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Ethics on the Home Planet

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Views of Earth from space are the most impressive photographs ever taken, if one judges by their worldwide impact. They are the most widely distributed photographs ever, having been seen by well over half the persons on Earth. Few are not moved to a moment of truth, at least in their pensive moods. The whole Earth is aesthetically stimulating, philosophically challenging, and ethi-

cally disturbing. The world view is an invitation to environmental philosophy. "Once a photograph of the Earth, taken from *the outside* is available . . . a new idea as powerful as any in history will be let loose."¹ The call is to rethink an emerging vision of Earth and the place of human life upon it. The distance lends enchantment, brings us home again. The distance helps us to get real. We humans get put in our place. We ask what we ought to do.

A virtually unanimous experience of the nearly two hundred astronauts, from many countries and cultures, is the awe experienced at the first sight of the whole Earth—its beauty, fertility, smallness in the abyss of space, light and warmth under the sun in surrounding darkness and, above all, its vulnerability. In the words of Edgar Mitchell, Earth is "a sparkling blue-and-white jewel . . . laced with slowly swirling veils of white . . . like a small pearl in a thick sea of black mystery,"² "I remember so vividly," said Michael Collins, "what I saw when I looked back at my fragile home—a glistening, inviting beacon, delicate blue and white, a tiny outpost suspended in the black infinity. Earth is to be treasured and nurtured, something precious that *must* endure."³ There is a vision of an Earth ethic in what he sees.

The two great marvels of our planet are life and mind, both among the rarest things in the universe; so far really unknown elsewhere. In the global picture, the late-coming, moral species, *Homo sapiens*, arising a few hundred thousand years ago, has, still more lately in this century, gained startling powers for the rebuilding and modification, including the degradation, of this home planet. The four most critical issues that humans currently face are peace, population, development, and environment. All are entwined. Human desires for maximum development drive population increases, escalate exploitation of the environment, and fuel the forces of war. Those who are not at peace with one another find it difficult to be at peace with nature, and vice versa. Those who exploit persons will typically exploit nature as readily—animals, plants, species, ecosystems, and Earth itself.

So we are searching for an ethics adequate to respect life on this Earth, the only planet yet known with an ecology. On Earth, home to several million species, humans are the only species with moral

responsibilities of this kind. Earth is the only planet "right for life," and ethics asks about the "right to life" on such a planet. Certainly it seems "right" that life continue here; life is, in the deepest sense, the most valuable phenomenon of all, with its prolific history since its origin three and a half billion years ago.

Socrates said, famously, as an invitation to philosophy, "The unexamined life is not worth living." To that I wish to add, in invitation to environmental philosophy: "Life in an unexamined world is not worthy living either." We miss too much of value. For the trip you are about to take I offer myself, you might say, as a wilderness guide. A century ago the challenge was to know where you were geographically in a blank spot on the map, but today we are bewildered philosophically in what has long been mapped as a moral blank space. Values run off our maps. We are beginning to see that we cannot figure out who we are until we know where we are, a unique species, *Homo sapiens.*, the wise species, on a unique Earth. Philosophy is the love of wisdom (*philos*, loving; *sophia*, wisdom); caring for the Earth has become vital in that quest.

1. Ethics for People

Well, yes, you may be saying, Earth is an impressive planet, but ethics is for people. People are both the subject and the object of ethics, in the sense that only humans are deliberative moral agents and also that humans have obligations only to other humans. Humans are helped or hurt by the condition of their environment, and that is what environmental philosophy is about.

Or so it might first appear, a truth which (we will argue) is only a half truth. Humans can and ought to be held responsible for what they are doing to their Earth, which is their life support system. That is true enough. We are not responsible, of course, for Earth's being here past and present; we are latecomers in evolutionary history. But we are becoming increasingly responsible for Earth's future. In that sense, everything humans value is at stake in seeking sustainable development, a sustainable biosphere. If there are any duties at all, we must care for this surrounding

world, since this is the home for us all. But, so this argument goes, these are duties owed by people to other people (as well as to themselves); caring for the planet is a means to this end.

One sometimes encounters claims that chimpanzees or other animals have the precursors of moral behavior, and that may be so. But it is pointless to invite the bears or daisies to do environmental philosophy; they are incapable of it. One is mistaken to blame wolves for killing sheep or to censure weeds for growing in the wrong place. They are doing what comes naturally, instinctively, about which they have few, if any, options and choices. They really cannot do otherwise, and so cannot be held to account morally. Maybe there are some animal virtues, but they are not in doing philosophy and ethics. The natural world is amoral; morality appears when humans in their cultures emerge out of previous nature. Our biochemistries are natural, to be sure, and humans draw their life support from the hydrological cycles and photosynthesis; humans too have genes and inborn traits; they are subject to natural laws.

But human life is radically different from that in spontaneous nature. Unlike coyotes or bats, humans are not just what they are by nature; we come into the world by nature quite unfinished and become what we become by culture. Animals are often social, of course; they can imitate the behaviors of parents or others in their packs or flocks, as when birds learn the migration routes by following others. Animal behavior is not always genetically stereotyped; it may be labile, subject to development only if environmental circumstances require or permit it, including their social interactions. But none of these hereditary factors resembles a cumulative transmissible culture, as is so strikingly present in humans. The determinants of animal and plant behavior are never anthropological, political, economic, technological, scientific, philosophical, ethical, or religious.

With their culturally formed worldviews, humans deliberately and extensively rebuild the spontaneous natural environment and make the rural and urban environments in which they reside. It is the quality of life in these environments, hybrids of nature and culture, about which we should care—so this people-centered argu-

ment runs. Ethics arises to protect various goods within our cultures; this, historically, has been its principal arena. As philosophers frequently model this, ethics is a feature of the human social contract.

If ethics is in any sense natural to humans, it will be in some special nature of this highly intelligent, quite social species, in *human* nature more than in *wild* nature. If ethics is rational for humans, this will be because there are benefits to persons who live in the resulting kind of culturally constructed society. Natural processes in the wild serve animal life well; but these are not processes in term of which the values achieved in culture can be fully protected; and, one way or another, there emerges morally responsible agency to protect human life and its cultural values.

People arrange a society where they and the others with whom they live do not (or ought not) lie, steal, kill, and so on. This is right, and one reason it is right is that people must cooperate to survive; and the more they reliably cooperate the more they flourish. In this social contract, each must respect the goods of the others. There is no reason for others to tell me the truth, respect my life and property, and so on, unless I reciprocate. This will be true for everybody. So it is in everybody's best interest to enter into this social contract.

There will be tradeoffs, my good against yours, and hence the sense of justice arises (each his or her due), or fairness (equitable outcomes for each), or of greatest good for greatest number. Such standards can appeal to every actor, in whatever culture (though the detailed content will to some extent be culturally specific), because on the whole this is the best bargain that can be struck, mindful of the required reciprocation. Human well-being depends on it. Further, there is considerable satisfaction both in being fairly treated and in reading that you keep your end of the bargain, even at some cost. Further still, one's identity and interests get vested in other people and causes, with which one shares one's values. What one ought to do, in any place, at any time, whoever one is, is what optimizes humanly shared values, and this is genetically good, both for the self and all others.

Beginning with a sense of one's own values to be defended, ethics requires becoming more inclusive, recognizing that one's

own self-values are widely paralleled, a kind of value that is distributed in myriads of other selves. The defense of one's own values gets mixed, willy-nilly, with the defense of the values of many others. One way of envisioning this is the so-called "original position," where one enters into contract, figuring out what is best for a person on average, oblivious to the specific circumstances of one's time and place. This is where the sense of universality, or at least panculturalism, in morality has a plausible rational basis.

But the problem with animals, much less plants, or species or ecosystems, or mountains and rivers, is that they are out of all this. They are not such contracting parties at all. They cannot be held responsible, nor does their flourishing depend on any such reciprocating in our human society. We cannot invite them to do environmental philosophy, or be ethical. So it may seem that ethics stops with humans in their cultures. Man is the measure of things, said Protagoras, an ancient Greek philosopher, setting the tone of philosophy since. Humans are the measures, the valuers of things, even when we measure what they are in themselves.

John Passmore thinks that only paradigmatic human communities generate obligations:

Ecologically, no doubt, men do form a community with plants, animals, soil, in the sense that a particular life-cycle will involve all four of them. But if it is essential to a community that the members of it have common interests and recognize mutual obligations, then men, plants, animals, and soil do *not* form a community. Bacteria and men do not recognize mutual obligations, nor do they have common interests. In the only sense in which belonging to a community generates ethical obligations, they do not belong to the same community.⁴

Passmore is assuming that the members of a morally bound community must recognize reciprocal obligations. If the only communal belonging that generates obligations is this particular social sense, involving mutual recognition of interests, then the human community is the sole matrix of morality, and environmental ethics is a nonstarter. So unless we can find a revised concept of bi-

otic community and of what duties can be toward, of what values are to be measured, there will be no duties to the environment.

Although we go on (in the next sections) and ask about duties to others than humans, a great deal of the work of environmental ethics can certainly be done from within the social contract. Humans need to be healthy, for instance; physical health is as much part of their biology as mental health is part of their culture. Health, however, is not simply a matter of biology from the skin-in. Environmental health, from the skin-out, is just as important. In what they do concerning the natural world, some actions are healthy for humans because they agree with the ecological processes with which their cultural decisions interact. After all, humans too, like the animals and plants, need reasonably clean air and water. Even in agriculture, humans must grow their food in some soil that is more or less unpolluted (use pesticides and herbicides though they may) and fertile (use fertilizers though they may). It is hard to have a healthy culture in a sick environment.⁵

Nor is environmental health just minimal; think rather of a quality environment. Humans enjoy the amenities of nature—wildlife and wildflowers, scenic views, places of solitude—as well as the commodities—timber, water, soil, natural resources. This is part of our mental health. Supporting environmental health and a quality environment can certainly be counted as duties within a social contract. So, sometimes at least, decisions in environmental ethics and in social ethics can be win-win. There are nonrival, complementary goods. Properly to care for the natural world can combine with a strategy for sustainability. If nature provides the life support system for culture, what is good for nature is often good for culture.

Environmental ethics, by this account, is founded on what we might call a human right to nature.⁶ Such a right includes the basic natural givens—air, soil, water, functioning ecosystems, hydrologic cycles, and so on. This right has not figured much in the heritage of our past, because it could previously be taken for granted. But now it must be made explicit, and defended. If humans have a right to life, liberty, and the pursuit of happiness,

then they have a right to the natural conditions that are instrumental to produce this.

Once we had to defend the right to own property, to vote, to a basic education. We have discovered of late there is one more domain where humans have fundamental values at stake, always present but only recently consciously appreciated, a domain so threatened that it must come under new social protection. The "right to a quality environment" has been proposed as constitutional amendment in the United States by the National Wildlife Federation. Some nations that have recently rewritten their constitutions have stipulated such a right. The World Commission on Environment and Development has proposed: "All human beings have the fundamental right to an environment adequate for their health and well-being."⁷

Such a "right to nature" is a right within culture, that is, it is a claim we can make against intrusions by other humans where these put a healthy environment in jeopardy. We all have a right to object when other humans foul the air, destroy the soils, drive other lifeforms to extinction, burn the rainforest. Asserting this right this does not mean that humans have some kind of claim against Mother Nature itself, for nature is no moral agent. We cannot lay claims against grizzly bears or wildflowers, rivers or mountains. There is no right to be claimed against nature for these processes and products. Nature is prolific but not responsible. In fact, if we leave the human world, the social contract, and turn to nature as it is independently of the human presence, things change—dramatically.

Ethics is for people, but is ethics only about people? What has ethics to say about the rest of life on our planet? Environmental philosophy is rather new, at least in its current form, although people have thought about nature across many centuries. This can seem rather strange, since we often think that today the scientific accounts of nature are better than ever. More than any other people who have previously lived on the planet, thanks to modern physics, chemistry, geology, meteorology, biology, including evolutionary and ecological science, as well as biochemistry, we have accurate descriptions of nature. True, we have a lot yet to learn,

and natural systems have proved to be more open and complex than we thought. Still, we know an enormous amount. But the problem is that, despite all these scientific accounts, nature has been mapped philosophically as a moral blank space, as value-free in and of itself.

Trying to map the human environments, we are valuing three main territories: the urban, the rural, and the wild—all three of which are necessary if we are to be three-dimensional persons. In some parts of the world (such as Denmark), the environments are either urban or rural; but in many parts of the world (such as Finland), considerable wildness remains. Over the Earth as a whole, in one survey, using three categories, researchers find the proportions of Earth's terrestrial surface altered as follows: (1) Little disturbed by humans, 51.9 percent; (2) Partially disturbed, 24.2 percent; and (3) Human dominated, 23.9 percent. Factoring out the ice, rock, and barren land, which supports little human or other life, the percentages become: (1) Little disturbed, 27.0 percent; (2) Partially disturbed 36.7 percent; and (3) Human dominated 36.3 percent.⁸ Most terrestrial nature is dominated or partially disturbed (73.0 percent). Still, nature that is little or only partially disturbed remains 63.7 percent of the habitable Earth. Also, of course, there is the sea, less affected than the land; and the oceans cover most of the Earth.

Turning to such nature, one approach is to see ourselves, humans, as valuing our roots, and our neighbors and others, who live along with us in the partially disturbed environments, who are present and flourish even more in the little disturbed places. The first two terms indicate kinships, but the third term goes further, to discover genuine "others," even "aliens," to put the point with some force. If ethics is not just for people, we humans must cross over diffuse boundaries into regions shared by neighbors and later we travel still further from our humankind, from our home territory. *Homo sapiens*, a unique species, is only one among five million (or ten or twenty, we do not yet know how many) species on Earth, only one among five billion (or ten, or more) species that have come and gone over evolutionary history.

The challenge here for environmental philosophy is how to get people, who perhaps alone on the planet can be ethical, to care for

a world that is our home planet and yet also the home for these other creatures. Nature is, of course, much present in the hybrid habitats of rural landscapes, and even in our cities. Here we will also need an ethic for domesticated animals, such as livestock and pets, animals for whom humans have undertaken a responsibility and may be putting to some resourceful use. Those issues are the concern of animal welfare ethics. Also, wildlife can still extensively remain on landscapes put to multiple use; and so we need an ethic of wildlife management.

Wild nature—unmanaged nature in the spontaneously wild sense—is part of our global environment, and yet not our human habitat. Examples are wilderness areas and nature reserves, which we try to manage as little as possible, or to manage human uses of them as far as we can to let nature take its course. The wild is an environment that humans need and ought to respect, but it is not an environment in which we can reside and still be human. "Man is by nature a political animal," said Aristotle—the animal who builds and inhabits a "polis," a town. *Homo sapiens* is the one species that rebuilds its environment on the basis of a cumulative transmissible culture. Man is generically an animal, but specifically a citizen; that specific characteristic identifies the human essence. That is why, some say, ethics arises to govern conduct in the "polis," with its social contract, channeling, orienting behavior to protect the goods of human nature and culture. Now, however, we are beginning to recognize that the larger realm of nature encompasses the city too. Likewise our ethical view must now grow more encompassing as well—without leaving the city behind.

2. Ethics for Animals

Domesticated animals, as we were saying, are hybrids, almost artifacts, since they have been bred so carefully. Their lives are under human control; they hardly have lives of their own, certainly not on their own, and their mixed status is problematic. They need protection, owing to their compromised nature, but we cannot formulate an adequate environmental ethic on the basis of our oblig-

ations to livestock, laboratory animals, and pets, since what they are is so largely the measure we make of them. An animal welfare ethic will not be the same as an environmental ethic. Mary Midgley calls these relationships those in "mixed communities."⁹ The challenge is to constrain an inevitably anthropocentric community by animal values that are present but admittedly not at the center of the ethical focus.

We can bring animals more directly into focus by considering wild animals. They do not make man the measure of things at all. There is no better evidence of nonhuman values and valuers than spontaneous wild life, born free and on its own. Animals hunt and howl, find shelter, seek out their habitats and mates, care for their young, flee from threats, grow hungry, thirsty, hot, tired, excited, sleepy. They suffer injury and lick their wounds. Here we are quite convinced that value is non-anthropogenic,* to say nothing of anthropocentric. These wild animals defend their own lives because they have a good of their own. There is somebody there behind the fur or feathers. Our gaze is returned by an animal that itself has a concerned outlook. Animals are value-able: able to value things in their world.

Discovering such values forces us to ask whether at least some of what counts in ethics is generic to our kinship with animals, not just specific to our species. First common sense and later science teaches us many similarities of animals and humans; nobody really doubts that animals get hungry and suffer pains for instance. The protein coding sequences of DNA for structural genes in chimpanzees and humans is more than 99 percent identical.¹⁰ Confronted with such facts, we have to philosophize over them.

The first thought seems to be the simple recognition that we are indeed related, kin with others in our biotic community, whether these communities are those of the wild, the rural, or even the suburban. By parity of reasoning, it seems that what we value in ourselves, if we find this elsewhere, we ought also to value over there, in others. There is a sympathetic turning to value what does not stand directly in our lineage but is like enough ourselves that

*Not generated by humans.—Ed.

we are drawn by spillover to shared phenomena manifest in others. The principle of universalizability demands that I recognize corresponding values in fellow persons. Growth in ethical sensitivity has often required enlarging the circle of neighbors to include other races and cultures. But this principle does not apply only with reciprocating moral agents.

Beyond that, animals take an interest in affairs that affect them. A moose does not suffer the winter cold, as we might if there (we having evolved in the tropics); perhaps the warbler is not glad when it sings. But we must not commit the humanistic fallacy of supposing no natural analogues to what humans plainly value. We have every logical and psychological reason to value posit degrees of kinship.

We do not want to be discriminatory, unfair, in ethics, to treat living beings inequitably because we misperceive what values are there. Nor do we want to be indiscriminating, blind to the advanced achievements, to the excellences, even the virtues that are superbly expressed in the animal world. Young and full of trigger-itch, Aldo Leopold once shot a wolf, mortally wounding her. "We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain."¹¹ Two-thirds of a century later, we have put wolves back in the landscape, in Yellowstone National Park, because we want the wisdom we can gain from looking into the fire in those fierce eyes. We have reached the conviction that they, as much as we, belong on the landscape of this Earth we together inhabit.

Nature is often a strange place. Our human roots may lie in wild nature, but wild nature also turns out often to be a radically different place. There are phylogenetic lineages far removed from our own. Here is a new challenge in environmental philosophy. We do not want to measure nonhumans by human standards, though we sometimes want to measure nonhumans and humans by comparable standards. We also frequently run past our capacity to argue by analogy from the value of our experience. For there are

quite alien forms of life, with whom we can hardly identify experientially.

Octopus is a mollusc that a primate can recognize as a fellow creature. It is very easy to identify with *Octopus vulgaris*, even with individuals, because they respond in a very "human" way. They watch you. They come to be fed and they will run away with every appearance of fear if you are beastly to them. Individuals develop individual and sometimes irritating traits . . . and it is all too easy to come to treat the animal as a sort of aquatic dog or cat.

Therein lies the danger. It is always dangerous to interpret an animal's reactions in human terms, but with dogs or cats there is a certain reasonableness in doing so. We are mammals too. . . . The octopus is an alien. It is a poikilotherm, never had a dependent childhood, has little or no social life. It may never know what it is to be hungry. . . . The animal, it is true, learns under conditions that would lead to learning in a mammal but the facts that it learns about its visual and tactile environment are sometimes very different from those that a mammal would learn in similar circumstances. Simply because it is evidently intelligent and possessed of eyes that look back at us, we should not fall into the trap of supposing that we can interpret its behavior in terms of concepts derived from birds or mammals. This animal lives in a very different world from our own.¹²

Those who take one evolutionary route in sentient experience are precluded from the direct experience of alien routes, which also have their integrity. Humans can recognize that integrity even though participation in it remains foreign to us. We can grant that the octopus is a center of experience, a subject (while we doubt that a mussel is), and respect a marine lifeform with which we cannot empathize. Some may think it logically or psychologically impossible to value what we cannot share, but this underestimates the human genius for appreciation. Some respect for alien forms of life seems plausible, even if we are slipping away into realms of experience that we cannot reach, and therefore, the critics will say, realms it will be difficult to evaluate.

3. Ethics, Plants, and the Value of Life

A duty to an octopus? Maybe. But can there be duties to a daisy? That claim, many will think, is just too wild. All the familiar moral landmarks are gone. We are not caring about humans, or culture, or moral agents, or animals that are close kin, or can suffer, or experience anything, or are sentient. Plants are not valuers with preferences that can be satisfied or frustrated. But then again, ethics must be about appropriate respect for life, and the higher animals (vertebrates) represent only 4 percent of the living organisms on Earth by species and a minuscule fraction were we to count numbers of individuals. Does the rest of the biosphere count at all in our moral consideration?

A favorite campground in the Rawah Range of the Rocky Mountains is adjacent to subalpine meadows profuse with daisies, lupines, columbines, delphiniums, bluebells, paintbrushes, penstemons, shooting stars, and violets. The trailside signs for years read, "Please leave the flowers for others to enjoy." When I returned once, the wasted wooden signs had been replaced by newly cut ones: "Let the flowers live!" Perhaps the intent was only subtly psychological, but I suspected a shifting ethic; respect for plants replacing what was before only respect for persons.

In the 1880s a tunnel was cut through a giant sequoia in what is now Yosemite National Park. Driving through the Wawona tree, formerly in horse and buggy and later by car, amused millions. The tree was perhaps the most photographed in the world. The giant blew over in the snowstorms of 1968—69, weakened by the tunnel. Some proposed that the Park Service cut another. But the rangers refused, saying that one was enough, and that this is an indignity to a majestic sequoia. It is better to educate visitors about the enormous size and longevity of redwoods, their resistance to fire, diseases, insect pests, better to admire what the stalwart tree is in itself. The comedy of drive-through sequoias perverts the best in persons, who ought to be elevated to a nobler experience. But there is a deeper conviction; using trees for serious human needs can be justified; a silly enjoying of prime sequoias cannot. It perverts the trees.

A plant is a spontaneous life system: self-maintaining with a controlling program (though with no controlling center, no brain). It executes this program, checking against performance in the world, using feedback loops. It composes and recomposes itself, maintaining order against disordering tendencies. Plants do not, of course, have ends-in-view. They are not subjects of a life, and in that familiar sense, they do not have goals. Yet each plant maintains a botanical identity, posting a boundary between itself and its environment. An acorn becomes an oak; the oak stands on its own.

An inert rock exists on its own, making no assertions over the environment. The plant, by contrast, though on its own, must claim the environment as source and sink, from which to abstract energy and materials and into which to excrete them. A botanical organism is partly a special kind of cause and effect system, and partly something more: partly a historical information system with a genetic coding that enables it to cope, to make a way through the world. Plants thus arise out of earthen sources (as do rocks) and turn back on their sources to make resources out of them (unlike rocks).

All this, from one perspective, is just biochemistry—the whirl and buzz of organic molecules, enzymes, proteins—as humans are too from one perspective. But from an equally valid—and objective—perspective, the morphology and metabolism that the organism projects is a valued state. *Vital* is a more ample word now than *biological*. A life is spontaneously defended for what it is itself, without necessary further contributory reference, although in ecosystems such lives necessarily do have further reference. Plants defend their lives; much is valuable to them for their survival.

Plants are unified entities of the botanical though not of the zoological kind. That is, they are not unitary organisms highly integrated with centered neural control, but they are modular organisms, with a meristem that can repeatedly and indefinitely produce new vegetative modules, additional stem nodes and leaves when there is available space and resources, as well as new reproductive modules (fruits and seeds) that can organize more of that species kind. This botanical program is coded in the DNA, informational

core molecules, without which the plant would collapse into the humus.

So far we have only botanical description, even when we are describing what is of value to the plant. We pass to philosophical value when we recognize that the genetic set is a *normative set*; it distinguishes between what *is* and what *ought to be*. This does not mean that the organism is a moral system, but the organism is an axiological, evaluative system. So the oak grows, reproduces, repairs its wounds, and resists death. The physical state that the organism seeks, idealized in its programmatic form, is a valued state. Every organism has a *good-of-its-kind*; it defends its own kind as a *good kind*.

The plants don't care, so why should I?, the traditional ethicists will complain. Ethics is about what people care about, that is, their values. Maybe, by extension, ethics can stretch to what animals care about. Then ethics is over.

But plants do care—using botanical standards, the only form of caring available to them. The plant life *per se* is defended. These things are not merely to be valued *for me and my kind* (as resources), not even as goods of *my kind* (sharing sentience or protein structures), but as goods *of their kind*, as *good kinds* without consideration of their kinship. So environmental philosophy, though it begins in human affairs, spreads into territories we share with neighboring organisms, such as mammals and other vertebrates. With deeper penetration, environmental philosophy evaluates all of life.¹³

When humans encounter such living organisms, they become responsible for their behavior toward them. A moral agent deciding behavior ought to take account of the consequences for other evaluative systems. We do have a responsibility to protect values, anywhere they are present and at jeopardy by our behavior. Of course, given our own biological needs, humans must eat. Humans too have to make a way through the world, and this requires capturing values present in plants and animals. Humans do so not only as biological agents but as moral agents. We have, if you like, a right to eat; we also have a responsibility to respect the vitalities of the flora around us.

4. Ethics, Endangered Species, and Biodiversity

At the species level, responsibilities increase. So does the intellectual challenge of defending duties to species. The question is partly scientific, one to be answered by the biologists. What are species? The question is partly ethical, one to be answered by the philosophers. One trouble is that scientists can find it difficult to say what a species is. Some are inclined to say that a species is merely an arbitrary classification, like the lines of latitude and longitude. Charles Darwin wrote, "I look at the term species, as one arbitrarily given for the sake of convenience to a set of individuals closely resembling each other."¹⁴

Indeed, biologists routinely put after a species the name of the "author" who, they say, "erected" the taxon. Sometimes it can sound like species are just decisions made by taxonomists at the universities, who make them up this way or that. They are just sets of individuals (such as bears), which can be regrouped this way and that (as bear biologists do when they dispute whether the Eurasian brown bear (*Ursus arctos*) is the same species as the North American grizzly (*U. horribilis*) and the Alaskan brown bear (*U. middendorffi*)). Nobody doubts that the individual bears exist, but if the various species are only the arbitrary groupings of biologists, one can seriously doubt whether there is a duty to endangered species.

Fortunately, biologists (including Darwin) also view species as quite real. Species are quite real as historical, lineages; that there really are bear-bear-bear sequences over long periods of time is not doubted by anyone either. The species line is this reproductive process, about which there is a kind of unity and integrity, though everyone also knows that species are dynamic and changing, and can evolve into new species. G. G. Simpson concludes: "An evolutionary species is a lineage (an ancestral-descendant sequence of populations) evolving separately from others and with its own unitary evolutionary role and tendencies."¹⁵

Ernst Mayr holds: "Species are groups of interbreeding natural populations that are reproductively isolated from other such groups."¹⁶ Niles Eldredge and Joel Cracraft find: "A species is a diagnosable cluster of individuals within which there is a parental

pattern of ancestry and descent, beyond which there is not, and which exhibits a pattern of phylogenetic ancestry and descent among units of like kind." Species, they insist, are "*discrete entities in time as well as space*"¹⁷ The claim that there are specific forms of life historically maintained in their environments over time does not seem arbitrary or fictitious at all but, rather, as certain as anything else we believe about the empirical world, even though at times scientists revise the theories and taxa with which they map these forms.

So species exist and are as real as individual plants or animals. The individual represents (re-presents) a species in each new generation. It is an individual ("token", as philosophers say) of a type, and the type is more important than the token. Now the philosophers can begin to ask their question, whether there can be duties to species.

But when we try to articulate this ethic, we get lost in unfamiliar territory. Natural kinds, such as species, are obscure objects of concern. Species, though they can be endangered, can't care, in the familiar senses of "care"—so comes an objection we heard before; now in a new form. They just come and go. Ninety-eight percent of the species that have inhabited Earth are extinct. It seems odd to say that species have rights, or moral standing, or need our sympathy, or that we should consider their point of view. A species lacks moral agency, reflective self-awareness, sentience, or organic individuality.

Probably most of us would say that one ought not needlessly to destroy endangered species. But many would give humanistic reasons, and think this enough. We would not say that the needless destruction of a plant species was doing something wrong to the plants, but we might say that it was vandalism in insensitive persons. Still that does not end the question, because we at once ask what are the properties in this or that endangered species, to which a person should be sensitive. Judgments of disgust and vandalism are derived from an admiration for something of value in the organisms, and if the type counts more than the tokens, then duties are to their species lineage, to the ongoing process as much as to the particular products.

When environmentalists care about endangered species, they do censure insensitivity in persons, but they also seem to appreciate an objective vitality in the world, one that precedes and overleaps human personal or cultural preferences. To care about endangered species, then, is not to report some subjective preferences in humans who fancy rare plants or animals. To the contrary, it is to be quite nonanthropocentric and objective about botanical and zoological processes that take place independently of human preferences.

In species, there is a biological identity reasserted genetically over time. The life that the individual has is something passing through the individual as much as something it intrinsically possesses, and a respect for life finds it appropriate to attach duty dynamically to the specific form of life. The species line is the dynamic living system, the whole, of which individual organisms are the essential parts. The species too has its integrity, its individuality, its "right to life" (if one chooses to use the rhetoric of rights); and it is more important to protect this vitality than to protect individual integrity. The right to life, biologically speaking, is an adaptive fit that is right for life, that survives over millennia, and this generates at least a presumption that species are good and therefore that it is right for humans to let them be, to let them evolve. The appropriate survival unit is the appropriate level of moral concern.

A shutdown of the life stream on Earth is the most destructive event possible. In threatening Earth's biodiversity, the wrong that humans are doing, or allowing to happen through carelessness, is stopping the historical vitality of life. Every extinction is an incremental decay in this stopping of life, no small thing. "Ought species x to exist?" is a distributive increment in the collective question, "Ought life on Earth to exist?" Since life on Earth is an aggregate of many species, when humans jeopardize species, the burden of proof lies with those who wish deliberately to extinguish a species and simultaneously to care for life on Earth.

One form of life has never endangered so many others. Never before has this level of question been deliberately faced. Humans have more understanding than ever of the natural world they in-

habit, of the speciating processes, more predictive power to foresee the intended and unintended results of their actions, and more power to reverse the undesirable consequences. At this point, all biology ought to become conservation biology, committed to optimizing the values carried by species. Any philosopher, examining life (as Socrates urged), ought to see that the responsibilities that such power and vision generate no longer attach simply to individuals or persons but are emerging duties to specific forms of life. What is required is principled responsibility to the biospheric Earth.

Few philosophers in the classical past have ever raised the question of duties to species, much less answered it. But now such duty is becoming clearer. Indeed it is urgent. If, in this world of uncertain moral convictions, it makes any sense to claim that one ought not to kill individuals without justification (as philosophers have said since Socrates), it makes more sense to claim that one ought not to kill the species without extraordinary justification. Several billion years worth of creative toil and several million species of teeming life have been handed over to the care of this late-coming species in which mind has flowered and morals have emerged. Life on Earth is a many splendored thing; extinction dims its luster.

From here onward, no one can claim to be living an examined life, to be examining life on Earth, unless he or she knows this responsibility to species and acts accordingly. Were the eminent moral species, *Homo sapiens*, to conserve all Earth's species merely as resources for human preference satisfaction, we would not yet know the saving truth about what is or ought to be going on in biological conservation. If you believe that, you are already doing environmental philosophy. If you do not, here is an invitation to start.

5. Ecosystems, a Land Ethic, and Ethics in Place

We have been traveling into progressively less familiar ethical terrain, though biologically quite fundamental. Ecosystems are ultimately—at least on the earthen scene—our home, from which *ecol-*

ogy is derived (Greek: *oikos*, house). We need a logic and an ethic for Earth with its family of life.

"A thing is right," urged Aldo Leopold, "when it tends to preserve the integrity, stability, and integrity of the biotic community; it is wrong when it tends otherwise."¹⁸ "That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics." "When we see land as a community to which we belong, we may begin to use it with love and respect."¹⁹ "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."²⁰ Ethics is here by people but not just for people; one needs an ethic of place.

But ecosystems are unfamiliar moral territory; it is difficult to get the biology right (again, as with species before), and, superimposed on the biology, difficult to get the ethics right. Fortunately, it is often evident that human welfare depends on ecosystemic support, and in this sense even those who believe that ethics is only about people can support legislation about clean air, clean water, soil conservation, forest policy, pollution controls, renewable resources and so forth, which deals with ecosystem-level processes. Further, humans find much of value in preserving wild ecosystems, for instance in our wilderness and park systems and our biological reserves. Still, a comprehensive environmental ethics needs the best, naturalistic reasons, as well as the good, humanistic ones, for respective ecosystems.

Again, we have a scientific question mixed with an ethical one. What are ecosystems? Only after answering that question can we ask the full extent of value present there, and whether humans can have duties to ecosystems. We need an accurate description of ecosystems and an informed prescription for conduct. We have to make clear, both in science and in ethics, a paradigm of community. Earlier we heard John Passmore claim that although ecosystems might be biotic communities, they are not moral communities. He is right that the members who are not humans are not reciprocating moral agents. But is he right that ecosystems cannot count morally?

Ecologists themselves have had differing opinions about ecosystems. The debate among the biologists has, understandably, con-

fused the philosophers. To some, ecosystems have seemed to be little more than stochastic (probabilistic, random) processes. A seashore, a tundra is a loose collection of externally related parts. Much of the environment is not organic at all (rain, groundwater, rocks, nonbiotic soil particles, air). Some is dead and decaying debris (fallen trees, scat, humus). These things have no organized needs; the collection of them is a jumble, hardly a community. Though the plants and animals within an ecosystem do have needs—each defends its own life—the fortuitous interplay between organisms is simply a matter of the distribution and abundance of organisms, how they get dispersed here and not there, birthrates and deathrates, population densities, moisture regimes, parasitism and predation, checks and balances. There is really not enough centered process to call community. There is only catch-as-catch-can scramble for nutrients and energy.

We respect a plant or animal because every organism defends an "organized" biological identity. An ecosystem is the necessary habitat for this, but an ecosystem itself has no genome, no brain, no self-identification. It does not defend itself against injury or death as do bears or even daisies. It is not irritable. An oak-hickory forest has no telos, no unified program it is set to execute. The parts (bears and daisies) are more complex, some will say, than the wholes (forests, grasslands).

So it can begin to seem as if concern for ecosystem is secondary after all, instrumental to a respect for human and nonhuman life. An ecosystem is too low a level of organization to be the direct focus of concern. Ecosystems have no interests about which they or we can care. More troublesome still, an ecosystem is a place of contest and conflict, a jungle where the fittest survive, beside which organisms are models of integrated cooperation, and animals are the centers of psychological experience. The so-called "community" is pushing and hauling between rivals, or indifference and haphazard juxtaposition, nothing calling forth our admiration.

But to say that and nothing more is to misunderstand ecosystems. Painting a new picture on the conflict side, even before the rise of ecology, biologists concluded that to portray a gladiatorial survival of the fittest was a distorted account. They prefer a model

of the better adapted fit. Although conflict is part of the picture, the organism is selected for a situated environmental fitness. A bear fits a forest just as much as its heart fits its lungs. There are differences; the heart and lungs are close-coupled in a way that bear and forest are not. Still, the bear requires its forest community; the bear-organism fits there, as surely as its organs fit together to compose a bear.

There is a crucial element of struggle, but it is equally important to see this struggle contained in community. Ecological science emphasizes how there is a biological sense in which the integrity, beauty, and stability of each individual and species is bound up with their coactions. Predator and prey, parasite and host, grazer and grazed require a coevolution where both flourish, since the health of the predator, parasite, grazer is locked into the continuing existence, even the welfare, of the prey, host, or grazed. Ecosystems are not of disvalue because contending forces are in dynamic process there, any more than cultures are. Like business, politics, and sports, ecosystems thrive on competition.

The community connections, though requiring adaptive fit, are more loose than the organismic coactions. But that does not mean they are less significant. Concentrated unity is admirable in the organism, but the requisite matrix of its generation is the open, plural ecology. Internal complexity arises to deal with a complex, tricky environment. The skin-out processes are not just the support, they are the subtle source of the skin-in processes. Had there been either simplicity or lock-step concentrated unity in the surroundings, no creative unity could have been composed internally. There would have been less elegance in life.

To look to ecosystems for what we respect in individual animals and plants, and to find such characteristics missing, and then judge that ecosystems do not count morally, makes what philosophers call a category mistake. To look at one level for what is appropriate at another faults *communities* as though they ought to be organismic *individuals*. One should look for a matrix of interconnections between centers, not for a single center, for creative stimulus and open-ended potential, not for a fixed telos and executive program. Everything will be connected to many other things,

sometimes by obligate associations, more often by partial and pliable dependencies; and, among other components, there will be no significant interactions. There will be shunts and criss-crossing pathways, cybernetic subsystems and feedback loops, functions in a communal sense. One looks for selection pressures and adaptive fit, for speciation and life support.

An ecosystem systematically generates a spontaneous order that exceeds in richness, beauty, integrity, and dynamic stability the order of any of the component parts, an order that feeds (and is fed by) the richness, beauty, and integrity of these component parts. Though these organized interdependences are "loose" in comparison with the "tight" connections within an organism, all these metabolisms are vitally linked. The equilibrating ecosystem is not merely push-pull forces. It is an equilibrating of values. Ecosystems select for adaptive fit; they have generated over evolutionary time increasingly richer lives in quality and quantity, and continue now to support myriads of species and individuals, with higher levels of autonomy and experience at the top trophic levels.

Using criteria appropriate to this level, philosophers ought to find that such ecosystems are satisfactory communities to which to attach duty. Our concern must be for the fundamental unit of survival. Ecosystems are the womb of life, the home community. Human cultures emerge from Earth's ecosystems and remain tethered to them. If such biotic communities are not admirable, satisfactory, and morally considerable, why not?

On the humanistic account, such species in their ecosystems ought to be saved for their benefits to humans. On the naturalistic account, the sole moral species has a duty to do something less self-interested than count all the products of an evolutionary ecosystem as nothing but human resources. Rather, the host of species and the system producing them has a claim to care in its own right. There is something Newtonian, not yet Einsteinian—besides something morally naive, also perhaps myopic and arrogant—about living in a reference frame where one species takes itself as absolute and values everything else relative only to its utility.

5. Earth Ethics

There is a sense in which the term "land ethic" chosen by Aldo Leopold when he urged expanding ethics in the Wisconsin sand counties, is a little unfortunate. He was right enough about the need where he was, right enough about where to start, and he did launch a seminal invitation to environmental philosophy. But in the half century since, we have had to enlarge ethics to include global concerns, to cover the Earth. Leopold's "land" is really the biotic community of life, because he included the rivers and the soils, as well as the fauna and flora. Still, his vision is local. A "land" ethic is not marine, for example. It does not ask about global warming, or ozone holes. Leopold did not ask about the population explosion or about sustainable development, not at least about the rich developed nations and the poor developing ones. Today, the horizons are expanding. We have got to look the whole Earth over to get ethics really in place.

Boutros Boutros-Ghali, speaking as the UN Secretary-General, closed the Earth Summit: "The Spirit of Rio must create a new mode of civic conduct. It is not enough for man to love his neighbour; he must also learn to love his world."²¹ "We must now conclude an ethical and political contract with nature, with this Earth to which we owe our very existence and which gives us life."²² This does not deny that we must continue to love our neighbors, but it enlarges the vision from just a social contract to a natural contract. The challenge is to think of Earth as a precious thing in itself because it is home for us all; Earth is to be loved, as we do a neighbor, for an intrinsic integrity. The center of focus is not people, but the biosphere. That is the reformation that the earthstruck astronauts with their whole Earth photographs invite.

Even more than valuing this or that particular ecosystem, and finding duties in result, valuing the whole Earth and responsibilities to it are unfamiliar and need philosophical analysis. A duty to the planet? Be careful, the hard-nosed humanist philosophers will say. Keep your logic in reign. Earth is really just a big rock-pile like the moon, only one on which the rocks are watered and

illuminated in such a way that they support life. We cannot have duties to dirt. Or to oceans, or mountains. So it is really the life we value and not the Earth, except as instrumental to life. We have duties to people, perhaps to animals that can suffer pains and pleasures, somewhat less plausibly to all living things. But we must not confuse duties to the home with duties to the inhabitants. We do not praise the earth so much as what is on Earth.

But this is not a systemic view of the valuable Earth we now behold, before we beheld it. Overlooking Earth, we confront not just some value that is generated in the eye of the beholder. Or some value that is found in this or that creature on it. Finding this more comprehensive level of value will generate a global sense of obligation. That people might have duties to dirt is often taken to be the *reductio ad absurdum* in philosophy. Philosophers often defeat an argument by showing that it leads logically to an absurdity. Those doubtful of environmental philosophy may think that once the idea of duties to others than humans starts, one slides down a slippery slope—animals, plants, species, ecosystems, mountains, rivers, clouds, dirt—and ends up claiming the ridiculous: that rocks have rights.

But this depends on how much "dirt" one considers. Shift the focus from *earth* to *Earth*. The evolution of rocks into dirt into fauna and flora is one of the great surprises of natural history, one of the rarest events in the astronomical universe. We humans too arise up from the humus, and we find revealed what earth can do when it is self-organizing under suitable conditions. This is pretty spectacular dirt. On an everyday scale earth seems to be passive, inert, an unsuitable object of moral concern. But on a global scale?

The scale changes nothing, a critic may protest, the changes are only quantitative. Earth is no doubt precious as life support, but it is not precious in itself. There is nobody there in a planet. There is not even the objective vitality of an organism, or the genetic transmission of a species line. Earth is not even an ecosystem, strictly speaking; it is a loose collection of myriads of ecosystems. So we must be talking loosely, perhaps poetically, or romantically of valuing Earth. Earth is a mere thing, a big thing, a special thing for those who happen to live on it, but still a thing, and not appropriate as an object of intrinsic or systemic valuation. Thinking

this way, we can, if we insist on being anthropocentrists, say that it is all valueless except as our human resource.

But we will not be valuing Earth objectively until we appreciate this marvelous natural history. This really is a superb planet, the most valuable entity of all, because it is the entity able to produce all the Earthbound values. At this scale of vision, if we ask what is principally to be valued, the value of life arising as a creative process on Earth seems a better description and a more comprehensive category than to speak of a careful management of planetary natural resources that we humans own. Such a fertile Earth, interestingly, is the original meaning of the word "nature," that which "springs forth," or "gives birth," or is "generated." This was once explained in the mythology of a "Mother Earth"; now we have it on scientific authority.

Dealing with an acre or two of real estate, perhaps even with hundreds or thousands of acres, we can think that the earth belongs to us, as private property holders. Dealing with a landscape, we can think that the earth belongs to us, as citizens of the country geographically located there. But on the global scale, Earth is not something we own. Earth does not belong to us; rather we belong to it. We belong on it. The deeper philosophical question is how we humans belong in this world, not how much of it belongs to us. The latter is only an economic question. This is an invitation to environmental philosophy. The question is not of property, but of community. The valuing of nature is not over until we have risen to the planetary level, and valued this system we inhabit. Earth is really the relevant survival unit. And with that global vision, we may want to return to our regional landscapes, such as the sand counties of Wisconsin, and think of ourselves as belonging there too, with a deeper sense of place.

7. Ethics for a New Millennium

Until recently, the mark of an educated person could be summed up as *civitas*, citizenship. People ought to be productive in their communities, leaders in business, the professions, government,

church, education. That was what colleges and universities tried to produce: educated citizens. That was why people studied philosophy: to examine the good life that humans can and ought to choose for themselves, their highest good, what philosophers called the *summum bonum*. The mark of an educated person is today, increasingly, something more. Ethics is becoming something different, as we turn a century.

In the next millennium, as we already realize, it will not be enough to be a good "citizen" or a "humanist" because neither of those terms have enough "nature," enough "earthiness" in them. "Citizen" is only half the truth; the other half is that we are "residents" on landscapes. Humans are Earthlings. Earth is our dwelling place. From here onward, there is no such thing as civic competence without ecological competence. Many a citizen who is celebrated for his or her humanity is quite illiterate when it comes to reading the signs of the times boding ecological crisis, or, even were there no crisis, in enjoying the values the natural world carries all around them. Philosophy professors stimulate their students to think about their duties to fellow citizens; this is commendable, but, alas, such teachers can leave their students without a sense of responsibility on their native landscapes. Neither professor nor students yet have a land ethic, an Earth ethics. Until that happens, no one is well educated for the next century, the century in which many of these problems will have to be solved, if ever they are solved.

Our responsibility to Earth might be thought the most remote of our responsibilities; it seems so grandiose and vague beside our concrete responsibilities to our children or next-door neighbors. But not so: the other way around, it is the most fundamental of our responsibilities, and connected with these local ones. Responsibilities increase proportionately to the level and value of the reality in jeopardy. The highest level that we humans have power to affect, Earth, is the most real phenomenon of all, marvelously real. We can hardly be responsible to anything more cosmic, unless perhaps to God.

Real community does not yet exist at world levels; nevertheless humans live on only one Earth and our powers operate at global

ranges. An opportunity that we face from here onward, indeed a necessity thrust upon us, is to see Earth globally, to see ourselves as Earth residents with transnational interests. From the perspective of a nation state, when we hear the word "international," we think at once of domestic and foreign. But with the word "global," there is no domestic and foreign, we are all natives. At that level, we are not citizens of a nation but "residents." We like to think of ourselves as "cosmopolitan," appreciating our own culture, as well as the accomplishments of many other cultures. But the animal who builds a "polis" still inhabits an "oikos," a whole world; humans have an ecology. We are incarnate in earth; we are Earth incarnate.

The natural and the cultural on Earth have entwined destinies. Across great reaches of geological time, there were no humans on Earth; Earth was entirely a natural system. Earth remains a vast natural system, as we see with the views from space. But for several thousand years Earth has increasingly supported cultural systems, and, in the last few centuries, these cultural systems have exploded. The great universities of the world have fueled that explosion, providing the knowledge that has made the modern world possible, with its vastly developed economies. Today, everywhere, the resulting explosion of culture presses Earth's natural systems to their carrying capacities.

Diverse combinations of nature and culture have worked well enough over many millennia, but no more. Our modern cultures threaten the stability, beauty, and integrity of Earth, and thereby of the cultures superposed on Earth. An interhuman ethics must serve to find a satisfactory fit for humans in their communities; and, beyond that, an environmental ethics must serve to find a satisfactory fit for humans in the larger communities of life. We worried throughout much of this century that humans would destroy themselves in interhuman conflict; that fear has subsided somewhat only to be replaced by a new one. The worry for the next century is that, if our present heading is uncorrected, humans may ruin their planet and themselves with it.

Colleges and universities are supposed to defend the arts and the sciences, the wisdom of the human genius. Colleges and universities guard our humanity. They transmit the heritage of culture,

without which we cannot be human. They teach humans the art of living well; they teach the sciences by which we understand the world and benefit from it. Animals have neither arts nor sciences; the particular virtue of *Homo sapiens*, the wise species, is this transmissible knowledge, this wisdom by which human life continues and flourishes. So it will first be thought, in keeping with this classical vision, that the role of the university is to protect human values at stake.

Now along comes environmental philosophy inviting a radically different inquiry. Environmental philosophy asks whether or not the colleges and universities are not themselves part of the problem, as much as part of the answer. They have produced the knowledge by which humans have gained their startling powers for the rebuilding and the degradation of this home planet. The knowledge accumulated in the universities, transmitted from one generation to the next, is of great genius. Yet it has destabilized human life on our home planet. Both the sciences and the humanities are responsible. Business too is responsible; so is politics, and religion. But our concern here is that philosophy and ethics are responsible, and need to figure in a better education. Universities set the pace intellectually; they educate today the leaders of tomorrow. In that sense, the challenges of environmental ethics are challenges to liberal education in the arts and sciences.

Socrates said that he was a lover of wisdom, and we admire him for that. But he once added, "I'm a lover of learning, and trees and country places won't teach me anything, whereas people in the city do,"²³ Socrates loved the city with its academy, its politics and culture, but avoided nature as profitless and boring. On the other hand, when John Muir finished his formal education and turned to live in the Sierra Nevadas, he wrote, "I was only leaving one university for another, the Wisconsin University for the University of the Wilderness."²⁴ Colleges and universities love learning; they love people and strive to make and keep life human. But, in an environmental ethics, life cannot be made and kept human unless we know our place, the human residence on this home planet.

We think of the universities as being the scene of an explosion of knowledge over the decades of this century, and we hope for

more in the century to come. We hope such learning is endless in the new millennium. We think that knowledge is power. But if this explosion of knowledge and its resulting empowerment has produced a planet in crisis, perhaps the genius of the university is not what we thought. Our knowledge has not in every respect made us better fitted for life on the planet; in important respects it has made us misfits. We could even be, or become, so misfitted that our welfare, or even our survival, is at stake.

Evolutionary history has been going on for billions of years, while cultural history is only about a hundred thousand years old. But certainly from here onward, culture increasingly determines what natural history shall continue. In that sense, it is true that Earth is now in a post-evolutionary phase. Culture is the principal determinant of Earth's future, more than nature; we are passing into a century when this will be increasingly obvious. The next millennium, some are even saying, is the epoch of the end of nature.

Environmental philosophy invites another vision, the inquiry whether we humans can launch a millennium of culture in harmony with nature. After all, the technosphere remains in the biosphere; we are not in a post-ecological phase. The management of the planet must conserve some environmental values, if only for our survival, and it ought to conserve many more, if we are to be wise. Hopefully, such policy can, in places, let nature take its course, let wild nature be. Here is the challenge John Muir found in his University of the Wilderness:

The world, we are told, was made especially for man—a presumption not supported by all the facts. A numerous class of men are painfully astonished whenever they find anything, living or dead, in all God's universe, which they cannot eat or render in some way what they call useful to themselves. . . . Now, it never seems to occur to these far-seeing teachers that Nature's object in making plants and animals might possibly be first of all the happiness of each of them, not the creation of all for the happiness of one. Why should man value himself as more than a small part of the one great unit of creation?²⁵

Earth is a fragile planet, a jewel set in mystery. We humans too belong on the planet; it is our home, as much as for all the others. Like it or not, we have a dominion here; we do have to learn to handle ourselves and to manage our cultures and the supporting environment. We can and ought to examine our lives and our world and choose the highest goods. We are, in that sense, more than just another small part of creation. We have a big responsibility, that of discovering an appropriate respect for nature.

Environmental ethics, you may have thought at the start, is marginal, an ethic for the chipmunks and daisies, for canoe freaks and tree huggers. Not so, environmental ethics is right at the center of the challenges of the next millennium.

Notes

1. Astronomer Fred Hoyle, quoted in Kevin W. Kelley, ed., *The Home Planet* (Reading, MA: Addison-Wesley, 1988), inside front cover.
2. Quoted in Kelley, at photographs 42-45.
3. Michael Collins, "Foreword," in Roy A. Gallant, *Our Universe* (Washington, DC: National Geographic Society, 1980), p. 6.
4. John Passmore, *Man's Responsibility for Nature* (New York: Scribner, 1974), p. 116.
5. Bryan G. Norton, *Toward Unity Among Environmentalists* (New York: Oxford University Press, 1991) claims that fully-enlightened anthropocentrists and more naturalistic environmentalists will almost entirely agree on environmental policy, what he calls a "convergence hypothesis."
6. Susan S. Hanna, Carl Folke, and Karl-Göran Mäler, eds., *Rights to Nature* (Washington, DC: Island Press, 1996).
7. *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (London/Dordrecht, Netherlands: Graham and Trotman/Martinus Nijhoff Publishers, 1987), p. 9.
8. Lee Hannah, David Lohse, Charles Hutchinson, John L. Carr and Ali Lankerani, "A Preliminary Inventory of Human Disturbance of World Ecosystems," *Ambio* 23 (1994), pp. 246-50.
9. Mary Midgley, *Animals and Why They Matter* (Athens, GA: University of Georgia Press, 1983).

10. Mary-Claire King and A. C. Wilson, "Evolution at Two Levels in Humans and Chimpanzees," *Science* 188 (1975), pp. 107-16. This is, however, only for structural genes, not for genes that regulate behavior.
11. Aldo Leopold, *A Sand County Almanac* (New York: Oxford University Press, 1968), p. 130.
12. Martin J. Wells, *Octopus* (London: Chapman and Hall, 1978), pp. 8-9.
13. Paul W. Taylor, *Respect for Life* (Princeton, NJ: Princeton University Press, 1986) calls this "biocentrism." Albert Schweitzer earlier spoke of a "reverence for life."
14. Charles Darwin, *The Origin of Species* (Baltimore, MD: Penguin Books, 1968), p. 108.
15. G. G. Simpson, *Principles of Animal Taxonomy* (New York: Columbia University Press, 1961), p. 153.
16. Ernst Mayr, *Principles of Systematic Zoology* (New York: McGraw-Hill, 1969), p. 26.
17. Niles Eldredge and Joel Cracraft, *Phylogenetic Patterns and the Evolutionary Process* (New York: Columbia University Press, 1980), p. 92.
18. Leopold, *Sand County Almanac*, pp. 224-25. Leopold's principal philosophical interpreter is J. Baird Callicott, *In Defense of the Land Ethic* (Albany, NY: State University of New York Press, 1989).
19. *Ibid.*, pp. viii—ix.
20. *Ibid.*, p. 204.
21. Boutros Boutros-Ghali, Extracts from closing UNCED statement, in an UNCED summary, *Final Meeting and Round-up of Conference*, June 14, 1992, p. 1. UN Document ENV/DEV/RIO/29, 14 June 1992.
22. Boutros Boutros-Ghali, Text of closing UNCED statements, in *Report of the United Nations Conference on Environment and Development*, 1992, vol. IV, pp. 66-69. UN Document A/CONF.151.26 (Vol. IV).
23. Plato, *Phaedrus* 230d., trans. H. H. Fowler, *Plato*, vol. 1, Loeb Classical Library (Cambridge, MA: Harvard University Press, 1914, 1977), pp. 423-24.
24. John Muir, *The Story of My Boyhood and Youth* (Madison: University of Wisconsin Press, 1965), p. 228.
25. John Muir, *A Thousand Mile Walk to the Gulf* (Boston: Houghton Mifflin Co., 1916), pp. 136-39.