

*Critique of Some Current Evolutionary Thought* (Princeton: Princeton University Press, 1966) and ever since, the concept of group selection has been avoided by most evolutionary theorists and certainly by sociobiologists. For a recent summary discussion see Michael Ruse, *Sociobiology: Sense or Nonsense?* (Boston: D. Reidel, 1979).

68. Most notably by W. D. Hamilton, "The Genetical Theory of Social Behavior," *Journal of Theoretical Biology* 7 (1964): 1-32; R. L. Trivers, "The Evolution of Reciprocal Altruism," *Quarterly Review of Biology* 46 (1971): 35-57; Edward O. Wilson, *Sociobiology: The New Synthesis* (Cambridge: Harvard University Press, 1975). Ruse, *Sociobiology: Sense or Nonsense?* provides a thorough bibliography.
69. Leopold, *Sand County*, p. 202.
70. Ibid.
71. Ehrlich and Ehrlich, *Extinction*, p. 48.
72. Ibid., pp. 50-51.
73. Hume, *Treatise*, pp. 484-85.
74. Darwin, *Descent*, p. 122.
75. Leopold, *Sand County*, p. 204.
76. See the discussion of Hume in W. D. Hudson, *Modern Moral Philosophy* (Garden City: Anchor Books, 1970), for a good summary of professional opinion.

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# Philosophical Problems for Environmentalism

ELLIOTT SOBER

## I. INTRODUCTION

A number of philosophers have recognized that the environmental movement, whatever its practical political effectiveness, faces considerable theoretical difficulties in justification.<sup>1</sup> It has been recognized that traditional moral theories do not provide natural underpinnings for policy objectives and this has led some to skepticism about the claims of environmentalists, and others to the view that a revolutionary reassessment of ethical norms is needed. In this chapter, I will try to summarize the difficulties that confront a philosophical defense of environmentalism. I also will suggest a way of making sense of some environmental concerns that does not require the wholesale jettisoning of certain familiar moral judgments.

Preserving an endangered species or ecosystem poses no special conceptual problem when the instrumental value of that species or ecosystem is known. When we have reason to think that some natural object represents a resource to us, we obviously ought to take that fact into account in deciding what to do. A variety of potential uses may be under discussion, including food supply, medical applications, recreational use, and so on. As with any complex decision, it may be difficult even to agree on how to compare the competing values that may be involved. Willingness to pay in dollars is a familiar least common denominator, although it poses a number of problems. But here we have nothing that is specifically a problem for environmentalism.

The problem for environmentalism stems from the idea that species and ecosystems ought to be preserved for reasons additional to their known value as resources for human use. The feeling is that even when

we cannot say what nutritional, medicinal, or recreational benefit the preservation provides, there still is a value in preservation. It is the search for a rationale for this feeling that constitutes the main conceptual problem for environmentalism.

The problem is especially difficult in view of the holistic (as opposed to individualistic) character of the things being assigned value. Put simply, what is special about environmentalism is that it values the preservation of species, communities, or ecosystems, rather than the individual organisms of which they are composed. "Animal liberationists" have urged that we should take the suffering of sentient animals into account in ethical deliberation.<sup>2</sup> Such beasts are not mere things to be used as cruelly as we like no matter how trivial the benefit we derive. But in "widening the ethical circle," we are simply including in the community more individual organisms whose costs and benefits we compare. Animal liberationists are extending an old and familiar ethical doctrine—namely, utilitarianism—to take account of the welfare of other individuals. Although the practical consequences of this point of view may be revolutionary, the theoretical perspective is not at all novel. If suffering is bad, then it is bad for any individual who suffers.<sup>3</sup> Animal liberationists merely remind us of the consequences of familiar principles.<sup>4</sup>

But trees, mountains, and salt marshes do not suffer. They do not experience pleasure and pain, because, evidently, they do not have experiences at all. The same is true of species. Granted, individual organisms may have mental states; but the species—taken to be a population of organisms connected by certain sorts of interactions (preeminently, that of exchanging genetic material in reproduction)—does not. Or put more carefully, we might say that the only sense in which species have experiences is that their member organisms do: the attribution at the population level, if true, is true simply in virtue of its being true at the individual level. Here is a case where reductionism is correct.

So perhaps it is true in this reductive sense that some species experience pain. But the values that environmentalists attach to preserving species do not reduce to any value of preserving organisms. It is in this sense that environmentalists espouse a holistic value system. Environmentalists care about entities that by no stretch of the imagination have experiences (e.g., mountains). What is more, their position does not force them to care if individual organisms suffer pain, so long as the species is preserved. Steel traps may outrage an animal liberationist because of the suffering they inflict, but an environmentalist aiming just at the preservation of a balanced ecosystem might see here no cause for complaint. Similarly, environmentalists think that the distinction between wild and domesticated organisms is important, in that it is the preservation of "natural"

(i.e., not created by the "artificial interference" of human beings) objects that matters, whereas animal liberationists see the main problem in terms of the suffering of any organism—domesticated or not.<sup>5</sup> And finally, environmentalists and animal liberationists diverge on what might be called the *n + m question*. If two species—say blue and sperm whales—have roughly comparable capacities for experiencing pain, an animal liberationist might tend to think of the preservation of a sperm whale as wholly on an ethical par with the preservation of a blue whale. The fact that one organism is part of an endangered species while the other is not does not make the rare individual more intrinsically important. But for an environmentalist, this holistic property—membership in an endangered species—makes all the difference in the world: a world with *n* sperm and *m* blue whales is far better than a world with *n + m* sperm and 0 blue whales. Here we have a stark contrast between an ethic in which it is the life situation of individuals that matters, and an ethic in which the stability and diversity of populations of individuals are what matter.<sup>6</sup>

Both animal liberationists and environmentalists wish to broaden our ethical horizons—to make us realize that it is not just human welfare that counts. But they do this in very different, often conflicting, ways. It is no accident that at the level of practical politics the two points of view increasingly find themselves at loggerheads.<sup>7</sup> This practical conflict is the expression of a deep theoretical divide.

## II. THE IGNORANCE ARGUMENT

"Although we might not now know what use a particular endangered species might be to us, allowing it to go extinct forever closes off the possibility of discovering and exploiting a future use." According to this point of view, our ignorance of value is turned into a reason for action. The scenario envisaged in this environmentalist argument is not without precedent; who could have guessed that penicillin would be good for something other than turning out cheese? But there is a fatal defect in such arguments, which we might summarize with the phrase *out of nothing, nothing comes*: rational decisions require assumptions about what is true and what is valuable (in decision-theoretic jargon, the inputs must be probabilities and utilities). If you are completely ignorant of values, then you are incapable of making a rational decision, either for or against preserving some species. The fact that you do not know the value of a species, by itself, cannot count as a reason for wanting one thing rather than another to happen to it.

And there are so many species. How many geese that lay golden eggs

are there apt to be in that number? It is hard to assign probabilities and utilities precisely here, but an analogy will perhaps reveal the problem confronting this environmentalist argument. Most of us willingly fly on airplanes, when safer (but less convenient) alternative forms of transportation are available. Is this rational? Suppose it were argued that there is a small probability that the next flight you take will crash. This would be very bad for you. Is it not crazy for you to risk this, given that the only gain to you is that you can reduce your travel time by a few hours (by not going by train, say)? Those of us who not only fly, but congratulate ourselves for being rational in doing so, reject this argument. We are prepared to accept a small chance of a great disaster in return for the high probability of a rather modest benefit. If this is rational, no wonder that we might consistently be willing to allow a species to go extinct in order to build a hydroelectric plant.

That the argument from ignorance is no argument at all can be seen from another angle. If we literally do not know what consequences the extinction of this or that species may bring, then we should take seriously the possibility that the extinction may be beneficial as well as the possibility that it may be deleterious. It may sound deep to insist that we preserve endangered species precisely because we do not know why they are valuable. But ignorance on a scale like this cannot provide the basis for any rational action.

Rather than invoke some unspecified future benefit, an environmentalist may argue that the species in question plays a crucial role in stabilizing the ecosystem of which it is a part. This will undoubtedly be true for carefully chosen species and ecosystems, but one should not generalize this argument into a global claim to the effect that *every* species is crucial to a balanced ecosystem. Although ecologists used to agree that the complexity of an ecosystem stabilizes it, this hypothesis has been subject to a number of criticisms and qualifications, both from a theoretical and an empirical perspective.<sup>8</sup> And for certain kinds of species (those which occupy a rather small area and whose normal population is small) we can argue that extinction would probably not disrupt the community. However fragile the biosphere may be, the extreme view that everything is crucial is almost certainly not true.

But, of course, environmentalists are often concerned by the fact that extinctions are occurring now at a rate much higher than in earlier times. It is mass extinction that threatens the biosphere, they say, and this claim avoids the spurious assertion that communities are so fragile that even one extinction will cause a crash. However, if the point is to avoid a mass extinction of species, how does this provide a rationale for preserving a species of the kind just described, of which we rationally believe

that its passing will not destabilize the ecosystem? And, more generally, if mass extinction is known to be a danger to us, how does this translate into a value for preserving any particular species? Notice that we have now passed beyond the confines of the argument from ignorance; we are taking as a premise the idea that mass extinction would be a catastrophe (since it would destroy the ecosystem on which we depend). But how should that premise affect our valuing the California condor, the blue whale, or the snail darter?

### III. THE SLIPPERY SLOPE ARGUMENT

Environmentalists sometimes find themselves asked to explain why each species matters so much to them, when there are, after all, so many. We may know of special reasons for valuing particular species, but how can we justify thinking that each and every species is important? "Each extinction impoverishes the biosphere" is often the answer given, but it really fails to resolve the issue. Granted, each extinction impoverishes, but it only impoverishes a little bit. So if it is the *wholesale* impoverishment of the biosphere that matters, one would apparently have to concede that each extinction matters a little, but only a little. But environmentalists may be loathe to concede this, for if they concede that each species matters only a little, they seem to be inviting the wholesale impoverishment that would be an unambiguous disaster.<sup>9</sup> So they dig in their heels and insist that each species matters a lot. But to take this line, one must find some other rationale than the idea that mass extinction would be a great harm. Some of these alternative rationales we will examine later. For now, let us take a closer look at the train of thought involved here.

Slippery slopes are curious things: if you take even one step onto them, you inevitably slide all the way to the bottom. So if you want to avoid finding yourself at the bottom, you must avoid stepping onto them at all. To mix metaphors, stepping onto a slippery slope is to invite being nicked and dimed to death.

Slippery slope arguments have played a powerful role in a number of recent ethical debates. One often hears people defend the legitimacy of abortions by arguing that since it is permissible to abort a single-celled fertilized egg, it must be permissible to abort a foetus of any age, since there is no place to draw the line from 0 to 9 months. Antiabortionists, on the other hand, sometimes argue in the other direction: since infanticide of newborns is not permissible, abortion at any earlier time is also not allowed, since there is no place to draw the line. Although these two arguments reach opposite conclusions about the permissibility of abortions, they agree on the following idea: since there is no principled place

to draw the line on the continuum from newly fertilized egg to foetus gone to term, one must treat all these cases in the same way. Either abortion is always permitted or it never is, since there is no place to draw the line. Both sides run their favorite slippery slope arguments, but try to precipitate slides in opposite directions.

Starting with 10 million extant species, and valuing overall diversity, the environmentalist does not want to grant that each species matters only a little. For having granted this, commercial expansion and other causes will reduce the tally to 9,999,999. And then the argument is repeated, with each species valued only a little, and diversity declines another notch. And so we are well on our way to a considerably impoverished biosphere, a little at a time. Better to reject the starting premise—namely, that each species matters only a little—so that the slippery slope can be avoided.

Slippery slopes should hold no terror for environmentalists, because it is often a mistake to demand that a line be drawn. Let me illustrate by an example. What is the difference between being bald and not? Presumably, the difference concerns the number of hairs you have on your head. But what is the precise number of hairs marking the boundary between baldness and not being bald? There is no such number. Yet, it would be a fallacy to conclude that there is no difference between baldness and hairiness. The fact that you cannot draw a line does not force you to say that the two alleged categories collapse into one. In the abortion case, this means that even if there is no precise point in foetal development that involves some discontinuous, qualitative change, one is still not obliged to think of newly fertilized eggs and fetuses gone to term as morally on a par. Since the biological differences are ones of degree, not kind, one may want to adopt the position that the moral differences are likewise matters of degree. This may lead to the view that a woman should have a better reason for having an abortion, the more developed her foetus is. Of course, this position does not logically follow from the idea that there is no place to draw the line; my point is just that differences in degree do not demolish the possibility of there being real moral differences.

In the environmental case, if one places a value on diversity, then each species becomes more valuable as the overall diversity declines. If we begin with 10 million species, each may matter little, but as extinctions continue, the remaining ones matter more and more. According to this outlook, a better and better reason would be demanded for allowing yet another species to go extinct. Perhaps certain sorts of economic development would justify the extinction of a species at one time. But granting this does not oblige one to conclude that the same sort of decision would

have to be made further down the road. This means that one can value diversity without being obliged to take the somewhat exaggerated position that each species, no matter how many there are, is terribly precious in virtue of its contribution to that diversity.

Yet, one can understand that environmentalists might be reluctant to concede this point. They may fear that if one now allows that most species contribute only a little to overall diversity, one will set in motion a political process that cannot correct itself later. The worry is that even when the overall diversity has been drastically reduced, our ecological sensitivities will have been so coarsened that we will no longer be in a position to realize (or to implement policies fostering) the preciousness of what is left. This fear may be quite justified, but it is important to realize that it does not conflict with what was argued above. The political utility of making an argument should not be confused with the argument's soundness.

The fact that you are on a slippery slope, by itself, does not tell you whether you are near the beginning, in the middle, or at the end. If species diversity is a matter of degree, where do we currently find ourselves—on the verge of catastrophe, well on our way in that direction, or at some distance from a global crash? Environmentalists often urge that we are fast approaching a precipice; if we are, then the reduction in diversity that every succeeding extinction engenders should be all we need to justify species preservation.<sup>10</sup>

Sometimes, however, environmentalists advance a kind of argument not predicated on the idea of fast approaching doom. The goal is to show that there is something wrong with allowing a species to go extinct (or with causing it to go extinct), even if overall diversity is not affected much. I now turn to one argument of this kind.

#### IV. APPEALS TO WHAT IS NATURAL

I noted earlier that environmentalists and animal liberationists disagree over the significance of the distinction between wild and domesticated animals. Since both types of organisms can experience pain, animal liberationists will think of each as meriting ethical consideration. But environmentalists will typically not put wild and domesticated organisms on a par.<sup>11</sup> Environmentalists typically are interested in preserving what is natural, be it a species living in the wild or a wilderness ecosystem. If a kind of domesticated chicken were threatened with extinction, I doubt that environmental groups would be up in arms. And if certain unique types of human environments—say urban slums in the United States—

were "endangered," it is similarly unlikely that environmentalists would view this process as a deplorable impoverishment of the biosphere.

The environmentalist's lack of concern for humanly created organisms and environments may be practical rather than principled. It may be that at the level of values, no such bifurcation is legitimate, but that from the point of view of practical political action, it makes sense to put one's energies into saving items that exist in the wild. This subject has not been discussed much in the literature, so it is hard to tell. But I sense that the distinction between wild and domesticated has a certain theoretical importance to many environmentalists. They perhaps think that the difference is that we created domesticated organisms which would otherwise not exist, and so are entitled to use them solely for our own interests. But we did not create wild organisms and environments, so it is the height of presumption to expropriate them for our benefit. A more fitting posture would be one of "stewardship": we have come on the scene and found a treasure not of our making. Given this, we ought to preserve this treasure in its natural state.

I do not wish to contest the appropriateness of "stewardship." It is the dichotomy between artificial (domesticated) and natural (wild) that strikes me as wrong-headed. I want to suggest that to the degree that "natural" means anything biologically, it means very little ethically. And, conversely, to the degree that "natural" is understood as a normative concept, it has very little to do with biology.

Environmentalists often express regret that we human beings find it so hard to remember that we are part of nature—one species among many others—rather than something standing outside of nature. I will not consider here whether this attitude is cause for complaint; the important point is that seeing us as part of nature rules out the environmentalist's use of the distinction between artificial-domesticated and natural-wild described above. *If we are part of nature, then everything we do is part of nature, and is natural in that primary sense.*<sup>12</sup> When we domesticate organisms and bring them into a state of dependence on us, this is simply an example of one species exerting a selection pressure on another. If one calls this "unnatural," one might just as well say the same of parasitism or symbiosis (compare human domestication of animals and plants and "slave-making" in the social insects).

The concept of naturalness is subject to the same abuses as the concept of normalcy. *Normal* can mean *usual* or it can mean *desirable*. Although only the total pessimist will think that the two concepts are mutually exclusive, it is generally recognized that the mere fact that something is common does not by itself count as a reason for thinking that it is desirable. This distinction is quite familiar now in popular discussions

of mental health, for example. Yet, when it comes to environmental issues, the concept of naturalness continues to live a double life. The destruction of wilderness areas by increased industrialization is bad because it is unnatural. And it is unnatural because it involves transforming a natural into an artificial habitat. Or one might hear that although extinction is a natural process, the kind of mass extinction currently being precipitated by our species is unprecedented, and so is unnatural. Environmentalists should look elsewhere for a defense of their policies, lest conservation simply become a variant of uncritical conservatism in which the axiom "Whatever is, is right" is modified to read "Whatever is (before human beings come on the scene), is right."

This conflation of the biological with the normative sense of "natural" sometimes comes to the fore when environmentalists attack animal liberationists for naive do-goodism. Callicott writes:

... the value commitments of the humane movement seem at bottom to betray a world-denying or rather a life-loathing philosophy. The natural world as actually constituted is one in which one being lives at the expense of others. Each organism, in Darwin's metaphor, struggles to maintain its own organic integrity. . . . To live *is* to be anxious about life, to feel pain and pleasure in a fitting mixture, and sooner or later to die. That is the way the system works. *If nature as a whole is good, then pain and death are also good.* Environmental ethics in general require people to play fair in the natural system. The neo-Benthamites have in a sense taken the uncourageous approach. People have attempted to exempt themselves from the life/death reciprocities of natural processes and from ecological limitations in the name of a prophylactic ethic of maximizing rewards (pleasure) and minimizing unwelcome information (pain). To be fair, the humane moralists seem to suggest that we should attempt to project the same values into the nonhuman animal world and to widen the charmed circle—no matter that it would be biologically unrealistic to do so or biologically ruinous if, per impossible, such an environmental ethic were implemented.

There is another approach. Rather than imposing our alienation from nature and natural processes and cycles of life on other animals, we human beings could reaffirm our participation in nature by accepting life as it is given without a sugar coating. . . .<sup>13</sup>

On the same page, Callicott quotes with approval Shepard's remark that "the humanitarian's projection onto nature of illegal murder and the rights of civilized people to safety not only misses the point but is



exactly contrary to fundamental ecological reality: the structure of nature is a sequence of killings."<sup>14</sup>

Thinking that what is found in nature is beyond ethical defect has not always been popular. Darwin wrote:

... That there is much suffering in the world no one disputes.

Some have attempted to explain this in reference to man by imagining that it serves for his moral improvement. But the number of men in the world is as nothing compared with that of all other sentient beings, and these often suffer greatly without any moral improvement. A being so powerful and so full of knowledge as a God who could create the universe, is to our finite minds omnipotent and omniscient, and it revolts our understanding to suppose that his benevolence is not unbounded, for what advantage can there be in the sufferings of millions of the lower animals throughout almost endless time? This very old argument from the existence of suffering against the existence of an intelligent first cause seems to me a strong one; whereas, as just remarked, the presence of much suffering agrees well with the view that all organic beings have been developed through variation and natural selection.<sup>15</sup>

Darwin apparently viewed the quantity of pain found in nature as a melancholy and sobering consequence of the struggle for existence. But once we adopt the Panglossian attitude that this is the best of all possible worlds ("there is just the right amount of pain," etc.), a failure to identify what is natural with what is good can only seem "world-denying," "life-loathing," "in a sense uncourageous," and "contrary to fundamental ecological reality."<sup>16</sup>

Earlier in his essay, Callicott expresses distress that animal liberationists fail to draw a sharp distinction "between the very different plights (and rights) of wild and domestic animals."<sup>17</sup> Domestic animals are creations of man, he says. "They are living artifacts, but artifacts nevertheless. ... There is thus something profoundly incoherent (and insensitive as well) in the complaint of some animal liberationists that the 'natural behavior' of chickens and bobby calves is cruelly frustrated on factory farms. It would make almost as much sense to speak of the natural behavior of tables and chairs."<sup>18</sup> Here again we see teleology playing a decisive role: wild organisms do not have the natural function of serving human ends, but domesticated animals do. Cheetahs in zoos are crimes against what is natural; veal calves in boxes are not.

The idea of "natural tendency" played a decisive role in pre-Darwinian biological thinking. Aristotle's entire science—both his physics and his biology—is articulated in terms of specifying the natural tendencies of

kinds of objects and the interfering forces that can prevent an object from achieving its intended state.<sup>19</sup> Heavy objects in the sublunar sphere have location at the center of the earth as their natural state; each tends to go there, but is prevented from doing so.<sup>20</sup> Organisms likewise are conceptualized in terms of this natural state model:

... [for] any living thing that has reached its normal development and which is unmutated, and whose mode of generation is not spontaneous, the most natural act is the production of another like itself, an animal producing an animal, a plant a plant. ...<sup>21</sup>

But many interfering forces are possible, and in fact the occurrence of "monsters" is anything but uncommon. According to Aristotle, mules (sterile hybrids) count as deviations from the natural state. In fact, females are monsters as well, since the natural tendency of sexual reproduction is for the offspring to perfectly resemble the father, who, according to Aristotle, provides the "genetic instructions" (to put the idea anachronistically) while the female provides only the matter.<sup>22</sup>

What has happened to the natural state model in modern science? In physics, the idea of describing what a class of objects will do in the absence of "interference" lives on: Newton specified this "zero-force state" as rest or uniform motion, and in general relativity, this state is understood in terms of motion along geodesics. But one of the most profound achievements of Darwinian biology has been the jettisoning of this kind of model.<sup>23</sup> It isn't just that Aristotle was wrong in his detailed claims about mules and women; the whole structure of the natural state model has been discarded. Population biology is not conceptualized in terms of positing some characteristic that all members of a species would have in common, were interfering forces absent. Variation is not thought of as a deflection from the natural state of uniformity. Rather, variation is taken to be a fundamental property in its own right. Nor, at the level of individual biology, does the natural state model find an application. Developmental theory is not articulated by specifying a natural tendency and a set of interfering forces. The main conceptual tool for describing the various developmental pathways open to a genotype is the norm of reaction.<sup>24</sup> The norm of reaction of a genotype within a range of environments will describe what phenotype the genotype will produce in a given environment. Thus, the norm of reaction for a corn plant genotype might describe how its height is influenced by the amount of moisture in the soil. The norm of reaction is entirely silent on which phenotype is the "natural" one. The idea that a corn plant might have some "natural height," which can be augmented or diminished by "interfering forces" is entirely alien to post-Darwinian biology.

The fact that the concepts of natural state and interfering force have lapsed from biological thought does not prevent environmentalists from inventing them anew. Perhaps these concepts can be provided with some sort of normative content; after all, the normative idea of "human rights" may make sense even if it is not a theoretical underpinning of any empirical science. But environmentalists should not assume that they can rely on some previously articulated scientific conception of "natural."

#### V. APPEALS TO NEEDS AND INTERESTS

The version of utilitarianism considered earlier (according to which something merits ethical consideration if it can experience pleasure and/or pain) leaves the environmentalist in the lurch. But there is an alternative to Bentham's hedonistic utilitarianism that has been thought by some to be a foundation for environmentalism. Preference utilitarianism says that an object's having interests, needs, or preferences gives it ethical status. This doctrine is at the core of Stone's affirmative answer to the title question of his book *Should Trees Have Standing?*<sup>25</sup> "Natural objects *can* communicate their wants (needs) to us, and in ways that are not terribly ambiguous. . . . The lawn tells me that it wants water by a certain dryness of the blades and soil—immediately obvious to the touch—the appearance of bald spots, yellowing, and a lack of springiness after being walked on." And if plants can do this, presumably so can mountain ranges, and endangered species. Preference utilitarianism may thereby seem to grant intrinsic ethical importance to precisely the sorts of objects about which environmentalists have expressed concern.

The problems with this perspective have been detailed by Sagoff.<sup>26</sup> If one does not require of an object that it have a mind for it to have wants or needs, what *is* required for the possession of these ethically relevant properties? Suppose one says that an object needs something if it will cease to exist if it does not get it. Then species, plants, and mountain ranges have needs, but only in the sense that automobiles, garbage dumps, and buildings do too. If everything has needs, the advice to take needs into account in ethical deliberation is empty, unless it is supplemented by some technique for weighting and comparing the needs of different objects. A corporation will go bankrupt unless a highway is built. But the swamp will cease to exist if the highway is built. Perhaps one should take into account all relevant needs, but the question is how to do this in the event that needs conflict.

Although the concept of need can be provided with a permissive, all-inclusive definition, it is less easy to see how to do this with the concept of want. Why think that a mountain range "wants" to retain its unspoiled

appearance, rather than house a new amusement park?<sup>27</sup> Needs are not at issue here, since in either case, the mountain continues to exist. One might be tempted to think that natural objects like mountains and species have "natural tendencies," and that the concept of want should be liberalized so as to mean that natural objects "want" to persist in their natural states. This Aristotelian view, as I argued in the previous section, simply makes no sense.<sup>28</sup> Granted, a commercially undeveloped mountain will persist in this state, unless it is commercially developed. But it is equally true that a commercially untouched hill will become commercially developed, unless something causes this not to happen. I see no hope for extending the concept of wants to the full range of objects valued by environmentalists.

The same problems emerge when we try to apply the concepts of needs and wants to species. A species may need various resources, in the sense that these are necessary for its continued existence. But what do species want? Do they want to remain stable in numbers, neither growing nor shrinking? Or since most species have gone extinct, perhaps what species really want is to go extinct, and it is human meddlesomeness that frustrates this natural tendency? Preference utilitarianism is no more likely than hedonistic utilitarianism to secure autonomous ethical status for endangered species.

Ehrenfeld describes a related distortion that has been inflicted on the diversity/stability hypothesis in theoretical ecology.<sup>29</sup> If it were true that increasing the diversity of an ecosystem causes it to be more stable, this might encourage the Aristotelian idea that ecosystems have a natural tendency to increase their diversity. The full realization of this tendency—the natural state that is the goal of ecosystems—is the "climax" or "mature" community. Extinction diminishes diversity, so it frustrates ecosystems from attaining their goal. Since the hypothesis that diversity causes stability is now considered controversial (to say the least), this line of thinking will not be very tempting. But even if the diversity/stability hypothesis were true, it would not permit the environmentalist to conclude that ecosystems have an interest in retaining their diversity.

Darwinism has not banished the idea that parts of the natural world are goal-directed systems, but has furnished this idea with a natural mechanism. We properly conceive of organisms (or genes, sometimes) as being in the business of maximizing their chances of survival and reproduction. We describe characteristics as adaptations—as devices that exist for the furtherance of these ends. Natural selection makes this perspective intelligible. But Darwinism is a profoundly individualistic doctrine.<sup>30</sup> Darwinism rejects the idea that species, communities, and ecosystems have adaptations that exist for their own benefit. These higher-level entities

are not conceptualized as goal-directed systems; what properties of organization they possess are viewed as artifacts of processes operating at lower levels of organization. An environmentalism based on the idea that the ecosystem is directed toward stability and diversity must find its foundation elsewhere.

## VI. GRANTING WHOLE AUTONOMOUS VALUE

A number of environmentalists have asserted that environmental values cannot be grounded in values based on regard for individual welfare. Aldo Leopold wrote in *A Sand County Almanac* that "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."<sup>31</sup> Callicott develops this idea at some length, and ascribes to ethical environmentalism the view that "the preciousness of individual deer, *as of any other specimen*, is inversely proportional to the population of the species."<sup>32</sup> In his *Desert Solitaire*, Edward Abbey notes that he would sooner shoot a man than a snake.<sup>33</sup> And Garrett Hardin asserts that human beings injured in wilderness areas ought not to be rescued: making great and spectacular efforts to save the life of an individual "makes sense only when there is a shortage of people. I have not lately heard that there is a shortage of people."<sup>34</sup> The point of view suggested by these quotations is quite clear. It isn't that preserving the integrity of ecosystems has autonomous value, to be taken into account just as the quite distinct value of individual human welfare is. Rather, the idea is that the only value is the holistic one of maintaining ecological balance and diversity. Here we have a view that is just as monolithic as the most single-minded individualism; the difference is that the unit of value is thought to exist at a higher level of organization.

It is hard to know what to say to someone who would save a mosquito, just because it is rare, rather than a human being, if there were a choice. In ethics, as in any other subject, rationally persuading another person requires the existence of shared assumptions. If this monolithic environmentalist view is based on the notion that ecosystems have needs and interests, and that these take total precedence over the rights and interests of individual human beings, then the discussion of the previous sections is relevant. And even supposing that these higher-level entities have needs and wants, what reason is there to suppose that these matter and that the wants and needs of individuals matter not at all? But if this source of defense is jettisoned, and it is merely asserted that only ecosystems have value, with no substantive defense being offered, one must begin

by requesting an argument: *why* is ecosystem stability and diversity the only value?

Some environmentalists have seen the individualist bias of utilitarianism as being harmful in ways additional to its impact on our perception of ecological values. Thus, Callicott writes:

On the level of social organization, the interests of society may not always coincide with the sum of the interests of its parts. Discipline, sacrifice, and individual restraint are often necessary in the social sphere to maintain social integrity as within the bodily organism. A society, indeed, is particularly vulnerable to disintegration when its members become preoccupied totally with their own particular interest, and ignore those distinct and independent interests of the community as a whole. One example, unfortunately, our own society, is altogether too close at hand to be examined with strict academic detachment. The United States seems to pursue uncritically a social policy of reductive utilitarianism, aimed at promoting the happiness of all its members severally. Each special interest accordingly clamors more loudly to be satisfied while the community as a whole becomes noticeably more and more infirm economically, environmentally, and politically.<sup>35</sup>

Callicott apparently sees the emergence of individualism and alienation from nature as two aspects of the same process. He values "the symbiotic relationship of Stone Age man to the natural environment" and regrets that "civilization has insulated and alienated us from the rigors and challenges of the natural environment. The hidden agenda of the humane ethic," he says, "is the imposition of the anti-natural prophylactic ethos of comfort and soft pleasure on an even wider scale. The land ethic, on the other hand, requires a shrinkage, if at all possible, of the domestic sphere; it rejoices in a recrudescence of the wilderness and a renaissance of tribal cultural experience."<sup>36</sup>

Callicott is right that "strict academic detachment" is difficult here. The reader will have to decide whether the United States currently suffers from too much or too little regard "for the happiness of all its members severally" and whether we should feel nostalgia or pity in contemplating what the Stone Age experience of nature was like.

## VII. THE DEMARCATION PROBLEM

Perhaps the most fundamental theoretical problem confronting an environmentalist who wishes to claim that species and ecosystems have autonomous value is what I will call the *problem of demarcation*. Every



ethical theory must provide principles that describe which objects matter for their own sakes and which do not. Besides marking the boundary between these two classes by enumerating a set of ethically relevant properties, an ethical theory must say why the properties named, rather than others, are the ones that count. Thus, for example, hedonistic utilitarianism cites the capacity to experience pleasure and/or pain as the decisive criterion; preference utilitarianism cites the having of preferences (or wants, or interests) as the decisive property. And a Kantian ethical theory will include an individual in the ethical community only if it is capable of rational reflection and autonomy.<sup>37</sup> Not that justifying these various proposed solutions to the demarcation problem is easy; indeed, since this issue is so fundamental, it will be very difficult to justify one proposal as opposed to another. Still, a substantive ethical theory is obliged to try.

Environmentalists, wishing to avoid the allegedly distorting perspective of individualism, frequently want to claim autonomous value for wholes. This may take the form of a monolithic doctrine according to which the only thing that matters is the stability of the ecosystem. Or it may embody a pluralistic outlook according to which ecosystem stability and species preservation have an importance additional to the welfare of individual organisms. But an environmentalist theory shares with all ethical theories an interest in not saying that everything has autonomous value. The reason this position is proscribed is that it makes the adjudication of ethical conflict very difficult indeed. (In addition, it is radically implausible, but we can set that objection to one side.)

Environmentalists, as we have seen, may think of natural objects, like mountains, species, and ecosystems, as mattering for their own sake, but of artificial objects, like highway systems and domesticated animals, as having only instrumental value. If a mountain and a highway are both made of rock, it seems unlikely that the difference between them arises from the fact that mountains have wants, interests, and preferences, but highway systems do not. But perhaps the place to look for the relevant difference is not in their present physical composition, but in the historical fact of how each came into existence. Mountains were created by natural processes, whereas highways are humanly constructed. But once we realize that organisms construct their environments in nature, this contrast begins to cloud.<sup>38</sup> Organisms do not passively reside in an environment whose properties are independently determined. Organisms transform their environments by physically interacting with them. An anthill is an artifact just as a highway is. Granted, a difference obtains at the level of whether conscious deliberation played a role, but can one take seriously the view that artifacts produced by conscious planning are thereby *less* valuable than ones that arise without the intervention of mentality?<sup>39</sup> As

we have noted before, although environmentalists often accuse their critics of failing to think in a biologically realistic way, their use of the distinction between "natural" and "artificial" is just the sort of idea that stands in need of a more realistic biological perspective.

My suspicion is that the distinction between natural and artificial is not the crucial one. On the contrary, certain features of environmental concerns imply that natural objects are exactly on a par with certain artificial ones. Here the intended comparison is not between mountains and highways, but between mountains and works of art. My goal in what follows is not to sketch a substantive conception of what determines the value of objects in these two domains, but to motivate an analogy.

For both natural objects and works of art, our values extend beyond the concerns we have for experiencing pleasure. Most of us value seeing an original painting more than we value seeing a copy, even when we could not tell the difference. When we experience works of art, often what we value is not just the kinds of experiences we have, but, in addition, the connections we usually have with certain real objects. Routley and Routley have made an analogous point about valuing the wilderness experience: a "wilderness experience machine" that caused certain sorts of hallucinations would be no substitute for actually going into the wild.<sup>40</sup> Nor is this fact about our valuation limited to such aesthetic and environmentalist contexts. We love various people in our lives. If a molecule-for-molecule replica of a beloved person were created, you would not love that individual, but would continue to love the individual to whom you actually were historically related.<sup>41</sup> Here again, our attachments are to objects and people as they really are, and not just to the experiences that they facilitate.

Another parallel between environmentalist concerns and aesthetic values concerns the issue of context. Although environmentalists often stress the importance of preserving endangered species, they would not be completely satisfied if an endangered species were preserved by putting a number of specimens in a zoo or in a humanly constructed preserve. What is taken to be important is preserving the species in its natural habitat. This leads to the more holistic position that preserving ecosystems, and not simply preserving certain member species, is of primary importance. Aesthetic concerns often lead in the same direction. It was not merely saving a fresco or an altar piece that motivated art historians after the most recent flood in Florence. Rather, they wanted to save these works of art in their original ("natural") settings. Not just the painting, but the church that housed it; not just the church, but the city itself. The idea of objects residing in a "fitting" environment plays a powerful role in both domains.

Environmentalism and aesthetics both see value in rarity. Of two

whales, why should one be more worthy of aid than another, just because one belongs to an endangered species? Here we have the  $n + m$  question mentioned in Section I. As an ethical concern, rarity is difficult to understand. Perhaps this is because our ethical ideas concerning justice and equity (note the word) are saturated with individualism. But in the context of aesthetics, the concept of rarity is far from alien. A work of art may have enhanced value simply because there are very few other works by the same artist, or from the same historical period, or in the same style. It isn't that the price of the item may go up with rarity; I am talking about aesthetic value, not monetary worth. Viewed as valuable aesthetic objects, rare organisms may be valuable because they are rare.

A disanalogy may suggest itself. It may be objected that works of art are of instrumental value only, but that species and ecosystems have intrinsic value. Perhaps it is true, as claimed before, that our attachment to works of art, to nature, and to our loved ones extends beyond the experiences they allow us to have. But it may be argued that what is valuable in the aesthetic case is always the relation of a valuer to a valued object.<sup>42</sup> When we experience a work of art, the value is not simply in the experience, but in the composite fact that we and the work of art are related in certain ways. This immediately suggests that if there were no valuers in the world, nothing would have value, since such relational facts could no longer obtain. So, to adapt Routley and Routley's "last man argument," it would seem that if an ecological crisis precipitated a collapse of the world system, the last human being (whom we may assume for the purposes of this example to be the last valuer) could set about destroying all works of art, and there would be nothing wrong in this.<sup>43</sup> That is, if aesthetic objects are valuable only in so far as valuers can stand in certain relations to them, then when valuers disappear, so does the possibility of aesthetic value. This would deny, in one sense, that aesthetic objects are intrinsically valuable: it isn't they, in themselves, but rather the relational facts that they are part of, that are valuable.

In contrast, it has been claimed that the "last man" would be wrong to destroy natural objects such as mountains, salt marshes, and species.<sup>44</sup> (So as to avoid confusing the issue by bringing in the welfare of individual organisms, Routley and Routley imagine that destruction and mass extinctions can be caused painlessly, so that there would be nothing wrong about this undertaking from the point of view of the nonhuman organisms involved.) If the last man ought to preserve these natural objects, then these objects appear to have a kind of autonomous value; their value would extend beyond their possible relations to valuers. If all this were true, we would have here a contrast between aesthetic and natural objects, one that implies that natural objects are more valuable than works of art.

Routley and Routley advance the last man argument as if it were decisive in showing that environmental objects such as mountains and salt marshes have autonomous value. I find the example more puzzling than decisive. But, in the present context, we do not have to decide whether Routley and Routley are right. We only have to decide whether this imagined situation brings out any relevant difference between aesthetic and environmental values. Were the last man to look up on a certain hillside, he would see a striking rock formation next to the ruins of a Greek temple. Long ago the temple was built from some of the very rocks that still stud the slope. Both promontory and temple have a history, and both have been transformed by the biotic and the abiotic environments. I myself find it impossible to advise the last man that the peak matters more than the temple. I do not see a relevant difference. Environmentalists, if they hold that the solution to the problem of demarcation is to be found in the distinction between natural and artificial, will have to find such a distinction. But if environmental values are aesthetic, no difference need be discovered.

Environmentalists may be reluctant to classify their concern as aesthetic. Perhaps they will feel that aesthetic concerns are frivolous. Perhaps they will feel that the aesthetic regard for artifacts that has been made possible by culture is antithetical to a proper regard for wilderness. But such contrasts are illusory. Concern for environmental values does not require a stripping away of the perspective afforded by civilization; to value the wild, one does not have to "become wild" oneself (whatever that may mean). Rather, it is the material comforts of civilization that make possible a serious concern for both aesthetic and environmental values. These are concerns that can become pressing in developed nations in part because the populations of those countries now enjoy a certain substantial level of prosperity. It would be the height of condescension to expect a nation experiencing hunger and chronic disease to be inordinately concerned with the autonomous value of ecosystems or with creating and preserving works of art. Such values are not frivolous, but they can become important to us only after certain fundamental human needs are satisfied. Instead of radically jettisoning individualist ethics, environmentalists may find a more hospitable home for their values in a category of value that has existed all along.<sup>45</sup>

## NOTES

1. Mark Sagoff, "On Preserving the Natural Environment," *Yale Law Review* 84 (1974): 205-38; J. Baird Callicott, "Animal Liberation: A Triangular Affair," *Environmental Ethics* 2 (1980): 311-38; and Bryan Norton, "En-

- vironmental Ethics and Nonhuman Rights," *Environmental Ethics* 4 (1982): 17-36.
2. Peter Singer, *Animal Liberation* (New York: Random House, 1975), has elaborated a position of this sort.
  3. Occasionally, it has been argued that utilitarianism is not just *insufficient* to justify the principles of environmentalism, but is actually mistaken in holding that pain is intrinsically bad. Callicott writes: "I herewith declare in all soberness that I see nothing wrong with pain. It is a marvelous method, honed by the evolutionary process, of conveying important organic information. I think it was the late Alan Watts who somewhere remarks that upon being asked if he did not think there was too much pain in the world replied, 'No, I think there's just enough'" ("A Triangular Affair," p. 333). Setting to one side the remark attributed to Watts, I should point out that pain can be intrinsically bad and still have some good consequences. The point of calling pain intrinsically bad is to say that one essential aspect of experiencing it is negative.
  4. See Sagoff, "Natural Environment"; Callicott, "A Triangular Affair"; and Norton, "Ethics and Nonhuman Rights."
  5. Callicott, "A Triangular Affair."
  6. A parallel with a quite different moral problem will perhaps make it clearer how the environmentalist's holism conflicts with some fundamental ethical ideas. When we consider the rights of individuals to receive compensation for harm, we generally expect that the individuals compensated must be one and the same as the individuals harmed. This expectation runs counter to the way an affirmative action program might be set up, if individuals were to receive compensation simply for being members of groups that have suffered certain kinds of discrimination, whether or not they themselves were victims of discrimination. I do not raise this example to suggest that a holistic conception according to which groups have entitlements is beyond consideration. Rather, my point is to exhibit a case in which a rather common ethical idea is individualistic rather than holistic.
  7. Peter Steinhart, "The Advance of the Ethic," *Audubon* 82 (January 1980): 126-27.
  8. David Ehrenfeld, "The Conservation of Non-Resources," *American Scientist* 64 (1976): 648-56. For a theoretical discussion see Robert M. May, *Stability and Complexity in Model Ecosystems* (Princeton: Princeton University Press, 1973).
  9. See Thomas E. Lovejoy, this volume.
  10. See Bryan G. Norton, this volume.
  11. Callicott, "A Triangular Affair," p. 330.
  12. Elliott Sober, "Evolution, Population Thinking, and Essentialism," *Philosophy of Science* 47 (1980): 350-83; and John McCloskey, "Ecological Ethics and Its Justification: A Critical Appraisal," in *Environmental Philosophy, Monograph Series 2*, edited by D. S. Mannison, M. A. McRobbie, and

- R. Routley (Philosophy Department, Australian National University, 1980), pp. 65-87.
13. Callicott, "A Triangular Affair," pp. 333-34 (my emphasis).
  14. Paul Shepard, "Animal Rights and Human Rites," *North American Review* (Winter 1974): 35-41.
  15. Charles Darwin, *The Autobiography of Charles Darwin* (London: Collins, 1876, 1958), p. 90.
  16. The idea that the natural world is perfect, besides being suspect as an ethical principle, is also controversial as biology. In spite of Callicott's confidence that the amount of pain found in nature is biologically optimal (see note 3), this adaptationist outlook is now much debated. See, for example, Richard Lewontin and Stephen Jay Gould, "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme," *Proceedings of the Royal Society of London* 205 (1979): 581-98; and John Maynard Smith, "Optimization Theory in Evolution," *Annual Review of Ecology and Systematics* 9 (1978): 31-56. Both are reprinted in Sober, ed., *Conceptual Issues in Evolutionary Biology* (Cambridge: MIT Press, 1984).
  17. Callicott, "A Triangular Affair," p. 330.
  18. Ibid.
  19. Sober, "Evolution, Population Thinking, and Essentialism," pp. 360-65.
  20. G.E.R. Lloyd, *Aristotle: The Growth and Structure of His Thought* (Cambridge, England: Cambridge University Press, 1968), p. 162.
  21. Aristotle, *De Anima*, 415a26.
  22. See Sober, "Evolution, Population Thinking, and Essentialism," pp. 360-65. See also Elliott Sober, *The Nature of Selection* (Cambridge: MIT Press, 1984) for further discussion.
  23. Ernst Mayr, "Typological versus Population Thinking," in *Evolution and Diversity of Life*, edited by Ernst Mayr (Cambridge, Mass.: Harvard University Press, 1976), pp. 26-29, reprinted in Sober, ed., *Conceptual Issues in Evolutionary Biology*; Richard Lewontin, "Biological Determinism as a Social Weapon," in *Ann Arbor Science for the People Editorial Collection: Biology as a Social Weapon* (Minneapolis, Minn.: Burgess Publishing Company, 1977), pp. 6-20; Sober, "Evolution, Population Thinking, and Essentialism," pp. 372-79; and Elliott Sober, "Darwin's Evolutionary Concepts: A Philosophical Perspective," in *The Darwinian Heritage*, edited by David Kohn (Princeton: Princeton University Press, 1986).
  24. Lewontin, "Biological Determinism," p. 10.
  25. Christopher Stone, *Should Trees Have Standing?* (Los Altos, Calif.: William Kaufmann, 1972), p. 24.
  26. Sagoff, "Natural Environment," pp. 220-24.
  27. The example is Sagoff's, *ibid.*
  28. I argue this view in more detail in "Evolution, Population Thinking, and Essentialism," pp. 360-79.
  29. Ehrenfeld, "The Conservation of Non-Resources," pp. 651-52.

30. George C. Williams, *Adaptation and Natural Selection* (Princeton: Princeton University Press, 1966); and Sober, *The Nature of Selection*.
31. Aldo Leopold, *A Sand County Almanac* (New York: Oxford University Press, 1949), pp. 224-25.
32. Callicott, "A Triangular Affair," p. 326 (emphasis mine).
33. Edward Abbey, *Desert Solitaire* (New York: Ballantine Books, 1968), p. 20.
34. Garrett Hardin, "The Economics of Wilderness," *Natural History* 78 (1969): 176.
35. Callicott, "A Triangular Affair," p. 323.
36. Ibid., p. 335.
37. John Rawls, *A Theory of Justice* (Cambridge, Mass.: Harvard University Press, 1971).
38. Richard Levins and Richard Lewontin, "Dialectic and Reductionism in Ecology," *Synthese* 43 (1980): 47-78.
39. Here we would have an inversion, not just a rejection, of a familiar Marxian doctrine—the labor theory of value.
40. Richard Routley and Val Routley, "Human Chauvinism and Environmental Ethics," in *Environmental Philosophy*, p. 154.
41. Mark Sagoff, "On Restoring and Reproducing Art," *Journal of Philosophy* 75 (1978): 453-70.
42. Donald H. Regan, this volume.
43. Routley and Routley, "Human Chauvinism," pp. 121-22.
44. Ibid.
45. I am grateful to Donald Crawford, Jon Moline, Bryan Norton, Robert Stauffer, and Daniel Wikler for useful discussion. I also wish to thank the National Science Foundation and the Graduate School of the University of Wisconsin-Madison for financial support.

## 8

## Duties of Preservation

DONALD H. REGAN

## I. THE PROBLEM

The central philosophical problem concerning our duties with regard to nature is this: We are strongly inclined to think we have certain duties which are not fully accounted for by instrumental arguments. We are also strongly inclined to hold a view about value that seems to make it impossible to account for these duties by any noninstrumental arguments. Hence our perplexity.

It seems that we have duties to respect living creatures; to avoid causing the extinction of species; even to preserve complex parts of the environment such as a tropical rain forest or the Grand Canyon. If we ask how we can account for these duties (which for convenience I shall refer to collectively as duties of preservation), one possibility is to list the benefits that accrue to us from acknowledging them. There are powerful instrumental arguments for preserving tropical rain forests, which are central to the whole planetary ecology. There are colorable arguments for the general preservation of species, since currently obscure species can turn out to yield new drugs or new genetic material for agricultural exploitation. There are more sophisticated arguments of potentially unlimited application based on "aesthetic utility"—we should preserve particular natural features or particular species because they embody qualities we value or because we find them pleasing. Instrumental arguments like these are numerous, varied, and significant, but they do not satisfy us entirely. They entail the consequence that if a species is not ecologically essential, and if it will produce no wonder drug or wonder crop, then whether we have a duty to preserve it depends on whether we like it. The content of our duties of preservation will depend heavily on accidental features of human preferences. This seems wrong. Analogously, even in the case of the tropical rain forest, whose present "economic" utility is not in doubt,