

Introduction

Re-engaging Culture and Ecology

Gregory A. Smith and Dilafruz R. Williams

Much of the conventional writing about the environment in newspapers, magazines, popular books, and scholarly publications centers on information related to environmental problems that affect our lives in one form or another. A review of two weeks of Portland's daily paper, *The Oregonian*, in April 1997, revealed sixty-nine stories about environmental topics ranging from the outbreak of *pfisteria* in South Carolina to controversies over protective measures aimed at restoring coho salmon and bull trout in the Pacific Northwest, to the difficulties PCBs now pose for the cleanup of nuclear wastes at the closed Hanford Nuclear Reactor facilities. In raising awareness of these issues, such information can evoke cynicism and fear that prevent people from addressing the very problems that are described. We deliberately take a different approach in this book.

We encourage readers to challenge taken-for-granted cultural assumptions about our relationship with nature, and to take action toward crafting an ecologically sustainable form of living through education. Action is seldom possible in isolation. This book is about the efforts of people who have broken the spell of stasis and are taking steps to shape a culture that is more responsive to the needs of human beings and the requirements of natural systems. When we refer to "culture" in this way, we are not suggesting a single set of responses that must be identically adopted by all people; such a culture may well be multifaceted in its manifestations.

At its heart, sustainability is about the relationship between human beings and the world; it is about morality. Indian physicist and ecofeminist Vandana Shiva explains that the term "sustainability" is derived from "sustain" which means "to support, bear weight of, hold up, enable to last out, give strength to, endure without giving way" (Shiva 1992, 191). Sustaining economies, such as those encountered in many nonindustrialized societies, recognize natural limits and derive an understanding of sustenance directly from nature. Edward Goldsmith

(1992), editor of *The Ecologist*, calls for a turn away from the practices of industrial growth societies to a culture premised on the sustenance of healthy natural systems. For Goldsmith and a growing number of international commentators and activists, the creation of such a culture must involve a recognition that the welfare of human societies is contingent on our ability to conform to ecological principles that appear to govern activities of nonhuman communities. Wes Jackson (1994), a soil scientist who has spent the past two decades developing a "natural systems agriculture," argues that this will happen only when we consult with nature rather than imposing our will upon her.

Wendell Berry (1990), in his book *What Are People For?* calls into question the way human energies in recent history have been bent to the purposes of an extractive economy determined to dominate nature and increase the material wealth and security of our own species. Berry suggests that human welfare and meaning are located not in the values of the marketplace but in the relationships that can emerge among people and landscapes where care and continuity rather than commercial success are the central aims. The economic and social implications of such a shift in human purposes are far reaching, linked as they are to the restoration of noncommercial virtues such as restraint, thrift, and generosity. The maintenance of relationships also requires a reevaluation of the preoccupation with individual choice and possibility that has become a dominant theme in modern societies. Rather than seeing individual identity as embedded in communal contexts, many people in industrial growth societies have sought to liberate themselves from such ties. We recognize that individuals must be granted the opportunity to criticize oppressive relations and the freedom to leave community, but we also believe that if people were to seek security and satisfaction through collective effort instead of individual striving, we might have less need to turn to the market and the attractions of consumerism. By choosing such a course, we could create ways of living that minimize humanity's impact on other species and the nonanimate world while at the same time providing for our own material and spiritual welfare. One way of seeing this issue, writes Shiva (1992), is to turn to the wisdom of a Native American elder: "Only when you have felled the last tree, caught the last fish, and polluted the last river, will you realize that you can't eat money." Both as debtors and as beneficiaries, we need to craft an ethic that reengages culture and ecology by challenging the *status quo* of Western notions of progress and promoting genuine multiculturalism.

Except in small measure, the field of environmental education has not as yet embraced such concerns. Marginalized when offered, classes

in environmental education focus on scientific analysis and social policy—not cultural change. They approach issues related to the degradation of the environment as problems capable of being solved through the collection of better data, the framing of regulatory legislation, or the development of institutional procedures aimed at reducing waste. Children are exposed to information regarding environmental problems and explore such topics as endangered species, the logging of tropical rainforests, or the monitoring of water quality in local streams and rivers. Some adopt manatees or whales, or raise funds to purchase a small piece of forest in Costa Rica or Brazil. Others create school-wide recycling programs to encourage their classmates to become more thoughtful about resource use. A few move into the legislative domain and participate in writing legislation to regulate the disposal of toxic wastes (Lewis 1991). These efforts are without question commendable in that they develop awareness for and an understanding of real-life environmental issues (Elliott 1991; OECD 1991; OECD 1995). Missing in most of these efforts, however, is a recognition of the deeper cultural transformations that must accompany the shift to more ecologically sustainable ways of life.

We have chosen to entitle this book *Ecological Education in Action: On Weaving Education, Culture, and the Environment* in an effort to distinguish the efforts described here from more common forms of environmental education. For us, ecological education connotes an emphasis on the inescapable embeddedness of human beings in natural systems. Rather than seeing nature as other—a set of phenomena capable of being manipulated like parts of a machine—the practice of ecological education requires viewing human beings as one part of the natural world and human cultures as an outgrowth of interactions between our species and particular places. From this standpoint, arguments over a human-centered or an earth-centered orientation toward the environment miss the point. There is no way to disentangle human beings from the earth, and as long as our species exists, no way to separate the earth from humans. Kat Anderson and Gary Nabhan's (1996) investigation of the relationship between people and local ecosystems in North America points to the degree to which the apparent wilderness of this continent had been shaped by human intentions prior to the arrival of European settlers.

The reverse of this process is also true; human cultures have arisen in response to the demands and opportunities of particular ecosystems. Technologies associated with the construction of dwellings; hunting, gathering, and agricultural practices; cooking; clothing; and defense are all closely tied into the resources available in specific places

(Kroeber 1939). Behind the extraordinary variability of human cultures is this adaptive principle. Stories, religious and moral systems, and even language are intimately connected to place, as well (Basso 1990). We are place-based creatures as much as the animals Darwin encountered on the Galapagos Islands, but instead of producing distinctive plumage or beaks or extravagant flowers, we have created different forms of cultural interaction appropriate for varying biotic communities and natural conditions.

What environmental education has tended to forget and ecological education attempts to remember is this ineluctable relationship between specific biosystems and cultures, and that cultures that have demonstrated their sustainability have often developed highly specific practices well suited to the characteristics of their particular region. One of the central problems with the culture associated with industrial growth societies is its lack of relationship to particular places and the way it is being imposed on the rest of the world from industrial and postindustrial centers. Helena Norberg-Hodge has described what happens when a finely tuned indigenous culture is disrupted by the process of modernization. Her exposition provides a useful example of issues that need to be placed in the foreground if students are to comprehend the relationship between human behaviors and beliefs and the health of the natural systems in which we live.

In her book, *Ancient Futures: Learning from Ladakh* (1991), Norberg-Hodge describes a Himalayan culture she initially encountered in the 1970s. People in Ladakh during this time continued to live much as they had during earlier centuries. They grew crops well suited to the short and dry growing season of the Tibetan plateau, constructed their own substantial and comfortable clay-brick homes, maintained irrigation systems built by their ancestors, governed their own affairs primarily through small village councils, and supported Buddhist monasteries whose religious ceremonies were closely linked to the lives and values of the lay community. Extended families and neighbors provided the forms of mutual support and care so often encountered in premodern societies where security is synonymous with the maintenance of human relationships and patterns of obligation. Children were educated through their constant observation of and participation in adult life. Struck by the material security and contentment of the residents of Ladakh, Norberg-Hodge asked a young man if there were any poor people in a village she was studying at the time. The man replied, "No, there are no poor people here."

The advent of a paved road to the south, modern consumer goods, tourists, and government-subsidized food has begun to end all that.

Eight years later, she overheard the same man beseeching a group of Westerners to “help us poor Ladakhis.” During this time, one set of expectations about the appropriate ends of human life had been replaced by another. And with this change has come a change in the relationship of Ladakhis to their land and to one another. Traditional agricultural practices that had been sustained for generations are being replaced with the use of fertilizers and machines. As young men and women, attracted to the amenities and baubles of consumer society, seek wage-paying jobs in the region’s capital city Leh, extended families are giving way to nuclear families. The resource of shared and nonmonetized labor—both within the family and the neighborhood—has become a rarity as children are drawn to school and adults are absorbed by the market economy. More and more people now live in cramped apartments rather than in commodious homes. A landscape that had featured pure air and water has been fouled with exhaust from internal-combustion engines, sewage, and litter. Most important, individuals are now expected to provide for their own support rather than relying on the support of their communities. Within a generation, the definition of security and satisfaction formerly shared by the residents of Ladakh and the social and environmental practices that had once contributed to the ecological sustainability of Ladakhi culture, have been fundamentally altered.

The microcosm of Ladakh demonstrates in miniature the global phenomena that lie at the heart of the environmental crisis. Moving away from this crisis will require a fundamental transformation of the way we perceive the world and one another as well as the nature of our membership in both the human community and the community of all beings. Such a transformation is not likely to occur as a result of taking courses in environmental studies that are primarily driven by conventional academic concerns. As educators, we need to teach in a manner that aims to transform the way our students interact with the world and one another. As the children of Ladakh have been inducted into a process of formal education aimed at replacing a vision of the world premised on local relationships and knowledge with one that celebrates participation in a global economy, we need to find ways to induct our own children into an educational process that reaffirms what is being lost in Ladakh. This is not to say that we should uncritically seek to restore the lifeways of more egalitarian, local, small-scale land-based societies. What may be required of us, however, is a careful reexamination rather than discounting of lessons learned by our ancestors over the millennia about the forms of human interaction with the natural world that are likely to enable our communities to persist over

time. Rather than seeking purely technological or legal solutions to the environmental disruptions that are now gaining prominence in the daily news, we need to revisit cultural traditions that have proven their sustainability and examine our own behaviors and beliefs in their light.

As we enter the closing years of the twentieth century, the ability of our own societies to persist is in question. Human beings are now expropriating for their own purposes approximately forty percent of the land-based primary productivity of photosynthesis (Vitousek et al. 1986). If our numbers continue to increase at their current rate, the human population will double sometime in the middle of the next century. What will it require to acknowledge the implications of these data and appropriately adjust our cultures? If we take as our touchstone the argument laid out earlier in this introduction that human culture necessarily emerges out of our species' relationship to particular places, there can be no single answer to this question. A multiplicity of responses will be required. Underlying these responses, however, may be a common set of principles that point to our fundamental interdependence with natural systems and our need for one another. It is toward the discovery of these principles and their implementation in the classroom that we and other authors in this volume are directing our efforts.

PRINCIPLES OF ECOLOGICAL EDUCATION

In our own work, the following principles of ecological education have become dominant and currently guide the shaping of our courses and work with other educators. In designing this book, we have sought out authors knowledgeable about formal and nonformal educational efforts for all ages of students and citizens that embody one or more of these principles.

- Development of personal affinity with the earth through practical experiences out-of-doors and through the practice of an ethic of care
- Grounding learning in a sense of place through the study of knowledge possessed by local elders and the investigation of surrounding natural and human communities
- Induction of students into an experience of community that counters the press toward individualism that is dominant in contemporary social and economic experiences
- Acquisition of practical skills needed to regenerate human and natural environments

- Introduction to occupational alternatives that contribute to the preservation of local cultures and the natural environment
- Preparation for work as activists able to negotiate local, regional, and national governmental structures in an effort to adopt policies that support social justice and ecological sustainability
- Critique of cultural assumptions upon which modern industrial civilization has been built, exploring in particular how they have contributed to the exploitation of the natural world and human populations

Educational experiments across the curriculum and across age groups have much to teach us about possible directions we might pursue in our attempt to engender a more ecologically sustainable culture.

Development of personal affinity with the earth through practical experiences out-of- doors and through the practice of an ethic of care

Stephen J. Gould (1991) has argued that human beings are unlikely to protect what they do not love, and that we cannot love what we do not know. Similarly, David Orr (1996) suggests that the simple possession of data regarding resource depletion or pollution is no guarantee that people will make decisions favorable to other species and the planet. One of the great hazards of modern life is that the close connection people once shared with the natural world has been disrupted as an increasing proportion of human activities has been channeled into the built environment. Recent studies (Nabhan and St. Antoine 1993) suggest that over the course of their lives most people spend only four to five percent of their time out-of-doors. Contrast this with the experience of hunters and gatherers or our own ancestors three to four generations back—most of whom were farmers—and it becomes clear that the basis for forming a relationship with the natural world no longer exists in the way it once did. Within the context of cities and suburbs it becomes easier to forget nature and to believe that human beings and our economy are able to exist outside the requirements of the ecosystems we have covered with our highways and shopping malls and skyscrapers. That relationship must be reestablished.

Adults need to consciously redirect themselves to the kinds of renewal and reconnection that can occur through outdoor work and recreation. For many children, educational settings may provide some of the few places where this relationship can be initially engendered. By situating learning beyond the confines of the classroom, teachers can help rectify this situation. Schoolyards can be turned into laboratories

where gardens and small ecological field stations along with textbooks and videotapes serve as sources of student learning. Local parks can become the sites of nature studies, play, and quiet reflection. Children, as well as adults, need to be encouraged to learn how to look and listen and smell and feel without the mediating influence of electronic screens or digitized sound. Developing a sense of affinity with the land, students of all ages may come to recognize its beauty and then take the steps needed to guard its integrity. The moral underpinnings of such embedded and contextualized understanding can be found in an ethic of care (Noddings 1995).

Grounding learning in a sense of place through the study of local knowledge and the investigation of surrounding natural and human communities

Within the context of the society as a whole, little exists to draw youngsters or adults into a sense of membership in their own place. With the coming of modernity, face-to-face interaction is replaced with relations between “absent” others, fostered through a variety of technologies (Giddens 1990). The mobility of families, the media, and the way automobiles isolate all of us from nature and our neighbors make it imperative for educators to construct learning experiences aimed at helping students encounter the forms of knowledge and personal interaction that in the past would have entered their lives in a more natural manner. In their development of curriculum, teachers need to seek out local resources, focus on local issues, and help students learn how to ask and answer questions about the phenomena and events that surround them. By relocating the curriculum in the local in this way, educators may be able to further the regeneration of the unique responses to particular places that have contributed to the development of the diverse cultures now being subsumed in the global monoculture purveyed by the market and the media. Such a project is necessarily one of affirmation of cultural and biological diversity and in no way precludes critical thinking about the condition of human and biotic communities.

Induction of students into an experience of community that counters the press toward individualism that is dominant in contemporary social and economic experiences

Some social psychologists believe that one of the central contributors to the perpetuation of today’s market society is the growing social isolation of individuals and individual families. Paul Wachtel (1989), for example, has argued that Americans’ preoccupation with affluence stems

from the declining strength and importance of communal institutions that once provided for the material and emotional welfare of people. In the past, such institutions were necessary if people were to survive in challenging natural conditions. One of the benefits of the scientific revolution is that we have been able to reduce the negative consequences of the vagaries of nature. The downside of this process is that the forms of sharing and obligation that once offered security have become vestigial. Now that security rests upon our ability to provide for ourselves and our immediate loved ones as individuals rather than as members of interactive and supportive communities. The result is a society-wide drive to compete for the jobs, salaries, and goods that promise to guard us from harm and to forget forms of cooperation that do not require the individual acquisition of wealth to ward off the unknown.

Although transcending the press to acquire and consume will not be easy, formal and nonformal educators can at least introduce students to the potential of community. Teachers, for example, can be assigned to work with a single class for two or more years. The creation of smaller schools that incorporate opportunities for informal interaction and joint projects outside the classroom can also contribute to the development of a sense of social membership among students (Smith 1993). Efforts to bridge the gap between school and the broader community such as those described in the two preceding principles could also help children develop an awareness of their ties to others and the forms of obligation, responsibility, and support associated with those relationships. Adult learners can also benefit from community building and support.

Acquisition of practical skills needed to regenerate human and natural environments

People's sense of connection to their community is likely to be further enhanced if they believe that they can contribute to the welfare of others. One way to engender the experience of connection is to invite children and adults to participate in projects aimed at restoring damaged ecosystems or improving the lives of others in their community. Central to the experience of alienation and isolation of people in contemporary society is the absence of regular opportunities to serve others. Without such opportunities, it is easy for individuals to believe that they have little value in themselves. Current efforts in schools to include community service reflect an understanding of the important role that this kind of labor can play in helping young people become members of the adult world. These efforts are likely to be most powerful if they

are coupled with the teaching of practical skills. Young people who learn how to renovate deteriorated homes, replant damaged riparian zones with appropriate species, grow food, create parks, or set up businesses that meet previously unfulfilled community needs discover their own capacity to contribute to beneficial projects. Adults who participate in such projects can encounter a similar form of affirmation. The creation of a sustainable culture will necessarily take place on the ground as well as in our minds and hearts and will involve the ability to do as well as think and feel.

Introduction to occupational alternatives that contribute to the preservation of local cultures and the natural environment

One of the most distinctive characteristics of industrial growth societies can be found in the way that people of varying ages live separate lives. A consequence of this fact is that youngsters have little direct contact with the vocational experience of adults. When it comes time to choose their own occupations, they are then at a loss about which direction to pursue. The current glut of doctors and lawyers in the United States is indicative of the lack of imagination young adults are able to bring to the task of choosing their life work; they remain restricted to the most obvious categories in the *Dictionary of Occupational Titles*. Young people, furthermore, have little sense of the way that the labor of adults contributes to the welfare of the broader community. Work is primarily seen as a vehicle for achieving personal security and status rather than as a way to give back to others. Service learning opportunities such as those described above, especially if they occur in situations where adults and children are involved in some common project, can begin to mitigate this problem. The creation of multiple internship opportunities for young people could also help them begin to grasp the possibility of pursuing socially and ecologically beneficial callings.

Youngsters, for example, could be introduced to what it means to practice sustainable forestry, run a community-supported farm, maintain a credit union that makes low-interest loans available to local residents, educate children in ways that lead them to love and respect the natural environment, design and/or construct energy-efficient and low-polluting buildings, or assist low-income people to organize to improve the quality of their lives. From such experiences could emerge a generation of adults willing to use their energy, intelligence, and good will to craft institutions and technologies aimed at fostering the long-term health of the human and natural communities in which they dwell.

Preparation for work as activists able to negotiate local, regional, and national governmental structures in an effort to adopt policies that support social justice and ecological sustainability

The creation of viable community and regional governments, responsive to the needs and viewpoints of all citizens will necessitate inducting the young, and reeducating their elders, into the give and take of political life. The building of such skills can begin in the classroom where students can be asked to shape classroom rules and expectations and to participate in the development of curriculum and learning activities; this process can be extended into the community of adults through the creation of organizations, such as watershed councils, that bring citizens together to grapple with serious local issues often overlooked by other governmental agencies. Schools, too, can draw much more heavily than they do on student participation in important institutional decisions. This does not mean that teachers and administrators should abrogate their responsibilities, but that the voices of children and young adults be given significant weight in decisions that affect their lives. In a handful of innovative public high schools across the United States, students and adults have developed strategies to share the governance of their institutions in an effective manner (Purpel 1987; Gregory and Sweeney 1993); their experiments bear careful consideration and replication. Young people can also be given the opportunity through their coursework to participate in research that has bearing on local problems or controversies. There are instances in which such activity has prodded adults to rectify problems identified by the children of their communities (Lewis 1991).

Critique of cultural assumptions upon which modern industrial civilization has been built, exploring in particular how they have contributed to the exploitation of the natural world and human populations

Undergirding the enactment of all of the preceding principles must be a recognition of the fundamental relationship that exists between human activities and the natural world. Rather than seeing the economy as separate from natural systems, for example, it is imperative that people begin to understand that the human economy is a subset of the ecology of particular places and the planet as a whole (Daly 1996). If human economic activities threaten the well-being of these natural systems, our own well-being must eventually be threatened. We must further come to understand that a way of life based on the celebration of

human inclinations of greed and avarice must eventually come to injure ourselves and the communities in which we live. From an ecological understanding of the way in which our lives are ineluctably tied to the lives of other people and other nonhuman beings—as well as to the welfare of rivers and mountains and sky—must emerge an evaluation of the appropriateness of human possibilities and actions. For example, the pursuit of self-interest without an awareness of our broader relationships will then be seen for what it is—a tear in the fabric of human and natural communities. Ecological education must call into question these understandings and urge teachers and their students to thoughtfully consider aspects of our lives that either contribute to or detract from the creation of an ecologically sustainable culture.

The chapters in this volume provide an opportunity to explore different facets of emerging forms of educational practice that implicitly recognize the close relationship that exists between human cultures and the environment. Although all of the authors may not subscribe to the preceding analysis in its entirety, their work or the work of people they describe demonstrates a similar form of understanding. Together the chapters create an image of what an ecologically grounded form of education for our own era could look like. It is imperative that models of the possible be placed in the hands of educational practitioners throughout our society in an effort to encourage further investigation as well as hope. The vast and many-sided nature of the environmental crisis can become immobilizing. It is difficult to know where to begin or what action is likely to stimulate movement in the right direction. Stasis in our current situation, however, will only allow for the continued deterioration of the natural and social communities essential to our well-being. We have chosen to include examples of work across the educational spectrum because we believe that what is required is a society-wide effort to transform peoples' thinking about the aims of human life and the social and ecological consequences of a continued reliance on the institutions that dominate industrial growth societies. We also believe that students of all ages have much to learn from one another. The arbitrary boundaries we have associated with different age groups often obscure our commonalities more than they illuminate our needs as learners and as people.

THE ORGANIZATION OF CHAPTERS

The first six chapters of this volume describe educational efforts in grade K–12 schools throughout the North American continent from

Alaska to Mexico, Oregon to Vermont. The next six chapters consider the work of people in higher education and nonformal educational settings and their attempts to instill an ecological perspective into the learning of college students and adult community members.

In chapter 1 of part I, Joseph Kiefer and Martin Kemple tell the story of the nonprofit Common Roots program in Vermont, a school restructuring project that has involved the implementation of a grade K–6 curriculum built around agricultural and ecological themes. Born out of a concern regarding hunger in Vermont and the declining ability of people to feed themselves in a state that is still largely rural, Common Roots has served to bring together schools and communities to educate children about their agricultural heritage and the skills and knowledge associated with growing food. In chapter 2, Paul Krapfel describes his efforts to develop an approach to the teaching of natural science that is aimed at cultivating in children a sense of continuity with the world around them. Like Kiefer and Kemple, Krapfel works outside the public school system but strives to influence educational practice there by developing curriculum units and modelling a form of science teaching grounded in close observation, inquiry, and discovery. Madhu Prakash and Hedy Richardson in chapter 3 recount the story of an effort to develop a similar kind of understanding among children and community members in a small city in central Mexico. Together with Mexican journalist and social activist Gustavo Esteva, Prakash worked with middle school students in an impoverished community to the south of Mexico City on a project aimed at developing ecological literacy. They sought to stimulate this understanding by involving students in a study of alternatives to modern sewage treatment systems. Turning their learning into practical action, students in association with other community members acquired the ability to construct and install dry latrines. Through this project they encountered important lessons in what it means to design technologies that work with natural systems in a manner that safely recycles waste rather than simply transporting it to some other location. This project models the combination of critical analysis, imaginative design, and practical action required by communities if they are to create technologies and social practices that are sustainable rather than environmentally destructive.

Chapter 4, by Dilafruz Williams and Sarah Taylor, tells about the efforts of other middle school educators to make the environment a central focus of the school experience of young adolescents, this time in the United States. Started in the fall of 1995 in Portland, Oregon, the Environmental Middle School places the environment at the heart of the curriculum. From this focus have emerged school-wide projects on

rivers and mountains that orient students to an exploration of local watersheds and geologic phenomena and provide ample opportunities for field work and community service activities. Elaine Schwartz in the following chapter builds a case for the development of ecofeminist literacy, a way of reading both the word and the world (Freire 1991) that elicits an awareness of the triple oppressions of women, the cultures of nondominant groups, and the natural world. For Schwartz, as for many ecofeminists, the exploitation of the earth arises from the same disregard and carelessness as the exploitation of people. At issue for her is nurturing in children an experience of interconnectedness so powerful that they choose to act in a manner that supports and respects the lives of the beings around them. In the final chapter of part I of this book, Oscar Kawagley and Ray Barnhardt of the University of Alaska-Fairbanks describe their efforts to integrate Western science and the grounded knowledge of people who have lived for generations in particular places. As a Yupik Eskimo and a former science teacher, Oscar Kawagley straddles both worlds. He and Barnhardt argue that the teaching of science needs to incorporate multiple perspectives rather than simply assuming the superiority of an approach based on reductionism, the fragmentation of scientific disciplines, and the failure to consider complex variables that frequently arises from these tendencies. As an alternative, they describe a form of science education that links understandings developed over generations in Alaska Native communities to the understandings of Western science, exploring the relationship between observed phenomena and indigenous technologies (e.g., food preservation practices, population estimates of fish and game, weather prediction) and the principles and theories presented in science textbooks.

The chapters in part II of this volume explore efforts among people in colleges and universities as well as nonformal educational settings to impart new perspectives about the environment to older students. Chapter 7, by Stephanie Kaza, provides details about the content and teaching approaches she uses in four courses offered in the Environmental Studies Department at the University of Vermont. Kaza, with academic training in ecology as well as ethics, draws on science, social science, and humanities perspectives in a set of courses aimed at transforming the understanding and social practices of her students. In her work, she strives to help undergraduates confront the facts of the environmental crisis but does so in a way that enables them to move beyond despair to an understanding of their own capacity to effect change.

C. A. Bowers in chapter 8 presents an account of recent efforts at

Portland State University to create a model of teacher education that embodies an ecological perspective. At the heart of Bowers's work is his belief that the cultural changes required to avert environmental disaster necessitate a careful examination of the linguistic roots of contemporary thinking as it relates to our definitions of self, intelligence, creativity, knowledge, and progress, among others. He challenges the common tendency in schools of education to segregate environmental education into science methods courses and argues that teacher educators concerned about these issues must find ways to integrate ecological concerns and understandings across the curriculum. As a teacher in small liberal arts colleges over the last fifteen years, Peter Corcoran has been working to achieve similar ends with undergraduate education majors; Corcoran, however, comes at this process from a different direction. In chapter 9, he describes the way he has sought to uncover vital affective connections to the earth among the students who have participated in his classes during this time. Although the environmental courses he teaches incorporate a strong intellectual component, Corcoran concentrates on restoring to students their own memories of experiences in the natural world, experiences that will ideally inform their development of curriculum and future work with children.

Gregory Cajete, in chapter 10, discusses the characteristics of cultures in which the maintenance of right relations between humans and the earth was of paramount importance. A Tewa Indian who has written extensively about indigenous education, Cajete creates a multifaceted description of the way that the sentiment of biophilia—love for nature and nonhuman beings (Wilson 1992)—has influenced the cultures of peoples who once lived, and in some cases continue to live, close to the land. Chapter 11, by Gregory Smith, offers a description of two nonprofit organizations, the Mattole Restoration Council and the Northwest Earth Institute, that are attempting to build comparable forms of understanding among people in the Pacific Northwest and northern California. Each of these organizations works with adults in nonformal educational settings in an effort to develop a deeper understanding among the general population of ecological principles and their cultural and economic implications. The final chapter, by David Orr, describes the process by which the building that will house Oberlin College's Environmental Studies Department was designed, incorporating the input of students and community members. This building project has given students at Oberlin the opportunity to grasp how they can translate their idealism into practical action through the process of designing one aspect of a more ecologically beneficent culture.

EPILOGUE

The ideas and models presented in this volume offer ways to reconceptualize not only the relationship between education and the environment, but the purpose of education itself. In the late twentieth century, education in its multiple forms has come to be viewed primarily as a vehicle by which individuals are able to gain a foothold in an increasingly competitive global market. Neglected in this shift in educational purpose is the role that acculturation and socialization once played in the maintenance of the health of the broader community. In earlier societies, that community often included nonhumans as well as people and a profound sense of relatedness to the land. Individuals were not educated for themselves alone but for what their education would mean to the welfare of the whole.

We recognize that the development of such an educational process is likely to be controversial. Even environmental education as currently practiced is eliciting reactions from those who have a stake in the maintenance of the status quo of market economics (Sanera and Shaw 1996). Under the rubric of being “conservative,” these political attacks on environmental education have left the field vulnerable to being co-opted. All education, however, inevitably takes some moral point of view—whether it is promoting the values of the market and technology or values premised on the maintenance of caring relationships with other people and the earth. Educators must strive to design curriculum and implement it through a balanced perspective, exposing students to all sides of controversial issues. This could include bringing ecological interdependence and an ethic of care in from the margin to the center of the debate.

In reengaging culture and ecology, the educational efforts described in this volume demonstrate what it means to craft an ethic of sustainability, an ethic anchored in a recognition of interdependence. Learners in these formal and nonformal educational settings grasp important skills and insights that they are able to direct to the benefit of others. They are able to grow and share food, participate in the eradication of nonnative species, model the meaning of voluntary simplicity, contribute to the restoration of watersheds, encourage awareness of a broader ecosystem perspective, help with the design of technologies that are more earth-friendly, and act out of an understanding of their fundamental relatedness to all things. This is only a partial list of the gifts people who have had these ecologically based educational experiences will possess, but it points to ways that education can help to ground local cultures and communities in an understanding of the par-

ticularities of place. Only from the sensibilities and efforts of people in thousands of such communities will cultures characterized by ecological sustainability and social justice be able to emerge.

References

- Basso, Keith. (1990). *Western Apache language and culture: Essays in linguistic anthropology*. Tucson: University of Arizona Press.
- Berry, Wendell. (1990). *What are people for?* San Francisco: North Point Press.
- Daly, Herman. (1996). Sustainable growth? No thank you. In Jerry Mander and Edward Goldsmith (ed.), *The case against the global economy and for a turn toward the local*, pp. 192–196. San Francisco: Sierra Club Books.
- Elliott, John. (1991). Environmental education in Europe: Innovation, marginalization or assimilation. In Organization of Economic Cooperation and Development. *Environment, schools, and active learning*, pp. 19–38. Paris, France: OECD.
- Freire, Paulo. (1991). The importance of the act of reading. In Candace Mitchell and Kathleen Weiler (eds.), *Rewriting literacy: Culture and the discourse of the other*. Granby, Massachusetts: Bergin and Garvey.
- Giddens, Anthony. (1990). *The consequences of modernity*. Stanford, California: Stanford University Press.
- Gould, Stephen Jay. (1991). Enchanted evening. *Natural History* (September), p. 14.
- Gregory, Tom, and Mary Ellen Sweeney. (1993). Building a community by involving students in the governance of the school. In Gregory A. Smith (ed.), *Public schools that work: Creating community*, pp. 101–128. New York: Routledge.
- Jackson, Wes. (1994). *Becoming native to this place*. Lexington, Kentucky: The University Press of Kentucky.
- Lewis, Barbara. (1991). *A kid's guide to social action: How to solve problems you choose—and turn creative thinking into positive action*. Minneapolis: Free Spirit Publishing.
- Nabhan, Gary Paul, and Sara St. Antoine. (1993). The loss of floral and faunal story: The extinction of experience. In S. R. Kellert and E. O. Wilson (eds.), *The biophilia hypothesis*, pp. 229–250. Washington, D.C.: Island Press.
- Norberg-Hodge, Helena. (1991). *Ancient futures: Learning from Ladakh*. San Francisco: Sierra Club Books.
- Noddings, Nel. (1995). *Philosophy of education*. Boulder, Colorado: Westview Press.
- Organization for Economic Cooperation and Development. (1991). *Environment, schools and active learning*. Paris, France: Author.
- Organization for Economic Cooperation and Development. (1995). *Environmental learning for the 21st century*. Paris, France: Author.

- Orr, David. (1996). Reconnecting the pieces: Ecological design and education in the 21st century. Keynote address at the Ecological Education Institute, Lewis & Clark College, Portland, Oregon, August 21, 1996.
- Purpel, David. (1989). *The moral and spiritual crisis in education: A curriculum for justice and compassion in education*. Granby, Massachusetts: Bergin and Garvey.
- Sanera, Michael, and Jane S. Shaw. (1996). *Facts not fear: A parent's guide about environmental education*. New York: Regnery Publishing.
- Shiva, Vandana. (1992). Recovering the real meaning of sustainability. In David Cooper and Joy Palmer (eds.), *The environment question: Ethics and global issues*, pp. 187–193. London: Routledge.
- Smith, Gregory A. (1993). *Public schools that work: Creating community*. New York: Routledge.
- Snyder, Gary. (1992). Coming in to the watershed. In Scott Walker (ed.), *Changing community*, pp. 261–276. Saint Paul, Minnesota: Graywolf Press.
- Vitousek, Peter M., Paul R. Ehrlich, Anne H. Ehrlich, and Pamela A. Matson. (1986). Human appropriation of the products of photosynthesis. *Bio-science* 37(6): 368–373.
- Wachtel, Paul. (1989). *The poverty of affluence: A psychological portrait of the American way of life*. Philadelphia: New Society.
- Wilson, Edward O. (1992). *The diversity of life*. Cambridge, Massachusetts: Harvard University Press.