

Global Environmental Ethics: A Valuable Earth

By [Holmes Rolston III](#)

This article was published as Chapter 20 in the book: **A New Century for Natural Resource Management**, edited by Richard L. Knight and Sarah F. Bates. (Island Press, Washington 1995), pp.349-366.

Suddenly from behind the rim of the moon, in long, slow-motion moments of immense majesty, there emerges a sparkling blue and white jewel, a light, delicate sky-blue sphere laced with slowly swirling veils of white, rising gradually like a small pearl in a thick sea of black mystery. It takes more than a moment to fully realize this is Earth—home.

—Edgar Mirchell, quoted by K.V. Kelley, 1988

Nature and Culture

The Earth is remarkable, and valuable, for both the nature and the culture that occur on it. 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. The next millennium is, some say, the epoch of the end of nature. But another hope is that we can launch a millennium of culture in harmony with nature.

Humans evolved out of nature; our biochemistries are natural and we draw our life support from the hydrological cycles and photosynthesis; we too have genes and inborn traits; we are subject to natural laws. But human life is radically different from that in wild, 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. Humans deliberately rebuild the wild environment and make rural and urban environments.

Information in nature travels intergenerationally on genes; information in culture travels neurally as persons are educated into transmissible cultures. In nature, the coping skills are coded on chromosomes. In culture, the skills are coded in craftsman's traditions, religious rituals, or technology manuals. Information acquired during an organism's lifetime is not transmitted genetically; the essence of culture is acquired information transmitted to the next generation. This information transfer is several orders of magnitude faster and overleaps genetic lines. Children are educated by taking classes from dozens of teachers, by reading hundreds of books, using libraries with tens of thousands of books, written by authors to whom they are genetically unrelated, who may have been dead for centuries.

Animals are without options in what they shall be, even if they make some limited choices. Humans have myriads of lifestyle options. Educated persons criticize their cultures. Natural selection pressures are relaxed; humans help each other out compassionately with charity, affirmative action, or head start programs. They study medicine to cure their diseases. They worry about overpopulation in developing nations and over consumption in developed nations. The determinants of animal and plant behavior, much less the determinants of climate or nutrient recycling, are never anthropological, political, economic, technological, scientific, philosophical, ethical, or religious.

Animals do not read or write books trying to recommend the future of natural resource management. They do not try to get clear about the differences between nature and culture. One critical difference is that humans are moral agents and their behavior is constrained by what they value, by values they recognize in other humans. Increasingly, we are here arguing, they *ought* also take into account the nonhuman values in the natural world.

The debate about ethics as applied to nature (often thought of as "natural resources") asks whether the primary values about which we should be concerned are cultural, that is, anthropocentric, or whether there is also intrinsic natural value, independent of humans, which humans ought to consider. Asking such a question is quite outside the capacity of plants and animals. Humans can and ought to see outside their own sector. Only humans have conscience enough to do this. Though humans evolved out of nature, they have significantly evolved *out* of it. We need to understand the difference in being human, and after we clarify that, we also want to see the senses in which, though evolved out of it, culture has and ought to remain in relative harmony with nature.

Although all deliberate human behaviors differ from the processes of spontaneous nature, some are healthy for humans because they agree with the natural systems with which their cultural decisions interact. In a relative sense, what humans do can be natural. Conservation values are not the only values; there are numerous values autonomous to cultures. Some of these can be gained by the sacrifice of natural values. So the environmental ethics of the next century will increasingly have to ask whether and why cultures should preserve any natural values at all, and what kind of balance ought to be reached. Here we may wonder how much of the time humans ought to win. They cannot lose all the time; but we may also hold that humans ought not invariably be the winners. They should constrain their behavior for the good of plants and animals.

Sometimes too, decisions can be win-win. There are nonrival, complementary goods. Properly to care for the natural world can combine with a strategy for sustainability. The idea here is that nature provides the life support system for culture, and therefore what is good for nature is often good for culture. Fauna, flora, and people all need clean air and water, good soil. It is hard to have a healthy culture on a sick environment. Nature and culture have entwined destinies.

It is true that Earth is now in a post-evolutionary phase. Culture is the principal determinant of Earth's future, more now than nature; we are passing into a century when this will be increasingly obvious. Indeed, some say, that will be the principal novelty of the new millennium—Earth will be a managed planet. Meanwhile, the technosphere remains in the biosphere; we are not in a post-ecological phase. The management of the planet must conserve environmental values. Hopefully, such policy can, in places, let nature take its course.

Intrinsic Natural Values

"Human beings are at the centre of concerns"So the *Rio Declaration* begins, the creed (once to be called the *Earth Charter*) formulated at the United Nations Conference on Environment and Development (UNCED), and signed by almost every nation on Earth. The claim is, in many respects,

quite true. The human species is causing all the concern. Environmental problems are people problems, not gorilla or sequoia problems. The problem is to get people into "a healthy and productive life in harmony with nature"(1). And yet those who put themselves at the center of concerns are liable to the fallacy of misplaced values.

Does this make nature peripheral or marginal? The center of a circle is circumscribed by, embedded in, the larger area. Being located at the center may highlight, rather than reduce, ties and responsibilities. We need to assess the human values that require natural values, asking also what human values may override, or ought to yield to, natural values. We need to ask whether there are many, or any, natural values independent of humans.

"Every form of life is unique, warranting respect regardless of its worth to man." That is how the UN *World Charter for Nature* begins. It is as nonanthropocentric as the *Rio Declaration's* beginning is anthropocentric (2). One hundred and twelve nations endorsed this charter, though the United States vigorously opposed it. It is possible, we should notice, for humans to be at the center of concerns and also for every form of life to have its worth regardless of humans. Both can be true. The Society of American Foresters, while continuing to affirm that forestry is for the good of society, has recently adopted a land ethic canon that, they say, "demonstrates our respect for the land." This means, says Raymond S. Craig, chair of their Land Ethic Committee, that foresters also "value all components of ecosystems, without regard to their usefulness to humans, because all components have intrinsic value"(3).

When we think about it, biological conservation did not begin when the United Nations promulgated a *World Charter for Nature*, nor when Teddy Roosevelt withdrew forest reserves. Biological conservation in the deepest sense is not something that originates in the human mind. Organisms are self-maintaining systems; they resist dying. They reproduce. They keep re-composing themselves. Life is an energetic fight uphill in a world that overall moves thermodynamically downhill. The "genius" of life is coded into genetic sets. The DNA is really a set of *conservation molecules*.

Biology can refer to the science humans have produced—that which appears in textbooks and laboratories. This is a subjective affair in human heads. Take away humans, and biology, like the other sciences, disappears. Biology can also refer to the life metabolisms on Earth. Such biology is objective out there in the world. Take away humans, and this nonhuman biology remains. This biology is primary, and such biology without conservation is impossible, a contradiction in terms, a condition that can exist in the actual world only temporarily, since biology without conservation is death.

Broadly, two different philosophical perspectives are possible when a human valuer encounters an x in the world.(1) What is x good for? (2) What is x's own good? The first is a question about instrumental value, the second about intrinsic value. What is Sally good for? She can serve as a cook or legislator. What is Sally's good? Her well-being of body and mind, the meaning she finds in life. This is also true, in comparative ways, confronting animals and plants. Beyond dispute, animals and plants defend a good of their own, and use resources to do so. Warblers preserve their own lives, and make more warblers; they consume (and regulate) insects and avoid raptors. They have connections in their ecosystems that go on "over their heads," but what is "in their heads" (and in their genes) is that being a warbler is a good thing. Every organism has a *good of its own*; it defends its kind as a *good kind*. In this sense, a 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, or has lifestyle options among which it may choose. These levels of value are reached only much later, dramatically in humans. Nevertheless the organism grows, reproduces, repairs its wounds, and resists death. A life is defended for what it is in itself, without necessary further contributory reference—although such lives invariably do have further ecosystemic reference. There is intrinsic value when a life is so defended. That *ipso facto* is value in both biological and philosophical senses.

Intrinsic value in nature is always in a web that connects with others. The tiger, valued for what it is in itself, is at the top of a trophic food pyramid that moves downward through gazelles, grass, microbes, requires the rainfall, the geomorphic and erosional cycles that produce the soil, and so on. In this sense, the traditional concepts of instrumental and intrinsic value need to be set in a more comprehensive picture, that of ecosystems and, before we conclude, of the home planet Earth. In that sense an ecosystem is valuable, that is, value-able, able to produce and sustain values. Organisms value and defend only their selves, with species increasing their numbers. But the evolutionary ecosystem spins a bigger story, limiting each kind, locking it into the welfare of others, promoting new arrivals, increasing kinds and the integration of kinds. Species increase their kind; but ecosystems increase kinds. The individual is programmed to make more of its kind, but more is going on systemically than that; the system is making more kinds. Communal processes generate an ever-richer community. Hence the evolutionary toil, elaborating and diversifying the biota.

Ethical conservatives, in the humanist sense, will say that ecosystems are of value only because they contribute to human experiences. They will put humans at the center of concerns. But that mistakes the last chapter, perhaps the climax, for the whole story, as though there were no concerns except those in center focus. Humans count enough to have the right to flourish here on Earth, but not so much that we have the right to degrade or shut down ecosystems, not at least without a burden of proof that there is an overriding cultural gain. The ethical conservative in the ecological sense sees that the stability, integrity, and beauty of biotic communities is what is most fundamentally to be conserved. That is, in fact, where the real ability to produce value arises; it does not arise, as we in our anthropocentric arrogance might say, only when we humans arrive on the scene to assign and project our values there. Making the fallacy of misplaced values, this is like dipping water at a fountain of life, watering a lush land, then valuing the water and the fountain instrumentally, and commenting that nothing was of value until I came. It is like finding a goose that lays golden eggs and valuing the eggs but not the goose.

Spontaneously, natural history organizes itself. This is what we call its systemic value. In one sense nature is indifferent to mountains, rivers, fauna, flora, forests, and grasslands. But in another sense nature has bent toward making and remaking these projects, millions of kinds, for several billion years. These performances are worth noticing—remarkable, memorable—and not just because they produce this noticing in certain recent subjects—our human selves. The splendors of Earth do not simply lie in their roles as human resources, supports of culture, or stimulators of experience. The most plausible account will find some programmatic evolution toward value.

How do we humans come to be charged up with values, if there was and is nothing in nature charging us up so? A systematic environmental ethic does not wish to believe in the special creation of values, nor in their dumbfounding epigenesis at the moment that humans appear on the scene. It discovers that values have evolved out of a systemically valuable nature.

From this more objective viewpoint, there is something naive about living in a reference frame where one species takes itself as absolute and values everything else in nature relative to its utility.

Placing one's own species at the center, a biologist may insist, is just what goes on in the woods; warblers take a warblo-centric point of view; spruce push only to make more spruce. Other biologists will also insist, however, that the system takes no such particular points of view but generates myriads of such kinds. Humans are the only species who can see an ecosystem for what it objectively is, a tapestry of interwoven values. Conservation biologists, in addition to saving fauna and flora, can save humans by daily rescuing us from this beguiling anthropocentrism through a perennial contact with the primeval biological and geomorphic givens. Conservation biology should liberate us from a narrow humanism—from putting ourselves at the center—and help us gain fuller humanity by transcending merely human interests. It reforms human character in encounters with a value-laden world.

Natural and National Resources

There is one Earth; on it are 178 sovereign nations, a politically fragmented world. "The Earth is one but the world is not"(4). True, the one Earth is plural in its landmasses and supports myriads of diverse ecosystems, species, and peoples. Still, the really divisive troubles arise among the world states. The national sovereignties are not well adapted for harmonious relations with the Earth commons. The rights of nations, and rights as claimed by citizens of these political states, are not well aligned with the ecology and geography. In the 20th century, the commons problem became transnational; at the turn of tire millennium it is becoming global. Our citizenship in nations is not well synchronized with our residence in geographic places, nor with our sense of global dwelling on our home planet.

Many of Earth's natural resources, unevenly distributed, have to flow across national lines. Few, if any, nations are self-sufficient in all of the natural resources they need or desire, and many are quite deficient. No one familiar with ecosystems will dislike interdependencies and networked communities. or be surprised by competition for resource allocation. Still, cultures differ radically from ecosystems. Animals do not live in nations and trade in markets. In ecosystems, there are no taxes and trade tariffs, no balance of payments to be protected, no GNP; there is no management and labor, no hiring and firing, no capital acquisition, no international loans to be repaid, no money exchange rates. So a new trouble appears. Nation states, and the relations between them, are often ill-adapted for the efficient use of natural resources. Divisiveness, struggle, even wars can result.

People are fighting for what is of value in nature, but they are also fighting as citizens of nations that have economic policies and political agendas, demanding loyalties in support. Their access to natural resources conics filtered through political and industrial units that are not formed, or continued, with these ecologies in mind. They want resources, but the political alignments can often mean suboptimal and unjust solutions to the problems of resource distribution. *Natural* resources have to become *national* resources, and "nationalizing" natural resources can be as much part of the problem as part of the answer, especially when the sovereign independence of nations is asserted without regard for the interdependencies of these nations—both those with each other and those of the global ecosystems. When biological resources are taken to be national possessions in dispute, rather than an Earth commons to be shared, it can become difficult to find a way to share them.

On Earth, there are two major blocs, the G-7 nations (the Group of 7, the big industrial nations of North America, Europe, and Japan), and the G-77 nations, once 77 but now including some 128 lesser developed nations, often south of the industrial North. The G-7 nations hold about one-fifth of the world's five billion persons, and they product and consume about four- fifths of all goods and services. The G-77 nations, with four-fifths of tire world's people, produce and consume one-fifth

(5). If we draw a pie chart of the goods produced by consuming Earth's resources, four-fifths of the pie goes to one-fifth of the people. Can this be fair?

Answers are complex. Earth's natural resources are unevenly distributed by nature, and national boundaries were nearly all drawn before many of the modern essential resources were resources at all: coal, electric power, iron ore. One quarter of the known petroleum reserves are in Saudi Arabia, and more than half are in the Middle East. The need for petroleum is dispersed around the globe. The divisions of nation states, rather accidentally related to the location of this most valuable resource, often compound the problem. The biodiversity resources on Earth are likewise unevenly located, and here the problem is that, though these resources are important to all nations, they may be located in the less developed nations, who most need to develop, possibly using up these resources (such as cutting their forests), or who, if they wish to conserve these resources, may be least able to afford the costs of conservation.

A second cause is that the myriad diverse societies on Earth have taken different directions of development; they have different governments, ideologies, and religions, have made different social choices, valued material prosperity differently. Typically, where there is agricultural and industrial development, people think of this as an achievement. If we imagine a pie chart of production again, different nations have different powers to produce this pie. People ought to get what they earn. There is nothing evidently unfair in dividing a pie unequally, until we consider who produced the pie. Fairness nowhere commands rewarding all parties equally; justice is giving each his or her due. That can mean unequal treatment proportionate to earnings.

In America, we think that our forefathers got what they got by Yankee ingenuity, hard work, thrift; they built the nation, plowed the prairies, hoed the corn, split the rails, paved the roads, developed the natural resources, and on and on. There is a commendable genius in the American blend of democracy, industry, labor, and resource conservation and use; that is, in fact, what has made the United States the envy of much of the world. Similar things can be said for any prosperous nation. If so, the distribution pattern reflects achievement; and what the other nations need to do is to imitate this. Unproductive people need to learn how to make more pie.

But do we believe that some countries have more merit than others? We have all been cautioned of ethnocentrism. One is reluctant to be too proud about success. Perhaps by the time one reaches the scale of country, statistical averages take over, and every country has its mix of deserving and undeserving persons, success and failure. People are the same all over the globe, and excellence is no respecter of national boundaries. We do not want to be discriminatory; we want to be fair.

Exploitation can be a third cause of this asymmetrical distribution. Many in C-77 nations find themselves deprived rather than blessed by the capitalism that originated in Europe and spread abroad, enabling the G-7 nations to take advantage not only of their own resources but also of those in other nations. These poor are, as they see it, the victims of colonialism. It is difficult to consider the one-fifth-consuming-four-fifths distribution pattern and not think that something is unfair, even when we make allowances for differential earnings and merit. Is some of the richness on one side related to the poverty on the other? Regularly, the poor come off poorly when they bargain with the rich; and wealth that originates as impressive achievement can further accumulate when such wealth becomes a means of exploitation.

Those in the G-7 nations who emphasize the earnings model tend to recommend to the G-77 nations that they produce more, often offering to help them by investments that can also be productive for the G-7 nations. Those in the G-77 nations realize that the problem is sharing too. A continually

growing production can be as much part of the problem as part of the solution. One way to think of a circular pie chart of Earth goods is that this is planet Earth, and we do not have any way of producing a bigger planet. Maybe too, Earth is not just a big pie to be eaten up. Earth is valuable on its own and has produced fauna and flora that are worth construing for what they are in themselves.

On global scales, if the controlling interest is national sovereignty, gross national product, and welfare alone, we may be prevented from the ethics we need by the fallacy of misplaced community. This mistakes the nature and character of the communities to which one belongs, and it gives such disproportionate emphasis to some communities (one's nation, one's city, one's industrial company) that one becomes blind to others (the larger community of life, the biotic community in which one resides, the global village). The wrong conclusions and inappropriate actions follow. An effort by a developed country to aid a developing nation is typically interpreted, for example, as "foreign" aid, when such effort could better have been interpreted by the developed country as saving their "home" planet. On the global scale, none of us are aliens—we are all at home. "The common heritage of mankind" is the classical category for valuing this global commons.

Keeping each nation oriented to global perspectives by instruments of international law is a major role of the United Nations. Since the United Nations is not a sovereign state, its appeal must be largely persuasive, negotiatory, ethical—based on rights and responsibilities more than on military force or political power. Laws will be soft laws, but still they will be aspirational and can orient nations. The UNCED Conference, for instance, produced the *Convention on Biological Diversity* and the *Framework Convention on Climate Change*. The United Nations Environment Programme played an important role in negotiations leading to the 1987 Montreal ozone protocol. We have already noted the *Rio Declaration* and the *World Charter for Nature*. *Agenda 21*, one of the most complex international documents ever negotiated, is a comprehensive strategy for blending environmental conservation and national development. There are more than 150 international agreements registered with the United Nations that deal directly with environmental problems(6).

Nature, Natural Resources, and Rights to Development

There are problems of overpopulation, overconsumption, and the underdistribution of resources. But a moral humanist can plausibly object that, when it comes to individual persons caught up in these social forces, we should factor out all three, none of which are the fault of the persons who may wish to develop their lands. "I did not ask to be born; I am poor, not overconsuming; I am not the cause but rather the victim of the inequitable distribution of wealth." Surely there is a right to use whatever natural resources one is available, as best one can, under the exigencies of one's particular life, set though this is in these unfortunate circumstances. "I only want enough to eat, is that not my right?"

Certainly a human right to an environment with integrity will be one of the chief goals of biological conservation. Human rights must include the right to subsistence, to have basic needs of food, clothing, and shelter met. So even if particular persons are part of an undesirable pattern of population growth, even if there is some better social solution than the wrong one that is in fact happening, have they not a right that will override the conservation of natural value? Granted that culture is unhealthy, will it not just be a further wrong to them to deprive them of their right to what little they have? Can human rights ever be overridden by a society that wants to do better by conserving natural value? Should nature win, while such unlucky persons lose?

Answering such questions requires some weighing of values. Consider tropical forests. There is more richness there than in other regions of the planet—half of all known species. On the one continent of South America, there are one-fifth of the planet's species of terrestrial mammals (800 species); there

are one-third of the planet's (lowering plants (7). Given the ecology of the tropical forests, which does not respond well to fragmentation, these species can be preserved only if large Amazonian rainforests and other wetland regions of South America are left relatively undeveloped and at low population densities. The peak of global plant diversity is the combined flora of the three Andean countries of Colombia, Ecuador, and Peru. There more than 40,000 species occur on just 2 percent of the world's land surface (8). But population growth in South America has been as high as anywhere in the world (9), and people are flowing into the forests, often crowded off other lands.

What about people? Consider people who are not now there but might move. This is not good agricultural soil, and such would-be settlers are likely to find only a short-term bargain, a long-term loss. Consider people who already live there. If they are indigenous peoples, and wish to continue to live as they have for hundreds and even thousands of years, there will be no threat to the forest. If they are cabaclos (of mixed European and native races), they can also continue the lifestyles known for hundreds of years, without serious destruction of the forests. Nothing is taken away from them.

Can these indigenous and cabaclos peoples modernize? Can they multiply? The two questions are connected, since it is modern medicine and technology that enables them to multiply. These are problematic questions for, in a sense, a modernized, much-multiplied indigenous people is not an indigenous people any more. The cabaclos' lifestyle modernized has really been transformed into something else. Have they the right to develop into modern peoples, if this requires an exploitation of their resources that destroys the rainforests? The first answer is that they do, but with the qualification that all rights are not absolute, some are weaker, some stronger, and the exercise of any right has to be balanced against values destroyed in the exercise of that right.

The qualification brings a second answer. If one concludes that the natural values at stake are quite high (perhaps higher than anywhere else in the world), and that the opportunities for development are low, because the envisioned development is inadvisable, then a possible answer is: No, there will be no development of these reserved areas. There will be development elsewhere, to which such persons will be facilitated to move, if they wish. If they stay, they must stay under the traditional lifestyle of their present and past circumstances. So they must pay, if you like, an opportunity cost, if they remain. They do have the right to develop, but not here.

Anywhere there is legal zoning, persons are told what they may not do on the lands on which they reside, in order to protect various social and natural values. Land ownership is limited, "imperfect," as lawyers term it. One's rights are always constrained by the harm one does to others. Environmental policy regulates the harms that people do on the lands on which they live, and it is perfectly appropriate to set aside conservation reserves to protect natural values, because of the ecological, scientific, economic, historical, aesthetic, religious, and other values people have at stake, as well as for intrinsic values in fauna and flora. Indeed, unless there is such reserving counterbalancing the pressures for development, there will be almost no conservation at all. Every person on Earth is told that there are some areas that he or she cannot develop. If one is residing in a location where development is constrained, this may seem unfair, to force relocation. Does that not violate human rights? Consider relocation in general, and start on the development side. Every large dam ever built has forced people to move. Kariba Dam, on the Zambezi River between Zambia and Zimbabwe, supplies water, electricity, fish, and benefits wildlife, but forced 50,000 Tonga people to move from their ancestral homelands. Typically we think this a justifiable overriding of their rights; we may also think that compensation is required. General Motors is closing 21 plants, affecting 76,000 jobs between 1990 and 1995, choosing subcontracting for parts, production overseas, and getting better efficiency in other plants. During 1920-1960, most textile mills in Lowell, Massachusetts, moved south, in search of cheaper, nonunion labor, lower taxes, to get closer to the

cotton, to modernize plants, and, no longer needing water power, to take advantage of cheaper electricity provided by TVA, and other government incentives to develop the South. The United States closes military bases and tens of thousands have to move.

We may not think these decisions are always right, but they sometimes are. We require people to relocate in the interests of various social goods. On a parity with this, but on the conservation side, we may also ask people to relocate—as when national parks have been established. What is so amiss about asking people to relocate in the interest of protecting nature, where the stakes are especially high? No more human rights are being "violated" for the conservation of nature than have regularly been "violated" (as is alleged) in the name of development. Rights, at least some of them, are constrained by larger goods, which we may not have any right to block or destroy.

This will be especially permissible where we ask persons to relocate only if they are revising their lifestyles in ways that put new threats on the environment. They are proposing to introduce changes, and the burden of proof should be on them to say why they should jeopardize nature there, rather than move to less sensitive areas. One way of putting this is that the people have options; the forests do not. People can move; forests cannot, nor can the animals they contain. Saving the natural values present, optimizing the mix of values in nature and culture can require limiting the options of people in order to save the nonoptional forest values.

Human rights to development, even by those who are poor, though they are to be taken quite seriously, are not always and everywhere absolute, but have to be weighed against all the other values at stake. A person may be doing what would be, taken individually, a perfectly good flung, a thing he has a right to do, were he alone. But taken in collection with thousands of others doing the same thing, it becomes a harmful thing, which he has no right to do because it destroys the commons and irreversibly destroys natural values. These poor may not have so much a right to develop in any way they please, as a right to a more equitable distribution of the goods of the Earth that we, the wealthy, think we absolutely own. A Managed Earth and the End of Nature?

William Clark writes, in a Scientific American issue devoted to "Managing Planet Earth," "NVc have entered an era characterized by syndromes of global change As we attempt to move from merely causing these syndromes to managing them consciously, two central questions must be asked? What kind of planet do we want? What kind of planet can we get?" (10). Those questions do not preclude nonanthropocentric answers; but they strongly suggest that humans are being asked what they want out of the planet, and the planetary managers will figure out how to get it for them. That puts humans at the center of concerns. The root of "manage" is the Latin "minus," hand. Humans will handle the place. This can even mean that Homo sapiens is the professional manager of an otherwise valueless world. Nature is to be harnessed to human needs. Now an opposite worry strikes us. This managing the planet begins to sound like the end of nature, the replacement of spontaneous nature with a new epoch of deliberate control, humanizing tire Earth. Is that what we have or what we want? Let's face the facts, the technocrat will insist. Humans now control 90 percent of the planet's land-based primary net photosynthetic productivity (11). A study for the World Bank found that 35 percent of the Earth's land has now become degraded (12). Surely, our only option is to intervene more intelligently—to manage the planet. Now no one wishes to oppose more intelligent intervention. We want a sustainable society with its health and integrity, superposed on a natural world with its health and integrity. But we are not so sure that managing the valueless planet is the apt paradigm, besides which all other conservation ideologies are backward romanticisms. Why not, for instance, think of ourselves as residents who are learning the logic of our home community, or as moral overseers trying to optimize both the cultural and the natural values on the planet? Is our only relationship to

nature one of engineering it for the better? Perhaps what is as much to be managed is this earth-eating, managerial mentality that has caused the environmental crisis in the first place.

Penultimately, management is a good thing; but, ultimately management is no more appropriate for Earth than for people, because it only sees means not ends. The scientific managers still have the value questions on their hands. On planetary scales, and even on continental and regional scales, it is not so clear that we really do want to manage the environment; rather we want to manage human uses of the environment so that they are congenial to letting the planet go on managing itself. Managers do not really dwell in an environment; they only have resources, something like the way in which bosses, as such, do not have friends, only subordinates. Even the most enlightened exploiters, *qua* exploiters, do not live as persons in a community; they are not citizens of a world, only consumers of materials. They reduce their environment to resource and sink. The environment must be this much, but it can be much more. For consummate managers, proportionately as the development ethic increases, the environment is reduced to little more than exploited resource.

We cannot simply take nature ready to hand, but we must remake it for the supporting of agriculture, industry, culture. After that, perhaps, on the larger planetary scales, it is better to build our cultures in intelligent harmony with the way the world is already built, rather than take control and rebuild the planet by ourselves and for ourselves. An overweening trust in science, technology, and industry may result in too little trust in Mother Earth.

The planetary manager wants human genius to manage the system, but there is already a considerable "genius" in the system. Is man the engineer in an unengineered world? The word engineer comes from the root *ingenium*, an innate genius, an inventive power, and hence our word ingenious, "characterized by original construction." Etymologically, "nature" and "genius" (and hence "engineer") come from the same root, *gene (g) nasci, natus*, to give clever birth. In that sense there is ample inventive and engineering power in nature, which has built Earth and about perhaps a billion species, keeping the whole machinery running, with these species coming and going, for several billion years.

Who built the engineers, with their clever brains and hands, with which they propose now to manage the planet? Isn't building people out of protozoans, and protozoans out of protons a rather ingenious achievement? Maybe we should reconsider our models. Nature is not the antithesis of engineering; it is the prototype of ingenuity. Engineers and managers cannot know what they are doing, until they know what they are undoing. We ought to spend adequate effort making sure we know what a place is, especially if it is the only home planet, before we decide to remake it into something else. Hands are for managing and also for bolding in loving care. Perhaps there looms before us what some call, rather dramatically, "the end of nature." In the 21st century, there will only be nature that has been tampered with, not spontaneous nature. Indeed, laments Bill McKibben, already "we live in a postnatural world," in "a world that is of our own making." "There's no such thing as nature any more" (13). Earlier, wild nature could remain alongside culture; the natural givens stayed in place. There could not be wilderness everywhere, but there could be wilderness somewhere, lots of it, all over the world. Wild creatures could coexist on their own in the reserves, the woodlots, the fencerows, the nooks, the crannies of civilization. But with acid rain, with pollutants everywhere, with carcinogens in the food chains, such coexistence is impossible. With global warming accelerating climate change a hundred times over, "changing nature means changing everything" and this "seems infinitely sad." Everything, everywhere "bears the permanent stamp of man." "We live at the end of nature, the moment when the essential character of the world . . . is suddenly changing." There is no more nature "*for its own sake*" (14).

Has or might nature come to an end? The answers are both matters of fact and of philosophical analysis. Is it the case that, owing to human disturbances in the Yellowstone Park ecosystem, we have lost any possibility of letting the park be natural? There will be an absolute sense in which this is true, since there is no square foot of the park in which humans have not disturbed the predation pressures, no square foot on which rain falls without detectable pollutants. But it does not follow that nature is absolutely ended because it is not absolutely present. Answers come in degrees. Events in Yellowstone can remain 99.44 percent natural on many a square foot, indeed on hundreds of square miles, in the sense that we can designate there "an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain" (15). We can put the predators back and clean up the air. Even where the system was once disturbed and subsequently restored or left to recover on its own, wildness can return.

On other lands, past certain thresholds, so far as land is managed for agriculture or industry, so far as it is fenced for pasture or mowed as lawns, wild nature has ended. This ending may be always, in its own way, a sad thing; but it is sometimes an inevitable thing, and the culture that replaces nature can have compensating values. It would be a sadder thing still, if culture had never appeared to grace the Earth, or if cultures had remained so modest that they had never substantially modified the landscape. We do not always lament our presence, even though we want some untrammelled lands. Where the human presence permanently alters the land, wilderness is impossible, but some portions of the Adirondacks of New York can be rural and still relatively natural.

Still, the more drastic the intervention, the more nature has ended. If, for instance, global warming introduces climatic changes so dramatic that natural environments cannot track these changes, then there will be no more nature. Again, this is not absolute, for some natural processes will remain, but the system will be unrecognizably natural. The epoch of spontaneously self-organizing systems, of wild nature with integrity, will be effectively over, and that will be a tragedy. Similarly if other toxics choke up the system, or if the extinction rate reaches the projected disastrous levels, or if deforestation or soil loss reach levels that cause the system to crash. So the end of nature is not absolutely here, it is not absolutely possible, but it is relatively to be feared. Some end of nature is a good thing; but too much of any good thing is a bad thing. Beyond, beneath, and around our culture, we do not want the *end of nature*. We value nature as an *end in itself*.

Earth Ethics

The astronaut Michael Collins recalled being: "I remember so vividly . . . 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" (16). The UN Secretary-General, Boutros Boutros-Ghali, 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" (17).

Neither is thinking merely anthropocentrically of Earth as a big resource to be exploited for human needs, a pie to be divided up for human consumption. Rather, Earth is 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. But valuing the whole Earth and responsibilities to it are unfamiliar and need philosophical analysis.

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 question is not of property, but of community. The valuing of nature and natural resources is not over until we have risen to the planetary level, and valued this system we inhabit. Earth is really the relevant survival unit.

Earth is, some will insist, a big rockpile like the moon, only one on which the rocks are watered and illuminated in such a way that they support life. So it is really the life we value and not the Earth, except as instrumental to life. We have duties to people, perhaps to living things. 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 what is going on. We need some systematic account of the valuable Earth we now behold, before we beheld it, not just some value that is generated in the eye of the beholder. Finding that value will generate a global sense of obligation.

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 rise 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. 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.

Do not humans sometimes value Earth's life-supporting systems because they are valuable, and not always the other way round? It seems parochial to say that our part alone in the drama establishes all its worth. The production of value over the millennia of natural history is not something subjective that goes on in the human mind. The creativity within the natural system we inherit, and the values this generates, are the ground of our being, not just the ground under our feet. Earth could be the ultimate object of duty, short of God, if God exists.

Notes

Quotation: Kelley, K. W. ed. 1988. The home planet, photo 42. Reading, Massachusetts: Addison-Wesley.

1. UN Conference on Environment and Development. 1992. The Rio declaration. UNCED Document A/CONF.151/5/Rev. 1, 13 June.

2. World Charter for Nature. 1982. UN General Assembly Resolution No. 37/7 of 28 October.

3. Craig, R.S. 1992. Land ethic canon proposal: a report from the task force. *Journal of Forestry* 90, no. 8 (August):40-41.
4. UN World Commission on Environment and Development. 1987. *Our common future*, 27. The Brundtland Report. New York: Oxford University Press.
5. World Development Report 1991. New York: Oxford University Press.
6. United Nations Environment Programme. 1991. Register of international treaties and other agreements in the field of the environment. Nairobi, Kenya. Document No. UNEI/GC.16/Inf.4, May.
7. Mares, M.A. 1986. Conservation in South America: problems, consequences and solutions. *Science* 233:734-39.
8. Wilson, E.O. 1992. *The diversity of life*, 197. Cambridge, Massachusetts: Harvard University Press.
9. Coale, A.J. 1983. Recent trends in fertility in the less developed countries. *Science* 221:828-832.
10. Clark, W. 1989. Managing planet Earth. *Scientific American* 261, no. 3 (September):47-48.
11. Vitousek, P., P. Ehrlich, A. Ehrlich, and P Matson. 1986. Human appropriation of the products of biosynthesis. *BioScience* 36:374.
12. Goodland, R.1992. The case that the world has reached limits. In *Population, technology, and lifestyle*. R. Goodland, H.E. Daly, and S. El Serafy, eds., 3-22. Washington, D.C.: Island Press.
13. McKibben, B. 1989. *The end of nature*, 60,85,89. New York: Random House.
14. McKibben, 70-79, 174-175, 210 (13).
15. United States Congress. Wilderness Act of 1964, sec. 2(c). Public Law 88-577. 78 Stat 891.
16. Collins, M. 1980. Foreword. In *Our universe*. R.A. Gallant, ed., 6. Washington, D.C.: National Geographic Society.
17. Boutros-Ghali, B. 1992. Extracts from closing UNCED statement, in an UNCED summary, Final Meeting and Round-up of Conference, 1. UN Document ENV/DEV/RIO/29,14 June.