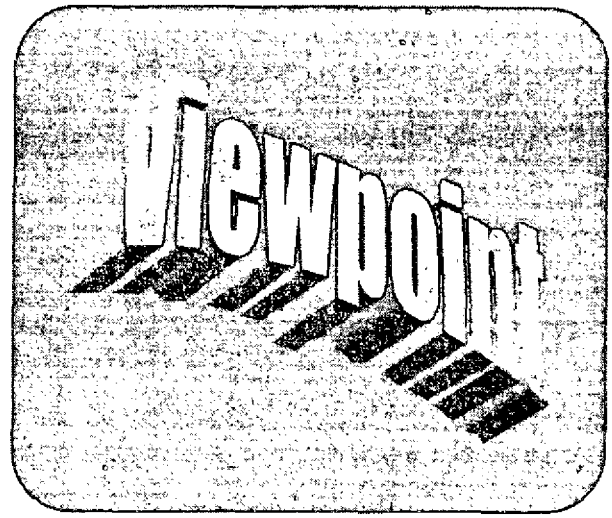
Ecological Education: Extending the Definition of Environmental Education



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Except in small measure, environmental education in the United States has not yet challenged the *status quo* of Western notions of progress or monoculturalism, or recognized that moving through the environmental crisis may require significant shifts in generally unquestioned cultural attitudes and beliefs. In the U.S., environmental education has instead tended to focus on information regarding environmental problems and to explore topics such as endangered species, global climate change, or the water quality of local streams and rivers. Even this has become a source of controversy in the United States since the mid-1990s as a coalition of right-wing organizations has mounted a well-coordinated political campaign charging environmental educators with bias and a failure to present both sides of controversial issues (Sanera & Shaw 1996, Independent Commission on Environmental Education 1997). Despite this, we believe that if environmental education is to live up to its promise as a vehicle for developing a citizenry capable of making wise decisions about the impact of human activities on the environment, examining and altering fundamental cultural beliefs and practices that are contributing to the degradation of the planet's natural systems will be imperative.

We have chosen to call this extended form of environmental education *ecological education*. For us, ecological education connotes an emphasis on the inescapable embeddedness of human beings in natural settings and the responsibilities that arise from this relationship. 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. We believe that the development of sustainable cultures will in fact require widespread acceptance of a relationship between humans and the earth grounded in moral sentiments that arise from the willingness to care. As Indian physicist and ecofeminist Vandana Shiva writes, the term 'sustainability' implies the ability and willingness 'to support, bear weight of, hold up, enable to last out, give strength to, endure without giving way' (Shiva 1992, p. 191). Preserving the integrity of natural systems will require human cultures that have accepted this task. Our aim is to help cultivate such cultures.

A small but visible group of educators and writers in the United States has provided inspiration and guidance to us in our efforts to incorporate these cultural and ethical concerns into the teaching of environmental issues and concerns. David Orr (1992), chair of the environmental studies program at Oberlin College in Ohio, is one of the most widely read members of this group. Orr popularized the term 'ecological literacy' in the early 1990s. For Orr, ecological literacy calls for the fostering of the mental disposition to seek out connections and to develop broad understandings of the ways people relate to one another, their society, and natural systems—a focus that is fundamentally self-critical in nature.

In the early 1990s, physicist Fritjof Capra sought to achieve similar ends by founding the Elmwood Institute in California. Capra (1993) uses as the touchstone for this institute eight principles of ecology: interdependence, sustainability, cycles, energy flow, partnerships, diversity, flexibility, and coevolution. He and his colleagues suggest that these principles be used to guide the creation of all elements of a school, from curriculum and instruction to social relations. Both Orr and Capra urge educators to incorporate an exploration of ways human behaviors and institutions do or do not conform to the functioning of the biosphere.

C.A. Bowers (1993, 1995) has also written extensively about these issues, primarily from a philosophical and linguistic perspective. Bowers argues that members of industrial growth societies are blinded to their own environmentally destructive practices because of their uncritical acceptance of a number of cultural assumptions. Unexamined metaphors such as linear progress or the individual as social atom propel people to participate in activities that weaken traditional understandings and forms of social reciprocity. These understandings coupled with the practice of mutuality once led human communities to construct relations among themselves and with the biotic world that were more socially just and environmentally sustainable than those encountered in industrial societies.

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In our own work, we have focused on directing educators to the importance of creating classrooms and schools that induct students into the actual experience of relatedness—to one another and to the world beyond the classroom. We have sought ways to embody a 'green pedagogy' that leads teachers and students to construct new ways of being in both the social and natural environments that surround them. We strongly believe that the achievement of sustainable cultures will require attending to all peoples' need for security and economic sufficiency, and that a failure to establish supportive and caring societies will lead to continued environmental degradation (Smith 1992, Smith 1998, Smith & Williams 1996).

In an effort to synthesise this body of work with and for our students, we have developed a set of principles of ecological education aimed at helping both us and them develop learning experiences capable of inducing a deeper understanding and experience of relatedness as well as the capacity to critically examine the cultural milieu in which they live. We suggest that teachers who are practicing this more comprehensive form of environmental education strive to accomplish the following:

- Develop among their students a deep personal affinity with the earth through practical experiences out-of-doors and through the practice of an ethic of care;
- Ground learning in a sense of place through the study of knowledge possessed by local elders and the investigation of surrounding natural and human communities;
- Induct students into an experience of community that counters the press toward individualism that is dominant in contemporary social and economic institutions;
- Help students to acquire practical skills needed to regenerate human and natural environments;
- Introduce students to occupational alternatives that contribute to the preservation of local cultures and the natural environment;
- Prepare students 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;
- Engage students in an exploration of cultural assumptions upon which modern industrial civilisation has been built, examining in particular how these assumptions have contributed to the exploitation of the natural world and human populations.

'We believe that educators could help cultivate among their students the disposition to care for one another and the earth'

With these principles as guideposts, we believe that educators could help cultivate among their students the disposition to care for one another and the earth as well as the knowledge of how to do so. It is still too early to know whether the application of these principles will lead to a more ecologically literate and committed citizenry, but a vision of the possible necessarily precedes evaluation.

In what follows, we will describe these principles in more detail and then discuss how they are evident in three different educational settings: a middle school that has chosen to focus on environmental topics, a set of inter-related courses in a university-level environmental studies program, and an informal adult education process tied to a long-term watershed restoration project. We have chosen to include examples from the fields of higher education and nonformal education because we believe that broad public support for the kind of educational reforms we are proposing cannot wait until today's current students have reached voting age. Adults, as well as children and young people, need to be encouraged to consider these matters. In each of the examples we describe, educators or activists have created learning experiences that are at least in part aimed at grappling with the ethical and cultural issues we associate with ecological education. Their practices exemplify ways that teachers, students, and community members are beginning to implement visions articulated by people like Orr, Capra, Bowers, and ourselves. We present them here as examples of what committed educators and environmentalists are creating in the United States. They demonstrate what is possible when a more restricted definition of environmental education is broadened to include cultural as well as scientific and regulatory issues.

Principles of ecological education

Development of personal affinity with the earth. Robert Michael Pyle (1993) has written eloquently about the extinction of experience with nature and its implications for environmental protection. Pyle believes that people will not protect what they do not know, and that larger and larger numbers of children have few opportunities to develop a meaningful connection with life outside the context of human society and inventions. One of the hazards of modern life is that the close connection people once shared with the natural world threatens to become "extinct" as an increasing proportion of human activities has been channeled into the built environment. Recent studies (Nabhan & St. Antoine 1993) suggest that over the course of their lives most people in industrialised societies spend only four to five percent of their time beyond their homes, schools, offices, or shopping malls. Within the context of cities and suburbs it becomes easy to forget nature and to believe that human beings and our economy are able to exist outside the requirements of natural systems.

In order to rectify this situation, adults need to consciously redirect themselves to the kinds of renewal and reconnection that can occur through outdoor work and recreation. For many children, whose time is absorbed by television or computer games, schools may provide one of the few places where a relationship to nature can be initially engendered. By situating learning beyond the confines of the classroom, teachers can redirect children's attention to the world unmediated by

software, video images, or even books. Schoolyards can be turned into laboratories where gardens and small ecological field stations serve, along with textbooks and videotapes, as sources of student learning. Local parks can become the site of nature studies, play, and quiet reflection. All of us need to be encouraged to learn how to look and listen and smell and feel, inhabiting our bodies and our places with full attention. By developing a sense of affinity with land and water, students of all ages may come to recognize their beauty and then take the steps needed to guard their integrity.

Grounding learning in a sense of place. Little exists in modern society to draw youngsters or adults into a sense of membership in their own locales. For many of us, face-to-face interaction has been 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 us from nature and our neighbours make it imperative for educators to incorporate learning experiences aimed at connecting students to their own communities and regions. 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 locating the curriculum in the local, educators may be able to further the regeneration of the unique responses to particular places that have contributed to the development of diverse cultures. Such a project in no way precludes critical thinking about the constraining as well as nurturing conditions encountered in most human communities.

Countering the press toward individualism. Some social psychologists believe that one of the central contributors to the perpetuation of today's market-driven 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. In the past, such institutions were necessary if people were to survive in challenging natural conditions. Now, security rests on 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 protect us from harm and to neglect forms of cooperation and mutual support that once provided for human welfare.

'Bridging the gap between school and community can help students develop an awareness of their ties to others'

Transcending the press to acquire and consume will not be easy, but formal and non-formal educators can at least introduce students to the potential of community. The creation of smaller schools that incorporate opportunities for informal interaction and joint projects outside the classroom can contribute to the development of a sense of social membership among students (Smith 1993). Bridging the gap between school and community can also help students develop an awareness of their ties to others and the forms of obligation, responsibility, and support associated with those relationships. The experience of these relationships can affirm values other than those encountered in the competitive market and direct learners toward an ethical stance grounded in inter-support.

Acquisition of 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. Current efforts in schools to include community service reflect an understanding of the importance of this kind of labour. 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.

Introduction to occupations that foster environmental health and social justice. Few adults or children in our society are able to conceive of economic activities that will provide for their support but not contribute to growing social and environmental degradation. Given the primacy of economic relations in our lives, finding ways to imagine other vocational paths seems critical. 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, 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 human and natural communities.

Preparation for work as social justice and environmental activists. The creation of viable community and regional governments that are responsive to the needs and viewpoints of all citizens will necessitate inducting the young, and re-educating their elders, into the give and take of public 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 entities. 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 (Purpel 1987, Gregory & Sweeney 1993). 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).

Exploration of cultural assumptions underlying modern industrial civilization. The enactment of all of the preceding principles must be founded on a recognition of the failure of industrial growth societies to acknowledge their embeddedness in natural systems. It is imperative, for example, that people 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 ecosystems, 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 this perspective, 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 the world. Ecological education must call into question the assumptions that underlie industrial and post-industrial societies and encourage teachers and their students to thoughtfully consider aspects of our lives that either contribute to or detract from the creation of a culture that is at once environmentally sound and socially just.

Practices of ecological education in the United States

We know of only a few schools or programs where all of these principles are being put into practice. There are, however, a number of formal and non-formal educational institutions in the United States and elsewhere where elements of this agenda can be observed. While we recognize that other countries have similar programs, we will focus on experiences in the United States about which we have a grounded understanding. Our book, *Ecological Education in Action: On Weaving Education, Culture, and the Environment* (1999), offers a collection of accounts by practitioners and researchers about thirteen programs that can serve as models of the possible. In this section, we will describe three of the thirteen, relating their activities and educational approaches to the principles discussed above.

The Environmental Middle School. We begin with Portland's Environmental Middle School, an institution we both know well since we participated in its founding and continue to serve on its site council. EMS, as the school is known to its participants, was started in the fall of 1995. Educators there have placed the environment at the heart of the curriculum. From this focus have emerged school-wide projects on rivers, mountains, and forests that orient students to an exploration of local watersheds and geologic phenomena. One of the most striking elements of EMS is its schedule which reserves Mondays, Wednesdays, and Fridays for inside classwork, and Tuesdays and Thursdays for fieldwork or service activities that take students into the community. Learning at EMS is not walled off from surrounding social and natural environments; teachers use those environments as the basis for students' education. Because EMS is located in an older school building close to public transportation, teachers have been able to engage in projects located throughout the Portland metropolitan region without incurring the added expense of school bus rentals. EMS students pull English ivy that has invaded Forest Park in the northwest sector of the city, study the Willamette River closer by, and travel to the Johnson Creek watershed southeast of the school to remove invasive Himalayan blackberries and plant native species. Students also help out in downtown soup kitchens and homeless shelters. Much learning at the school, itself, has also been situated out-of-doors. A sizable vegetable and flower garden has been created with the help of parents and community members, and a section of the school grounds has been 'naturescaped' with plantings of indigenous species and the construction of a small wetland.

'The social environment in the school encourages the formation of close interpersonal ties'

Beyond its curricular focus and hands-on teaching approaches, the social environment in the school encourages the formation of close interpersonal ties. Students can stay with the same teacher for three years in classrooms that blend grades six through eight. Each morning begins with a community meeting that features announcements, group singing, and occasional presentations by outside speakers. Because the school is small—180 students—the anonymity encountered in larger middle schools is absent. Students are drawn into a sense of community membership and participation on a number of levels: the immediate school, the broader social environment, and the "community of all beings" in which humans play only one part.

To one extent or another, EMS enacts all of the principles of ecological education enumerated earlier. Students are provided with multiple opportunities to develop a personal affinity with the earth. During field studies, it is not uncommon for them to be given time to observe quietly what is going on around them and to be encouraged to write poems or journal entries about what they have perceived. In addition to work during regular school days, students, teachers, and parents participate in week-end camp-outs at the Oregon Coast, in old growth forests, or in the high country of the Cascade Mountain Range.

These experiences, as well, provide an opportunity for young people to be outside in ways that deepen their sense of connection to nature. Teachers, furthermore, expose students to a curriculum that focuses on local phenomena. Field studies, obviously, contribute to this end. EMS students, in fact, are surprised when they learn that their counterparts in other schools do not know the names of indigenous flora and fauna. Students also explore local history, investigating the relationship between human beings and our region over time. During a year devoted to a study of the forests, for example, students researched the history of logging in the Pacific Northwest and constructed a model of a traditional logging operation.

Perhaps one of the most powerful elements of EMS involves the degree to which students are drawn into an experience of community membership. More than anything, EMS is an emotionally safe place to be. Teachers care about students, and students care about their teachers and one another. At EMS, young adolescents can be kids and not be embarrassed about it. Despite peer pressure elsewhere, eighth-grade boys, for example, sing along with everyone else during morning meetings. EMS has also consciously reached out to the Native American community in Portland, striving to provide educational experiences and support for children more likely to drop out than any other population group in the United

States. Parents of Native American students describe their teachers as being like 'aunties and uncles'. A disciplinary approach that emphasises kindness, honesty, and flexibility undergirds much of what makes EMS friendly and supportive. Students learn what it means to be part of a caring and cooperative community.

Through fieldwork and community service, students are given the chance to learn many practical skills. They become knowledgeable about the use of native species in home gardens, and share what they know with residents of the neighbourhood surrounding the school during plant sales. They acquire genuine gardening skills, as well as skills associated with restoration ecology. And they learn how to organize major events—such as school celebrations held at the completion of major thematic units—or other events such as the monthly community luncheon prepared by different classes. In this process, they are exposed to a variety of socially responsible occupations as they work shoulder to shoulder with local farmers at subscription farms, participate in the delivery of food at local soup kitchens, or interact with Americorps volunteers at the school. Students at EMS have an ongoing chance to see and try out vocations premised on service to the community.

Although EMS avoids organizing events that might be politically controversial, students have had a number of opportunities over the preceding years to make their voices heard with regard to welfare of their school. At the end of the Environmental Middle School's first year, three of the school's six teachers were told they would not be re-hired for the coming school year because they were not yet tenured in the Portland district. Students and their parents were outraged that people who had become like family members could be supplanted by displaced teachers from other schools with little interest in EMS or environmental education. They organized a march and rally to Portland's Pioneer Square, where their speeches and songs were reported by local news media.

Finally, although the school does not explicitly attempt to critique the cultural values of post-industrial civilisation, something that is the explicit aim of the program described immediately below, students are encouraged to question our society's casual attitudes towards resource use and disposal. Students reflect on their experiences in school and out-of-doors, and are encouraged to think critically about their place within the broader culture of consumption.

Radical Ecology at the University of Vermont. Stephanie Kaza is an associate professor in the Environmental Studies Department at the University of Vermont. Trained as an ecologist as well as an ethicist, she combines the perspectives of the scientist and the humanist in a set of courses aimed at transforming the understanding and social practices of her students. 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. Her courses on Ecofeminism, Radical Environmentalism, Religion and Ecology, and International Environmental Studies push her students to acknowledge the link between central cultural assumptions and practices of our own society and the environmental crisis. Through a variety of highly personalised experiences that combine community building, 'conscientisation', and activism, Kaza asks students in her classes to shine the light of new knowledge and understanding on their own lives and decisions and then embody the implications of what they are learning in new behaviours. This process violates some of the norms of liberal education because of its obvious partisanship—many sides of an issue may be explored, but Kaza does not hesitate to distinguish the life-affirming from the life-denying. In doing so, she models an educational practice with deep ethical and spiritual roots that reclaims the moral ground upon which an ecologically sustainable and socially just culture must be built.

Kaza says that her intent in her classes is to '...generate both awakening and empowerment, freeing students to act responsibility in a relational world' (Kaza 1999, p. 149). It would be fair to say that Kaza's teaching approach is primarily aimed at examining the central values and assumptions of industrial growth societies and equipping her students to become activists capable of stimulating the cultural and institutional changes required to reverse environmental degradation and social injustice. She achieves this end through combining the activities and liberatory analysis of Joanna Macy (1983) and Gerard Fourez (1982). Macy's work is aimed at releasing energy contained by unexpressed despair about modern developments such as nuclear armaments and environmental degradation through workshops built on the assumption that people are better able to confront their own

grief in the context of community. Out of that community emerges the ability to take action to address conditions that threaten the well-being of humans and the Earth. Fourez's approach is more analytical, tied as it is to liberation theology and liberation ethics. Kaza uses his methodology to critically examine power and institutional relationships and to unravel our society's legitimating myths. These approaches provide a means for helping students grasp the nature of their own relationship to one another and the world.

'Students have become closely involved with a campus effort to "green" the university'

From that experience of relationship and community, Kaza goes on to assign students projects that involve researching local and global environmental issues and taking local action. One group of students from her ecofeminism class developed a campus awareness program to alert their peers to the relationship between breast cancer and environmental hazards. Another group focused on the toxic chemicals in tampons and placed stickers in all women's restrooms on the University of Vermont campus to warn their classmates and instructors about these products. Students in the Radical Environmentalism course have become closely involved with a campus effort to 'green' the university by reducing the use of pesticides and paper, purchasing food from local producers, and examining campus investments with an eye to their social and environmental implications. In addition to immersing students in social action, this research also directs them to an exploration of local issues.

The Mattole Restoration Council. The Mattole Restoration Council is a non-profit organization that for the past decade has been helping adults and young people in Northern California begin to understand the complex relationships that link human activities to the health of the local environment. It works primarily with adults in nonformal educational settings to develop among the general populace a deeper grasp of ecological principles and their cultural and economic implications. Located in Petrolia, California, the Council grew out of the concern of a group of local residents about the declining health of indigenous King salmon stocks. During the years of its existence, its members have stimulated the development of what might be called a watershed consciousness among people who live on California's 'lost coast' through their work to restore stream habitat, replant clear-cut slopes, erase unused logging roads, install hatchboxes (to ensure higher rates of salmon propagation), and document and publish the consequences of their efforts. Although the Council offers no degrees or licenses, its activities are educating a corps of activists and leaders in the practical skills and intellectual understandings associated with the emerging field of restoration ecology. Musical comedies written, produced, and staged by some of the Council's members take that learning to members of their own community and interested audiences along the Pacific Coast and elsewhere.

In subtle yet powerful ways, the Mattole Restoration Council, like the Environmental Middle School, practices all of the principles of ecological education. Most obviously, people involved in this work acquire a variety of practical skills associated with restoration ecology. They learn how to enhance the productive capacity and survival rate of spawning salmon; they learn how to assist in the reforestation of damaged forest lands and riparian zones; they learn how to map and analyse the consequences of human activities that both injure and help their region. Such skills, in some instances, can be translated into new occupations; a former heavy equipment operator, for example, now repairs or eliminates poorly constructed roads. Much of the learning that occurs in the field also contributes to a deepening of the affinity Council members feel toward their own region and other species. Restoration ecologist Freeman House, one of the founders of the Council, has written about the impact that catching live salmon and not harming them has had on his own thinking.

To enter the river and attempt to bring this strong creature out of its own medium alive and uninjured is an opportunity to experience a momentary parity between human and salmon. Vivid experiences between species can put a crack in the resilient veneer of the perception of human dominance over other creatures. Information then begins to flow in both directions, and we gain the ability to learn: from salmon, from landscape, itself (House 1990, p. 112).

Such learning is also predicated upon a deepening understanding of local phenomena. House tells a story of an effort early on in the Council's work when a group of people had decided to replant alders along sections of the Mattole River that in aerial photographs showed virtually no vegetation. When individuals had scouted out this area, they were unable to locate the sites, discovering instead stands of alder that were four to twelve feet in height. They later deduced that during a dry period in the 1980s, ripe alder cones had been deposited on the scoured channels. While stream flows remained low, the young trees were able to reestablish themselves. From such experiences, Council members have learned the importance of paying attention, as House has observed, '...not only systematically, but systemically, over time and space' (1995, p. 2) to the land and rivers that surround them.

The Mattole Restoration Council also exemplifies what it means to regenerate the human community. The Council's success has from the beginning been contingent on the ability of diverse groups from the region to work together. Environmentalists, loggers, fishermen, ranchers, and representatives from state agencies needed to learn how to discover what they shared in common and then act from that base of agreement. In the process, people came to believe that they could reverse the dramatic decline in the salmon population that followed heavy logging and then siltation of the Mattole River in the fifties and sixties. Although these

groups have found it difficult to cooperate on other issues beyond salmon restoration, their ability to cooperate on this problem suggests that in time they may be able to extend their energies and activism to other domains.

The promise of ecological education

The human capacity to connect to the earth and other people is at the heart of sustainable cultures that must emerge in coming decades. Among the indigenous residents of North America and elsewhere, the formation and sustenance of such relationships was the bedrock upon which their cultures and moral systems were created. Modernity has allowed human beings to achieve an apparent liberation from many of these relationships and the obligations and responsibilities they entail. Geographic and social mobility, freedom from the limitations of particular communities and places, and the ability to define our own identities have been some of the benefits associated with this liberation. The consequence, however, is uprootedness and detachment, qualities that further the goals of an extractive economy and curtail the possibilities of care.

For us, ecological education provides one means for re-establishing connections and reaffirming relationships. The promise of ecological education lies in its potential to move teaching and learning away from the detached objectivity encountered in most conventional classrooms to experiences that involve students as engaged participants. Instead of being spectators to the knowledge of others, they can become the producers of knowledge and active citizens embedded in meaningful cultures. Ecological education opens the door by providing more space for feelings, values, and commitments, extending these to include relationships with other people. Strengthening the experience of mutual identification and relatedness, it holds out the possibility of regenerating patterns of interconnection and reciprocity that must become widespread if human beings are to learn to live in partnership with the natural world and one another in new ways.

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