivious to these trends, many schools now have computers with networking capabilities. To some extent, these technological appurtenances have been absorbed into the life of the school, though often they simply deliver the old lessons in a more convenient and efficient format.

In the future, however, education will be organized largely around the computer. Not only will much of instruction and assessment be delivered by computer, but the habits of mind fostered by computer interactions will be highlighted, while those that fall through the computational cracks may be lost. For example, precise, explicit step-by-step thinking is likely to be enhanced, while fine-grained aesthetic or ethical judgments may be marginalized. At the same time (if somewhat paradoxically), computers will permit a degree of individualization—personalized coaching or tutoring—which in the past was available only to the richest

All students may receive a curriculum tailored to their needs, learning style, pace and profile of mastery, and record of success with earlier materials and lessons. Indeed, computer technology permits us to realize, for the first time, progressive educational ideas of "personalization" and "active, hands-on learning" for students all over the world.

Computer technology puts all the information in the world at one's fingertips, quite literally. This is both a blessing and a curse. No longer do we have to spend long periods of time hunting down a source or a person—these can be reached essentially instantaneously. (Indeed, soon we will not even have to type in an instruction in order to learn the capital of Montana, the population of Korea, or Ohm's law; we will just be able to ask out loud and the computer will print out or speak the answer. Thus people will achieve instant "cultural literacy.")

Less happily, the Internet has no means of quality control; "anyone can play." Information and disinformation commingle comfortably and, as of yet, there are no reliable ways to distinguish sense from distortions and downright nonsense on the Net. Ethnographer Sherry Turkle tells about the young child who insists that "there are always riots when taxes go up" because that is the common wisdom embedded in the widely available game program Sim City. Identifying the true, the beautiful, and the good—and which of these truths, beauties, or goods are worth knowing—constitutes a formidable challenge.

It might be said, in response, that the world has always been filled with misinformation. True enough, but in the past educational authorities could at least choose their favorite texts (and proscribe others). Today's situation, with everyone having instant access to millions of sources, is unprecedented.

Artificial intelligence and virtual reality are two computer-related technologies that may cast a large shadow on education. Much of school planning may be done not by human agents but by programs created by human agents; and much of what was once accomplished by textbooks and occasional field trips will now be performed in virtual reality. One can ask: What is the truth value of materials prepared entirely by nonhuman entities?

In a turnabout from previous trends, the acquisition of credentials from accredited institutions may become less important. Individuals will be able to educate themselves (largely if not wholly) and to exhibit their mastery in a simulated setting. Why pay $120,000 to go to law

school, if one can "read law" as in earlier times and then demonstrate one's legal skills via computer simulation? Or learn to fly a plane or conduct neurosurgery by similar means, for that matter?

Much of education in the past was calibrated to make sure that individuals could carry out a regular job, reliably, throughout their productive adult years. Nowadays, this assumption is doubly flawed. First, almost everything that can be handled algorithmically will be carried out by automata. Second, few people will remain in the same occupational niche for their whole lives; and many will move frequently (either voluntarily or by necessity) from one niche, company, and sector of the economy to another.

The explosion of new and rapidly changing roles in the workplace complicates education in unprecedented ways. Most adult teachers and parents will not have experiences on which they can draw to prepare youngsters for a world in which they can expect to change jobs regularly. In the absence of precedent, youths will have to prepare themselves for rapidly changing "career paths" and life situations.

While computer-based teaching and curricula figure to be the dominant technological influence on education, other innovations will have impact as well. Imaging technologies will permit study of students' brain activity and blood flow as they engage in various kinds of problem-solving or creative activities. No longer restricted to research, these findings about a student's "mental life" are likely to influence pedagogical approaches as well as her placement in special or mainstream educational settings.

Enhanced understanding of the genetic basis of learning and of various talents is also likely to intrude on the classroom. It may be possible to determine which youngsters are likely to advance quickly and which ones seem doomed to "uphill" school experiences; some authorities will insist that these findings be applied in specific cases, while others will strenuously object to any decisions made on the basis of genetic information. Drugs that purport to improve learning, memory, or motivation will become readily available. Teachers and parents may face ethical dilemmas that would in earlier times have been restricted to science fiction.

Finally, recent breakthroughs in biology and medicine may change education in the most radical ways. If individuals seek to "design" offspring through genetic engineering, or to alter the genetic endowment

of an already existing person, or if human cloning becomes a reality as well as a possibility, then our definitions of what it means to be a human being, and to be a part of a human society, will be changed forever. Even the laws of evolution may have to be reconceived.

Science and technology do not merely alter our conceptions of what is true. New roles are spawned and traditional values are challenged. Our array of moral possibilities is altered, and our aesthetic sensibilities may be affected as well.

Political Trends. With the end of the Cold War, the constitutive assumptions of twentieth-century international relations have been undermined. Constant struggle against a powerful military foe no longer provides a motive for education or training; democratic forms of government are on the rise; and with readier communication among individuals and nations, certain patterns of human interaction (such as a free press and ready migration) become more attractive, while others (such as censorship or violations of human rights) prove less easy to advocate.

Even those of us who cheer these developments recognize their vexed character. There are degrees and types of democracy. The external forms of democracy are more easily imitated than its underlying values. Democratic principles are often honored more in the breach than in the observance, both in the United States and abroad. Indeed, without knowing their sources, many Americans cannot distinguish passages from the Declaration of Independence from quotations drawn from the writings of Marx and Engels. (One wonders how Eastern Europeans would fare on the same test.)

The collapse of Communism and the weakening of socialism have not been without their costs. Safety nets on which individuals were counting disappear or become attenuated, and various criminal forces have often inserted themselves into the political vacuum. Ethnic and tribal fundamentalisms that were hidden or suppressed under totalitarian regimes have returned with unanticipated force. There may be fewer large-scale wars, but there are endless local skirmishes, virulent forms of torture, and even attempts at genocide.

Since education is concerned significantly with systems of values, these rapid changes in the political ecology cause strains. Texts, lesson plans, even worldviews have to be altered. Instructors must steer a course among the various isms, racial and ethnic groups, past and present political and social values. Consider what it has been like to be a teacher in an Eastern European country over the last fifty years. What was considered true, beautiful, and good in 1950 or even 1990 may not be today; and yet individuals trained in earlier eras—parents no less than teachers—cannot simply shrug off beliefs long since internalized. In the words of the British poet and educator Matthew Arnold, they may be "Wandering between two worlds—one dead, / The other powerless to be born."

Nor is this feeling of anomie restricted to the former Communist world. As we gain distance from the events of this century, many Western European and American citizens have had to rethink our nation's roles in major conflicts, such as the Second World War. Many dubious practices—for example, collusion with the Nazis by so-called neutral governments—were denied in years past; now, fifty years later, it is very painful for citizens of a country to come to terms with what they (or their parents or grandparents) did (or failed to do). And paradoxically, those who think of themselves as the most patriotic—for example, members of the right-wing militias in America—end up embracing aesthetic standards and moral values that are discrepant from the democratic values they are ostensibly committed to defend.

Economic Forces. Even those parts of the world that have little sympathy with democratic institutions and values now recognize the ascendancy of markets and market forces. Everywhere, once "Third World" regions—China and Russia, Iraq and Iran, Africa and Latin America, members of ASEAN and Mercosur—now are ineluctably involved with the new technologies, the buildup of powerful corporations, the pursuit of productivity, in sum, with a sustained, ceaseless competition involving goods and services in an ever more global marketplace.

Students must be educated so that they can participate and survive in this unrelentingly Darwinian environment. Such education is easier where capitalism has long been ascendant, either in the official policies of the society or at least "on the street." But in those societies where cooperation has been stressed over competition, where individuals are encouraged to subdue their own personal passions, and where the state has provided a safety net (often in exchange for political cooperation or silence), adjustment to a dog-eat-dog milieu proves difficult—and perhaps distasteful.

An inescapable part of the new environment—political as well as economic—is globalization. Whereas, earlier, much of the economy operated comfortably at a local level, the period of isolated economic systems is long since past. Multinational corporations, regional trading associations and pathways, international investments and financing are the new realities. Countries must find and press their competitive advantages; they must remain ever vigilant as they alternate between offense and defense in a rapidly shifting economic landscape over which they can never exert sufficient control. Each day financial institutions circulate one trillion dollars; a sudden drop in the stock market in one nation can trigger billions of dollars of losses worldwide within hours. When George Soros speaks, markets quake.

Globalization has ecological as well as economic ramifications. Pollution does not observe political boundaries, and efforts to clear up or protect air, water, and outer space require international cooperation. The market economy works against such endeavors, since the market responds to short-term pressures and profits rather than to longer-term strategic policies and needs. Also, developing countries often perceive ecological initiatives as veiled efforts to maintain an uneven playing field. But unless one assumes that these matters will somehow take care of themselves, it becomes an imperative to include ecological as well as economic awareness in any curriculum.

Though not necessary concomitants, other phenomena tend to accompany the market economy. There is the rush to produce numerous products, which often differ from one another only minimally; the need then to describe and advertise these products *as if* they were actually distinct from one another; planned obsolescence; a focus on consumption, commercialism, and consumerism. Alas, people do not seem to need "disciplinary training" to enter this world; it seems all too well adapted to deep human proclivities. Indeed, "defensive education" may be necessary if one is to resist the seductions of the market—the tastiest chocolate, the most stylish sneaker, the fastest motorcycle.

Finally, with economic growth comes the shift to the information society, the knowledge society, the learning society. More and more people work in the sectors of human services and human resources, and, especially, in the creation, transformation, and communication of knowledge. Workers may well be hired and fired on the basis of what they know, how well they can learn, and what they have contributed

recently to relevant knowledge bases. No one will be able to rest on past school or educational laurels. Only those who can demonstrate their continued utility in a knowledge-suffused society can expect to reap the rewards of that society indefinitely.

In portraying these economic forces, I do not mean to endorse them—I have mixed feelings about them at best—or to indicate that they will be dominant forever. There are many ways to run a society, or a world—even as there are many ways to ruin it! The capitalism of Adam Smith and Milton Friedman—or of Singapore's Lee Kuan Yew or China's Deng Xiaoping—does not exhaust the options. But at least for the foreseeable future, viable alternatives do not exist on the international scene. Citizens (and especially future citizens) must be primed (or inoculated, if you prefer that metaphor) to participate in the market economy as needed, while perhaps being able to resist its less palatable facets.

Perhaps it should not be the job of schools to prepare students for life in a market-dominated world. Certainly other agencies and institutions are more than willing to step into the breach. However, schools cannot be cordoned off from the process either. Decisions about which skills to inculcate are one consideration; policies about placement, advancement, school leaving and school-to-work transition are other places where education meets the economy. How the curriculum highlights or marginalizes economic considerations proves an important variable. Equally telling are the implicit messages of the school community: is the school environment competitive, cooperative, or some amalgam? If it's competitive, does a zero-sum or a win-win mentality prevail? Schools can embody the marketplace or offer an alternative model of how life might be pursued; they can teach for the market or teach against the market. Indeed, the decision about which of these courses to pursue is itself a moral one, reflecting educators' and policymakers' sense of "the good."

Social, Cultural, and Personal Trends in the Modern Era. While the econom writing on the wall is unambiguous, it proves more challenging to di cern the social, cultural, and personal trends of the coming years. On can envision a utopia, where individuals will be personally comfortable and secure, able to follow their own desires, to mix with whom they like, and to partake of a wider range of leisure and cultural opportuni-

ties than ever before. It is equally easy, alas, to envision a dystopia, where individuals are manipulated by unseen advertisers and spin doctors, where group conflicts are exacerbated, where our seemingly unlimited options are actually constrained by the cynical owners of the media, where privacy and personal space are perennially violated, and where the already sizable gap between affluent and indigent grows ever wider. Or one may be persuaded by the scenario developed by political scientist Samuel Huntington, who foresees a struggle between the authoritarian but economically powerful Asian Confucian societies and the democratic but less coherently organized West.

It is safe to make one prediction: The media of communication will be a dominating (if sometimes unintentional) agency of education throughout the world. Radio, television, movies, magazines, advertising materials will continue to proliferate and to convey powerful messages about roles and values around the world. (Just consider the global media messages of the past few years—those associated with names like "O.J.," "Diana," "Dolly," and "Deep Blue.")*

It will be extremely difficult—if not impossible—to isolate a particular culture. Individuals all over the world will have full-color access to the beliefs, attitudes, and styles of living of millions (indeed, billions!) of other individuals. In our terms, they will be exposed to, and challenged by, the truths, beauties, and moral visions of fellow human beings, including people whose assumptions and backgrounds differ considerably from their own. Islamic fundamentalists in Iran, Jewish fundamentalists in Israel, Christian fundamentalists in the Americas may adhere to their beliefs, but they will have to do so amid considerable "noisy" knowledge of the lives of those who belong to other sects, as well as of those millions for whom religion is no longer a potent force.

Some people will feel threatened (perhaps appropriately so) by exposure to alien lifestyles, and will be tempted to entrench themselves, to reject and dismiss these foreign infectants. But others—particularly the younger, the more courageous, the more adventurous—will enlarge their sense of options. And as knowledge of options (and how to act on them) becomes universal, it should prove more difficult to marginalize

*Fame can be fleeting in Andy Warhol's "fifteen minutes" world. In order: a former football star accused of two murders; a princess who died young; the first cloned sheep; the first computer to defeat the world's human chess champion.

large sectors of humanity on the basis of skin color, ethnic membership, gender, or sexual orientation.

Briefly, this is what cultural modernism has been about. In some Western civilizations, particularly those in Europe and North America, modernist practices, norms, and values have evolved gradually. More recently, people living in other parts of the world have been exposed via the media to ways of life in which individuals choose their own work, their mates, their places of residence, and even their systems of values. In such a modernist context, issues of personal expression, sports, entertainment, fashion become more important; political, religious, and ideological concerns wane to some extent.

Initially such exposure was shocking. In some countries, for example Iran and China, strong negative reactions ensued with respect to "modern society," "the West," "secular society," and other bogeymen. Yet, at the same time, there has been a fascination with what humans can be like when they are largely shorn of those "ligatures"—both comforting and confining—that have characterized most of human life in most of the world throughout most of human history. Notions of truth, beauty, and morality are irrevocably challenged and, perhaps, forever altered.

Whether the Western brand of modernism will survive and prevail remains an open question. Islamic societies (Indonesia, Malaysia) and Confucian societies (Singapore, China) have succeeded in assimilating much of the technological and economic expertise of the West without acquiring as well its liberal political beliefs and permissive social practices. Yet, whether formal education embraces such controversial Western features or inoculates against them, the increasing intimacy of our planet ensures a constant preoccupation with these issues.

Personal factors have typically influenced choices about partners, residence, work, and style of life; these "social considerations" remain important to people the world over. However, another dimension of personal life, potentially of equally great importance, has not yet been much remarked upon. I refer here to a greater understanding of human emotions, personality, and cognition. In our time, psychological insights have accrued and popular fascination with the mind's workings shows no sign of abating, whether in China, Brazil, or Denmark. But understanding of one's own mind has not yet been linked with personal responsibility for one's education.

So far, education has been largely seen as the responsibility of exter-

nal forces; individual minds have been treated like sealed black boxes. However, people can now secure far greater insights into the operation of minds, in general, and into the operation of their own minds, in particular. Personal knowledge about the mind might furnish people with a sense of agency with respect to their cognitive lives that would have seemed utopian in an earlier era. Metacognition, self-consciousness, intrapersonal intelligence, second-order thinking, planning (and revising and reflecting), systemic thinking, and their interrelations need not just be psychological jargon or "self-help" buzzwords; to put it plainly, individuals can play a far more active role in determining the truth, beauty, and goodness that will suffuse their own lives.

Education has traditionally been thought of as an imperative for the young; people did not live that long, and adult lives did not change that much. Now, however, adult lives change rapidly, and the longevity of human beings pushes steadily upward, having reached at least the biblical seventy in most countries and approaching eighty in several. Lifelong learning is becoming a necessity, not just a mellifluous phrase. Again, for some this is a welcome development; certain ethnic and religious groups have long stressed the importance of bettering one's mind perennially. But for those raised in less scholastically oriented environments, and for those who never much liked school, the prospect of a life during which one must continue to study, to master, to practice—above all, to improve one's mental skills and powers—proves less appealing.

Youngsters ought to be reared so that they enjoy learning, develop wide-ranging interests, and want to nourish their minds for the remainder of their lives. Plato put it memorably: "The purpose of education is to make the individual want to do what he has to do." Such virtue seems lacking even in countries that excel in international comparisons of educational achievement; and the flocking of most individuals to the most mindless forms of entertainment—and away from those that smack even slightly of formal education—indicates that lifelong learning, however necessary it seems to policymakers (including me), may not be an easy sell.

The Shifting Cartography of Knowledge. Knowledge has always expanded but in the past that expansion has been gradual and seemingly controllable. It has been said, only partly in jest, that Matthew Arnold, who died in 1888, was the last man (*sic*) in the world to know everything. Be that as it may, there is hardly a scholarly discipline now whose knowledge base does not grow at essentially geometric rates. By conservative estimates, the amount of information available doubles every few years; I recently heard a claim that the amount of information in the world doubles every eighty days! And even if those figures are largely meaningless (Does disinformation count as information? What counts as information, anyway?), the reality that they are attempting to quantify makes it more difficult to determine what "truth" is worth studying and what is worth living by.

In the future, the individual (or "intelligent agent") who can examine these bodies of knowledge and determine what is worth knowing will be at a tremendous premium. Even more estimable will be the person (or browser) who (or that) can synthesize the exponentially expanding domains of knowledge so that vital information can be made available in useful form to the average citizen and the average policymaker.

The conservatism of educational systems proves especially problematic here. Work at the frontiers of knowledge changes from decade to decade; indeed, friends in the world of molecular biology tell me that they cannot afford to stop reading professional journals and on-line services for more than three months! Even in the humanities, perspectives on art and literature are quite different from those of a generation ago. And yet, the world over, individuals in schools study the same "subjects," pretty much in the same way, that their parents and grandparents did. When such students discover—at the university, through their own reading or surfing, or in an apprenticeship—what cutting-edge work in the disciplines is really like, they are often astonished, sometimes pleasantly, sometimes rudely so.

The question of interdisciplinary study proves timely. At the beachheads, most problems do not readily fit into neat disciplinary niches. Teams of interdisciplinary workers are the norm, and the most effective investigators are those who are able judiciously to combine the insights and techniques of two or more disciplines—no easy task when the disciplines themselves are rapidly changing. And yet, interdisciplinary work proves challenging, as it requires the wedding of often disparate methods and ways of thinking.

In my view, it is appropriate to continue to teach disciplinary thinking in high school and perhaps even in college. The disciplines represent our

best efforts to think systematically about the world, and they are prereq-
uisite to competent interdisciplinary work. At the same time, such a
practice produces an unwelcome disjunction between the discipline-
based training of future practitioners and the interdisciplinary reality of
cutting-edge scholarship.

Changes in the cartography of knowledge can boggle the mind. While
individuals used to wait for long periods to read the results of research,
important discoveries are now known all over the world within days,
courtesy of the Internet. Print publication has increasingly become a
formality and is even bypassed altogether in certain breakthrough fields.
New fields and subfields are founded each year, even as once-dominant
fields recede in importance. The availability of large databases makes it
possible for individuals without formal training to master topics and to
make contributions to the scholarly world. Distance learning makes it
possible to pursue even advanced coursework without moving to a col-
lege or university setting. And, as I've already mentioned, virtual envi-
ronments may allow talented or determined individuals to demonstrate
proficiency without lengthy and costly certification processes.

Given these disciplinary tensions, the very notion of literacy is
altered. To the classic three Rs, one must certainly add various comput-
ing and programming languages. A different mix among the literacies is
also coming to the fore. To function in hypermedia, to read and design
Web pages and embark on computer-based projects, one must orches-
trate a fresh amalgam of graphic, linguistic, and even auditory literacies.
There is every reason to believe that these literacies will continue to
proliferate, even as their possible interrelations are explored (perhaps
especially by younger persons who are busily designing their own Web
sites).

Changes in the cartography of knowledge exert their chief effects on
a culture's sense of what is true. However, their impact does not stop
there. One can never anticipate the implications of a discovery. For
example, the Internet grew initially out of efforts to help government-
funded scientists and military personnel communicate efficiently.
However, it now transmits new forms of art and many varieties of sexual
material, including pornography. And the Internet enables people to
design their own portrayal of themselves—indeed, to change it at will.
Not only do these new forms of communication and art represent possi-
ble contributions to our evolving senses of beauty (or ugliness) and

goodness (or evil); but whether, and to what extent, such transmission
should be regulated raises fundamental political and moral issues.

Beyond Modernism: A Postmodern Jag. New perspectives on knowledge,
largely unknown to the general public, have developed in the West
(especially in France) during the last generation. Called variously post-
modernism, relativism, structuralism, post-structuralism, and decon-
structionism (and, to be sure, these are not all the same thing!), these
approaches collectively challenge the certainties assumed during earlier
epochs.

In milder variants, this "postmodern perspective" cautions against
privileging specific points of view; calls for a recognition of different
(often previously suppressed) "voices"; and stresses the "constructed
nature" of all knowledge. In its more radical variants, it questions even
the possibility of advances in knowledge and truth. Postmodern
"purists" claim that knowledge is essentially about power, and that those
in power determine what is true and what is not, such determinations
changing when "hegemony" (controlling political authority) changes.
Texts cannot contain truths because they are inherently self-contradic-
tory; all readings are necessarily misreadings; and the scholar's task is to
uncover—through "deconstruction" of these texts—these rampant self-
indictments and internal contradictions.

Postmodernist thought has broken through to public consciousness in
a number of ways: Through ridicule, as when a traditionally oriented
scholar seizes upon a particularly ludicrous passage and highlights it in a
text that documents the current sins of academe. Through trickery—as
when the physicist Allan Sokal succeeded in publishing an article on sci-
ence in *Social Text,* a "postmodern" journal. Sokal then revealed that the
article was actually a collage of largely nonsensical statements, designed
to spoof the prototypical deconstructionist texts. And through scan-
dal—as when a leading deconstructionist, Paul de Man, was revealed
(posthumously) to have been a Nazi sympathizer during his youth.

Despite my effort to be descriptive, I must admit that I have little or
no tolerance for the "pure" version of postmodernist thought. I believe
that, rather than revealing the contradictions in the writings of others,
this position is itself riddled with self-contradictions. If the only stan-
dards are those of power, why should one pay any attention to the writ-
ings of deconstructionists? If one should pay attention to *some* writing

(as opposed to the impossible task of spending an equal amount of time on all writings), then there must be some standards at work—in which case the postmodern position does not cohere. One cannot take a position that stresses the relativity of all knowledge and yet at the same time claim the right to be listened to and taken seriously. I am reminded of the teacher who declared to a class of relativistically oriented students that he intended to grade them by whim. Instantly "cured" of their relativism, the students became converts to objective standards.

This book is not, however, the occasion to be fair, or unfair, to (my version of) postmodern scholarship and criticism. I mention this school of thought here for one reason. Taken at face value, the postmodern stance invalidates my enterprise of creating an education that focuses on the true, the beautiful, and the good. Indeed, from a postmodern perspective, my mission would be an impossibility. Since these virtues are themselves fictions, riddled with internal contradictions, how could one legitimately try to convey them? Even the effort to heighten sensitivity to *others'* versions of truth would be futile, though perhaps more politically correct.

I'd like to propose a truce, however. I am willing to cede a lot of running room to the postmodernists at the college and university level (particularly in elective courses!), as long as they will allow me to fashion curricula for kindergarten through secondary school. Whatever merits postmodern perspectives may have for the mature student or scholar, I think that they will stir up nothing but trouble for all but the most subtle-minded precollegiate students. As I see it, there may be validity in challenging easy assumptions about truth or beauty or goodness—once these have consolidated; but to try to undermine the very endeavor to move toward truth (or beauty or goodness) before it has had a chance to take hold seems to me unfair, even deeply disturbing, to the growing mind. I can add that efforts to terminate these discussions of the traditional virtues are doomed to fail: even the study of beauty has recently been resurrected in the academy.

Let me offer an analogy. Many psychology students have told me that Freud or Piaget has been disproved. I then ask whether the students have read their work and am assured that it is no longer necessary to do so! I am content to hear arguments against a major and still influential thinker from someone who has grappled with the work, but not from

someone who transmits the conclusion secondhand or from someone who questions the very validity of a given form of inquiry. In this ecumenical context, let me say that in many ways I respect the scholarship undertaken by postmodern scholars like Jacques Derrida (with respect to Kant and Descartes) or Jean-François Lyotard (with respect to Freud and Marx) or Richard Rorty (with respect to the classical epistemological thinkers). It is a pity that their own students so often project their attitudes and their conclusions, rather than emulating their careful study of critical texts.

A final point: in one sense, the postmodernists may well be right. Even in science, ultimate truth may be an impossible goal; and certainly conceptions of beauty and morality change, and will continue to change indefinitely, if slowly. A curriculum grounded in the traditional verities should not claim to be definitive. Instead, it should seek to elucidate current cultural conceptions of the true, beautiful, and the good; and it can certainly include a review of opposing claims and contentions as well as a recognition of the contingent status of all knowledge. More important, it should legitimate the continuing search for examples to admire, to condemn, to puzzle over. I reveal my traditionalist roots— and my most enduring struggle with "pure" postmodernism—in my assertion that these perennial concerns continue to be the proper ones for human beings. And I reveal my Enlightenment allegiance in my conviction that, over time, humanity has made some progress in the three realms I cherish.

The View from Multiculturalism. Postmodernism is sometimes confused with multiculturalism, perhaps because both are promoted in humanities departments, sometimes by the same individuals. Indeed, missionaries from both camps begin with a critique of standard Western humanistic scholarship. But then they diverge. Postmodernists focus on the epistemology of the canon, while multiculturalists attack the constitution of the canon—as they see it, an excessive focus on the ideas and works of "Dead White Males."

My view of multiculturalism is more nuanced than my critique of postmodernism. I agree that the insistence on a single canon is misguided; far more works and ideas are worthy of study than could conceivably be included in any canon. (Historians tell us that canons have always been loosely constituted.) Moreover, there is virtue in a pluralis-

tic canon, one that deliberately draws on different historical, cultural, and ideological sources. Indeed, in a nation whose population is itself diverse, such eclecticism is both needed and desirable. Finally, what counts as a canon can legitimately change, depending on the educational community in question.

For me, the issues to consider are standards and accuracy. Here a possibly surprised Matthew Arnold makes his third appearance in this chapter. Borrowing his phrase, I call for educators "to learn and propagate the best that is known and thought in the world." I also want students to have information that is as accurate as possible. So long as these two criteria are met, I believe that multicultural curricula and approaches are beneficent. When, however, multiculturalists abandon high standards in their selections of work, or favor inferior work just because of its appealing provenance, I part company with them. By the same token, I have no sympathy for those who choose to rewrite history, so that credit for discoveries is given, without convincing evidence, to individuals or groups that happen to have a certain accent, cultural background, or political attitude.

Let me phrase my point positively. I want all students to develop a sense of high standards; I want all students to strive for accuracy and to use evidence properly; I want all students to respect a range of groups and cultures, but not to do so uncritically.

It is possible to have a precollegiate education that is multicultural and that meets these criteria, though that is not a necessary outcome of multicultural education. It is *not* possible to have a postmodern curriculum that meets these criteria—indeed, the criteria themselves have no legitimacy in the eyes of postmodernists.

An Educational Crossroad

My survey has touched on the constants that have characterized education over the centuries, as well as on the variables that figure to dominate the landscape in the coming years. Taken together, these factors constitute a sizable challenge for any educator. On the one hand, he or she must determine how best to convey desired roles, values, literacies, and disciplines, and a nuanced sense of the true, the beautiful, and the good. At the same time, the educator must be mindful of the world's sci-

entific, technological, political, economic, social, cultural, and personal changes, and must respond to them. Finally, alert to the signals sent from the academy, the educator needs to situate his or her own work within the discourses of postmodernism and multiculturalism; for even if (as is claimed) all discourses contradict themselves, educators cannot avoid the fallout from the most vocal proponents of these provocative worldviews.

I have noted that education is conservative, and that this conservatism is not necessarily an evil. Indeed, with respect to the transmission of values and the mastery of certain notational systems and disciplines, a conservative approach may well be called for. Yet the explosion of knowledge and the ever-shifting cartography of disciplines call for close and fresh attention to curricular matters. And new and imaginative approaches will have to be developed if youths are to be prepared for the rapidly changing roles they can expect to assume.

With most other observers, I am convinced that education stands at a crossroad. The shifts in the world are so cataclysmic, their implications at such variance with past practices, that the status quo cannot endure in most parts of the world. Indeed, if somewhat paradoxically, the nations that are deemed most successful by current standards seem most concerned about the unsuitability of their current schools for future needs. East Asian societies call for more creativity and individuality; European and American leaders lament the failure of the schools to reach (let alone excite!) large segments of the population; and observers the world over note that centuries-old assumptions about the creation and transmission of knowledge no longer hold. We cannot anticipate what future schools and education will be like, but we can expect that they will differ substantially from what we and our forebears have taken for granted. Past and future provide one set of lenses; our expanding knowledge of human beings provides another.

Fortunately, in this quest for new educational visions, there is dry land. Indeed, there are several areas of shelter—provided by what we can learn from studies of the mind (psychology), studies of the brain (neurology and biology), and studies of cultures (anthropology). As it happens, part of what has changed in the recent past is our understanding of these several domains. We are now in a position to draw on this knowledge *as warranted* in our reshaping of the educational landscape to achieve an understanding of the true, the beautiful, and the good.