CHAPTER 8

NATURAL RESOURCE CONSERVATION OR PROTECTION OF THE INTEGRITY OF NATURE: CONTRASTING VIEWS OF MANAGEMENT

There are only people and natural resources.
—Gifford Pinchot (1947)

The times are changing. Today it's a matter of dollars and cents. That makes it tough on uses (of the national forests) that don't produce much income, such as recreation.
—U.S. Regional Forester Craig Rupp (1983)

Old-growth forests remind me of an old folks home, just waiting to die.
—Official of the Reagan administration (1984)

In the previous chapter we discussed wilderness protection as a public policy issue and as an issue of cultivating ecological consciousness. In this chapter we discuss the broader notion of human uses of Nature or natural resources.

We begin with a historical sketch of the Resource Conservation and Development ideology as expressed in the United States and then discuss the New Age/Aquarian Conspiracy as a radical extension of this ideology.

We then make some comments on the assumptions of these dominant positions from a deep ecology perspective and offer some tentative suggestions for deep ecological management.

I. STEWARDSHIP IN PRACTICE

1. A Brief History of Resource Conservation and Development (RCD)

After spending three nights with President Theodore Roosevelt under the oaks and pine trees of Yosemite National Park in 1903, John Muir proclaimed in his journal, "Now Ho! for righteous management." Muir was hopeful at the beginning of the twentieth century that under the leadership of wise managers, the national parks and forests would be left essentially wild, preserved as watershed and wildlife habitat. The national parks would remain largely wilderness. Utilitarian uses of the national forests would respect the ongoing, healthy functioning of ecosystems. But his hopes for the wise management of the nation's forests and wild lands were soon to be destroyed.

The story of professionalized, scientific management of natural resources and public land by new experts working within the framework of centralized corporations and national legislation in the United States begins with Gifford Pinchot. Pinchot was trained in Germany in forest management and fought under the label of the "conservation movement" to change the then-prevalent attitude, especially in the western United States, that all land was open for taking minerals, grazing on open range, cutting timber, plowing fields, and appropriating water without planning for the future or considering what the economists were to call "externalities"—air and water pollution, for example.[1]

While Muir was striving to protect large areas of land from the machines of technocratic-industrial society, first through the institution of national forests and then through the institution of national parks, Pinchot was striving to develop a professional cadre of

managers to develop resources and encourage legislation which would institutionalize scientific management of renewable resources.

Pinchot's ideology was adopted in law and through the actions of public agencies and private organizations. Conservation became a way of allocating natural resources more efficiently through scientific management and manipulation of natural systems on an ever-larger scale. The "wise use" and multiple use of natural resources meant management for development and economic growth.

As Pinchot said:

The first great fact about conservation is that it stands for development. There has been a fundamental misconception that conservation means nothing but the husbanding of resources for future generations. There could be no more serious mistake. . . . The first principle of conservation is the use of the natural resources now existing on this continent for the benefit of the people who live here now.[2]

It now seems obvious that we are in the midst of an environmental and spiritual crisis more severe than the one that sent Muir to his grave defending wild Nature in Yosemite. For now the whole planet is threatened by the possible holocaust of nuclear war and by the continued "peaceful" development of natural resources in the tropical rain forests and in the oceans. "Balanced use of resources," "wise use," "scientific management," and "genetic improvement" of forests are all central concepts of the management ideology based upon the assumption that humans are the central figures and actors in history, together with the idea that the whole of Nature is to be understood as resources for humans and thus is open for unlimited human manipulation.

In the United States these assumptions were enacted in land use laws passed by most county governments and federal agencies such as the U.S. Forest Service and Bureau of Reclamation as well as the Tennessee Valley Authority, and form the dominant ideology taught in professional schools of forestry, wildlife management, water resources management, range management and agriculture.

Various types of natural resources were given to special recreation managers, soil scientists, foresters, range managers, environmental engineers, and energy managers, for example. Some reform environmental groups developed their own professionals specializing in these fields. Historian Stephen Fox in his history of the conservation movement argues that radical amateurs arose time and again to revitalize

reform groups such as the Audubon Society and Sierra Club, but the experts continue to dominate the normal decision-making processes.[3]

The experts found a congenial home in colleges and universities, which were interested in keeping student enrollment up by training hordes of these experts. In some ways the modern university is like a sponge, sopping up new professions. The university has been called the citadel of expertise. It is not surprising that some of the leading theorists of reform environmentalism have been university professors who wish to appear progressive and professional.

"Expert Testimony" became something of a growth industry. Frequently, in congressional committee hearings or in administrative hearings, or in court cases concerning some natural resource issue, expert was pitted against expert. Theodore Roszak calls this strategy one of "countervailing expertise" and contends that it is a shallow practice because:

. . . while undeniably well-intentioned and capable of stopgap success on specific political issues, it leaves wholly untouched the great cultural question of our times. It does not challenge the universally presumed rightness of the urban-industrial order of life. Therefore it cannot address itself to the possibility that high industrial society, due to its scale, pace, and complexity, is inherently *technocratic, and so inherently undemocratic. At most, it leaves us with the hope that the bastardized technocracies of our day might be converted into ideal technocracies.*[4]

2. Resource Conservation and Development Ideology

Among resource managers there seems to be some awareness of the philosophical assumptions underlying the anthropocentric resource ideology. But generally the problems that arise in this kind of management are perceived to be technical, economic, or political issues. Many people trained in this ideology see themselves as being "value-free" and beyond politics in their decisions. In keeping with this ideology, when environmentalists try to discuss forestry management with public agencies such as the Forest Service, their positions and arguments are viewed from the subjective standpoint of a "special interest" group. The generally nonreflective position of RCD managers makes it almost impossible to discuss issues on a deeper philosophical level. The anthropocentric versus biocentric worldviews of land use managers and environmentalists generally mean that they share little common ground and, as a result, they talk past each other. The basic philosophical differences tend to be obscured or deflected into discussions of tech-

nical issues. For example, those who oppose aerial spraying of herbicides on forests are trapped into arguing over the research data of very technical studies of dispersion rates, the effects on pregnant women, and so on. But the chains of interrelationships in an ecosystem are so complex that the results of such studies are usually tentative and inconclusive. And if the burden of proof is on those opposed to the spraying to demonstrate its harmful effects, then the spraying will continue. Those with a philosophically biocentric perspective that respects all of Nature and its processes would most likely arrive at a contrary conclusion.

The usual rhetoric of "conservation," "stewardship," and "wise use" in the contemporary version of RCD now means in practice the development of resources as quickly as is technically possible with the available capital to serve human "needs." The whole of Nature and nonhuman species are not seen as having value in themselves and the right to follow out their own evolutionary destinies. In the ideology of RCD, humans are not understood or experienced to be an integral part of natural processes, but rather as rightfully dominating and controlling the rest of Nature based on principles of scientific management. This means altering Nature to produce more or "better" commodities for human consumption and directing Nature to do the bidding of humans on the utilitarian principle of the "greatest good for the greatest number" of humans.[5]

The ultimate foundations of RCD scientific management of Nature appear to be a profound faith, almost a religion of management. A commissioner of the Bureau of Reclamation, in a speech defending the Reagan administration's management policies, said:

Research, engineering, and resource management all have a role in solving our water resource problems. We need better water resource technology, especially for ground water resources. Although the Bureau of Reclamation is recognized internationally for its engineering excellence, we're constantly working to improve our engineering. And the quest for better management is practically a religion in America. *(Emphasis added.)*[6]

The value-free managers, the experts and technocrats, even if they do not espouse some extreme version of Christian stewardship and domination, do profess a secular religion of faith and hope— a faith in never-ending technological progress and a hope that what they do will work. Even technological failure on an alarmingly regular basis, as in the case of nuclear power, only seems to generate more faith, more hope, and a stronger belief that we need more and more

managers and technical experts to solve the problems. Case after case of technological fixes that produce even greater environmental backlash seem not to daunt them in the least.[7]

The metaphor of the Earth as just natural resources to be exploited and consumed by humans remains the dominant image embedded in the psyches of modern RCD managers. As sociologist William Burch wrote, "Though the conversion of all the world into a commodity is periodically challenged and even modified, it remains the basic metaphor in high energy societies both communist and capitalist."[8]

Modern managers can rationalize that they are only serving the needs of the people because of their commitment to unlimited growth and ever-expanding markets. As Karl Polanyi points out, the modern consumer society in which everything is marketable and is assigned an economic value is a completely new social form of society that involves "no less a transformation than that of the natural and human substance of society into commodities. Yet labor, land, and money are *not* commodities. Labor is simply another name for human activity. But on the basis of the fiction that labor, land and money are commodities, markets are organized."[9] The trinity of beliefs underlying the ethics of RCD is the metaphor of the market, the Earth as a collection of human resources or commodities, and the Earth as a machine or spaceship. The dominant quest for better management in modern industrial societies, however, is *not* righteous management as envisioned by John Muir.

The RCD position easily translates into the economizing of forests, rivers and anything defined within the specific human economy as a natural resource. When this degeneration of the RCD position is coupled with the anthropocentric assumptions which are its underpinning, and when it is believed to be natural and desirable for human populations to increase indefinitely together with the assumption that it is desirable for humans to continue expanding their demands and wants, then there is very little room to consider any rights of dolphins, spotted owls, or California condors to their own habitats. Indeed, the logical outcome is to consider other species as just genetic resources whose DNA can be frozen and stored in gene banks for manipulation by scientist-technologists at the command of corporations or government agencies.

Within the assumptions of the dominant worldview, the basic challenge of the forester, water resource manager, range manager,

fisheries manager, etc., is to produce more and more commodities in shorter and shorter periods of time.

Nature and its processes are too slow and inefficient in terms of the economizing model. Indeed, "efficiency of production," virtually without regard for the larger ecological context, is the major slogan of managers who take a homocentric rather than biocentric position.

For example, the rotation cycle, the number of years between cutting a stand of timber and its recutting after regrowth, has been progressively reduced from perhaps 120 years to eighty, sixty, or forty. One official of a major corporation in the western United States asked his scientific managers and technologists to develop and plant "genetically enhanced" trees which could be "harvested" in twenty years. "Trees are just a crop, like corn," say many commercial foresters.

Relatively small natural areas and stretches of free-flowing rivers are allowed to exist in the context of RCD, but only if they do not intrude upon basic resource production. As one forest products industry official said, "Maybe 100 acres of old-growth redwood would be enough for our grandchildren to see." "Nonproductive" land may be left as wilderness, but the borders get smaller and smaller and environmentalists find themselves arguing with forestry officials over fifty-foot buffer strips along streams where logging will not be allowed. At best, under RCD, the "environmental effects" of proposed development projects will be studied and *some* effort will be made to "mitigate" the known negative environmental impacts.

Recent Forest Service efforts to develop a "decision procedure" for differing recreational uses on forest lands have fared little better than economic analyses of forest values, and continue to highlight the failure of land use managers to recognize more objective ecological criteria. For example, in a recent study of "scenic preferences" as baseline data for decisions concerning "scenic management," a sample of persons was shown photos of various kinds of scenes ranging from clear-cut forests to super freeways. They were asked to rate their preferences on a subjective scale and then the averages were tabulated. The average preference ratings were then considered to be public opinion concerning the types of landscape to be valued for recreational purposes.[10]

The older imagery of RCD sees humans as happy gardeners and stewards weeding the Earth of "undesirable pests" and predators. Biologist René Dubos has presented this image in his book, *The Wooing of the Earth,* along with the claim that humans are simply "bringing out the potential" of the planet. But even Dubos admits that "The belief that we can manage the Earth and improve on Nature is proba-

bly the ultimate expression of human conceit, but it has deep roots in the past and is almost universal."[11]

W. D. Hagenstein, an official of the Industrial Forestry Association, in a speech entitled "The Old Forest Maketh Way for the New," gives a succinct statement of the Resource Conservation and Development ideology:

I know firsthand what happens to an old-growth forest left entirely to the whims of nature. What all this background is leading to is my philosophy of the use of old-growth timber. First, do not waste the asset. Second, if the timber is needed to satisfy social needs like housing and other construction, use it. . . .

Professional foresters are trained to accept the philosophy that the conversion of old-growth unmanaged forest . . . to a managed forest, with its favorable distribution of age classes, is desirable from a social, economic, and forestry point of view. The annual allowable harvests determined by the Forest Service are simply a scheme to regulate the harvest of the old growth. By the time the last of it has been harvested, there is sufficient young timber of merchantable size, brought about by reforestation and protection, to prevent any hiatus in the timber supply to meet Americans' needs for both products and jobs. . . .

Just as the medical profession is bound to protect public health in general, the forestry profession is likewise duty-bound to protect public health by preventing the waste of trees. . . . Therefore, any artificial restriction on the protection or salvage of damaged old-growth forests poses the ethical question of whether the forestry profession is performing in its highest tradition and in accordance with its full responsibilities to society. . . . When there are homeless people in the world, there is no more a right to waste wood than there is a right to waste food when there are hungry people. Whether people like it or not, the old forest must make way for the new.[12]

---

3. New Age/Aquarian Conspiracy

The New Age/Aquarian Conspiracy version of scientific management is the most systematic, technocratic and domineering version of Resource Conservation and Development ideology. It is the logical extension of the dominant worldview of the Earth as a collection of natural resources to be used primarily for humans. Proponents of this view frequently speak of the elimination, by planned human intervention, of most of the natural evolutionary process. The only "ultimate resource" is humans who, with their brains and technocratic abilities, will develop grander and grander schemes for "humanizing" the Earth.[13]

In *An Operating Manual for Spaceship Earth* (1971), Buckminster Fuller likens the Earth to a machine, asserts that there is no world population problem, and says that the world's problems can be solved by computers. Engineering, coupled with cybernetics systems and information theory, can provide a purely technological solution to the world's ills.

On the issue of genetic engineering and the rapid development of this industry, Jeremy Rifkin in *Algeny* (1983) points out that the Darwinian view of natural evolutionary processes is now being replaced by genetic manipulation and development of species to conform to limited human purposes and desires. The computer/information revolution is a mere prelude to the genetic transformation of all life on Earth.[14]

New Age/Aquarian Conspiracy futurists are planning for newly contrived biological organisms to provide the energy base for the expanding industrial society as the fossil fuel era phases out. By redesigning life on Earth, this conveniently eliminates the natural evolutionary process, for it is too slow and inefficient. Similarly, natural ecosystems are not geared to the modern pace of industrial production and efficiency, although some representative samples can be preserved in museum-like settings as a luxury item to satisfy the aesthetic and recreational tastes of certain elite minorities.

Dick Russell has explored the new corporations which see the potential to make a profit from the biotechnological revolution. "The tree of knowledge," he says, "grows on Wall Street":[15]

A revolution of unprecedented scope and incalculable social effects is taking place around the globe in corporate board rooms and allied scientific laboratories. Its practitioners bear company names right out of yesterday's science fiction: Cetus, Biogen, Genetech, Agrigenetics. Its financial backers are giant multinational corporations like Environmenton, DuPont, Dow Chemical and Eli Lilly. And its sources of wisdom are university researchers from Harvard, MIT, Stanford and elsewhere, many of whom are becoming overnight millionaires by affiliating with the new "growth industry of the '80s." The industry is biotechnology, or genetic engineering. . . . The potential of this ability to alter the basis of nature is staggering, and beginning to manifest itself in nearly every arena of life. Besides offering an eventual cure for

1,000 genetically-related diseases and possibly cancer, the bioengineers talk of new types of crops designed to take nitrogen from the air, farm animals that will grow faster, and manufactured life forms to carry out industrial processes.

Domestic animals and humans are now being bred through artificial insemination while "cloned" animals and plants are also being widely developed. Even some zoos have developed an endangered species program which includes freezing sperm and eggs and matching animals through computerized systems.

The New Age/Aquarian Conspiracy ideas for scientific management are presented against the backdrop of the possibility of all-out nuclear warfare, which would be the most devastating human-caused event in the history of the world. But the possible destruction of up to twenty-five percent of all species on Earth due to "business-as-usual" economic growth and development during the next forty to sixty years is seen by some as "reparable" by the advances in genetic engineering.

At the same time, multinational corporations and government resource agencies are building, or have on the drawing boards, projects to "tame" the Amazon Basin by clear-cutting the old-growth tropical rain forests and through "vegetative conversion" to monocultures. Almost all old-growth rain forests from Sri Lanka to Australia and South America are threatened by multinational corporations bent on extracting resources.

Centralized government agencies are drawing plans for even vaster projects using larger construction equipment. Massive pipelines are planned to run from Siberia to western Europe. Soviet planners envision damming and diverting the major river systems of western Siberia from running north to the Arctic to running south to the Caspian Sea. There are plans to further divert northern California waters to southern California through massive canals, and even plans to ship water from the Great Lakes to Texas. Oil, gas, and mineral development on one billion acres off California is presented as a "new frontier" for economic development. "Harvesting" krill and other resources on the Antarctic marine shelf and possible mineral developments on that continent have been discussed for years by the scientists working for those nations having a claim to the continent. The list of projects for major technological modification of the Earth goes on and on.

But New Age/Aquarian Conspiracy proponents see this future as bright with human promise. In his book *Doomsday Has Been Cancelled,* J. Peter Vayk says:

Once we come to understand the heat balancing mechanisms more thoroughly, we can begin to supplement existing regulatory interactions with consciously implemented mechanisms. Should we find it desirable, we will be able to turn the Sahara Desert into farms and forests, or remake the landscape of New England, while we create the kind of future we dream. . . . We are the legitimate children of Gaia; we need not be ashamed that we are altering the landscapes and ecosystems of Earth. But we do owe our mother careful attention to our handiwork and to our treatment of Gaia's other species of life.[16]

In this vision, humans are the center of the historical process, with the duty, as René Dubos says, to "humanize the earth." He asserts that, "Earth has potentialities that remain unexpressed until properly manipulated by human labor and imagination."[17]

The logical next move for New Age/Aquarian Conspiracy advocates is the "leap into space." "Spaceship Earth" became a popular image in the 1960s, the decade of the first space flights. And space has been called the "high frontier," in which modern technological man can do productive work, mine minerals on the moon and other planets and plant human civilization on previously "undomesticated" planets. James M. Beggs, administrator of the National Aeronautics and Space Administration in 1984, outlined this kind of scenario: U.S. space stations could "open space to a limitless range of opportunities" and lead to a moon colony by the year 2010 and a manned base on Mars by 2060.

After building a permanently manned space station we must learn how to tug it out, or move it in other ways to geosynchronous orbit, 22,300 miles up where the station rotates at the same rate as Earth and thus remains stationary over one area.

As we enter the twenty-first century, or shortly thereafter, we will have established a manned space station in lunar orbit, which will allow us to exploit the moon's resources. At about the year 2010, we could establish a colony on the moon, beginning with a small research station. By 2020 or 2030 we might have an operating productive activity on the moon.

In about the year 2040 the colony on the moon would be flourishing. Twenty short years after that the colony on Mars would be healthy and growing. And with the technology being developed today, we could be

mining large amounts of material, expanding our economic activities in space and bringing the benefits back to Earth.

The technology to carry out the scenario is in our hands today. We need the will, imagination and vision to use it to reach our goals.

—James Beggs, National Aeronautics and Space Administrator (1984)

Some proponents of the New Age/Aquarian Conspiracy look to Teilhard de Chardin as their godfather. Teilhard's spiritual evolutionary Christianity is expressed in *The Phenomenon of Man* (1959) and other writings. Teilhard has appeared as an avant-garde theologian to many because he has combined Christian spirituality with evolutionary ideas. But as Christian scholar Frederick Elder (*Crisis In Eden*, 1970) pointed out in his survey of Christianity and the environment, Teilhard is "fiercely anthropocentric." Teilhard envisioned "man's evolutionary movement toward a point of complete humanization" of the planet—what Teilhard called the *Omega point*. Teilhard was writing largely before the human overpopulation crisis had been brought to public consciousness by ecologists and others. Similarly, Teilhard was also writing in a preecological era. His faith in human ingenuity through technology seemed to be almost unbounded.

Teilhard was himself a paleontologist and student of biological evolution. But in his case, his awareness of species extinction over the ages may have led to a profound distrust, alienation, and fear that the natural evolutionary processes would eventually result in the extinction of humans. This fear of Nature seemed to pervade his theology and cannot be overestimated in assessing the theme of domination and control over Nature expressed in much New Age writing. Teilhard also harkened back to the story of the Fall in Genesis. On this view, Nature as well as man fell from divine grace and so "both needed to be redeemed." There is spiritual transformation for humans, but there is also "creative transformation" of the nonhuman world. What this means is that the planet must be humanized and converted over to human purposes. This is an old theme in Western thought and was used as a justification by English philosopher Francis Bacon, who was largely instrumental in developing the modern worldview. Unfortunately, the large-scale human transformation of the nonhuman world is profoundly dangerous and unecological, as professional ecologists ceaselessly point out.

Teilhardian scholar Thomas Berry is aware of the antiecological anthropocentrism of Teilhard's thought and has struggled to revise it in biocentric ways. But he realizes how difficult it is for humans to go beyond anthropocentric thinking in all its forms:[18]

Probably the adjustment of thinkers from a pre-evolutionary context to an evolutionary context of interpretation is the best parallel, in the order of magnitude of its adjustment, to the adjustment from an anthropocentric to a biocentric orientation of consciousness. This latter is the adjustment we are suggesting for the vision of Teilhard. . . .

[For Teilhard] the sense of progress was irresistible, the feeling that the great mission of the human was to exploit natural resources, to build civilization, to release mankind from the age-old tyrannies of the natural world. The ancient mystique of communion with the natural world was seen simply as ignorance and superstition. . . . A world under rational control was the ideal to work toward. . . . While he rejected the mechanistic worldview in favor of a mystical worldview, he fully accepted the industrial and technological exploitation of the planet as a desirable human activity. . . . Teilhard became the heir to the imperial tradition in human-earth relations, the tradition of human control over the natural world. The sublime mission of scientific research and of technological invention was to support this advance into the ultra-human. . . . Teilhard is the most faithful of all followers of Francis Bacon, in his assertion that human intelligence should subordinate the natural world to human heights. . . . The damage done to the natural world was incidental, a price to be paid, a normal expenditure of energy for every advance in the evolutionary order. Teilhard is deeply involved in the total religious and humanist traditions of the West out of which this exploitative attitude developed. . . . The opinion is correct that Teilhard does not in any direct manner support the ecological mode of consciousness. . . .

Teilhard establishes the human as his exclusive norm of values, a norm that requires the human to invade and to control rationally the spontaneities of nature. . . . [For Teilhard] there is no question of accepting the natural world in its own spontaneous modes of being and establishing as an ideal a basic intercommunication with the total earth community, a communion whereby the human would "live lightly" upon the earth. This would be a treachery to the demands of the evolutionary process. . . .

On his own principles of totality we might say that the evolutionary process finds its highest expression in the earth community seen in its comprehensive dimensions, not simply in a human community reigning in triumphal dominion over the other components of the earth community. The same evolutionary process has produced all the living and nonliving components of the planet.

—Thomas Berry, *Teilhard in the Ecological Age* (1982)

The New Age movement is a powerful and vocal force in today's world of futurologists and "think tanks." One reason it is so influential is that it is telling people what they are used to hearing: more and more massive technology and conquest of the planet and outer space. This is merely the most sophisticated and glamorous thrust of the Western tradition of anthropocentric domination and control. But Teilhardian scholars such as Berry are already defecting from the ranks. The New Age scientists, technologists, and businessmen will have to face the fact that their philosophical/religious base is now rapidly eroding. They will have to join the Age of Ecology sooner or later. One hopes for the sake of person/planet that it is sooner rather than later.

A NEW AGE ANTI-ECOLOGICAL VISION

In the life/death struggle between man and nature . . . the question has been . . . *who* would win: Man or Nature? Man has won—or is winning. . . . Man has loved his earth; it nourished him. But he has also hated it for its relentless attempt to annihilate him. . . . Man is on the threshold of setting controls over ever-larger forces of nature—climate and earthquakes, for instance. The control of life and evolution is near . . . man may eventually establish control on a cosmological scale. We might alter the orbit or the tilt of the earth. . . . Man is now in process of taking control of his own evolutionary destiny and, by default, the destiny of all other living creatures on his planet. . . . [This is] part of the grand transition man is now undergoing, the transition from being a *passively produced organism* to being the *active controller* of life and destiny. . . . Controls have now spread to almost every area of human experience. Lagging behind, of course, is control of man himself, but this appears to be the area wherein the next giant steps will be taken.

—James Christian, *Philosophy* (1981)[19]

(Viewed from the perennial philosophy wisdom tradition of Spinoza or Buddhism, the kind of power over Nature described here is not being *active,* as New Age thinkers believe, but rather as being *passive* to our fears and unhealthy desires.)

II. A DEEP ECOLOGY PERSPECTIVE

1. Some General Suggestions

An alternative approach to that suggested by resource economists and current versions of the Resource Conservation ideology is suggested in this section.

Our first principle is to encourage agencies, legislators, property owners and managers to consider flowing with rather than forcing natural processes. Second, in facing practical situations we favor working within the minority tradition, in the local community, especially the bioregion.

One of the criticisms of scientific management as now practiced is the attention to building "abstract models" which in our estimation have little relevance to site-specific situations. For example, the U.S. Forest Service has attempted to develop and implement decision-making by setting goals for each forest. The goals are "commodity outputs" per time frame (usually every ten years). A computer model (Forplan) takes data collected by sampling techniques, adds numerous questionable assumptions and yields output tables telling the managers how many board feet or cubic feet of trees can be cut to meet the goals. This abstracting of Nature is a dangerous and uncaring approach and lulls the manager into thinking he has the relevant variables under control. We need to take seriously the ecologists' principle that Nature is more complex than we now know and more complex than we possibly can know.

This is not to say we don't see some value to scientific data collection. But it should be specifically addressing a more local site, valley or bioregion. Many primal peoples were excellent observers of natural processes, knowing the weather, pattern of changes in the seasons, habits of wildlife and so forth. Science and technology can be an aid but they are no substitute for this kind of direct land wisdom.

This knowledge was used to serve vital needs for food collection, materials for building shelters, and so forth. Therefore, drawing upon the distinction in wildlife management between "hands-on" and "hands-off" techniques, Muir's righteous management (biocentric ecological management) would be essentially hands-off management.[20]

Righteous management would also be consistent with Taoist philosophy and ways of life wherein human activities fit in and flow with the larger cycles of Nature rather than attempt to modify Nature on a large scale to fit grandiose human projects and whims. There is some indication that this is what Muir had in mind for the national

forests when they were established in the 1880s and 1890s, and his concluding essay, "The Bee Pastures of California," in *The Mountains of California*, presents a vision of righteous management which has been long overlooked by planners and reform environmentalists.

Muir saw the national forests as places where the flow of wild Nature would be protected against the ravages of expanding industrial civilization. When he saw Pinchot's plans being implemented for the exploitation of the national forests as commodities for economic growth and development, he turned to the concept of national parks as places where wilderness would predominate. It is perhaps ironic that now in the United States nearly every national park is also being threatened by encroaching industrial civilization. And as ecologists such as Paul Erlich call for vast unmanaged wilderness ecosystems as essential for human survival, the Forest Service has launched a publicity campaign through its pamphlets and other means to condition the public to accept "tree farms" in place of natural forests. "Is Nature Always Right?" one pamphlet asks. "Nature often works in slow, ponderous rhythms which are not always efficient" and "natural growth results in a crowded haphazard mix." The forester can give Nature a helping hand to provide forest products for growing human needs.

There seems to be a general principle involved here that, in terms of hands-on, manipulative management, increasingly intensive management produces a host of unintended consequences which are perceived by the managers and the general public, and especially by the environmental/ecology movement, as real and severe problems. The usual approach, however, is to seek ever more intensive management, which spawns even more problems. And each of these problems is seen as separate, with separate experts and interest groups speaking to each other across a chasm of different technical vocabularies, hidden agendas and very narrow ideas of their own self-interest.

An extreme example of this situation, well documented by historians, ecologists and government agencies, is the situation in California's Central Valley, where the intensively managed agri-industry, which claims as its goal, "feeding the hungry of the world," is now creating an unhealthy, almost unfit environment for many human inhabitants of the Valley. Massive construction projects designed to bring more water to more acres of land have caused desertification, air and water pollution, failure of the underground water system and destruction of fisheries and estuaries in the San Francisco Bay and Sacramento River delta.[21]

Alternatives can be derived from Aldo Leopold's land ethic, which he states as a general principle for maintaining the integrity of natural processes. The land—birds, plants, soil, etc.—is included in the community along with humans, and consideration of vital human needs is placed in the context of the needs of others for self-realization. Both individuals and collectives of organisms and ecosystems are considered when making decisions.

For example, when it is shown that a proposed project will threaten a rare or endangered species, much more careful consideration is given to the project. Mitigation by removing some individuals of the endangered species, such as California condors from their nests or eggs from their nests, breeding some of these in captivity or freezing their genes as genetic resources for future generations are *not* acceptable alternatives.

The killing of the remaining whales to "serve the food needs" or the "needs for jobs" of a few people for a few years in the whaling industry is not an acceptable alternative. Furthermore, ecologists and others interested in preserving wild species should not be required to solve all the problems of jobs, urbanization, and industries in order to advocate protection of other species. Environmentalists are never against jobs as some opponents charge, but are certainly proponents of jobs which are ecologically benign.

2. "Not Do"

Many of the specific goals of preservation of habitat of other species consistent with biocentric equality are summarized in the phrase "Let the river live," where the "river" includes a broader definition of living—not just human populations or even the trees along the river, but the ecosystem of flowing energy. Another perspective on management consistent with Naess's key slogan, "simple in means, rich in ends," is "not do."

It is well documented, for example, that huge areas of the American West have been overgrazed by domestic livestock during the last hundred years so that the carrying capacity, the ability of the range to support certain "head" of livestock over the long term, has diminished. But federal subsidies in the form of low grazing fees (in comparison to fees charged on private lands) and letting ranchers (because of their political pull) continue running livestock on overgrazed lands in herds which are too large for sustainability, increase the problem.

A simple "not do" solution is to end federal subsidies and restrict use of public lands for grazing to a level consistent with recovery of grasslands as estimated by professional ecologists.

A second simple "not do" example is the Great Barrier Islands legislation in the United States Congress. The numerous Barrier Islands along the Atlantic seaboard and the Gulf of Mexico are noted for their fragility and unique lifeforms but also the desirability by humans for second home developments and commercial industrial development. One way to protect the intrinsic values and human amenity values of some of these islands is to establish national parks or wildlife reserves at a cost of buying private lands.

However, the "not do" solution in this case was removal of all government financial subsidies for building on Barrier Islands—no funds for roads, schools, sewer systems, marina developments nor government subsidies or guarantees for storm damage insurance (a major issue since hurricanes frequently sweep through some of the islands). The government stated that it would not provide emergency relief funds to help people resettle if they lost their property in a storm.

Result: The rate of development of the Barrier Islands has decreased, habitat has been protected and some people are relieved that "big government" is not taking their property.

3. Living in Mixed Communities of Humans and Nonhumans

While the bioregional, minority tradition seems appropriate to us for cultivating ecological consciousness, allowing for biological diversity and simplicity of means, there are tough, practical decisions to make. We cite several examples.

Consistent with our ultimate norms, it seems that one principle is protection of endangered species of plants and animals as part of the general norm of unity in diversity.

Another norm is bioregional responsibility. The local community is the place for decisions. However, what happens when a local community's needs conflict with the norm of protecting species diversity?

Such a situation occurred on the north slope of Alaska where native Eskimos were hunting bowhead whales in the 1970s. The International Whaling Commission ruled that this was an endangered species of whale and considered a total ban on the killing of bowheads. However, the native Eskimos pleaded that it was part of their tradition to kill whales. Their myths and lifestyle were dependent on it. If they didn't kill whales they would be more dependent on canned meat from the "lower forty-eight" given them by welfare departments.

This somewhat split the environmentalists. Many groups supported a total ban on the killing of bowheads until ecologists determined that their population had "sufficiently increased," but Friends of the Earth took the position that Eskimos be allowed to take a regulated number of bowheads using their traditional methods (no advanced technology for killing them was allowed).

Arne Naess provides an example from the bioregion of northern Norway where farmers and herders, through expansion of farms and number of sheep, were rapidly encroaching on habitat of wolves and bears. Some suggested killing all bears since a few bears seemed to be eating some sheep. But others suggested identifying the problem more carefully. Was a specific bear becoming more and more interested in sheep? Could that bear be enticed to refrain from eating sheep? Could it be removed to another location? Could the farmers agree to keep their sheep out of areas where bears were known to have dens or graze? Only as a last resort would the community consider the option of killing that bear.[22]

This approach is in great contrast with that favored by some ranchers and farmers in the American West. When a "predator" is defined—such as wolves, coyotes, eagles, etc.—then systematic efforts are undertaken to eliminate it, including aerial hunting of wolves (in Alaska), spreading of poison "1080," shooting eagles with high-powered rifles and destroying habitat (denning areas, riparian habitat of rats, etc.).

4. Forms of Agriculture

Most agriculture as now practiced as agri-industry with massive use of herbicides, pesticides and other chemicals, major changes in the natural flow of energy through irrigation systems, monocultural systems of cropping and deletions of "border" regions such as riparian habitat, would be wrong insofar as this type of agriculture threatens the integrity and stability of wild ecosystems.

In practice, of course, given the realities of world population and the amount of human-induced changes in landscapes, some less-pure-than-desirable forms of agriculture are necessary, if we are trying to work within a deep ecology perspective.

Thus we are especially encouraged by some of the work on *permaculture* by Australians, including Bill Mollison. Working within a bioregion, sharing experiences and knowledge, experimenting with self-reliance and leaving areas of habitat for other species, they are working toward a sustainable and more locally based agriculture.[23]

The organic farming techniques publicized by many writers in the context of specific bioregions is another example worth exploring. For example, an interesting proposal for a return to primitive agriculture in one of the most industrialized nations of the world, Japan, is explained by its founder, Masanobu Fukuoka, in his book *The One-Straw Revolution.*[24] Fukuoka is particularly useful from a deep ecology perspective because he discusses the metaphysical and epistemological assumptions of agriculture in technocratic-industrial societies and presents some alternative proposals.

Much work remains to be done to expose the assumptions and the consequences of the dominant worldview on agriculture and grazing, perhaps along the lines of Denzel Ferguson's *Sacred Cows on the Public Lands* (1983).[25] Further specification of types, modes and assumptions of agriculture within deep ecology principles is needed.

> The reason for all the confusion is that there are two paths of human knowledge—discriminating and non-discriminating. . . . I deny the empty image of nature as created by the human intellect, and clearly distinguish it from nature as experienced by the non-discriminating understanding. If we eradicate the false conception of nature, I believe the root of the world's disorder will disappear. . . . Nature as grasped by scientific knowledge is a nature which has been destroyed; it is a ghost possessing a skeleton, but no soul.
>
> —Masanobu Fukuoka, *The One-Straw Revolution* (1978)

Wendel Berry, in *The Unsettling of America* (1977), makes the point that modern agriculture and land use in general is the result of our contemporary distortion of values:

The exploitive always involves the abuse or the perversion of nature and ultimately its destruction. Thus, we saw how far the exploitive revolution had penetrated the official character when our recent secretary of agriculture remarked that "Food is a weapon." This was given a fearful symmetry indeed when, in discussing the possible use of nuclear weapons, a secretary of defense spoke of "palatable" levels of devastation. Consider the associations that have since ancient times clustered around the idea of food—associations of mutual care, generosity, neighborliness, festivity, communal joy, religious ceremony—and you will see that these two secretaries represent a cultural catastrophe. The concerns of farming and those of war, once thought to be diametrically opposed,

have become identical. Here we have an example of men who have been made vicious, not presumably by nature or circumstances, but by their values.

Food is not a weapon.[26]

Berry demonstrates that older, more intuitive ways of interacting with the land are being swept away and labeled "superstitious" when in actuality they contain a great deal of ecological understanding. Modern technocratic societies have pinned their hopes for increased production and efficiency on technologies based on partial, and in many cases, inadequate theoretical scientific models. There is no reason to believe that scientific theories and models will ever capture the full intricacy of natural ecosystem functioning.

The adequacy of technology is only as good as the theoretical models upon which it is based. The idea of Gaia treated as a scientific theory rather than myth is an example of a theoretical model and its limitations. Myth is encompassing, intuitive, comforting, involving. The model is limited, cold, manipulative, distant from reality.

The science of ecology as defined narrowly in academia with its thermodynamic studies of energy flows modeled on our current understanding of the laws of physics, the economically modeled concepts of producers and consumers, and quantitative analyses of predator-prey relationships, is itself replete with theoretical concepts and models. The very concept of an ecosystem is based upon cybernetics systems theory which is an attempt to apply a machine model to natural organic processes.

The massive failure of modern technologies when applied more intensively to complex organic systems should lead to widespread healthy skepticism toward scientific modeling together with its associated technologies. It seems appropriate that ecologists and other scientists, and certainly the Resource Conservation and Development scientific managers of Nature, should take heed. But treated with due caution, modesty, a basically conservative attitude, and an awareness of its inherent limitations, ecological science can help us in our search for righteous management. But science and technology alone are a dangerous substitute for land wisdom. And so underlying the search is the constant process of asking deeper and more probing questions.[27]

At the level of politics, land use planning, and other decision-making, every proposal which involves an alteration of a natural ecosystem must be subjected to intensive questioning. What are the

social and environmental impacts? Why this project? Will it disrupt the far-future generations of other species, in addition to humans?

Revisioning the quest of human living, we need to ask the fundamental question posed by twentieth-century anthropologist and naturalist Loren Eiseley: "How can we reenter the first world of Nature, from which we have alienated ourselves?" And we need to ask how we can rediscover the enchantment of Gaia, the sacredness of Gaia, and thus heal ourselves.

5. Recovery of Damaged Ecosystems

We have argued that Muir's righteous management is management based upon a worldview and a spiritual way of life similar to the outlook of Taoism, the American Indians, and other primal societies wherein the best management is, in principle, the least management. But we also realize that vast areas of the Earth have been seriously distressed and disrupted by careless and highly exploitive human activity. Strip mining and deforestation are only two obvious examples in the United States. Should these kinds of environmental degradation be left to heal naturally or should humans intervene to help the healing process?

Aldo Leopold defined land health in terms of the naturally evolving processes of an ecosystem in dynamic equilibrium. He used undamaged wilderness as a baseline from which to gauge the health of human-occupied ecosystems. It would seem to be compatible with deep ecology principles and righteous management that, in general, if humans have distressed an ecosystem, they have an obligation to help heal that system. The recovery of human-damaged ecosystems is not strictly a scientific matter, for reasons mentioned earlier, but would involve a combination of art, science, and most importantly, a sense of place.[28] That is, those humans involved in reinhabiting or restoring an ecosystem to health would need to be sensitive to the spiritual as well as the biological needs of that place.

Only in recent years have professional ecologists begun to consider, in a systematic way, the scientific, ethical, and practical issues involved in the recovery of damaged ecosystems. In the introduction to his book on the art of ecosystem healing, ecologist John Cairns poses some interesting questions:

How is recovery defined? What criteria are important in measuring recovery? Do societal perturbations (e.g., strip mining) have a different effect upon natural communities than natural perturbations (e.g., floods)? Should the term "restoration" include, for example, replace

ment of stripmined forests with prairie grassland where the latter do not naturally occur (e.g., West Virginia)? How do perturbation-dependent communities differ from other communities relative to the recovery process? Are certain species likely to be primary colonizers of all disturbed systems? . . . Even the selection of an appropriate word to describe the overall process is difficult. One might use rejuvenate, restore, renew, regenerate, rebuild or reconstitute. All of these imply a return to the original (or a new) state of recreation or a youthful strength. Such terms are synonyms for "restoration" and may make it easier for readers of ecological literature to understand and identify the results expected from the recovery phase.[29]

Cairns attempts to answer critics who claim that restoration or rehabilitation has nothing to do with the concept of conservation:

If one views conservation as saving for future generations, reclamation may be as important as preservation. If complete recovery is indeed possible, a distant future generation may not be able to distinguish the reclaimed area from a preserved one. It is also worth noting that reclamation will be better understood and the degree of recovery more precisely determined if untouched reference areas are preserved to serve as models.[30]

Over the years, various environmentalists have proposed dismantling the Bureau of Reclamation. Cairns's use of the term *reclamation* might provide the basis for a new positive ecological function for the Bureau. Cairns's philosophical grounding in anthropocentric conservation might also be widened to include the rights of other species to their own habitats as further criteria in the restorative process. Those committed to deep ecology principles will look with interest on ecological models and prescriptions as provided by Cairns while also keeping in mind the deeper religious/philosophical understanding of person in Nature.

The following are two examples which are symbolic and provocative metaphors for those seeking to heal human-damaged ecosystems. The first example is the significant move in the direction of implementing deep ecology and land ethic principles that has been taken by the U.S. National Park Service in their recent efforts to rehabilitate portions of Redwood Creek in California's Redwood National Park. This small watershed has been studied as intensively as any in the state and could serve as an example of possible rehabilitation in other watersheds. However, the first chapter of *Watershed Rehabilitation in Redwood*

National Park and Other Pacific Coastal Areas provides restoration managers with a vexing dilemma:

Rehabilitation is the restoration to a former state or capacity. Implicit in the term is the assumption of a degraded condition. In wildlands, the greater the degradation, the greater the public visibility and, therefore, the greater the pressure for restoration or rehabilitation. Unfortunately, the greater the perceived "need" for rehabilitation, the lower the probability that rehabilitation efforts will be successful. Thus this dilemma: The greater the public outcry that "something be done," the smaller the opportunity to actually succeed.[31]

This dilemma may again point to the need for land use agencies to move away from policy decisions based on subjective criteria such as public opinion to more objective criteria based upon sound ecological principles.

When the patient is in a state of crisis, the healers need both skills and luck to stabilize the condition. This was the case with Redwood Creek. Until the 1880s, this watershed was inhabited by old-growth redwoods, black bear, Roosevelt elk, oak trees, egrets, river otter, Pacific salmon, and a small tribe (two to four hundred) of Chilula Indians. The Chilula led lives filled with rituals and with a sense of place. Their "churches" were rocks and waterfalls and small lakes where they prayed, held puberty rites, communed with the spirits, and sought to understand. They ate salmon from Redwood Creek and engaged in some prescribed burning, allowing grasses to continue to grow which they used in making baskets.[32] After 1880 the Indians were removed to the Hupa reservation and the lands of Redwood Creek passed to large timber corporations. As late as 1950, however, most of the old-growth redwood forests (which were considered the only commercially valuable wood in the forests) were still intact.

By 1978, only 9,500 acres of old-growth redwoods remained. Clear-cuts on steep slopes were eroding. Exotic species of trees had been planted in some areas by the timber corporations. In the Act establishing Redwood National Park, Congress directed the Park Service to undertake ". . . the rehabilitation of areas within and upstream from the park contributing significant sedimentation because of past logging disturbances and road conditions. . . ."[33] The land managers agreed that, "Successful management of erosion is as much a philosophical and political problem as a technical one."

In the first three years of rehabilitation, sites were selected on the basis of the seriousness of the "wounds," estimates of the potential for increasing sediment to the drainage, and "complications" such as gullying from the failure of culverts on logging roads. Each site had a "prescription" written for it.

An example of a site-specific prescription is found in the recommendations for the Tall Trees Grove, an alluvial flat of old-growth redwoods containing some of the tallest trees on Earth. This grove is surrounded on three sides by Redwood Creek, which is still carrying heavy quantities of man-induced erosion material, and by clear-cuts on the uphill slopes. The report claimed that: "Most likely the Tall Trees Grove has a long history of flooding and sedimentation, as with other similar groves on alluvial flats, and it is necessary to see that this continues with minimum adverse change. This will be difficult, because the past half-century has been one of major changes on the watershed related to human use." A whole series of subtle conditions relating to rates of sedimentation, fine sediment versus coarse bedloads, rates of tree growth, and seedling survival was found to be necessary for maintaining these groves. The long, slow, inexorable processes of Nature could not be circumvented by technological ingenuity if these groves were to continue to prosper. It was concluded that, "Management of these groves with the objective of their preservation must allow for such events and their maintenance."

The ecological and rehabilitation studies which resulted in the prescriptions for maintaining the redwood groves, together with other practices such as allowing forest fires to burn in uninhabited areas, further underscores Commoner's law that "Nature knows best." It is encouraging to see the U.S. Park Service begin to incorporate ecological wisdom in their management plans and as an ideal by which to guide management and rehabilitation policy.[34]

The second example of the difficult job of rehabilitating a human-damaged area is the proposal to make the Los Angeles Basin again habitable by the California condor. The condor is an endangered species caught up in the machinations of an exploitive hands-on scientific management plan. Instead of attempting to protect the remaining birds and enlarge and restore their habitat, some biologists have weighed and measured and generally disturbed the condors while hopes for their survival hinge mainly on captive breeding in zoos. But captive wild animals have been removed from the natural evolutionary processes. As David Brower has pointed out, the condor is a condor only in *place,* in natural habitat, and this principle holds

as well for other wild animals, as well as humans. The goal is to restore the Los Angeles Basin to condor habitat. The symbol of the condor and condor habitat for the Los Angeles Basin provides a provocative metaphor for this and future generations of humans as they begin the process of reinhabitation of these areas.[35]

The fate of the California condor is a symbolic issue for Brower and many other people. Brower asked a rhetorical question: "If we cannot save a receptive environment for the condor, symbol of the global threat to endangered species, what can we save? What condors need most right now is our sense of their place," he concluded. Brower suggested that a practical ecotopian vision would be to restore the Los Angeles Basin to condor habitat. He concluded his essay on "The Condor and a Sense of Place" with the following statement:

The Condor Question, we hope, will enhance the opportunity for the rest of us to keep intact the wildness and wild living things that remain in the sea, on the land, and in the air, to prevent a wake for them and their not-so-distant relatives, ourselves. We and they need our places, our islands of sanctuary.

Let it speed the California condor's recovery to measure the bird arbitrarily about like this: A condor is five percent feathers, flesh, blood, and bone. All the rest is *place.* Condors are soaring manifestations of the place that coded their genes. That place requires space to nest in, to teach fledglings, to roost in unmolested, to bathe and drink in, to find other condors in and not too many biologists, and to fly over wild and free. If it is to be worthy at all, our sense of ethics about other living things requires our being able to grant that their place transcends our urge to satisfy our curiosity, to probe, to draw blood, to insult, to incarcerate. We can respect the dignity of a creature that has done our species no wrong—except, perhaps, to prefer us at a distance.

We tend to view the kind of management designed to regulate and halt further environmental destruction by modern humans as *interim management.* And since the current urban-industrial onslaught must be slowed and stopped as quickly as possible, then surely the success of interim resistance measures will be equally important in its own way as are the creative steps taken toward deep ecology futures. We are arguing that interim management measures, while a necessary condition at present, are not sufficient to provide a long-range solution to our environmental plight. As Gary Snyder suggests, "We need to work on all levels simultaneously."

We recognize the absolutely crucial importance of maintaining the natural evolutionary/ecological processes on this planet and of resisting the dominance of the managed "artificial world." Another interim management strategy, justified in anthropocentric terms, is the "World Conservation Strategy" developed by the International Union for the Conservation of Nature and Natural Resources (IUCN) and backed by the United Nations Environmental Program. This worldwide plan has been worked out in considerable detail and might actually help provide a transition to deep ecology decentralized futures.[36]

In October 1982, the United Nations General Assembly adopted a World Charter for Nature (which had been prepared by the IUCN) which includes a more biocentric orientation. The General Assembly is convinced that:

. . . Every form of life is unique, warranting respect regardless of its worth to man, and, to accord other organisms such recognition, man must be guided by a moral code of action. . . . Nature shall be respected and its essential processes shall not be disrupted. . . . Ecosystems and organisms . . . which are utilized by man shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist.

While the Charter for Nature is to be applauded, we have suggested the ambiguities in the concept of management, and various incompatibilities in achieving optimum productivity on the one hand while not disrupting ecological processes and the integrity of Nature on the other.

We are caught in a series of complex dilemmas. We have argued that contemporary RCD ideology is generally hands-on management, and that the overall manipulation of Nature is both ecologically disastrous and ethically unacceptable. It violates the integrity of Nature, and further, it is unethical, as Heidegger and others have argued, to pervert living beings by mechanizing and genetically altering them. Environmental disaster is the end result of the unrestrained freedom of societies to exploit Nature. We believe that genuine freedom for humans and nonhumans lies in deep ecology futures.

It is crucial that interim management plans do not include practices that are ecologically harmful or questionable, thus foreclosing the possibilities for deep ecology futures. Many forms of hands-on management—taking wild animals from their natural habitats to serve

as breeding stock in zoos, or being lulled into complacency by setting up genetic sperm banks of wild stock—may be examples of such practices.

6. Deep, Long-Range Goals and Interim Management

Some will no doubt say that deep ecology proposals for holistic management and reinhabitation are overly idealistic and impractical on a global scale. As a sociological fact, deep ecological consciousness and interest in bioregionalism are on the increase in many parts of the Earth.

However, there are public policy decisions which are being made by corporations and national governments which include the fate of vast areas of the planet where humans have never made significant impact before—the oceans, sky, antarctic and polar regions, Siberia, many mountain regions, and all remaining rain forest areas where bioregional peoples have lived for centuries but which are now being destroyed.[37]

In our estimation, at present we must use all political avenues open to us, including the mechanism of the United Nations, to protect vast expanses of ecologically viable habitat to insure species survival.

Furthermore, in order to insure the compatibility of interim measures with long-range ecology futures, restoration managers and interim managers need to cultivate a biocentric perspective. Some are just beginning to understand the relationship between cultivating one's own ecological consciousness and "managing." Any real understanding of the land means atuning oneself to the land, to a specific bioregion, and developing a sense of place. Otherwise, land management will continue to "manage" on the basis of subjective economic criteria to the detriment of the Earth and the future.

If enough citizens cultivate their own ecological consciousness and act through the political process to inform managers and government agencies of the principles of deep ecology, some significant changes in the direction of wise long-range management policies can be achieved.

Nothing is said in this book about the export of commodities—water, plants, timber, etc.—to cities, nor anything about managing cities, their size or design, nor the political power of cities to take natural resources from far away for their own uses. Nor do we discuss jobs, the structure of decision-making in natural resource extraction and the creation of jobs for ever-growing human populations. These are vital issues for individuals and for public policy and deserve

careful, thoughtful consideration based on deep ecology norms and principles. We encourage readers to draw from their own experiences, whether living in large cities, suburbs or the countryside, to make more specific decisions based on their own knowledge, information, and intuitions within the deep ecology framework.

Forest workers and private landowners of small and large parcels of damaged forest lands, for example, can adopt a holistic forestry strategy based on maintaining biological diversity rather than making decisions based on short-term return on invested capital.[38]

As Gary Snyder concludes, "Like it or not we are *all* finally 'inhabitory' on this one small blue-green planet. . . . It's clearly time to put hegemonial controversies aside, to turn away from economics that demand constant exploitation of both people and resources, and to put Earth first!"[39]

This living flowing land
is all there is, forever

We are *it*
it sings through us—

We could live on this Earth
without clothes or tools!
—*Gary Snyder, from "By Frazier Creek Falls" in* Turtle Island *(1974)*

CHAPTER 9

ECOTOPIA: THE VISION DEFINED

It would be a grave injustice to dismiss utopian thought as mere fantasy, visionary and impractical; to consider it restricted to literary forms that bear its label is to underestimate its wide prevalence, at many levels and in all cultures. However expressed, it is essentially a critique of defects and limitations of society and an expression for something better.
—Paul Sears, "Utopia and the Living Landscape" (1965)

Developing ecotopian visions is part of our environmental education. In a society famous for dystopian visions, such as *Brave New World* and *1984,* ecotopian visions present affirmations of our bonds with Earth.

Creating ecotopian futures has practical value. It helps us articulate our goals and presents an ideal which may never be completely realized but which keeps us focused on the ideal. We can also compare our personal actions and collective public decisions on specific issues with this goal. We suggest that ecotopian visions give perspective on vain-glorious illusions of both revolutionary leaders and the propaganda of defenders of the status quo. Furthermore, ecotopian visions help us see the distance between what ought to be and what is now reality in our technocratic-industrial society.

In this chapter, we use ecotopia in the broad sense of all visions of a good society placed in the context of deep ecological norms and principles. We present the ecotopian visions of Loren Eiseley, Baker Brownell, Aldous Huxley, Gary Snyder and Paul Shepard. We should keep in mind that ecotopian visions are always tentative; the examples given in this chapter are first approximations and not complete statements.[1]

In addition to acting as a provocative catalyst for public debate, creating ecotopian visions is also useful for the development of ecological consciousness in people who struggle with these visions. This process enables one to sharpen both the image of the ecotopian future, and the rational skills needed in public debate to argue the points.

We feel this process is an essential part of environmental education for high school- and college-age students. This may help them see viable alternatives to the status quo which they can incorporate into their own lives. Even grammar school children can gain from this activity. With some ingenuity on the part of teachers, deep ecology principles can be introduced using the deep questioning process.

Inspiration for ecotopian visions can be drawn from the anthropological literature on hunter/gatherers, small-scale agricultural communities, and contemporary primal cultures. A direct transition from our own culture into an ecotopia is beyond the imagination of most people. And so deciding on what is the "best" of contemporary culture to include in the ecotopian vision is part of the educational process. This can help us understand the difference between vital and nonvital human needs and bring us to a greater realization of the implications of applying deep ecology norms.

When we look back through history we can recognize the practical significance in shaping the direction of society of Plato's *Republic,* Augustine's *City of God,* and the visions of Karl Marx. Our contemporary technocratic-industrial worldview and society owes much of its present form to the vision presented in Bacon's *New Atlantis,* to various Enlightenment utopian visions, and to science fiction from H. G. Wells to Isaac Asimov.

Some ecotopias are very broad in scope whereas others are more specifically bioregional. It would be valuable to develop more ecotopias which address the problems and issues of the differing unique bioregions. For example, Ernest Callenbach's novels, *Ecotopia* (1975) and *Ecotopia Emerging* (1981), provide specific visions for America's Pacific Northwest region. The city of Saint Francis (San Francisco) becomes an ecological model for future urban areas. Callenbach discusses appropriate technology, emphasizing local grassroots politics, consensus decision-making, and the importance of providing opportunities for women to be major political leaders. There are discussions of ecological education for children, and ecological rituals. The basic philosophy of the Ecotopians tends to be patterned after the American Indian.

QUESTIONS TO ASK IN DEVELOPING ECOTOPIAN VISIONS

How can imperfect persons reach toward Self-realization in the broader sense discussed in this book?

How can humans begin the process of integrating body-mind-spirit?

What kinds of social structures are more conducive than others to both individual self-realization and the broader Self-realization?

What kinds of social structures are truly sustainable?

What kinds of technology are appropriate to deep ecology principles?

How do communities of people and individuals relate to this technology?

How can vital needs be defined?

How can vital needs be served fully with minimal impact on the requirements of vital needs of nonhumans?

What is the role of emotion in human life?

What kinds of cosmology, religion and education are most conducive to deep ecology principles?

I. LOREN EISELEY

In his essay "The Last Magician," which appeared in his collection of essays, *The Invisible Pyramid* (1970), Eiseley says that humanity now faces a magician who will shape its final form:

. . . a magician in the shape of his own collective brain, that unique and spreading force which in its manipulations will precipitate the last miracle, or, like the sorcerer's apprentice, wreak the last disaster. The possible nature of the last disaster the world of today has made all too evident: man has become a spreading blight which threatens to efface the green world that created him . . . the nature of the human predicament is: how nature is to be reentered; how man, the relatively unthinking and proud creator of the second world—the world of culture—may revivify and restore the first world which cherished and brought him into being.[2]

In the hunting/gathering cultures of the first world—the world of ecosystem people—man "projected a friendly image upon animals: animals talked among themselves and thought rationally like men; they had souls. . . . [Man was still] inside that world; he had not turned it into an instrument or a mere source of materials."

The second world—the world of culture—is a world of man's creation. It was made possible, in Eiseley's estimation, as a result of more advanced forms of symbolizing, of the linguistic phenomenon of displacement, of the invention of historical time. Man separated himself from the rest of Nature, became more urban and alienated from the "spirits in every tree or running brook. His animal confreres slunk like pariahs soulless from his presence. They no longer spoke." The Pan-power has been lost. Now the life of humanity is felt to be "unreal and sterile":

Perhaps a creature of so much ingenuity and deep memory is almost bound to grow alienated from his world, his fellows, and the objects around him. He suffers from a nostalgia for which there is no remedy upon earth except as is to be found in the enlightenment of the spirit—some ability to have a perceptive rather than an exploitive relationship with his fellow creatures. . . . Yet as the growing crust of his exploitive technology thickened, the more man thought that he could withdraw from or recast nature, that by drastic retreat he could dispel his deepening sickness.

If modern humans are to overcome this growing alienation and sickness, what will be required is:

. . . the act of a truly great magician, the man capable of transforming himself. For what, increasingly, is required of man is that he pursue the paradox of return . . . [but] man does not wish to retrace his steps down to the margins of the reeds and peer within, lest by some magic he be permanently recaptured. Instead, men prefer to hide in cities of their own devising.

Eiseley was writing at the juncture of two historic human events: the landing on the moon and the advent of space travel coupled with the explosive awareness of the global environmental crisis. Two competing images of the future seem to be vying for our attention—"the starship and the canoe." He gently warns us to set our priorities straight:

At the climactic moment of his journey into space [man] has met himself at the doorway of the stars. And the looming shadow before him has pointed backward into the entangled gloom of a forest from which it has been his purpose to escape. Man has crossed, in his history, two worlds. He must now enter another and forgotten one, but with the knowledge gained on the pathway to the moon. He must learn that, whatever his powers as a magician, he lies under the spell of a greater and a green enchantment which, try as he will, he can never avoid, however far he travels. The spell has been laid on him since the beginning of time—the spell of the natural world from which he sprang.

While Eiseley as an evolutionary voyager claims no aversion to space travel, he is nevertheless concerned with the motivations of some who advocate it most ardently. The great axial religions tried to "persuade man to transcend his own nature" but modern science has held out to humans "the prospect of limitless power over exterior nature. Its technicians sometimes seem, in fact, to have proffered us the power of the void as though flight were the most important value on earth." One space engineer of Eiseley's acquaintance claimed that "We have got to spend everything we have, if necessary, to get off this planet" because the Ice Age is returning. A space agency administrator claimed in print that "Should man fall back from his destiny . . . the confines of this planet will destroy him." Eiseley finds the expression of this kind of continuing psychic alienation from the planet shallow and dangerous:

It is not fair to say this planet will destroy us. Space flight is a brave venture, but upon the soaring rockets are projected all the fears and evasions of man. He has fled across two worlds, from the windy corridors of wild savannahs to the sunlit world of the mind, and still he flees. Earth will not destroy him. It is he who threatens to destroy the earth.

Eiseley concludes with a challenge and a utopian direction for the future survival of mankind:

Today man's mounting numbers and his technological power to pollute his environment reveal a single demanding necessity: the necessity for him consciously to reenter and preserve, for his own safety, the old first world from which he originally emerged. His second world, drawn from his own brain, has brought him far, but it cannot take him out of nature, nor can he live by escaping into his second world alone. He must incorporate from the wisdom of the axial thinkers an ethic not alone directed toward his fellows, but extended to the living world around him. He must make, by way of his cultural world, an actual conscious reentry into the sunflower forest he had thought merely to exploit or abandon. He must do this in order to survive. If he succeeds he will, perhaps, have created a third world which combines elements of the original two and which should bring closer the responsibilities and nobleness of character envisioned by the axial thinkers who may be acclaimed as the creators, if not of man, then of his soul.

II. BAKER BROWNELL

Baker Brownell, a social philosopher at Northwestern University during the 1930s and 40s, deserves credit for the first post-World War II ecotopian vision. Brownell proposed redirecting technocratic-industrial society away from its destructive path and toward simplified lifestyles in balance and rhythm with the natural world. Brownell realized that human existence is sustained by the larger natural world and the social order proposed in an ecotopian vision must be articulated with constant awareness of that fact.[3]

In Brownell's words, man's life:

. . . has been laid out through millions of years in association with living animals and plants and the vast music movement of the natural world . . . the beasts and the plants participate primevally in our communities. They enter our philosophies; mold our natures; help make us fully human. They are among our greatest teachers.

This sense of evolutionary continuity and ecological interrelatedness and reciprocity has implications for value determinations. In characterizing Brownell's position, Thomas Colwell, the educational philosopher, says:

By making value determination a function of an environmental field in which human interests are only one of a number of contending considerations, Brownell hopes to avoid the subjectivity inherent in social determinism. The process of deciding what is good for man would have to be framed in the context of what is good for components of the natural world other than man.[4]

From this ecological worldview and value orientation so reminiscent of Leopold's land ethic, Brownell sees that standards of human health and the meaningfulness of human existence must also be framed within the wider context of Nature:

We are continuous with Nature and the world. This sense of functional unity with the natural world is a basic condition, we may assume, of what is called a meaningful and stable life. . . . This functional . . . conception of life establishes normality on the broad basis of man's associations with his fellow plants and animals as well as with his own kind. . . .

Brownell is now faced with an epistemological problem and Colwell describes his dilemma:

But how is Nature to be known such that we may not only learn its own requirements for sustained existence, but that human values may be articulated within its purview? What method of knowing is appropriate to value judgment that is construed ecologically rather than socially? And how do we find in this method a place for human individuality and uniqueness? How, in short, is man's relationship to Nature to be understood if we are to derive a scheme of social practice from it?

He was forced to reject science as a way of knowing in the relevant sense, for science is statistical and generalized by its very nature and thus tends to "subsume the concrete under the relational." But for Brownell, the "concrete thing is the ultimate datum in existence." A method was needed that would retain the concrete reality of each individual thing even within the wider sphere of ecological interrelatedness, and Brownell found this method in direct mystical experience. This experience, for Brownell, is a kind of Gestalt in which individuality is retained even within the field of ecological relationships:

Mysticism enables man to comprehend the unity of direct experience which is denied to science, and in so doing he is in touch with the influence of environmental forces and relationships contextually rather than through the inadequate symbolic formulations of scientific method. In Brownell's mysticism, man is more fully aware of the sanctions and limits of the natural world because he is sensitive to their direct intervention in his daily life, and so is better able to overcome his anthropocentrism and shape his social life in accordance with ecological norms. . . . [In an ecologically healthy man/nature environment] sub-

jectivity is transformed and judgment begins to be conditioned by respect for the normativeness of ecosystemic relationships and sanctions. Thus, the ground of objectivity for Brownell's mysticism is in the world, in an environment ordered on the basis of ecologically sound principles.

From this ecological metaphysical/epistemological base, Brownell launches his attack on the urban/industrial worldview. The gargantuan size and complexity of modern industrial societies eliminates the possibility for direct concrete experience:

Industrial man, fragmented by the divisive specialization he is forced to engage in, vainly compensates for his lack of direct experience by vicarious cultivation of still other specializations, either as spectator, participant in extroverted pursuit of pleasure and material goods, or as lone practitioner of highly wrought technical and professional skills. For Brownell, our culture is a culture of escape and substitutive behavior. . . . Substitutive behavior forces us to separate emotion from direct action; and this separation, Brownell thought, is the essence of decadence.

Brownell was especially critical of urban life:

The greater aggressiveness and violence of city life stemmed from an excessive concentration of the specialized functions and organizations. But because the activities of corporate organizations increasingly reached out to include the remotest of rural areas, they too became affiliated with the extensive urban culture. All industrial life is lived in the urban context. . . . [Urban men] have learned to value false gods. They have been seduced by bright, divisive cultures, specialized perfections and privileges, glittering fragments, gadgets, ready-made arts, and importations bought promiscuously without relevance to the basic making-using rhythm that is central in any good life. They live on the loot of the world, on trinkets and odds and ends, the only value of which is often the thrill of acquisition.

Colwell sums up Brownell's critique of industrial society in his review of Brownell's writing:

In limiting concrete experience and reinforcing acquisitiveness, the goal of urban culture becomes the perpetual expansion of the scope of acquisitive experience. . . . An acquisitive culture is a man-centered culture. . . . It is morally narrow in its outlook and suicidal in its course; it fails to realize that the destiny of man, his well-being and happiness, must be framed in accordance with the welfare of the life of the whole of Nature and not just his own immediate desires.

To achieve a healthy, ecologically integrated human community, Brownell called for the decentralization of society: "The true human community is incompatible with corporate mass society." The reform of education, even in ecological ways, is by itself insufficient. Education as a social institution is part and parcel of the larger social context. As Colwell says:

The goal of the school is to promote the self-realization of each community member, and this leads to an appreciation of the broad world beyond the culture itself. Man is a part of Nature, his full humanity is realized when he has defined his own particularity in relation to Nature's totality. . . . The community is the supreme educational environment, and however much educators may try to institute instructional reform in the schools designed to enhance self-realization and overcome alienation, their efforts will fail as long as the community is organized on the principles of mass-society. Education must therefore become the agency of social reconstruction to make the small community the primary environment for educational activity. . . . In so heavily emphasizing the dependency of educational reform on social reconstruction, Brownell has made the possibility of educational reform hinge on what amounts to utopian social innovation.[5]

It is significant that Brownell had been a student of George Santayana. Upon his retirement in 1911, Santayana had made a scathing attack upon the anthropocentrism of the European philosophical/religious tradition. He had also rejected urban life and the direction of technocratic society for the virtues of rural life.

III. ALDOUS HUXLEY

Aldous Huxley came to an ecological perspective gradually during his long career, and as a result of his long association with D. H. Lawrence. Huxley's last novel, *Island* (1961), was an ecotopian vision.[6]

The novel is set on the island of Pala in southeast Asia, a Buddhist community which had isolated itself for 200 years from industrialization and colonization. A Scottish physician had introduced Western science to Pala in the nineteenth century, but the prevailing Buddhism set the contemplative direction of the community. The village was the mode of human community. Population had been stabilized, and technology was appropriate to meet basic needs—the island was self-sustaining. Much of the plot revolves around the attempt by Pala to resist commercialization from a neighboring community and to resist exploitation of its oil reserves by outside corporations.

Buddhism is the vehicle by which the youth are taught to have direct mystical experience and to experience their identity with the ecological whole. A great deal of the book is concerned with the nurturing and education of the young. Mountain climbing is one of the ways Huxley proposes to integrate the individual and overcome the mind-body split so endemic in Western civilized education:

Specialization . . . is necessary and inevitable. And if one educates the whole mind-body along with the symbol-using intellect, that kind of necessary specialization won't do much harm. But you people don't educate the mind-body. Your cure for too much scientific specialization is a few more courses in the humanities. . . . By themselves the humanities don't humanize. They're simply another form of specialization on the symbolic level. Reading Plato or listening to a lecture on T. S. Eliot doesn't educate the whole human being; like courses in physics or chemistry, it merely educates the symbol manipulator and leaves the rest of the living mind-body in its pristine state of ignorance and ineptitude.

Huxley further claimed that the primary scientific emphasis would be on the life sciences, not physics and chemistry. The islanders had "not the faintest desire to land on the backside of the moon. Only the modest ambition to live as fully human beings in harmony with the rest of life on this island at this latitude on this planet." Young children began their science training with the study of ecology. When asked whether this was too complicated for children, Huxley replied:

That's precisely the reason why we begin with it. Never give children a chance of imagining that anything exists in isolation. Make it plain from the very first that all living is relationship. Show them relationships in the woods, in the fields, in the ponds and streams, in the village and the country around it.

Children are taught ecological truths in animal fables. They are shown examples of erosion and ecological damage in places where "greedy, stupid people have tried to take without giving, to exploit without love or understanding." For Huxley, an understanding of ecology leads to an understanding of morality:

Confronted by [examples of ecological damage], it's easy for the child to see the need for conservation and then to go on from conservation to morality—easy for him to go on from the Golden Rule in relation to plants and animals and the earth that supports them to the Golden Rule in relation to human beings. . . . The morality to which a child goes on from the facts of ecology and the parables of erosion is a universal ethic. . . . Conservation morality gives nobody an excuse for feeling superior, or claiming special privileges. "Do as you would be done by" applies to our dealings with all kinds of life in every part of the world. We shall be permitted to live on this planet only for as long as we treat all nature with compassion and intelligence. Elementary ecology leads straight to elementary Buddhism.

IV. GARY SNYDER

Gary Snyder has provided an admirably concise yet comprehensive ecotopian vision in "Four 'Changes'" (1969). Snyder's ecological perspective results from a combination of Zen Buddhism, Native American religion, the ways of life of the primal peoples on many continents, and the insights of the contemporary science of ecology.[7] This spiritual ecology is in evidence when he claims:

Man is but a part of the fabric of life—dependent on the whole fabric for his very existence. As the most highly developed tool-using animal, he must recognize that the unknown evolutionary destinies of other life forms are to be respected. . . . There are now too many human beings, and the problem is growing rapidly worse. . . . The goal would be half of the present world population, or less. . . . Let reverence for life and reverence for the feminine mean also reverence for other species, and future human lives, most of which are threatened. . . . I am a child of all life, and all living beings are my brothers and sisters.

And in anticipation of Schumacher in *Small Is Beautiful*, Snyder asserts:

Most of the production and consumption of modern societies is not necessary or conducive to spiritual and cultural growth, let alone survival . . . mankind has become a locust-like blight on the planet that will leave a bare cupboard for its own children— all the while in a kind of addict's dream of affluence, comfort, eternal progress—using the great achievements of science to produce software and swill. . . . Balance, harmony, humility, growth which is mutual growth with redwood and quail—to be a good member of the great community of living creatures. True affluence is not needing anything. . . . *Economics must be seen as a small sub-branch of ecology.*

Snyder's broad utopian visionary statement clearly sets him in direct opposition to the artificial environment vision contained in much New Age/Aquarian conspiracy literature. Snyder calls for an *unobtrusive technology* in a world environment which is left natural:

We have it within our powers not only to change our "selves" but to change our culture. If man is to remain on earth he must transform

the five-millennia long urbanizing civilization tradition into a new ecologically-sensitive harmony-oriented wild-minded scientific/spiritual culture . . . nothing short of total transformation will do much good. What we envision is a planet on which the human population lives harmoniously and dynamically by employing a sophisticated and unobtrusive technology in a world environment which is "left natural." . . . Master the archaic and the primitive as models of basic nature-related cultures—as well as the most imaginative extensions of science—and build a community where these two vectors cross.

V. PAUL SHEPARD

Perhaps the most challenging, uncompromising, and in some ways disturbing ecological utopian proposal has been advanced by Paul Shepard in *The Tender Carnivore and the Sacred Game* (1973).[8] Shepard develops his thought from a very sophisticated anthropological basis and does an admirable job of clearing away the myths and distortions which have been heaped upon hunting/gathering societies since the advent of agriculture. Shepard asks, "Can we face the possibility that hunters were more fully human than their descendants?" In his view, the ecological crisis has been ten thousand years in the making:

As agriculture replaced hunting and gathering it was accompanied by radical changes in the way men saw and responded to their natural surroundings. Although hundreds of local forms of farming developed . . . they all shared the aim of completely humanizing the earth's surface, replacing wild with domestic, and creating landscapes from habitat.[9]

Not only is farming itself an ecological disease, according to Shepard, but the traditional peasant has led "the dullest life man has ever lived." While the pioneer subsistence farm is in fairly close ecological harmony, farmers in a monocultural setting "require constant social supercharging to remain sane and human." Rural life is hopeless in modern industrial irrigation farming. Domestic plants and animals are biological disasters, he claims; they are "genetic goofies." Shepard agrees with Brownell that humans need wild animals in their natural habitat to model themselves after and become fully human; domesticated pets and farm animals provide pathetically inadequate substitutes. For Shepard, an ecologically sane future requires that almost all forms of farming together with genetically-altered plants and animals must go. Another requirement for the

future is the full recognition that humans are genetically hunters and gatherers:

Most people seem to agree that we cannot and do not want to go back to the past; but the reason given is often wrong: that time has moved on and what was can never be again. The truth is that we cannot go back to what we never left. Our home is the earth, our time the Pleistocene Ice Ages. The past is the formula for our being. Cynegetic man is us.[10]

Unlike some of the earlier utopian literature, Shepard squarely comes to grips with the recent anthropological/genetic literature on Homo sapiens. In any realistic utopian planning for the future, it is necessary for our physical and emotional health that we incorporate into our lives the central features of a hunting/gathering way of life (rituals, exercise, etc.). Secondly, modern ecological findings support the existence of huge expanses of unmanaged wilderness to ensure the integrity of ecosystems and wildlife habitat. Shepard also addresses this issue in his utopian proposal. As he points out:

It is impossible to overestimate the ecological crime of species extinction, which is the only irreparable environmental damage by man. Extinction is caused by alteration of the habitat. The measures necessary to avoid it are the same that preserve the biosphere as a whole. The prevention of extinction should be the criterion for a plan or policy of environmental activity of any kind.[11]

Shepard's proposal is somewhat desperate in that he plans for the world population to stabilize at about eight billion people by the year 2020. In order to meet the requirements for hunting/gathering existence, he argues that cities of the kind designed by Doxiadis or Paolo Soleri might be strung in narrow ribbons along the edges of the continents and islands while the center of the continents would be allowed to return to the wild.

If eight billion people . . . were to live in some 160,000 cities (of 50,000 inhabitants), and these cities were uniformly distributed over the earth's fifty million square miles of land, only some three hundred square miles of land would surround each city (allowing two square miles for each city itself). Cities would then be only about seventeen miles apart, and no true wilderness would be possible. If, instead of being dispersed in the interiors of continents, they were constructed in a broken line on the perimeters of the continents, the whole of the interior could be freed for ecological and evolutionary systems on a scale essential to their own requirements and to human cynegetic culture.[12]

What would provide the basic diet for humans living in these great ribbons of cities stretching endlessly around the continents with agriculture gone, only occasional gardens, and meat brought back from hunting/gathering forays into the wilderness? Surprisingly, Shepard's answer is a food technology based on microbial life:

Biochemistry and microbial biology make possible the recovery of a livable planet complementing ecology rather than opposing it . . . the transition to non-land-based subsistence might take half a century . . . but perhaps three-quarters of the earth could be freed from its present destructive use. [13]

Shepard's long, detailed discussions of the maturation and education of future cynegetic people are fascinating. For example:

I believe that every child under ten has three ecological needs: architecturally complex play space shared with companions; a cumulative and increasingly diverse experience of non-human forms, animate and inanimate, whose taxonomic names and generic relationships he must learn; and occasional and progressively more strenuous excursions into the wilderness where he may, in a limited way, confront the non-human. . . . The collection and study of plants and animals is more important than any other learning activity. . . . In the cynegetic society [the child] would be introduced gradually to the great wilderness, which . . . would occupy the centers of islands and continents, unmodified by human action. All travel in three-quarters of the earth's land surface would therefore be on foot. . . . Cynegetic man by definition is a hunter and a gatherer. From the age of thirteen the adolescent youth would move into a series of increasingly extended and arduous expeditions for which childhood and juvenile skills and his knowledge of natural history had prepared him. [14]

Shepard has some harsh words for mystical experience but, like most Western intellectuals, he is not aware of its use by Brownell, Zen Buddhism, and many other traditions including the primitive, in which individual concrete reality is stressed:

Primitive man is often said to feel an "identity with nature." This observation stems from an erroneous concept of continuity in nature in which distinctions and boundaries evaporate. Hunting/gathering men are not lost in a fuzzy emotional merger with their surroundings; they are sensitive to delicate nuances that separate and relate . . . mysticism is hardly a way of advancing to a mature life on this earth. [15]

VI. CRITIQUE OF ECOTOPIAN VISIONS

Much of the antimodernist movement in the West during the last 300 years has been a resistance to the urban-industrial in favor of the pastoral. Contemporary New Age thinking glorifies the urban-industrial high technology future at the expense of both the rural and the wilderness/ecological. Shepard appears to want to combine the New Age visions of Doxiadis and Soleri and biochemical food technology with the hunting/gathering wilderness/ecological vision and, in *some* ways, his solution echoes Thoreau, as described by Roderick Nash:

In providing a philosophical defense of the half-savage, Thoreau gave the American idealization of the pastoral a new foundation. Previously most Americans had revered the rural, agrarian condition as a release both from wilderness and from high civilization. They stood, so to speak, with both feet in the center of the spectrum of environments. Thoreau, on the other hand, arrived at the middle by straddling. He rejoiced in the extremes and, by keeping a foot in each, believed he could extract the best of both worlds. [16]

The virtues of "high civilization" have paled considerably since Thoreau's day. And the prospects of modern cynegetic man as also modern urban man filling those apartment-house cities encircling the continents of the world is unsettling, to say the least. As Shepard puts it:

Nature would be separated from the works but not the lives of men, for men would live in both worlds. The confusion that has plagued mankind for ten millennia between what is made by him and what is not made by him would be ended. [17]

This seems an unusually high price to pay for these kinds of advantages and we wonder if Thoreau, given this option in today's world, would have closed with the deal. Traditional hunters traveled in small bands, isolated from other humans and totally surrounded by and integrated with their natural environment. On special occasions they came together as a larger society or nation. Shepard thinks this kind of tribalization can occur within Soleri's cities and, "Properly designed, such an arrangement would seem less crowded than present city life. Architecture will take into account our mammalian and primate nature as well as our human values and customs." [18]

Whether cities like this could be so designed remains largely conjectural. We have suspicions that those who go on the hunting expeditions into the center of the wilderness, lasting for weeks, months,

and perhaps years in some cases, might on occasion just decide not to return. Those cynegetic genes, having grown used to the true freedom of wilderness and solitude, a steady diet of wild game and plants, and encountering highly desirable living space, might come to look with acute displeasure on the microbial diet and the multitudes of people awaiting their return. The continents would gradually be repopulated with what ecologist Raymond Dasmann calls *ecosystem people* living a mixed hunting/gathering subsistence-agricultural appropriate technology way of life. Our sympathies would lie with them. The future primitive would not live in two worlds but would be integrated with the surroundings.

We find the visions of Gary Snyder and Raymond Dasmann more appealing and realistic in the long run than Shepard's.[19] Snyder has respect for a great deal of modern theoretical science and for small-scale appropriate technology and, like Shepard, he is fully aware of the hunting/gathering biological basis of Homo sapiens and of the ecological necessity for vast unmanaged natural areas. Snyder, however, has much less respect for cities but more tolerance for subsistence and small-scale organic farming. With Raymond Dasmann and Peter Berg, he has been exploring bioregional proposals for reinhabiting the land whereby ecosystem people ways of life can be reinstituted. Which vision is ultimately more practical? Shepard acquiesces in the prospect of an Earth inhabited by eight billion humans. With Snyder's vision, carrying capacity of continents and islands at ecosystem people levels would have to be determined and then all efforts would have to be made to reduce human population to those levels by humane means. Utopian proposals which are less specific and less global in scope may increase the likelihood that cultural as well as biological diversity will be preserved as each area works out its own unique version of reinhabitation.

The overall claim here has been that the explicit or implicit utopian visions of the technocratic social worldview—of humans dominating and managing Nature as a resource in the production of the "artificial environment" or as an expendable launching pad in the journey to outer space—are indefensible. Human attention must now rapidly shift to an ecological worldview and utopian vision to serve as a guide for individual and social values and action. Intellectual debate must focus on the refinement of these visions together with appropriate social strategies. Educational goals and strategies must follow suit.

One of the poems of the *Tao Te Ching* expresses one vision of ecotopia clearly:

Better to keep
Your country small
Your people few
Your devices simple—
And even those for
Infrequent use.

Let people measure life
By the meaning of death
And not go out of their way
To visit far off places.
With nowhere to travel

And little care for display
Great ships, fine carriages,
And shining weapons become
Mere relics of the past.

Let people recover
The simple life:
Reckoning by knotted cords,
Delighting in a basic meal,
Pleased with humble attire,
Happy in their homes,
Taking pleasure in their
Rustic ways.

So content are they
That nearby towns,
So close the sound
Of dogs and roosters
Forms one chorus,
Folks grown gray with age
May pass away never having
Strayed beyond the village.

—Translated by Tom Early