
Environmental Ethics and Planning Theory

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Environmental ethics addresses the basic questions of how we ought to use and manage the natural environment and the extent to which man must exercise certain moral and ethical constraints in his relations to the natural environment. More specifically, the subject of environmental ethics asks questions such as the following: Based upon what ethical criteria or principles should individuals and society make decisions about the use of the environment? What are acceptable levels of environmental risk or degradation, and does society have an obligation to protect individuals from such risks? How should conflicts between social justice and environmental protection be resolved? Do we have moral obligations to non-human forms of life? Do we have environmental obligations to future generations? Do we have obligations to maintain the stability and integrity of natural systems? It is argued here that environmental ethics should be a legitimate and necessary component of planning theory. This article provides a cursory taxonomy of the primary substantive topics addressed by the literature, and the various perspective and theories presented within each.

It has been over twenty-five years since Rachel Carson (1962) spoke dramatically of the "silent spring" and well over a century since

George Perkins Marsh (1864), perhaps America's first environmental planner, brought attention to man's impact on the natural environment in his classic book *Man and Nature*. Although some of the environmental problems identified in the past have been addressed, such as the banning of DDT in response to Carson's work, in many ways the environmental problems of this era are much more serious than in any prior period of history. The litany of environmental ills includes stratospheric ozone depletion, acid rain, mass species extinction, and loss of wilderness and natural areas in all parts of the world. It can be argued fairly convincingly that we have not developed much of an environmental ethic, either at an individual or societal level, especially one up to the challenge of these problems. If anything, our environmental problems seem to be getting worse rather than better (see The Conservation Foundation 1987; Adams 1985; Brown 1987; The World Commission on Environment and Development 1987). All of this suggests that it is quite timely to consider the topic of environmental ethics, and to

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assess where we are. There has been a tremendous amount of literature on the subject in recent years and this article attempts to identify and synthesize this body.

Environmental ethics has particular importance and relevance to planners and the field of planning for several reasons. First, there is a clear and immediate need for those involved in the area of "environmental planning" to develop a theoretical and moral basis to support and guide their activities. Second, and more fundamentally, virtually all facets of planning, whether economic development, growth management, housing, or transportation, have direct impacts on the natural environment and as such confront the issue of environmental ethics. Thus, all planners, I would argue, have the need to explicitly consider the principles, concepts, and obligations that might comprise a public or personal environmental ethic. But there is a sense in which the distinction between public and private environmental ethics is a false one because the formation of other public policy and public ethics requires the formation of personal opinions and values—both by the elected and appointed public officials and by the many citizens and others who provide input and ultimately assess the performance of public officials.

Within ethics and philosophy, environmental ethics is a fairly recent subject of thought and scholarship. However, in a relatively short period of time substantial attention and literature have been generated, with numerous anthologies, books, and articles published (Van DeVeer and Pierce 1986; Regan 1984a, 1984b; Goodpastor and Sayre 1979; Partridge 1981; Passmore 1974; Scherer and Attig 1983; Taylor 1986; Blackstone 1974b; Rolston 1988; Cahn 1978; Elliot and Gare 1983; Shrader-Frechette 1981; Hargrove 1989). Indeed, there is even a journal entitled *Environmental Ethics*, from which articles are extensively cited here. In short, environmental ethics has become a serious source of thought and theory about the appropriate use of the physical world, and as such deserves attention for what it can add to

planning theory. What follows is an attempt to organize the burgeoning body of literature in this area into several primary categories. This is by no means an all-inclusive coverage of environmental ethics. Rather, I have been necessarily selective in both the categories and literature cited.

Several of the topics addressed here under the heading of environmental ethics might appear on first view to have little to do with planning. Some subject areas have been included because of the need for theoretical completeness, and because they help us in understanding other related issues that are of direct relevance to planning. For instance, the theories and literature of animal rights may appear to have little immediate relevance to planning (in their emphasis on such things as the laboratory use of animals, factory farming, and so on), yet they are essential to understanding the broader questions of whether obligations exist to other, non-human forms of life. The latter is an extremely pertinent question in that planners around the country, and indeed the world, are confronting basic conflicts between urban development and the protection of endangered species. Furthermore, though it may not be immediately obvious, almost all of the concepts and theories discussed here do have a direct bearing on planning practice and policy dilemmas. Discussions of risk assessment and paternalism, for example, conjure up images of debates about cigarette smoking and seatbelt laws, yet a number of environmental planning laws and policies must confront these issues. Much planning policy involves the regulation of environmental risks and the prevention of risky individual behavior (for instance, the desire to locate homes and businesses in floodplains or high hazard seismic zones). Discussions of the concepts of preservation and conservation, as a further example, may seem to have their most direct application to questions about how to best use federal public lands (forest production versus wilderness). While I would argue that such activities are in fact within the domain of planning (environmental planning at

least), the concepts have broader application to more typical planning concerns. Many conventional land-use conflicts, such as whether to regulate shorefront development to protect water quality, are at their heart disagreements about whether a resource (a pristine water body, for example) should be preserved or conserved.

WHAT IS ENVIRONMENTAL ETHICS?

The subject of environmental ethics can be defined and delimited in several ways. At one level the term "environmental ethic" can simply be used to describe or characterize the package of attitudes or values an individual or society has towards the environment. It is a normative perspective on, or disposition towards, the environment. It is "about choices and decisions we make which affect the environment and hence affect human life" (Shirk 1988, 78). On a somewhat different level, environmental ethics, particularly as it has evolved as a subfield in philosophy, describes the activity or endeavor by which an individual or society consciously contemplates its relationship to the environment and seeks to choose those principles or ethical standards that are in some sense rational or morally supportable. As Van DeVeer and Pierce (1986) argue, what we need (among other things) is a

. . . rationally defensible ethical theory or viewpoint. For without one we can only understand what is, was, or will be—and not have any rational basis for deciding how we ought, or ought not, treat others, or our larger environment. We need, in short, a defensible environmental ethic (p. 2).

Taylor (1986) defines environmental ethics as something "concerned with the moral relations that hold between humans and the natural world. The ethical principles governing those relations determine our duties, obligations, and responsibilities with regard to the Earth's natural environment and all the animals and plants that inhabit it" (p. 3). Natural environment includes, under Taylor's definition, both natural systems unexploited and untouched by man and those

"that were at one time worked by human labor (such as farming and mining) or have undergone modification in the past as a result of certain human practices (such as sheep grazing or wood cutting)" and may now have "returned to a natural condition simply because it has been left alone for a long period of time" or because of human intervention designed to restore the environment to "approximately the condition it was in before it was changed by humans" (p. 4).

These definitions highlight some possible points of disagreement about what environmental ethics is and is not. Defining environmental ethics as concerned essentially with the moral relations that hold between humans and the natural world suggests that we are concerned primarily about moral interrelationships and human obligations to the nonhuman world (e.g., animals, trees). Although this is certainly a major concern of environmental ethics, as we will see below, environmental ethics also encompasses questions of moral relationships and obligations between *humans*. These become questions of *environmental* ethics because they involve the use or misuse of natural environments and natural systems. While air or water pollution may certainly raise important questions concerning our moral relationship to the natural world they also raise basic questions about the moral relationship between people—for example, is it equitable to permit some people to inflict harmful and costly pollution on other people and the broader public? As Shirk (1988, 82) notes, "the environment acts as a third party, a kind of moral medium of exchange between I and thou, transmitting the moral quality of my environmental choices to you and yours to me." Moreover, environmental ethics need not unduly restrict its purview to the natural world as defined by Taylor. Many serious and basic questions of environmental ethics occur in settings that exhibit the heavy hand of man (urban air pollution, for instance).

Environmental ethics additionally encompasses many basic moral and ethical ques-

tions that individuals and society face *generally*, that is, where environmental resources or phenomena are not involved. For instance, while concern about obligations to future generations appears in much of the environmental ethics literature, it is certainly not a moral question unique to the environment. Regan (1984a) suggests that we view the "wall" between environmental ethics and moral philosophy as a porous membrane "through which fundamental ideas, ideas such as the value of the individual and the proper role of government, respect for justice and the scope of obligation, freely pass" (p. 11).

HISTORICAL AND CULTURAL ROOTS

Much literature included under the heading of environmental ethics seeks to explain or speculate upon the cultural, sociological, and other causes of environmental problems—that is, the source of our current ethic towards the environment (or lack of one, depending upon your perspective). Secular roots of the environmental crises are seen in Western empiricists including Galileo, Bacon, and Descartes, who viewed nature in terms of a set of mechanistic functions that could be understood and manipulated for man's benefit (Gunn and Vesilind 1984). Many hold the Cartesian view of the world largely responsible for many of our environmental problems and our present reliance on and belief in technological and scientific solutions to them. Ehrenfeld (1981) refers to the modern embodiment of these attitudes as the "Arrogance of Humanism." At the core of this belief structure is a "supreme faith in human reason—its ability to confront and solve the many problems that humans face, its ability to rearrange both the world of nature and the affairs of men and women so that human life will prosper" (p. 5). The ramifications of this attitude for environmental policy have been tremendous. It often leads us to manipulate the natural environment with undue confidence in the outcome, leads to the view that the problems of pollution and environmental destruction are ultimately solvable, and supports a strong

anthropocentric orientation that man is superior and above nature (see Glacken 1967).

It has also been argued that much of the current Western view of nature is directly attributable to religious beliefs, and specifically to the Judeo-Christian tradition. In what has become a classic article published in *Science* magazine, Lynn White (1967) presents the argument convincingly. To many, the story of creation justifies a sharp moral separation between man and the rest of nature; God made man in his image and the plants, animals, and the rest of creation were deemed to be man's to benefit from and exploit. "Man named all the animals, thus establishing his dominance over them. God planned all of this explicitly for man's benefit and rule: no item in the physical creation had any purpose save to serve man's purposes. . . . Especially in its western form, Christianity is the most anthropocentric religion the world has seen" (White 1967, 1205). Of central importance is the replacement of paganism, which found spirits in nature objects and which as a result attached a certain reverence and seriousness to any action that might affect these spirits. "Before one cut a tree, moved a mountain, or dammed a brook, it was important to placate the spirit in charge of that particular situation, and to keep it placated. By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects" (White 1967, 1205).

Different religious and cultural backgrounds have produced different orientations to the environment and some literature examines these different cultures. Two cultural backgrounds of particular interest when considering the need for a more environmentally sensitive view of land and resources are the culture and religion of the East—primarily Buddhism—and native American thought and culture. Taoism and Zen Buddhism, in particular, view the world as an organic, interdependent unity (the unity of self and other). Nature is not something to be conquered, but to be appreciated and surrendered to (Barbour 1980). Native

American culture exemplifies a similar unity, and a strong view that man is part of a larger, interconnected system of living things.

Human beings are related to the moon, sun and mountains as part of a balanced order. The spiritual forces that constitute the reality of the world are present in all things. Human and animal beings are kin, and all forms of life must be respected. Native Americans sought to understand themselves in relation to the landscape and the sacredness of particular places and ancestral origins. When an animal was killed, it was not done thoughtlessly; there were prayers of apology to the spirit of the animal. The native American tries to live in harmony and balance with the environment, and many tribal stories suggest humility and dependence on other creatures (Barbour 1980, 20).

This leads to a dramatically different view of land and environmental resources. These are things less to be owned, as in the Western world, but to be respected and nurtured for the benefit of the larger tribe (see Udall 1964).

Others point to economic factors, primarily to capitalism and the profit motive, as major reasons for environmental degradation. Under this view, land and property have essentially been seen as commodities to be used and used up in the pursuit of industrial production. Moreover, to be concerned with environmental degradation was to put one's business interests at a competitive disadvantage—to many, the profit motive does not permit environmentally responsible behavior. Thus, cultural, economic, and social factors serve as both an explanation of how man has interacted with the natural environment in the past, and a backdrop against which contemporary efforts at environmental policy can be better understood.

CONSERVATION AND PRESERVATION

It is common practice in debates about environmental issues to distinguish between those who advocate environmental *conservation* and are *conservationists*, and those who advocate *preservation* and are thus

preservationists. On the other hand, these two terms are often used interchangeably in public policy debates. The environmental ethics literature does embrace such a distinction. Conservation is typically used to refer to practices and obligations to use natural resources sparingly and to save them for future consumption (Passmore 1974). Preservation, on the other hand, represents obligations to maintain certain environmental goods and resources in their present condition—for instance, wilderness areas, national parks, or scenic vistas—in perpetuity. As Passmore (1974) notes, “On a particular issue, conservationists and preservationists can no doubt join hands. . . . But their motives are quite different: the conserver of forests has his eye on the fact that posterity, too, will need timber, the preserver hopes to keep large areas of forest forever untouched by human hands” (p. 73).

The conservationist sees his or her role with respect to nature as one of husbandry—carefully managing resources so as to not be wasteful and so as to maintain the productive “yield” for some time to come. The preservationist's ethic is, on the other hand, largely one of standing back and leaving nature to its own natural processes and functions—active intervention is discouraged. Two archetypes of these different positions often juxtaposed in the environmental literature are Gifford Pinchot and John Muir. Pinchot, the first director of the U.S. Forest Service under Theodore Roosevelt, was a strong supporter of conservation and viewed the national forests as resources to be actively managed and nurtured much as a garden or vineyard would be. The proper application of scientific and business principles to forest management would in his mind induce “efficient” production (see generally Hays 1959; Worster 1977). To Pinchot, conservation meant development, prevention of waste, and a collective sharing of the benefits from these resources (Pinchot 1947, 1910).

The connection between Pinchot's view of conservation and what Ehrenfeld (1981) describes as the arrogance of humanism is

clear enough. Pinchot believed not only that man could actively intervene with scientific and business skills to enhance the production of nature but that there was a moral obligation to do so.

I recall very well indeed how, in the early days of forest fires, they were considered simply and solely as acts of God. . . . It was assumed that they came in the natural order of things, as inevitably as the seasons or the rising and setting of the sun. Today we understand that forest fires are wholly within the control of men. So we are coming in like manner to understand that the prevention of waste in all other directions is a simple matter of good business. The first duty of the human race is to control the earth it lives upon (Pinchot in Worster 1973, 86).

A clear element of Pinchot's conservation ethic was a belief that resources must be managed so that all citizens benefited from them, not just corporations or the wealthy elite. "Conservation means the greatest good to the greatest number for the longest time" (Worster 1973, 87). While in most other respects the federal administration of the last eight years would appear to have agreed with Pinchot's philosophy (it is too early to tell about the Bush administration), here is perhaps where they parted company (witness the history of attempts to promote offshore oil and gas development). Pinchot's focus, and indeed the focus of much of the early conservation efforts in the United States was on "efficiency"—the greatest good for the greatest number—and as such foreshadowed the heavy reliance on cost-benefit analysis and economic criteria that has since developed (see below). It is clear that what is expounded is a form of utilitarianism (note the use of Benthamic language).

John Muir, as the prototypical preservationist, disagreed strongly with the narrow view of nature as a productive machine requiring man's active intervention and management. Nor did Muir view productive efficiency as the ultimate goal or output of forests and natural systems. Rather his position, and that of many who could be described as preservationists, is to admire and

seek to protect the "wildness" in nature. Moreover, and consistent with this view, Muir saw that nature had a good of its own—an intrinsic value—that did not require man's hand in the creating.

No dogma taught by the present civilization seems to form so insuperable an obstacle in the way of a right understanding of the relations which culture sustains to wildness, as that which declares that the world was made especially for the uses of man. Every animal, plant, and crystal controverts it in the plainest terms. Yet it is taught from century to century as something ever new and precious, and in the resulting darkness the enormous conceit is allowed to go unchallenged (Muir in Worster 1973, 189).

Muir vehemently objected to the utilitarian logic by which many environmental and resource decisions are made. He viewed nature and natural places in a more spiritual way and condemned efforts to put them to their "highest and best" commercial use. Many contemporary battles between preservation and economic prosperity are similar to the quintessential and famous one Muir waged, unsuccessfully, to preserve the Hetch Hetchy Valley in California's Yosemite National Park from being dammed. "These temple destroyers, devotees of ravaging commercialism, seem to have a perfect contempt for nature, and instead of lifting their eyes to the God of the mountains, lift them to the Almighty Dollar" (Muir 1912, as reprinted in Worster 1973, 197).

A substantial body of contemporary literature has developed on the ethics of preserving wild areas, in basic agreement with Muir's position. Some works, such as Nash's *Wilderness and the American Mind* (1967), examine American attitudes towards wilderness from a historical perspective. Much of the recent literature is more analytical and philosophical in nature. Rolston (1985), for instance, identifies a complex set of values that could attach to wildlands and wilderness areas and justify their preservation (e.g., life support value, recreational value, scientific value) (see also Godfrey-Smith 1979). Joseph Sax is one of the most eloquent advo-

cates for the need to preserve areas in their wild and undeveloped states, with particular attention to the psychological and spiritual functions served by national parks. In *Mountains Without Handrails* (1980), Sax presents the convincing argument that the national parks should be reserved for reflective recreation. Here individuals should be encouraged to set their own agendas, and to see and experience nature—its beauty, wonder, and immensity—directly and not simply from behind the windshield of an automobile.

Ultimately it seems, conservation and preservation views rely heavily on other ethical concepts and principles. Pinchot and conservation thought, as we have seen, are heavily dependent upon utilitarian theory—that we should conserve environmental resources in order to maximize social benefits. In a sense many preservationists argue their position on utilitarian grounds as well, although their definition of “benefits” or “utility” is substantially different. Moreover, as with Muir, many preservationists assign to nature and other forms of life intrinsic value; that is, value beyond what is assigned by humans. In both conservationist and preservationist thought there are strong concerns about the rights and interests of future generations. As Pinchot notes, “The thing we ought to leave them [our descendants] is not merely an opportunity for equal happiness, but a vastly increased fund of both” (Pinchot in Worster 1973, 90).

UTILITARIANISM, MARKET EFFICIENCY, AND BEYOND

Since Jeremy Bentham and John Stuart Mill popularized the philosophy of utilitarianism in the nineteenth century, it has been wholeheartedly embraced by many public policymakers as the appropriate theoretical framework for making public (as well as individual) decisions. It is not surprising then that utilitarianism is defended and employed as a fit guide for environmental decisions, and for considering appropriate man-nature relations as well. Based on the fundamental

principle of maximizing social benefit (Bentham's the “greatest good for the greatest number”), it brings environmental ethics into the realm of economics and economists. The utilitarian outcome is usually conceived of in terms of what a perfectly operating free-market system would yield, with “Pareto-optimality” the ultimate objective (reaching a point where no further economic transactions would make at least one person better off while making no one else worse off). If we only left decisions concerning air and water pollution, wilderness protection, conservation of natural resources, and so on, up to the free market, a socially efficient outcome would result. Of course, the free market does not usually operate according to its basic assumptions and the occurrence of “market failure” can signal the need for collective or governmental intervention. Typical cases of market failure include the non-exclusive nature of air, water, and other forms of environmental pollution (“externalities”), and the socially inefficient overproduction that occurs as a result; the free rider problem and the ability to exclude people from enjoying “public goods” (such as clean air or national defense), and the underproduction of such goods which results; high transaction costs that discourage the buying and selling of nonexclusive goods; faulty or imperfect information; and intertemporal misallocations because of differences between social and private discount rates. A key assumption behind such a utilitarian or market failure ethics is that current environmental decisions are determined through a tabulation or adding up of discrete individual preferences on a particular resource or issue. We might determine whether or not to preserve a pristine wilderness area, for example, by considering what individuals would be willing and able to pay to keep it in this undeveloped state. William Baxter (1974) is one of the strongest supporters of this approach, arguing that we must seek “optimal” levels of pollution based on the goal of maximizing social utility. “The first and most fundamental step toward solution of an environmental problem is a

clear recognition that our objective is not pure air or water but rather some optimal state of pollution. That step immediately suggests the question: How do we define and attain the level of pollution that will yield the maximum possible amount of human satisfaction?" (Baxter 1986, 216-17; see also Freeman 1986; Freeman, Haveman, and Kneese 1973).

A widely cited variant of the market failure view is the "tragedy of the commons" analogy, popularized by Garrett Hardin's 1968 article in *Science*. Hardin put forth the example of the English commons as a powerful analogy of why contemporary common pool resources would always be destroyed (that is, without collective constraints). Because each herdsman has the right to keep adding additional cattle to the commons, and because the resulting reduction in productive capacity of the commons is shared by all the herdsmen, there is a natural incentive to continue adding cattle. This incentive structure eventually leads to the destruction of the commons. It is a variant of the utilitarian model in that the incentive structure leads to a socially inefficient outcome. To *optimize* the larger productive capacity of the commons requires some form of "mutual coercion, mutually agreed upon." Hardin and others have applied the tragedy of the commons analogy to numerous specific environmental policy areas from fisheries management to national parks policy to air and water pollution to population control (Hardin and Baden 1977; Hardin 1977).

The most obvious manifestation of utilitarian thinking in the environmental area is the use of cost-benefit analysis. Those environmental laws, programs, or projects that are found to yield benefit-cost ratios greater than one-to-one are deemed socially desirable. In addition, much of the recent environmental literature focuses on the methodological techniques and issues involved in the use of this type of analysis (see, e.g., McAllister 1986). Increasingly heavy reliance is placed on contingent valuation methods, such as willingness-to-pay surveys, to estimate benefits and costs (Edwards 1987; Sa-

goff 1988a; Samples, Dixon, and Gowan 1986). Moreover, the use of cost-benefit analysis, and the explicit utilitarian standard it implies, has become institutionalized in many environmental decision-making spheres. President Reagan's 1981 Executive Order 12291, for example, requires that environmental regulations undergo cost-benefit assessment, and that the benefits must be found to exceed the costs (Smith 1986). Although many environmentalists have historically resisted the movement towards environmental decision-making based on cost-benefit analysis, many are beginning to argue that cost-benefit, if done properly, could offer substantial support for environmental programs (e.g., Barlitt 1984).

There is a substantial body of literature and thought that is vehemently opposed to the utilitarian and cost-benefit view of the environment (Van DeVeer and Pierce 1986; MacIntyre 1985; Kelman 1981a, 1982). Much of it points to the inherent inability of utilitarianism to consider and judge the moral complexity of issues. In fact, reliance on a cost-benefit criterion can lead to results that most would deem morally unacceptable, such as overturning rights, disregarding promises, or telling lies where the net benefits are seen to exceed the costs (Kelman 1981a). Some have argued, as Sagoff has (1981a, 1981b, 1988b), that we are confusing or commingling two different decision-making realms. As individuals we hold certain preferences about lifestyle and consumer goods, but as citizens we are concerned about what is good for the broader community or society. Utilitarian and market ethics will tend to pick up the first set of values and attempt to use them in resolving community or societal decisions about the environment—a realm where our opinions and judgments as *citizens* and not as consumers are relevant. What Sagoff argues for is a more Kantian conception of value, where citizens make moral judgments about what is right or wrong, fair or unfair, and so on, in a public and intersubjective context.

Considerable criticism has been expressed about the inability of cost-benefit analysis to

do what it claims it can do. Calculating the willingness of consumers to pay for certain environmental goods, for example, is fraught with technical and methodological difficulties. It is very difficult, with any degree of accuracy, to put market prices on environmental goods such as clean air and endangered species, goods that are never actually traded in any market. Shadow-pricing and the use of proxy measures are usually necessary, with questionable results (see Kelman 1981a).

Furthermore, many environmental advocates are offended by a process that seeks to place specific monetary values on wilderness areas and scenic vistas, things that many believe are simply priceless. The very act of putting prices on them may lead society to devalue them. Perhaps some things should simply be declared as "not for sale," since this declaration itself tends to enhance the value of the object. Ehrenfeld (1981) expresses similar concerns about recent attempts to estimate the monetary value of coastal wetlands (i.e., for the pollutant, filtering, flooding control, and wildlife habitat functions they serve for man). "But discovering value can be dangerous . . . in effect one surrenders all right to reject the humanist assumptions. . . . In other words, finding a value for some part of Nature is no guarantee that it will be *rational* for us to preserve it—the reverse may hold" (Ehrenfeld 1981, 201-2).

As an alternative to the conventional economic and utilitarian paradigms, Sagoff (1988a, 1988b) argues that deliberation, dialogue, and personal judgment are inherently superior as an approach to making environmental decisions. Rather than conducting a contingent valuation study to see, for example, how much people would be willing to pay to protect an endangered species (Samples, Dixon, and Gowen 1986), we should provide people with full information on the issue and permit them to engage in discourse and discussion. "The contingent valuation method . . . insofar as it tries to make respondents express preferences rather than form judgments, denies

their status both as thinking and political beings" (Sagoff 1988b, 74). Of course, these judgments must contain substance and are shaped by various moral arguments, including utilitarianism (i.e., this particular environmental outcome or policy is the morally correct one because it results in the greatest social benefit), as well as others.

As another alternative, Holmes Rolston III (1988) offers an *axiological* model of values for deciding environmental policy dilemmas. Under such a model a taxonomy of different values is presented (including individual preferences value, individual good value, social preference value, social good value, organismic value, and ecosystem value), with a system for prioritizing among them. Maximizing personal preferences is still relevant and desirable, but can be overruled by higher-order values, such as the integrity of the ecosystem. Many of these values are further considered below.

RISK ASSESSMENT, PATERNALISM, AND PUBLIC SAFETY

Much environmental policy involves basic questions about risk—both issues of predicting and estimating environmental risks, and decisions about the social acceptability of risks. When we regulate the emission of certain toxic air or water pollutants, when we set minimum standards for drinking water, when we permit (or deny) the construction of nuclear power plants, and so on, we make explicit decisions about the magnitude and acceptability of risks. Ethical dimensions exist to risk assessment and to risk management, and a substantial literature has developed in these areas.

There are a number of alternative ethical criteria or standards, for example, that could be used to determine acceptable levels of risk, each with certain merits and limitations (Lowrance 1976, 1986; Starr 1969). The ultimate choice is clearly an ethical one. Do we adopt a zero-risk standard? Do we balance risks against the benefits they generate, or against the costs that would be incurred in eliminating or minimizing them? (This would embrace an essentially utilitarian

view.) Do we seek to determine certain minimum thresholds of acceptable risk? Do we base our notions of acceptable risk on the state of risk-reduction technology as we have basically done in the case of federal water quality management? Lowrance (1976) identifies a set of factors that may make risks more or less ethically acceptable, including whether the risks are voluntarily borne, the immediacy of their effects, the existence of alternatives (which has played a role in federal bans of substances such as DDT), the certainty of the risk, and whether it is encountered occupationally, is a common or "dread" hazard, and has reversible effects.

Decisions about the acceptability of environmental risks relate to the questions of identifying the relevant public mentioned above. Is it fair, for instance, for certain groups in the population to incur a disproportionately high level of exposure to certain risks? There is some evidence to suggest that lower-income residents are more likely to live near hazardous waste dumps, for example. An issue of great controversy in the area of environmental standard-setting is whether it is ethical to regulate for the "average" person. Such an approach might serve to prevent serious risks for most people, but certain segments of the population, such as the elderly and children, may in fact incur serious effects.

Government—and environmental planners—are often placed in situations where they make determinations of risk acceptability that may conflict with similar individual assessments. Consider, for instance, a case where a local or state government restricts building (in some way) in a high storm hazard area, perhaps a highly dynamic barrier island. Perhaps the restrictions involve placing a maximum cap on permissible development on the island, in order to ensure that all residents will be able to evacuate within a certain "acceptable" time period (say twelve hours). The developers and prospective homeowners may argue that they are willing to assume a greater level of risk, and that the benefits of doing so surely exceed the risks (i.e., they're willing to accept higher evacua-

tion times). On what moral basis does society have to regulate such voluntarily borne risks? (Rowe 1977).

What emerges is a basic question of whether many public environmental policies and programs are "paternalistic" in nature; that is, representing interferences with an individual's freedom of action or choice "justified by reasons referring exclusively to the welfare of, good, happiness, needs, interests or values of the person being coerced" (Dworkin 1971, 108). A number of normative positions have been put forth. An initial reply is that in many so-called cases of paternalism there are substantial public costs associated with risky private decisions (that, for instance, the public will end up paying for much of the damage from a hurricane striking a barrier island). J. S. Mill (1859), in his classic *On Liberty*, saw a legitimate function of government in restraining certain individual liberties where they interfered with the liberties of others. Even where it is not obvious that other liberties are infringed upon, or where the public at-large will be harmed, government may still legitimately restrain individual risk-taking. Government may prevent an individual from locating her home in the floodway, for instance, because it is unclear that she fully comprehends the risks involved (Tversky and Kahneman 1974) or because the government's issuance of the permits for the project would itself constitute a kind of validation that the area was "safe" (Beatley 1985).

Goodin (1976) argues for what he refers to as "reflective rationality," defending unpopular government policies in situations where the perceptions and preferences of individuals are likely to change in the future (for example, in a year or two when the big hurricane finally strikes, the restrained individual(s) will be glad they were prevented from building on the barrier island). (For additional discussions of risks and paternalism, see Van DeVeer 1986; Feinberg 1986; Kelman 1981b. For an interesting application of the concept of paternalism to environmental policy, see Sax 1980, and Sagoff's commentary on Sax in Sagoff 1987.)

Questions of risk also invariably raise empirical and scientific questions. How certain are we that we even face a particular hazard or risk? Are the scientific assumptions correct? Are the ecological pathways fully understood? Because science is ultimately based on values it represents another category of environmental ethics issues, although one that I will not be able to consider in much detail here. Questions concerning epistemology and the philosophy of science would ideally need to be addressed. In particular, science, and scientific studies and experts, often provide planners and policymakers with sharply conflicting policy directions. The recently issued report of NAPAP (the National Acid Precipitation Assessment Project) is perhaps illustrative of this scientific quagmire (see U.S. EPA 1987). Given the charge by the President of assessing the magnitude and seriousness of the acid rain problem in the United States, the report's conclusions have been strongly disputed and its critical assumptions questioned. NAPAP's conclusions were surprising to many, finding that relatively few lakes and streams had actually incurred acidic effects. A critical assumption behind these findings is that aquatic systems have reached a kind of steady state of acidification given current levels of pollution, and thus are not likely to become more acidic. Also, the conclusions result partly from the study group looking only at lakes in a limited federal survey and at effects in lakes of a certain pH level (5.0 or lower). A storm of criticism followed the issuance of the report, prompting some in the scientific community to call the conclusions ridiculous. This type of case raises fundamental ethical questions about how science is conducted and how its findings are conveyed to the public (as well as raising questions of professional ethics).

A basic and related ethical quandary concerns the relationships between scientific evidence and the implementation of environmental policy, and is tied to the question of risk. Many of our more serious environmental issues involve global and long-term phenomena, where it is difficult to reach

consensus about them in the scientific community, including the greenhouse effect and global sea level rise, chlorofluorocarbons production and depletion of upper stratospheric ozone, the effects of species loss, the meteorological and other effects of deforestation, and so on. These are also problems that cannot be solved or addressed quickly and require action long before the public may view them as "crises." How cautious should we be? How much more data and information should we collect; how much more convincing must our scientific evidence be before we believe that public policies and actions are called for?

ECOLOGY AND SOCIAL JUSTICE

As Rawls (1971, 3) states, "Justice is the first virtue of social institutions, as truth is of systems of thought." Social justice has to do with questions of fairness and equity; questions of how equitable and just social institutions and distributive patterns are. In this sense social justice is usually defined entirely in terms of man-to-man relations, with little concern about interrelationships between man and nature. This is true to a point, but as I suggest below there are also fundamental questions with respect to the justness of man's interaction with other elements of the natural environment, and particularly other living creatures.

There is another way in which conventional social justice comes into play in man-nature interactions. First, humans manipulate the environment in many ways that affect other humans, primarily through pollution and waste disposal, and through the consumption of scarce environmental resources which are then denied to other members of society. Substantial questions of fairness and equity emerge. Is it fair to permit a factory to pollute the air and in the process to impose substantial negative environmental effects on other individuals? Here also arise questions of culpability. Should society prevent polluters from inflicting these harms, and should society hold polluters responsible for the ultimate effects?

A second, and related, perspective involves

arguments that individuals have certain rights relative to the environment; that is, they have certain minimum rights to such environmental resources as clean air and clean water, as well as other things such as a minimum level of adequate housing, food, and health care. Blackstone (1974a) argues, for instance, that the right to a liveable environment is a human right:

Each person has this right qua being human and because a liveable environment is essential for one to fulfill his human capacities. And given the danger to our environment today and hence the danger to the very possibility of human existence, access to a liveable environment must be conceived as a right which imposes upon everyone a correlative moral obligation to respect" (p. 32).

Such a human right has been expressed and codified in the United Nations Declaration of Human Rights and has been proposed as a constitutional amendment in this country. In the sense that individuals have the right to be free from certain harms, such as toxic air pollutants, industrial manufacturers have a parallel duty not to inflict such toxic air pollutants (the culpability principle). (For more extensive discussions of rights see Shue 1980; Dworkin 1977; Wenz 1988.)

Environmental problems and policies often involve difficult questions concerning their impacts on particular income groups and social classes. Often it is low-income groups that must suffer disproportionately from environmental harms (such as the location of hazardous waste dumps). While it may be unjust for a factory or individual polluter to inflict a toxic pollutant on *anybody*, it has particularly unjust implications for those lower-income social groups, because they are the least equipped to respond to such harms.

It should be apparent then that environmental goods (clean air, clean water) can figure prominently in any theory of social justice. An equalitarian or egalitarian notion of justice, which views the struggle for social justice as a continued attempt to move toward a fundamentally equal distribution of wealth and resources, needs to consider

the distribution and impact of environmental goods. As Manning (1981) rightly argues, the consumption of natural resources (broadly defined) should be considered a "primary social good" under Rawls's Theory of Justice (see "Justice as Fairness," Rawls 1971; Beatley 1984; Wenz 1988). Rawls argues that once certain basic liberties are provided equally, social and economic inequalities can be permitted as long as they work to the benefit of the least advantaged in society (referred to as the "difference principle"). Primary goods—including environmental resources and conditions—represent the proxies by which we can determine whether people are better or worse off. For instance, Rawls's theory would support one set of social institutions over another even though somewhat greater inequality resulted, as long as the least advantaged group was made better off, say in terms of environmental primary goods (e.g., they now have cleaner air to breathe, an environment free of toxic wastes, an environment where they are able to enjoy and experience a diversity of species, and so on).

Many environmental problems are often characterized as trade-offs between goals of environmental protection and goals of social justice (that is, the rights, interests, economic position of lower-income groups in society). Recent examples include the arguments made against the proposed District of Columbia bottle bill because it was believed to result in higher costs for low-income consumers and would disproportionately affect smaller, community business establishments (Sherwood 1987). Arguments are often made against environmentally based land-use and growth management controls because they increase the costs of local housing and serve to exclude certain social groups (e.g., Frieden 1979). Environmental programs are often characterized as trade-offs between the environment and jobs (e.g., Hahn 1988). At a more international level, slash and burn agriculture and the resulting loss of tropical rain forests and other sensitive ecosystems are seen as the only alternatives when considering the starvation and economic and

social strife present in developing countries. As Heinegg (1979) puts the dilemma:

. . . with so much of the world's (and the country's) population in such desperate straits, spending time and money and moral energy on the preservation of wilderness or the protection of endangered species may seem irrelevant at best, and at worst positively harmful, when, for example, it blocks construction projects that promise to create new jobs. . . . How can one take seriously the loss of animal habitat or the degradation of clean air and water standards, when one has to face degradation every day in the street (p. 322).

And Heinegg rightly accuses big business of capitalizing on this tension by characterizing the challenges of environmental groups as elitist, and their own activities as benefiting the larger economy and population. "In an imaginative flight of stunning hypocrisy giant oil companies, lumber and mining interests, etc. present themselves as humble servants of the Republic, struggling against tremendous natural obstacles and the petty harassment of Sierra Club dilettantes" (Heinegg 1979, 323). Heinegg and others argue that we are unnecessarily forced into deciding between economic benefits and environmental integrity. "When loggers in Northern California bitterly fight the extension of Redwood National Forest, it is because the timber industry (and ultimately our whole economy, with the government backing it up) has forced them to choose between devastation of priceless forests and unemployment" (Heinegg 1979, 323).

This ethical conflict is a profound and difficult one and is far from resolution in the literature. A number of ethicists argue that social justice and redistribution of economic and social wealth must not be achieved by sacrificing the environment. Some have argued that environmental protection and conventional concerns of social justice (such as affordable housing and minimum health care) need not be irreconcilable. Increasingly, public policies and programs are being created that combine these objectives.

(For example, the Vermont legislature created a housing and conservation trust fund in 1987 to provide funds for the dual goals of affordable housing and the preservation of open space. Partially funded through a land transfer tax, the fund provides monies for a variety of housing and conservation projects, many directly combining the two goals). One of the major challenges for environmental ethics in the future is to adequately flesh out and overcome this conflict.

It is clear as well that actions that protect the environment, while sometimes undermining, in the short term, social equity goals—for example, by raising the cost of housing—are designed to respond to *other* principles of justice—for instance, obligations to protect the interests of future generations, or other forms of life on earth.

Another social justice dimension to environmental ethics involves the extent to which one geographical unit of society (a town, county, state, country) owes certain environmental obligations to other geographical units. These obligations might be to prevent certain negative environmental spillover effects, or to take certain positive actions to assist in preventing environmental disasters. The United States courts have found some support for the notion that local governments should consider the regional environmental impacts of their actions and policies (Zurvalec 1979). At a much broader level it has been argued that richer nations have obligations to poorer nations to help correct and forestall environmental and other catastrophes (Singer 1971-72; Beitz 1979; for a contrary view see Hardin 1974).

Another interesting angle on the question of social justice as it applies to environmental affairs emerges when considering the actions of businesses and corporations. Is it just for a private logging company to wholesale destroy one-thousand-year-old redwoods in order to maximize profits? Is it just to society for a manufacturing company to discharge suspected carcinogens into a river—a river that serves as the source of drinking water for several downstream communities—assuming there is no law prohibiting such

discharge? What business or corporate responsibilities exist here? Does a business or corporation have only responsibilities to obey the law? There is substantial literature, of course, in the subject of business ethics generally (e.g., Behrman 1988; Freeman and Gilbert 1988), yet a considerably smaller body of literature specifically addressing the question of corporate environmental responsibilities (see Blackstone 1974b; see also Cahn 1978 for an excellent review of the environmental ethics of different business sectors). Rolston (1988) provides one of the better recent discussions of the environmental obligations of business, outlining a set of principles that environmentally sensitive businesses ought to follow and elaborating on their application to business settings (e.g., "the more fragile an environment, the more lightly it ought to be treated," and "Respect life, the more so the more sentient . . .").

EXPANDING THE MORAL COMMUNITY

A major criticism of the Western view of nature is that it is so strongly anthropocentric—viewing the value of plants, animals, rivers, and other natural objects as contingent upon the utility they have for man. This leads Tribe (1974) to be highly critical of the trend toward replacing nature with artificial substitutes, such as the installation of plastic trees along the median strip of a Los Angeles highway. Much of the contemporary environmental literature and thought has emphasized an expansion of the moral community to include obligations to these components of the natural system, particularly other forms of sentient life, and the development of arguments that they possess intrinsic values and rights irrespective of their utility and value to man. This non-anthropocentric view of nature poses difficult questions. How far should this broadened moral community extend (does it include insects as well as whales)? And, assuming plants and animals have certain intrinsic value, how do we resolve situations where their interests and well-being clash with humans?

The idea that nature has intrinsic value is by no means a settled question in the literature, however. One of the sharpest criticisms of the utilitarian or market ethic is that it views the world in a highly anthropocentric manner. The title of Baxter's (1974) book (cited earlier)—*People or Penguins: The Case for Optimal Pollution*—suggests this fundamental conflict between human and non-human interests. Baxter argues that the only consideration when seeking optimal environmental solutions is benefit to humans:

My criteria are oriented to people, not penguins. Damage to penguins, or sugar pines, or geological marvels is, without more, simply irrelevant. One must go further by my criteria, and say: Penguins are important because people enjoy seeing them walk about rocks; and furthermore, the well-being of people would be less impaired by halting use of DDT than by giving up penguins. In short, my observations about environmental problems will be people-oriented, as are my criteria. I have no interest in preserving penguins for their own sake (Baxter 1986, 215).

Some authors have argued that there are strong psychological reasons for supporting the protection of natural objects. Partridge (1984) makes an interesting argument in support of what he characterizes as a non-anthropocentric view. He argues that for personal fulfillment we need things that are independent and external to us. "Thus, our personal and moral life is enriched to the degree that it is 'extended outward' in self-transcending enjoyment, cherishing and contemplating things, places, and ideals that are remote in space and time—ever, in a sense, *timeless*" (p. 126). Man has a basic need for this self-transcendence; a basic need to "identify with, and seek to further, the well-being, preservation, and endurance of communities, locations, causes, artifacts, institutions, ideals, etc., which are outside themselves and which they hope will flourish beyond their own lifetimes. . ." (p. 118). Individuals who lack this sense are alienated and narcissistic. Wild creatures and natural objects are important not for their immediate economic value or use, but rather be-

cause we value them "for what they are." Although perhaps not self-focused, this type of rationale still has the look of anthropocentrism.

Contrary to the views of Baxter, or others, there has been a tremendous explosion of literature in support of the non-anthropocentric position, much of it generated by the animal rights/animal welfare movement (Clark 1977a, 1977b; Feinberg 1974; Fox 1980; Midgley 1983; Regan 1982, 1983; Regan and Singer 1976; Rodman 1977, 1980; Morris and Fox 1978; Singer 1985). But the moral bases for concluding that obligations exist to consider the interests and well-being of animals may be quite different. Even utilitarianism could be expanded to consider the pleasure and pain of non-human creatures, as argued principally by Peter Singer (1985). He claims that logically, utilitarianism must consider the welfare of other creatures: "If a being suffers, there could be no moral justification for refusing to take that suffering into consideration, and, indeed, to count it equally with the like suffering . . . of any other being" (see also Singer 1981, 1979, 1979-80). Tom Regan is perhaps the most prolific and widely read animal activist. He argues that, in contrast to Singer's utilitarianism, animals have *rights* that cannot be violated simply because the aggregative utility or benefit suggests it is appropriate. Regan's "right view," most extensively stated in *The Case for Animal Rights* (1983), is founded on the idea that all creatures have inherent worth. Animals, to Regan, are in fundamental ways similar to human beings and as such are entitled to the same level of inherent worth as humans: ". . . we are each of us the experiencing subject of a life, each of us a conscious creature having an individual welfare that has importance to us whatever our usefulness to others. We want and prefer things; believe and feel things; recall and expect things. . ." (1986, 37; see also Regan 1980, 1979-80, 1987). Animal rights positions lead to arguments against such things as leghold traps, the killing of whales, factory farming, laboratory experimentation using animals, the development

of wildlife habitat, and in support of vegetarianism, among many other relevant policy issues (Auxter 1979; Regan 1979). Other philosophers and theorists have offered counterarguments against the animal rights movement (see Frey 1980, 1983).

A significant conceptual and theoretical difficulty for many writers is where to draw the line between creatures that should be assigned rights (or their interests considered in some manner) and those that should not. Should species be distinguished based on sentience (feeling) and ability to feel pleasure and pain, or on level of intelligence (perhaps favoring such creatures as whales and dolphins, for example), or their physical skills or outward beauty (the incredibly swift cheetah, and the visably impressive butterfly or songbird), among others?

Moreover, even if non-human life forms are given rights or inherent values how do we morally deal with inevitable situations of conflict with human needs and rights? Different proposals for prioritizing rights and interests have been put forth. Van DeVeer's (1979a) "Two-factor Egalitarianism" is one of the most interesting. He seeks to set up a moral framework that differentiates between types of interests (basic interests versus peripheral interests) and level of psychological capabilities. For creatures of similar psychological capabilities the peripheral interest of one can be sacrificed to promote the more basic interest of another. It is not permissible, however, to sacrifice a basic interest of one creature to satisfy a peripheral interest of another even if the latter creature has far superior psychological capabilities (although it is permissible when promoting a "serious" interest). The complexity of a creature's psychological capabilities is important to Van DeVeer in that it can determine the kinds and nature of suffering experienced (certain creatures, such as man, feel dread and remorse, while others do not).

There has been considerable argument about whether the animal rights movement provides a legitimate foundation for an environmental ethic (see Callicott 1980). For many the focus on the suffering of animals

(emphasizing particularly the more intelligent) neglects the broader ecological system that should serve as the focus (see the discussion of Aldo Leopold in a section below)—here the concern is of a much broader nature; it is more holistic, and implies ethical concern and obligation for all elements of this interwoven system, from trees to plants to streams, and so on. Moreover, the animal rights goal of reducing suffering to creatures is inconsistent with the harsh realities of the natural system, where predation and natural selection are the norm. Indeed, as Sagoff (1984) argues, animal welfare/liberation groups have goals that are fundamentally at odds with environmental groups. “Environmental and conservationist organizations traditionally have been concerned with ecological, not with humanitarian, issues. They make no pretense to improving the lot of individual animals; they attempt rather to maintain the diversity, integrity, beauty, and authenticity of the natural environment” (p. 300).

Although there is substantial support for recognizing the intrinsic value of animals, particularly sentient creatures, there is considerably less consensus about such things as trees and plants, and non-living natural objects such as rivers, mountains, and rocks (Brennan 1984; Atfield 1981; Callicott 1979). While these elements gain protection and moral respect because they are typically receptacles of sentient creatures (bears live in forests, fish in streams), more may be necessary.

One of the most widely read advocates of assigning legal rights to natural objects is law professor Christopher Stone (1974, see also Stone 1987), whose views are expressed essentially in a now classic law review article (reissued as a book) *Should Trees Have Standing?* Stone argues that simply because nature and natural objects cannot speak for themselves does not preclude their being assigned legal rights. Corporations, municipalities, and universities, for instance, cannot speak but they hold and exercise clear legal rights. Stone maintains the necessity of

three basic criteria to qualify as a right-holder: (1) the thing can institute legal actions at its behest, (2) in granting legal relief, the court must take injury of it into account, and (3) relief must run to the benefit of it. Stone argues against the illogic of conventional environmental damage actions, say where a river polluter is sued. Conventionally it is the harm to the *human users* of the river that is considered. When awards are made the benefits flow, not to restoring the river as Stone would argue is appropriate, but rather to the harmed human. To implement this unique rights proposal Stone suggests the use of the legal concept of “guardianship.” The court (or someone) should appoint a legal guardian in situations where natural objects or resources are endangered much the same way legal guardians are appointed to look after the needs and interests of members of society deemed incompetent, such as underage children or the mentally ill. Some of what Stone proposes has found favor in recent years. The liberal interpretations of standing rules by federal courts (allowing groups like the Sierra Club to challenge public and private actions) help implement to some extent the guardianship approach. It could also be argued that certain environmental agencies, such as the EPA or the Department of Interior, have at times assumed guardianship functions (although this was a very doubtful hypothesis under the Reagan administration, particularly within the Department of Interior). There has been a trend at the federal and state levels as well to create funding arrangements where environmental damages paid by private parties, for instance, under Superfund, go into a reserved fund to be used to restore the environmental resource to its pre-damage condition.

A particular subcategory of ethical concerns given special attention in the recent literature is the extinction of species. Perhaps the single most disturbing environmental trend of our time, the estimates of the number by year of species lost is incredible and may currently be as high as one thou-

sand. Myers (1979) estimates that by the year 2000, the planet may be losing as many as five thousand species per year, although the estimate may vary widely depending on assumptions about the rate of tropical rain-forest destruction, and so on (see generally Myers 1979). The arguments for protecting the existence of species and biological diversity are numerous in the literature. Much of the reasoning is anthropocentric: we need to protect species because they may provide us with substantial economic and scientific benefits in the future (medicinal and scientific advances); they provide us with tremendous aesthetic and recreational values (the entertainment and pleasure of watching a hump-back whale); they are important to us for symbolic and cultural reasons (the courage, strength, and national importance of the bald eagle); and if they go unprotected, eventually the entire ecosystem, upon which man depends as well, will collapse (the Ehrlichs use the marvelous analogy of continually popping rivets off the wings of an airplane; at what point will the airplane be unsafe to fly? See Ehrlich and Ehrlich 1981). Saving species is often based on the other theoretical and normative positions discussed in this article, such as utility maximization and obligations to future generations (see in particular an excellent anthology of essays in Norton 1986; Gunn 1980; Rolston 1988). The protection of species is also often strongly justified in terms of the right of the species to exist irrespective of these other human benefits. Ehrenfeld (1981) states this position strongly in terms of what he refers to as the "Noah Principle":

This non-humanistic value of communities and species is the simplest of all to state: *they should be conserved because they exist and because this existence is itself but the present expression of a continuing historical process of immense antiquity and majesty.* Long-standing existence in Nature is deemed to carry with it the unimpeachable right to continued existence. Existence is the only criterion of the value of the parts of Nature, and diminution of the number of existing things

is the best measure of decrease of what we ought to value (pp. 207-8).

The species preservation issue almost always raises the question of whether extinction is not a completely natural process and as such should be permitted to run its course as it has certainly in the past. Is not man simply another creature in the environment and are not the long-term impacts of his living and behavioral patterns a part of the natural selection process Darwin discovered? Does the doctrine of survival of the fittest permit man to disregard impacts on other species? We would not worry as much, some would argue, if the California condor or the black-footed ferret were threatened by a natural phenomenon, such as the gradual expansion of the terrain of another species or a series of forest fires. It is obvious to many, however, that the magnitude of man's intervention in the natural world has no precedent in history and that man has certain fundamental moral and ethical obligations deriving from the explicit choices man has that other creatures do not. For example, man has the ability to develop, grow, and live in harmony with nature and can protect the existence and diversity of species.

The connection between the animal rights movement and species protection advocates is an interesting and uncertain one. As Saggoff (1984) accurately notes, the objective of the former is to relieve the pain and suffering of *every* creature. The latter are concerned with promoting and ensuring the continued existence of an entire species, which may often require the killing of other more populous species, usually introduced by man, that are encroaching on the endangered or threatened species. (In Southern California, for instance, the expansion of the cowbird jeopardizes the existence of the least Bell's vireo.)

Stone (1974) has argued that the extension of rights and moral interests is analogous to movements to end slavery and to extend political and social rights to other disenfranchised groups in human society. These

social movements involved attempts to overcome the view that slaves and other individuals were “property” and could be “owned” and exploited. Nash (1985, 1989) likens much of the environmentalism of the 1970s to a modern day abolitionism, with landmark events such as the enactment of the Endangered Species Act in 1973 as strong evidence of a public demand to extend legal rights to other forms of life. Moreover, such a movement is in Nash’s view, completely consistent in fact with the revolutionary spirit and ideals of our founding fathers. The contemporary and environmental movement “. . . fits quite squarely into the most traditional of all American ideals: the defense of minority rights and the liberation of exploited groups. Perhaps the gospel of ecology should not be seen so much as a revolt against American traditions as an extension and new application of them—as just another rounding out of the American Revolution” (Nash 1985, 179).

ENVIRONMENTAL OBLIGATIONS TO FUTURE GENERATIONS

The National Environmental Policy Act (NEPA) of 1969, sometimes referred to as the United States’ environmental magna carta, clearly states that protecting the environment for future generations is an important national goal. Specifically, the act states that it is the continuing responsibility of the federal government to “use whatever practicable means . . . to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may . . . fulfill the *responsibilities of each generation as trustee of the environment for succeeding generations* . . .” (see 42 U.S.C. sections 4321-47; this author’s emphasis). The goals expressed in NEPA are found in many other environmental laws and it is common for environmental proponents and advocates to speak of obligations to future generations. The extent to which such obligations are indeed morally grounded and defensible, as well as the extent to which it is practically meaningful to talk in terms of fu-

ture generations, are highly contentious subjects. The literature on this subject has increased substantially in recent years, although not all of it has focused on the natural environment (see Partridge 1981 and Sikora and Barry 1978 for two excellent anthologies).

At the crux of the matter is the clear and undeniable fact that what we do today—how we dispose of hazardous wastes, whether we permit off-shore oil development, the extent to which we permit the extinction of species—will have an impact on future occupants of the earth. Feinberg (1980) puts the dilemma eloquently:

We have it in our power to make the world a much less pleasant place for our descendants than the world we inherited from our ancestors. We can continue to proliferate in ever greater numbers, using up fertile soil at an even greater rate, dumping our waste into rivers, lakes and oceans and cutting down our forests, polluting the atmosphere with noxious gases. All thoughtful people agree that we ought not to do these things, meaning not merely that conservation is morally required (as opposed to merely desirable), something to be done for their sakes. Surely we owe it to future generations to pass on a world that is not a used up garbage heap. Our remote descendants are not present to claim a liveable world as their right, but there are plenty of proxies to speak now in their behalf. These spokesmen, far from being mere custodians, are genuine representatives of future interest” (pp. 180-81).

The futuricity problem, as Kavka (1978) characterizes it, manifests itself in many practical environmental decisions. The conventional economic methodology by which public decisions are made about projects and actions that involve future costs and benefits explicitly devalues the future. Through the practice of “discounting,”—all benefits and costs are converted to their present value—it is assumed, for instance, that benefits occurring twenty years into the future are not as *valuable* as the same level of benefits occurring today. It is also sometimes assumed by supporters of discounting that fu-

ture residents will be more prosperous than current residents. (There is considerable controversy in the literature about discounting and its impact on environmental and natural resources decision-making: the ethics of it generally, and the extent to which the social discount rate differs from private discount rates, which in turn leads to intertemporal misallocations of resources; see Williams 1978.)

The problems of future generations are also tied intimately to questions of global population growth and resource scarcity. The dire predictions of the Club of Rome Study and others suggest a particularly strong ethical imperative to take actions now to forestall future calamities (Meadows, Meadows, Randers, et al. 1972; Ehrlich 1971; Baumol and Oates 1977; Barbour 1980). These predictions and the rapid increase in global population levels have caused some to argue for major readjustments to existing economic institutions, particularly in support of a steady-state economy (Daly 1977, 1985; Ophuls 1977; Mann and Ingram 1985; see also Gorz 1980). Others have argued that population growth and continued use of global resources does not result in the dire consequences of the "doomsdayers" and Malthusians (e.g., Simon and Kahn 1984). While I cannot fully explore this question here, it should be obvious that one's beliefs about these empirical and factual issues will have considerable bearing on how serious the problem of future generations is from an ethical vantage point.

What are the extent of these obligations, if owed at all? How far into the future—how many future generations—do we owe obligations? (This is what has been called the distance problem; see Norton 1982b.) One approach is to argue, as many have, that because we do not have a crystal ball it is impossible to know what future generations will want or value, particularly distant generations. For Golding (1972), the question hinges upon the concept of "moral community." A moral community, Golding argues, can be constituted in several ways—

through explicit contract, or by a social arrangement in which parties are mutually benefited, or through altruism or sympathetic impulses. For the latter to serve as the basis for a moral community that includes future generations requires us to develop a conception of what is "good" for others. Because we have difficulty in conceptualizing this "good" for future generations, they cannot convincingly be said to be members of our moral community to whom we owe obligations. "They comprise the community of the future, a community with which we cannot expect to share a common life. It appears to me that the more remote the members of this community are, the more problematic our obligations to them become. That they are members of our moral community is highly doubtful, for we probably do not know what to desire for them" (Golding 1972, 69). Thus, while we may owe obligations to our immediate descendants we do not owe obligations to future individuals with whom we do not share a common life. In a practical sense, this inability to identify with future generations results in what Care (1982) calls a "motivation problem" (" . . . what in people can we draw upon to motivate them to follow the policies that morality requires regarding our legacy for the world of the future?" p. 197). (See also Care 1987.)

Others argue that we simply do not know what the wants and needs of future generations will be. This leads Passmore (1974) to view obligations to posterity, if we have them at all, as obligations only to *immediate* posterity: ". . . we ought to try to improve the world so that we shall be able to hand it over to our immediate successors in a better condition, and that is all" (p. 91). However, as Callahan (1981) and others argue, certain human needs and interests will not likely change much, ". . . since we cannot *know* what their social ideal will be, we should act on the assumption that it will not be all that dissimilar from our own; we have no special reason to think otherwise" (p. 80). Moreover, we can be virtually certain that hu-

mans in the future will need and desire certain basic things, such as adequate food and shelter, clean air and water, and a safe environment free of hazardous contaminants (Kavka 1978).

Other arguments against a concern for future generations include the belief that future individuals will be more prosperous (and can thus perhaps better handle environmental costs thrust upon them; see Goodin 1980). Consistent with this view is again a belief in the abilities of science and technology to deal with many of the complex environmental problems faced today. Leaving such problems for future generations may not be unethical because they will be better prepared to solve them. It is not at all clear, however, that future generations will be either more prosperous or more technologically capable.

Parfit (1981-82, 1984) offers a somewhat different argument against assigning rights to future generations. Because the assignment of rights requires that we identify individuals, and because current consumption and population policies affect who these individuals in fact will be, we have a paradox (referred to as "Parfit's Paradox"). For instance, a low consumption policy adopted now, Parfit argues, would prevent many individuals from ever being born. Although the average quality of life may in some sense go down in the future, individuals are still better off being born. Norton (1982b) summarizes the conclusions of Parfit's logic: "(1) No one is banned by a policy of high consumption; (2) No future person's rights are infringed by a policy of high consumption, and (3) Rights of future generations are an inadequate basis for an environmental ethic" (p. 323).

What then are the specifics owed to future generations? What precise moral weight do we assign to posterity? Many believe that the interests of future generations ought to be given equal moral weight with existing populations, and a substantial amount of the environmental ethics literature supports this conclusion. "Future people count, to speak morally, as much as present ones. . . .

Our obligations to people are not lessened at all by the mere fact of their futurity" (Attfield 1983, 95; see also Routley and Routley 1978; Goodin 1980). Kavka (1978) draws from Lockean principles in arguing that present generations have an obligation when making environmental resource decisions to leave "as much and as good for others" (i.e., future generations; for extensive discussions of John Locke's *Theory of Property* see Nozick 1974; MacPherson 1962; Becker 1977).

Accordingly, we say that a generation may use the earth's resources provided that it (i) does not waste them (i.e., uses them to satisfy human interests) and (ii) leaves "enough and as good" for future generations. In the spirit of the justification Locke offers for his second condition, I interpret it to mean that, in this context, the generation in question leaves the next generation at least as well off, with respect to usable resources, as it was left by its ancestors (Kavka 1978, 120).

But even Kavka's standard implies certain assumptions about the capacity of science and knowledge to increase the productive output of limited physical resources in the future. "It might at first appear impossible that any generation live up to the Lockean standard . . . how could a generation use *any* resources at all and leave even an equal number of descendants with as many resources as they themselves inherited? The question is readily answered by noting that some physical resources are renewable or reusable, and that knowledge—especially scientific and technological knowledge—is a usable resource that grows without being depleted and enables us to increase the output of the earth's physical resources" (Kavka 1978, 120).

Rawls (1971) employs a contractarian approach to the question of justice between generations and argues for a "just savings principle." This would require present generations to adopt a reasonable rate of investment and savings to ensure that just institutions are protected in the future. This accumulation must encompass ". . . not only factories and machines, and so on, but also knowledge and culture, as well as the

techniques and skills, that make possible just institutions and the fair value of liberty" (p. 288). It can be argued that such a just savings principle requires public policies to protect a range of social and environmental resources from historic buildings to irreplaceable natural environments. Defining the precise extent of this just savings obligation is problematic and the specific resources and social goods that would require protection (or development) would, of course, be difficult. For example, how much value to future generations will an undeveloped wetlands provide versus the value that might be provided by an industrial park built upon the same site?

Rawls's hypothetical original position seeks to show that certain principles of social justice would be chosen by rational individuals under certain conditions (notably under the "Veil of Ignorance"; that is, devoid of information about personal circumstances and social position that might bias the fairness of the decision; see Beatley 1984). Rawls believes the just savings principle would be embraced because individuals in the original position would be motivated to express concern about their immediate descendants (contracting parties are assumed to be contemporaries . . . that is, of the same generation). Others have provided modifications, interpretations, and adjustments to the assumptions of such a contractarian model. These have resulted in additional arguments for future generations, placing restrictions on the current generation that would appear to go considerably further than the just savings principle (Routley and Routley 1978; Hubbard 1977; Manning 1981). One approach conceives of an original position in which representatives from each generation are present and must consent to the intergenerational principles adopted.

Respect for future generations is also defended based on utilitarian and consequentialist grounds (Surber 1977). The current population has a responsibility to conserve resources, for instance, because this will maximize utility across generations. Attfield (1983) expresses a variant of this, arguing

that the best way to maximize social utility is to provide equally for the basic needs of all—including those of present and future generations. Utilitarian theories bump up against the basic contradiction that greater population growth may yield greater *total* social welfare or utility, but that the *average* welfare or utility of each person may be diminished (see discussion of Parfit 1981-82, 1984 above; see also Narveson 1967; Sikora 1975). There have been many attempts to address and resolve this problem. Attfield's (1983) theory, for example, holds that "increases in the world population should be severely restricted, but that within this restriction as many people as possible who are likely to lead worthwhile lives should be brought into existence, except where their arrival would mean that other people's basic needs could not be met. . . ." (p. 135).

One obligation to the future argued both by philosophers and environmentalists is the need to keep options open, and to avoid making irreversible environmental decisions. Although the current generation may place little value on a wilderness area or on the existence of a certain species of animal or plant life, future generations may deem these things to be more valuable. Once destroyed a wilderness area is for all practical purposes impossible to recreate; once a species is extinct there is no way known to man to bring it back. As Goodin (1983) observes, a keeping the options open principle need not mean a refusal to make choices: "Having chosen one path, it will always be costly to shift over to some other; but, while costly, the shift is at least possible. . . . Thus we may, consistent with that rule, pursue certain options provided our policy is *reversible*—provided we can backtrack if necessary" (p. 7). Rolston (1988) promotes a similar rule against irreversible changes, noting that different types of environmental degradation imply different levels of irreversibility: "a decade for forage, a century for timber regeneration, 100,000 years for soil lost, forever for extinction" (p. 267). The *more* irreversible the outcome, the more carefully society should consider the envi-

ronmental decision. Caution is always required in making such environmental decisions because we are never sure what the ultimate impacts will be. "It is often easier to make changes . . . than to foresee the results of these changes. . . ." (Rolston 1988, 267). Preventing irreversible environmental actions—and respecting the interests of the future—requires society to move slowly and cautiously.

STEWARDSHIP AND ALTERNATIVE VIEWS OF PRIVATE PROPERTY

A substantial portion of the environmental ethics literature explores the idea that there are certain environmental obligations—certain duties that individuals and society have to treat land and environmental resources in a more respectful way. Often this is described in terms of stewardship, and itself is quite conceptually related to concerns about future generations. Being a good "steward" of the land and the environment is often justified in terms of the rights and interests of the inhabitants to come. While stewardship has taken on secular meanings, much of the literature attempts to examine the religious foundations, principally Judeo-Christian, of this idea. Wendell Berry (1981) has been one of the more outspoken proponents of a somewhat different reading of the Bible—one that implies a responsibility to care for and steward the land. He divines much of this responsibility from the story of the promised land, and the idea of land as a gift—"not a free or a deserved gift, but a gift given upon certain rigorous conditions" (p. 270). The gift is a temporary gift from God, a sort of tenancy. To be worthy of the gift the land must be cared for, which, among other things, requires that possessors of the land practice good husbandry and preserve the land so that it can be inherited by the next generation. "You may eat the harvest, but you must save the seed, and you must preserve the fertility of the fields" (p. 273). Stewardship requires Christians to undertake "right livelihoods." Precisely what such lifestyles include, and what the more specific obligations of Christian stewardship are,

Berry does not tell us. It may be possible, of course, to at least identify the lifestyles and practices that *do not* fulfill stewardship obligations. As Berry (1981) asks, "Is there . . . any such thing as a Christian strip mine?" (p. 275). Religious groups, such as the North Carolina Stewardship Council, have developed more specific stewardship principles and are attempting to amass public support for them (N.C. Land Stewardship Council n.d.).

Much of the normative direction provided by Berry and other writers advocating stewardship appears focused on appropriate management of agricultural operations, with particular attention to the need to encourage small-scale, low energy, soil-conserving modes of farming. It is often not obvious how this guidance can apply to such problems as air and water pollution, destruction of wildlife habitat, hazardous waste management, and so on (see also Jackson, Berry, and Colman 1984; Dubos 1972; Barbour 1980).

Notions of stewardship (religious or secular) in turn suggest modifications to our conventional views of private property. Indeed, many argue that the ever more serious nature of contemporary environmental problems demands such a change. "What in the past had been properly regarded as freedoms and rights (given what seemed to be unlimited natural resources and no serious pollution problems) can no longer be so construed, at least not without additional restrictions This is not to say that all private rights must be denied. . . . It is to insist that those rights be qualified or restricted in the light of new ecological data and in the interest of the freedom, rights, and welfare of all" (Blackstone 1974a, 32). Substantial commentary has called in recent years for this type of redefinition—viewing private property in land more as temporary rights of use, carrying stewardship responsibilities, and certainly not as an absolute or natural right (Large 1973; Leeson and Sullivan 1981; Babcock and Feurer 1977). The foundations of such a view are already largely present in American real property law,

seen for instance in the public trust doctrine, which holds that the public retains certain rights to use certain common pool resources, such as river passage and access to the shoreline (Oehme 1987; Sax 1971).

BIOCENTRIC PERSPECTIVES

Biocentric approaches to environmental ethics have as their focus the larger ecosystem and its integrity. The theory and science of ecology has influenced the development of this perspective with an increasing realization that, as Barry Commoner (1971) says, "everything is connected to everything else." It makes little sense to emphasize one element of the ecosystem (whether man or another creature) when the system works as a complexly interconnected unit (see Odum 1963). Among writers in environmental ethics, Aldo Leopold is frequently credited with popularizing this view, specifically in his 1949 classic *A Sand County Almanac*. Here he strongly chastises economists and economic views of the environment and attempts to develop a more explicitly ethical relationship to land and the environment. He lays out in his now famous "land ethic," a new view of the land—one that views man as a part of a larger ecological system and infers strong ethical obligations for man to protect the integrity of this system.

Leopold is critical of modern society—its priorities focused on an empty concept of "progress"—a progress that would forsake a marsh for a highway, a society that recreates in high speed cars and fails to comprehend the fascination and beauty of the natural world, a society that would sacrifice a wild species or its last remaining wilderness for the sake of material goods. Instead of "progress," Leopold questions whether we are in fact in a period of "regress":

Our grandfathers were less well-housed, well-fed, well-clothed than we are. The strivings by which they bettered their lot are also those which deprived us of pigeons [referring to Passenger Pigeons]. Perhaps we now grieve because we are not sure, in our hearts, that we have gained by the exchange. The gadgets of industry bring us more comforts

than the pigeons did, but do they add as much to the glory of the spring? (p. 109)

Man always kills the thing he loves, and so we the pioneers have killed our wilderness. Some say we had to. Be that as it may, I am glad I shall never be young without wild country to be young in. Of what avail are forty freedoms without a blank spot on the map? (p. 149)

In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such. (p. 204)

At the heart of Leopold's ethic is the concept of *community*. Because people are part of human communities they have certain obligations to cooperate and to acknowledge the interdependence inherent in society. Equally as true, man is a member of a larger biological community. "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land" (Leopold 1949, 204).

To Leopold, land and environmental managers must escape from the modern tendency to view everything in terms of economics: ". . . quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. *A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise*" (pp. 224-35; this author's emphasis). Viewing land as "private property" is both a cause and result of these tendencies. Being a responsible citizen of the biological community requires private landowners to act in ways that protect the larger community, such as embracing soil conservation measures, even where such practices are not perhaps in one's economic self-interest. Effectuation of these land obligations requires the extension of an ecological "conscience" from people to land (p. 209). Ethical behavior must be reinforced by society: "social ap-

probation for right actions: social disapproval for wrong actions" (p. 225).

Leopold's notion of the ecological community and man's responsibility to protect and respect its integrity is a powerful message. It finds much expression in Ian McHarg's (1969) "Design with Nature" approach, for instance. To the skeptic, however, Leopold leaves many of the specifics uncharted. At what level of ecological community do our obligations extend—to the small wetland ecosystem, or the larger global ecosystem, or the many points in between? Is it acceptable perhaps that we lose the small wetland, if by doing so the integrity of the larger system is not damaged or jeopardized (a conclusion that is of course suspect in the long run)? While we should certainly seek to minimize human intervention and damage, when are such interventions justified and by what criteria could these ecological interruptions be assessed? Moreover, on what moral basis do we owe *anything* to the ecosystem (outside of those actions that will protect our own self-interest)? Because Leopold develops no explicit fundamental moral justification or meta-ethic, such as moral obligations to other creatures or obligations to future generations, it could be contended that his theory is incomplete.

Much of the ethical and philosophical literature appears in basic agreement with the "holistic" or "organic" views expressed by Leopold (see Rolston 1975; Partridge 1982; Callicott 1989). In Rolston's (1988) axiological model of environmental ethics the "ecosystem" value takes priority over all other values where conflicts arise. There has also been considerable writing in recent years in support of the concept of Mother Earth—or Gaia, the Greek term for this—that is consistent with the Leopold view and extends it to a more global scale (e.g., Lovelock 1987; Myers 1984). Some have pointed to the space program and the powerful images of earth (as a finite capsule swirling with life) sent back from these journeys as the beginning of this perspective. At the heart of the Gaian thesis is the belief that the planet acts as a

functioning, self-regulating unit. Gaia can be defined as a "complex entity involving the Earth's biosphere, atmosphere, oceans, and soil; the totality constituting a feedback or cybernetic system which seeks an optimal physical and chemical environment for life on this planet" (Lovelock 1987, 11). The cybernetic system works to sustain relatively constant conditions or "homeostasis." Under the Gaian view, Mother Earth is remarkably resilient and is capable of self-healing to a point—man can, however, seriously disrupt the earth's major physical and chemical cycles with tremendous repercussions (as we are perhaps seeing with the greenhouse effects of carbon dioxide buildup).

While Leopold and others hold the integrity and sustainability of the ecological community as the ultimate moral responsibility, Paul Taylor puts forth a somewhat different biocentric view. In *Respect for Nature*, Taylor (1986) argues that all living organisms have an intrinsic good—that is, a good of their own (see also Taylor 1984, 1983, 1981). Whether animal or plant life, intelligent or lacking intelligence, all life forms have a good and an inherent worth and as such, humans have an obligation to adopt an attitude of respect for them. In defending and justifying this attitude of respect Taylor embraces a "biocentric outlook on nature" that closely parallels Leopold's. Four beliefs are at the core:

- (a) The belief that humans are members of the Earth's Community of Life in the same sense and on the same terms in which other living things are members of that community.
- (b) The belief that the human species, along with all other species, are integral elements in a system of interdependence such that the survival of each living thing . . . is determined not only by the physical conditions of its environment but also by its relations to other living things.
- (c) The belief that all organisms are teleological centers of life in the sense that each is a unique individual pursuing its own good in its own way.
- (d) The belief that humans are not inherently superior to other living things (pp. 99-100).

The respect for nature and all its organisms—and the belief system upon which it is based—leads to a kind of bio-egalitarianism in which other members of the ecological community are placed on equal moral footing with man. Taylor's work is unique in its attempt to delineate a tremendously detailed set of moral standards and rules of conduct which he argues flow directly from the attitude of respect. "Basic rules of conduct" include the Rule of Nonmaleficence (the duty not to harm creatures in the natural environment, particularly those that do not harm man), the Rule of Noninterference (a duty to refrain from denying freedom to organisms and a general "hands off" policy for ecosystems and organisms), the Rule of Fidelity (restrictions to deceiving or betraying wild creatures), and the Rule of Restitutive Justice (requirements of restorative or compensatory actions for previous injustices done to organisms and ecosystems). Taylor also provides a set of priority rules for resolving conflicts between these principles, explaining which rules shall take priority in which types of circumstances.

A fundamental issue is how to morally reconcile the inherent worth and equality of nature and natural creatures with the needs and demands of the human race, such as demands to fill wetlands for housing or to dispose of wastes in rivers and oceans. The fundamental moral dilemma is put succinctly by Taylor (1986): "to further human values in these situations is to bring about severe, permanent adverse effects on the good of beings that have the same inherent worth as humans" (p. 257). This is a case of competing *moral claims* (p. 259). Taylor provides much of the detail lacking in Leopold. Whether this theory is morally or logically compelling is debatable, but its detail and ready applicability to planning and public policy are commendable. Specifically, five principles are put forth to resolve these completing claims, including the principle of self-defense, the principle of proportionality, the principle of minimum wrong, the principle of distributive justice, and the principle of restitutive justice. Taylor ad-

mits that these principles do not provide "neat solutions" to every conflict, but rather represent clusters of morally relevant considerations that can serve as rough guides to resolving conflicts (p. 263). In arranging and defining these principles Taylor calls upon Van DeVeer's (1979a) earlier distinction between "basic" and "non-basic" interests. Taylor's principle of proportionality, for instance, applies only to conflicts between the *basic* interests of other creatures and the *non-basic* interests of humans, and holds that the latter cannot supercede the former (for instance, the non-basic human need to see and own ivory products cannot outweigh the more basic need of elephants to survive). The principle of minimum wrong imposes the duty that where, under special circumstances, human actions are permitted that harm wild plants and animals, those alternatives that minimize these impacts must be chosen. (For examples of how this principle might affect urban development and human settlement patterns, see Taylor 1986, 287-90).

Taylor's work would strike many as inappropriate because it seeks to justify respect for nature in a Western philosophical framework. Deep ecology represents another variant of the biocentric approach. The term "deep ecology" is a relatively recent addition to the vocabulary of environmental ethics. Coined by Norwegian philosopher Arne Naess, the deep ecology movement seeks fundamental changes in the manner in which man views and relates to nature (Naess 1973, 1979). It is critical of "shallow" attempts to initiate changes at the margin. Deep ecologists are highly critical of the "Dominant Modern Worldview," which believes, among other things, that man is fundamentally different from other creatures and has dominion over them, that man is the master of his destiny, that the world has vast resources and contains unlimited opportunities for man, and that human progress need never cease (Devall and Sessions 1985, 43). At the heart of deep ecology is an understanding of the need to develop and nurture individual ecological consciousness. Specifically, Naess discusses two ultimate norms: self-realization

and biocentric equality. Self-realization comes about through a "meditative deep questioning process" in which individuals begin to identify themselves not as isolated from other humans and other creatures but as one with them. Biocentric equality refers to the basic intuition that "all things in the biosphere have an equal right to live and blossom and to reach their own individual forms of unfolding and self-realization within the larger self-realization. This basic intuition is that all organisms and entities in the ecosphere, as parts of the interrelated whole, are equal in intrinsic worth" (Devall and Sessions 1985, 67). Deep ecology appears to be a unique blend of utopian and spiritual thought drawn from a number of sources and traditions, including the American literary traditions of naturalism and pastoralism, and elements of Christianity, feminism, Taoism, and Buddhism. Its ultimate purpose is to develop in individuals a greater direct association with nature and to modify human interaction with nature so that man flows with nature rather than destroying or going against it (see Tobias 1985).

Deep ecology seeks to nurture a kind of spiritual harmony between man and nature. While some of the conclusions of this movement are consistent with Taylor's respect for nature, deep ecologists would denounce Taylor's attempt to justify and arrive at them through means of philosophical analysis and by means of appealing to human *rationality*. To a deep ecologist such analytic rationality is a pretense and denies the basic spiritual identification that ought to be the moral basis for a more ecologically sensible culture. It is not clear from the existing literature exactly how this new "religion" is to gain a foothold, nor what its precise institutional and policy implications are. It is evident from the deep ecology writings, however, that much sympathy rests with appropriate and alternative technologies, with eco-utopian lifestyles (Callenbach 1975, 1981), with policies of population control, with wilderness preservation, and with Green politics. Yet, a highly developed philosophical theory or ethic it is not. Rather

it remains at a spiritual and intuitive level—referring to and drawing from, in a rather disorganized manner, a range of interdisciplinary literature and ideas.

CONCLUSIONS

Serious environmental problems confront our society both at local and global scales. Most of this degradation is, in one way or another, a consequence of urban development and human settlement patterns—the domain of urban planning. To adequately address these environmental problems requires society to carefully analyze its values and to make difficult choices and trade-offs. I have argued that the literature, concepts, and normative theories of environmental ethics are essential in resolving these dilemmas, and as such should be considered an important component of contemporary planning theory. Although planners are perhaps not in a position to decide what the morally correct or ethical environmental decision is, they are certainly in a position to put forth, and cause to be considered, key questions in arriving at an environmental ethic.

This article has sought to identify the primary literature in the area of environmental ethics as a resource to be used in seeking answers to these questions. It is important to view the subject and literature of environmental ethics as useful to planners and public policymakers confronted with difficult land-use and environmental decisions.

This article has not attempted to advocate or put forth as superior a particular moral theory or set of ethical principles. This is a task reserved for another time. Moreover, devising a unified, coherent environmental ethic that would resolve every environmental conflict is difficult, to say the least, and typically hard for individuals to wholeheartedly embrace. A more practical view of environmental ethics is to see it as a complex assemblage of principles, theories, and concepts, only a subset of which might be applicable in any given situation. (What Stone (1987) refers to as a "pluralistic" approach

to ethics.) Planners and policymakers are faced with the challenge of first identifying the relevant ethical and moral dimensions of a particular environmental conflict or decision, and then reviewing and choosing those principles or concepts that should be applied to the case. This raises the additional difficulty of how planners and policymakers choose which ethical theories or positions are *morally correct*—another subject that has been largely beyond the scope of this article. On the one hand some have argued for particular positions on the basis of certain logical or theoretical constructs (Rawls's hypothetical contract, Taylor's respect for nature). Others support positions based on what strikes them as *intuitively* ethical. In the end most moral decisions are some combination of logic and intuition. An important point is that planners and policymakers must be encouraged to develop their moral positions toward and about the environment through a deliberative and dialogic process, one that recognizes and utilizes the considerable amount of thought and writing already existing in the area of environmental ethics.

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