CHAPTER ONE

What Is Education For?

IF TODAY is a typical day on planet earth, we will lose 116 square miles of rain forest, or about an acre a second. We will lose another 72 square miles to encroaching deserts, the results of human mismanagement and overpopulation. We will lose 40 to 250 species, and no one knows whether the number is 40 or 250. Today the human population will increase by 250,000. And today we will add 2,700 tons of chlorofluorocarbons and 15 million tons of carbon dioxide to the atmosphere. Tonight the earth will be a little hotter, its waters more acidic, and the fabric of life more threadbare. By year's end the numbers are staggering: The total loss of rain forest will equal an area the size of the state of Washington; expanding deserts will equal an area the size of the state of West Virginia; and the global population will have risen by more than 90,000,000. By the year 2000 perhaps as much as 20% of the life forms extant on the planet in the year 1900 will be extinct.

The truth is that many things on which our future health and prosperity depend are in dire jeopardy: climate stability, the resilience and productivity of natural systems, the beauty of the natural world, and biological diversity.

It is worth noting that this is not the work of ignorant people. Rather, it is largely the results of work by people with BAs, BSs, LLBs, MBAs, and PhDs. Elie Wiesel once made the same point, noting that the designers and perpetrators of Auschwitz, Dachau, and Buchenwald—the Holocaust—were the heirs of Kant and Goethe, widely thought to be the best educated people on earth. But their education did not serve as an adequate barrier to barbarity. What was wrong with their education? In Wiesel's (1990) words,

> It emphasized theories instead of values, concepts rather than human beings, abstraction rather than consciousness, answers instead of questions, ideology and efficiency rather than conscience.

I believe that the same could be said of our education. Toward the natural world it too emphasizes theories, not values; abstraction rather than consciousness; neat answers instead of questions; and technical efficiency over conscience. It is a matter of no small consequence that the only people who have lived sustainably on the planet for any length of time could not read, or like the Amish do not make a fetish of reading. My point is simply that education is no guarantee of decency, prudence, or wisdom. More of the same kind of education will only compound our problems. This is not an argument for ignorance but rather a statement that the worth of education must now be measured against the standards of decency and human survival—the issues now looming so large before us in the twenty-first century. It is not education, but education of a certain kind, that will save us.

❖ Myth ❖

What went wrong with contemporary culture and education? We can find insight in literature, including Christopher Marlowe's portrayal of Faust who trades his soul for knowledge and power, Mary Shelley's Dr. Frankenstein who refuses to take responsibility for his creation, and Herman Melville's Captain Ahab who says "All my means are sane, my motive and my object mad." In these characters we encounter the essence of the modern drive to dominate nature.

Historically, Francis Bacon's proposed union between knowledge and power foreshadowed the contemporary alliance between government, business, and knowledge that has wrought so much mischief. Galileo's separation of the intellect foreshadowed the dominance of the analytical mind over that part given to creativity, humor, and wholeness. And in Descartes's epistemology, one finds the roots of the radical separation of self and object. Together these three laid the foundations for modern education, foundations that now are enshrined in myths that we have come to accept without question. Let me suggest six.

First, there is the myth that ignorance is a solvable problem. Ignorance is not a solvable problem; it is rather an inescapable part of the human condition. We cannot comprehend the world in its entirety. The

advance of knowledge always carried with it the advance of some form of ignorance. For example, in 1929 the knowledge of what a substance like chlorofluorocarbons (CFCs) would do to the stratospheric ozone and climate stability was a piece of trivial ignorance as the compound had not yet been invented. But in 1930 after Thomas Midgely, Jr., discovered CFCs, what had been a piece of trivial ignorance became a critical life-threatening gap in human understanding of the biosphere. Not until the early 1970s did anyone think to ask "What does this substance do to what?" In 1986 we discovered that CFCs had created a hole in the ozone over the South Pole the size of the lower 48 U.S. states; by the early 1990s, CFCs had created a worldwide reduction of ozone. With the discovery of CFCs, knowledge increased, but like the circumference of an expanding circle, ignorance grew as well.

A second myth is that with enough knowledge and technology, we can, in the words of *Scientific American* (1989), "manage planet earth." Higher education has largely been shaped by the drive to extend human domination to its fullest. In this mission, human intelligence may have taken the wrong road. Nonetheless, managing the planet has a nice ring to it. It appeals to our fascination with digital readouts, computers, buttons, and dials. But the complexity of earth and its life systems can never be safely managed. The ecology of the top inch of topsoil is still largely unknown as is its relationship to the larger systems of the biosphere. What might be managed, however, is us: human desires, economies, politics, and communities. But our attention is caught by those things that avoid the hard choices implied by politics, morality, ethics, and common sense. It makes far better sense to reshape ourselves to fit a finite planet than to attempt to reshape the planet to fit our infinite wants.

A third myth is that knowledge, and by implication human goodness, is increasing. An information explosion, by which I mean a rapid increase of data, words, and paper is taking place. But this explosion should not be mistaken for an increase in knowledge and wisdom, which cannot be measured so easily. What can be said truthfully is that some knowledge is increasing while other kinds of knowledge are being lost. For example, David Ehrenfeld has pointed out that biology departments no longer hire faculty in such areas as systematics, taxonomy, or ornithology (personal communication). In other words, important knowledge is being lost because of the recent overemphasis on molecular biology and genetic engineering, which are more lucrative but not more important areas of

inquiry. Despite all of our advances in some areas, we still do not have anything like the science of land health that Aldo Leopold called for a half-century ago.

It is not just knowledge in certain areas that we are losing but also vernacular knowledge, by which I mean the knowledge that people have of their places. According to Barry Lopez (1989),

> it is the chilling nature of modern society to find an ignorance of geography, local or national, as excusable as an ignorance of hand tools; and to find the commitment of people to their home places only momentarily entertaining, and finally naive.
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> [I am] forced to the realization that something strange, if not dangerous, is afoot. Year by year the number of people with firsthand experience in the land dwindles. Rural populations continue to shift to the cities. . . . In the wake of this loss of personal and local knowledge, the knowledge from which a real geography is derived, the knowledge on which a country must ultimately stand, has come something hard to define but I think sinister and unsettling. (p. 55)

The modern university does not consider this kind of knowledge worth knowing except to record it as an oddity "folk culture." Instead, it conceives its mission as that of adding to what is called "the fund of human knowledge" through research. What can be said of research? Historian Page Smith (1990) has offered one answer:

> The vast majority of so-called research turned out in the modern university is essentially worthless. It does not result in any measurable benefit to anything or anybody. It does not push back those omnipresent 'frontiers of knowledge' so confidently evoked; it does not *in the main* result in greater health or happiness among the general populace or any particular segment of it. It is busywork on a vast, almost incomprehensible scale. It is dispiriting; it depresses the whole scholarly enterprise; and most important of all, it deprives the student of what he or she deserves—the thoughtful and considerate attention of a teacher deeply and unequivocally committed to teaching. (p. 7)

In the confusion of data with knowledge is a deeper mistake that learning will make us better people. But learning, as Loren Eiseley (1979) once said, is endless and "in itself . . . will never make us ethical men" (p. 284). Ultimately, it may be the knowledge of the good that is most threatened by all of our other advances. All things considered, it is possible that

we are becoming more ignorant of the things we must know to live well and sustainably on the earth.

In thinking about the kinds of knowledge and the kinds of research that we will need to build a sustainable society, a distinction needs to be made between intelligence and cleverness. True intelligence is long range and aims toward wholeness. Cleverness is mostly short range and tends to break reality into bits and pieces. Cleverness is personified by the functionally rational technician armed with know-how and methods but without a clue about the higher ends technique should serve. The goal of education should be to connect intelligence with an emphasis on whole systems and the long range with cleverness, which involves being smart about details.

A fourth myth of higher education is that we can adequately restore that which we have dismantled. I am referring to the modern curriculum. We have fragmented the world into bits and pieces called disciplines and subdisciplines, hermetically sealed from other such disciplines. As a result, after 12 or 16 or 20 years of education, most students graduate without any broad, integrated sense of the unity of things. The consequences for their personhood and for the planet are large. For example, we routinely produce economists who lack the most rudimentary understanding of ecology or thermodynamics. This explains why our national accounting systems do not subtract the costs of biotic impoverishment, soil erosion, poisons in our air and water, and resource depletion from gross national product. We add the price of the sale of a bushel of wheat to the gross national product while forgetting to subtract the three bushels of topsoil lost to grow it. As a result of incomplete education, we have fooled ourselves into thinking that we are much richer than we are. The same point could be made about other disciplines and subdisciplines that have become hermetically sealed from life itself.

Fifth, there is a myth that the purpose of education is to give students the means for upward mobility and success. Thomas Merton (1985) once identified this as the "mass production of people literally unfit for anything except to take part in an elaborate and completely artificial charade" (p. 11). When asked to write about his own success, Merton responded by saying that "if it so happened that I had once written a best seller, this was a pure accident, due to inattention and naivete, and I would take very good care never to do the same again" (p. 11). His advice to students was to "be anything you like, be madmen, drunks, and bastards of every shape and form, but at all costs avoid one thing: success"

(p. 11). The plain fact is that the planet does not need more successful people. But it does desperately need more peacemakers, healers, restorers, storytellers, and lovers of every kind. It needs people who live well in their places. It needs people of moral courage willing to join the fight to make the world habitable and humane. And these qualities have little to do with success as our culture has defined it.

Finally, there is a myth that our culture represents the pinnacle of human achievement. This, of course, represents cultural arrogance of the worst sort and a gross misreading of history and anthropology. Recently, this view has taken the form that we won the Cold War. Communism failed because it produced too little at too high a cost. But capitalism has also failed because it produces too much, shares too little, also at too high a cost to our children and grandchildren. Communism failed as an ascetic morality. Capitalism has failed because it destroys morality altogether. This is not the happy world that any number of feckless advertisers and politicians describe. We have built a world of sybaritic wealth for a few and Calcuttan poverty for a growing underclass. At its worst, it is a world of crack on the streets, insensate violence, anomie, and the most desperate kind of poverty. The fact is that we live in a disintegrating culture. Ron Miller (1989) stated it this way:

> Our culture does not nourish that which is best or noblest in the human spirit. It does not cultivate vision, imagination, or aesthetic or spiritual sensitivity. It does not encourage gentleness, generosity, caring, or compassion. Increasingly in the late twentieth century, the economic-technocratic-statist worldview has become a monstrous destroyer of what is loving and life-affirming in the human soul. (p. 2)

❖ Rethinking Education ❖

Measured against the agenda of human survival, how might we rethink education? Let me suggest six principles.

First, all education is environmental education. By what is included or excluded, students are taught that they are part of or apart from the natural world. To teach economics, for example, without reference to the laws of thermodynamics or ecology is to teach a fundamentally important ecological lesson: that physics and ecology have nothing to do with the economy. It just happens to be dead wrong. The same is true throughout the curriculum.

A second principle comes from the Greek concept of Paideia. The goal of education is not mastery of subject matter but mastery of one's person. Subject matter is simply the tool. Much as one would use a hammer and a chisel to carve a block of marble, one uses ideas and knowledge to forge one's own personhood. For the most part we labor under a confusion of ends and means, thinking that the goal of education is to stuff all kinds of facts, techniques, methods, and information into the student's mind, regardless of how and with what effect it will be used. The Greeks knew better.

Third, I propose that knowledge carries with it the responsibility to see that it is well used in the world. The results of a great deal of contemporary research bear resemblance to those foreshadowed by Mary Shelley: monsters of technology and its byproducts for which no one takes responsibility or is even expected to take responsibility. Whose responsibility is Love Canal? Chernobyl? Ozone depletion? The *Exxon Valdez* oil spill? Each of these tragedies was possible because of knowledge created for which no one was ultimately responsible. This may finally come to be seen for what I think it is: a problem of scale. Knowledge of how to do vast and risky things has far outrun our ability to use it responsibly. Some of this knowledge cannot be used responsibly, safely, and to consistently good purposes.

Fourth, we cannot say that we know something until we understand the effects of this knowledge on real people and their communities. I grew up near Youngstown, Ohio, which was largely destroyed by corporate decisions to "disinvest" in the economy of the region. In this case MBA graduates, educated in the tools of leveraged buyouts, tax breaks, and capital mobility, have done what no invading army could do: They destroyed an American city with total impunity and did so on behalf of an ideology called the "bottom line." But the bottom line for society includes other costs: those of unemployment, crime, higher divorce rates, alcoholism, child abuse, lost savings, and wrecked lives. In this instance what was taught in the business schools and economics departments did not include the value of good communities or the human costs of a narrow destructive economic rationality that valued efficiency and economic abstractions above people and community (Lynd, 1982).

My fifth principle follows and is drawn from William Blake. It has to do with the importance of "minute particulars" and the power of examples over words. Students hear about global responsibility while being educated in institutions that often spend their budgets and invest their

endowments in the most irresponsible things. The lessons being taught are those of hypocrisy and ultimately despair. Students learn, without anyone ever telling them, that they are helpless to overcome the frightening gap between ideals and reality. What is desperately needed are (a) faculty and administrators who provide role models of integrity, care, and thoughtfulness and (b) institutions capable of embodying ideals wholly and completely in all of their operations.

Finally, I propose that the way in which learning occurs is as important as the content of particular courses. Process is important for learning. Courses taught as lecture courses tend to induce passivity. Indoor classes create the illusion that learning only occurs inside four walls, isolated from what students call, without apparent irony, the "real world." Dissecting frogs in biology classes teaches lessons about nature that no one in polite company would verbally profess. Campus architecture is crystallized pedagogy that often reinforces passivity, monologue, domination, and artificiality. My point is simply that students are being taught in various and subtle ways beyond the overt content of courses.

❖ Reconstruction ❖

What can be done? Lots of things, beginning with the goal that no student should graduate from any educational institution without a basic comprehension of things like the following:

- the laws of thermodynamics,
- the basic principles of ecology,
- carrying capacity,
- energetics,
- least-cost, end-use analysis,
- limits of technology,
- appropriate scale,
- sustainable agriculture and forestry,
- steady-state economics, and
- environmental ethics.

I would add to this list of analytical and academic things, practical things necessary to the art of living well in a place: growing food; building shelter; using solar energy; and a knowledge of local soils, flora, fauna, and the local watershed. Collectively, these are the foundation for the capacity to distinguish between health and disease, development and growth, sufficient and efficient, optimum and maximum, and "should do" and "can do."

In Aldo Leopold's words, does the graduate know that "he is only a cog in an ecological mechanism? That if he will work with that mechanism his mental wealth and his material wealth can expand indefinitely? But that if he refuses to work with it, it will ultimately grind him to dust"? And Leopold asked, "If education does not teach us these things, then what is education for?" (p. 210).

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