

INTRINSIC VALUES ON EARTH: NATURE AND NATIONS

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INTRODUCTION

Ultimately and increasingly, humans are responsible for and to Earth as planet and biosphere. Peoples in their nations are and ought to be united on one Earth, with an ethics inclusive of both humans and nature. Only people can be ethical, but this does not mean that only people count in ethics; on the contrary, we are fully human only when we appropriately respect life on earth in its rich biodiversity.

Much of the urgency for conserving biodiversity arises from our duties to other humans, as nature is instrumental to what humans have at stake in their environments. These interests directly feed into national interests and require international cooperation. But a deeper environmental ethics recognizes intrinsic values in and duties directly to nature. Such duties arise because values are distributed at the levels of animals, living organisms, endangered species, and ecosystems as biotic communities, as well as in human life. Sustaining the biosphere underlies and takes priority over sustaining development. This demands an Earth ethics – increasingly an important mission of the United Nations.

PEOPLE AND THE PLANET

Looking at Earth from space, astronauts see one world but no united nations. Of course not, you may reply. They are viewing it from too far off, and nation-states, divided or united, do not show up in photographs of our planet. Come back to earth. On the ground, nations do claim

their land and post their national boundaries – sometimes, but rather rarely, along topographic features such as rivers or mountain divides. On the ground, nations inhabit their landscapes. But our nations are united inescapably in sharing air, water, oceans, climate, natural resources, migratory birds and wildlife; this inescapable interdependence can also divide them. There is one Earth; on it are nearly two hundred sovereign nations. Superimposed on this planet is the politically fragmented world of human culture. 'The Earth is one but the world is not' (WCED, 1987, p. 27).

Earth seen from space reminds us that people in their nations have entwined destinies, not only with each other but also with this home planet that we inhabit. The then UN Secretary-General, Boutros Boutros-Ghali, closed the Earth Summit with an imperative: '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' (1992a). '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' (1992b).

Views of Earth from space have given us an emerging vision of our planet and the place of human life upon it. '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' (Astronomer Fred Hoyle, quoted in Kelley, 1988, inside front cover). That idea is one world or none, the unity and community of the home planet, our global responsibility. Leaving home, we discover how precious a home is. Distance lends enchantment, brings us home again. Distance helps us to get real. It puts us in our place.

On this scale, thinking as earthlings is more important than acting as Americans, Brazilians or Germans. On this scale too, common natural resources are more fundamental than national and private resources. The health and integrity of the global environment are not values that people or nations should let themselves become rivals about, because they are not national or private resources. We need to think of these as world resources that belong to us all, even though nations and people may legitimately control access to certain natural resources. On the global scale, nations are almost as ephemeral as people. The common natural heritage can only be temporarily appropriated as national property, under the constraint of its conservation for the good

of the whole planet. In a fundamental sense, earth and its riches belong to no one because they belong to us all.

Yes, you may reply, but that simply makes the point that Earth is humanity's common heritage. Perhaps the Earth is rich in biodiversity, but we who are humans inherit this richness; or, alas, perhaps we lose it through environmental degradation. Humans are helped or hurt by the condition of their environment; and, many argue, that is what environmental ethics is all about – protecting what people have at stake in the conservation of their life-support systems, landscapes and natural resources. Ethics is for people. People are both the subject and the object of ethics. Only humans are deliberative moral agents, and humans have obligations only to other humans. Only people can be held responsible, and they can be held responsible only by and to other people.

Humans can and ought to be held responsible for what they are doing to their Earth – that is true enough. Only humans can be held so responsible – not wild animals, or plants, or species or ecosystems. Nature is amoral. We are not responsible, of course, for Earth's being here past and present; we are latecomers in evolutionary history. But humans 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 we have any duties at all, we must care for this surrounding world, because this is 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.

Certainly, a great deal of the work of environmental ethics can be done mindful of our duties to other humans. Humans need to be healthy, for instance. Health is not simply a matter of biology from the skin in. Environmental health, from the skin out, is just as important. Humans too, like animals and plants, need reasonably clean air and water. In their agriculture, humans must grow their food in 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.

Nor is environmental health just minimal; think rather of a quality environment. Humans need natural commodities – timber, water, soil, natural resources; people enjoy natural amenities – wildlife and wildflowers, scenic views, places of recreation and solitude.

Environmental ethics, by this account, is founded on what we might call a human right to nature. There are duties to people concerning nature, but there are no duties directly to animals, or plants, or species, or ecosystems. Nature is instrumental to human goods.

But that, I will now turn to arguing, is a half-truth, which, if taken for the whole, becomes a dangerous untruth. Environmental ethics is also about duties towards, and values intrinsic in, the natural world. Broadly speaking, we can ask two questions of something, an x : (1) 'What is x good for?' and (2) 'What is x 's good?' The first asks what good does it hold for me, for us humans. The second asks what good does it hold in itself. The first question is about instrumental value to people. The second is about intrinsic value, whether humans are involved or not. Are there intrinsic values in nature, values that can command our appropriate respect, values that can count morally?

Environmental ethics applies ethics to the environment, analogous to ethics applied to business, medicine, engineering, law and technology. Such humanist applications may be challenging: limiting population growth or development, questioning consumerism and the distribution of wealth, advocating the inclusion of women or aboriginal peoples, or fearing global warming. At depth, however, environmental ethics is more radical in 'applying ethics' outside the sector of human interests. Contemporary ethics has been concerned to be inclusive: the poor as well as the rich, women as well as men, future generations as well as the present. Environmental ethics is even more inclusive. Whales slaughtered, wolves extirpated, whooping cranes and their habitats disrupted, ancient forests cut, Earth threatened by global warming – these are ethical questions intrinsically, owing to values destroyed in nature, as well as instrumentally, owing to human resources jeopardized. Humans need to include nature in their ethics; humans need to include themselves in nature.

Maybe it will help to reframe this question in terms of biological conservation: (1) 'What good is conserving x ?' and (2) 'What good is x conserving?' The first is the up-front, current question about biodiversity, the reason we wish to conserve x instrumentally. But maybe that question cannot be correctly answered until we have also asked the second question, which goes deeper; the more fundamental biological question about what intrinsic conservation is taking place.

In this profound sense, biological conservation began when life began, three-and-a-half billion years ago. Biological conservation is

innate, as every organism conserves and values its life. Biology without conservation is impossible, a contradiction in terms, a condition that can exist in the actual world only temporarily, because it will be self-defeating and selected against. Biology without conservation is death, extinction. What we need as a conservation strategy is appropriate respect for life, to make our human-conservation biology an adapted fit with this perennial-conservation biology.

Are there values conserved in non-human nature that humans can and ought to respect appropriately? Ethics is for people, but is ethics only about people? What has ethics to say about the rest of life on our planet? The challenge for environmental philosophy is how to get people, who alone on the planet can be ethical, to care for a world that is our home planet and also the home of these other creatures.

ANIMALS

There is no better evidence of non-human 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-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. Here is value right before our eyes, right behind those eyes. Animals are value-able, able to value things in their world. They maintain a valued self-identity as they cope in the world. An animal values its own life for what it is in itself, intrinsically, and values its resources instrumentally.

At least some of what counts in ethics is generic to our kinship with animals, not just specific to our species. Common sense first and science later teaches that we human animals have many similarities with non-human animals. No one doubts that animals get hungry and tired, that they suffer pains and pleasures. The protein coding sequences of DNA for structural genes in chimpanzees and humans are more than 95-98 per cent identical. Confronted with such facts, we have to philosophize about them. The conclusion seems to follow that, whatever our unique differences as *Homo sapiens*, there is also a kinship with others.

By the same reasoning, it seems that what humans value in themselves, if they find this elsewhere, they ought also to value in non-human others. We value what does not stand directly in our lineage but is enough like ourselves that we are drawn by spillover to shared phenomena manifest in others. The principle of universalizability demands that an ethicist recognize corresponding values in fellow persons. Growth in ethical sensitivity, or virtue, has often required enlarging the circle of neighbours to include other races, nations and cultures. But these widening circles do not end with reciprocating moral agents. A still more inclusive ethics finds that pains and pleasures count morally wherever they occur, in humans or animals. A moose does not suffer the winter cold as we might (humans having evolved in the tropics). Perhaps the warbler is not glad when it sings. But one must not commit the humanistic fallacy of supposing no natural analogues to what humans plainly value. We have every logical, biological and psychological reason to posit degrees of value kinship.

Some may think it logically or psychologically impossible to value kinds of experience that we cannot share (those of the squirrels). True, animal lives do not coincide with our own, and there are realms of experience that we cannot reach or easily evaluate. But neither should we underestimate the human genius for thoughtful appreciation and considerate respect for alien forms. Meanwhile, the claims of kindred animals ought to count in environmental ethics.

Humans have used animals for as long as anyone can recall, instrumentally. And in most of their moral traditions, they have also made room for duties concerning the animals for which they were responsible (domestic animals) or towards the wild animals they hunted. We modern people are not too wise if we think that ethics is only about people. Animal lives command our appropriate respect for the intrinsic value present there.

But this is only an ethics concerning for mammals, perhaps for vertebrates, and this is only a fractional percentage of living things.

ORGANISMS

Animals, yes, you may say – the higher, sentient animals. What about other living things? Most of the biological world has yet to be taken into account: lower animals, insects, microbes, plants. Over 96 per cent of species are invertebrates or plants; only a tiny fraction of individual

organisms are sentient animals. Can these others defend value, on their own? Do they count morally?

A plant is not a subject, but neither is it an inanimate object, like a stone. Plants do not have ends in view, and in the familiar sense they do not have goals. But plants are quite alive, and if our ethics respects life, we must figure in the plants. They are unified entities of the botanical though not of the zoological kind, that is, they are not unitary organisms highly integrated with centred 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.

Plants make themselves; they repair injuries; they move water, nutrients and photosynthate from cell to cell; they store sugars; they make toxins and regulate their levels in defence against grazers; they make nectars and emit pheromones to influence the behaviour of pollinating insects and the responses of other plants; they emit allelopathic agents to suppress invaders; they make thorns, trap insects. All this, from one perspective, is just biochemistry – the whirl and buzz of organic molecules, enzymes, proteins – just as humans are 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 applicable word than *biological*.

A plant, like any other organism, sentient or not, is a spontaneous, self-maintaining system, sustaining and reproducing itself, executing its programme, making a way through the world, checking against performance by means of responsive capacities with which to measure success. On the basis of its genetic information, the organism distinguishes between what *is* and what *ought to be*. The organism is an axiological system, though not a moral system. So the tree grows, reproduces, repairs its wounds and resists death. A life is defended for what it is in itself. Every organism has *a good of its kind*; it defends its own kind as a *good kind*. The plant, as we were saying, is involved in conservation biology. Does not that mean that the plant is valuable, able to value itself on its own?

Some will object that even though plants have a good of their own, they are not able to value because they are not able to feel anything. Nothing matters to a plant. There is plant good, but not plant value. There is no valuer evaluating anything. Plants can do things that interest

us, but the plants are not interested in what they are doing. They have only their merely functional goods.

But, though things do not matter *to* plants, things matter *for* them. We ask, of a failing plant, 'What's the matter *with* that plant?' If it is lacking sunshine and soil nutrients, and we arrange for these, we say, 'The tree is benefiting from the sunshine and the soil nutrients'; and *benefit* is – everywhere else we encounter it – a value word. Objectively, it is difficult to dissociate the idea of value from natural selection. Biologists regularly speak of the 'survival value' of plant activities; thorns have survival value. These survival traits, though picked out by natural selection, are innate (= intrinsic) in the organism; that is, stored in its genes and expressed in its structure and behaviour.

It will be protested, however that careful philosophers will put this kind of 'value' in scare quotes. This is not really value at all, because there is no felt experience of choosing from alternatives, no preferences are being exercised. This so-called value is not a value of interest to people valuing nature because it is not a value with interest in itself. But is the organism not valuing what it is making resources of? Not consciously, but we do not want to presume that there is only conscious value or valuing. That is what we are debating, not assuming.

The tree defending the good of its kind is an observation of value in nature with just as much certainty as the tree's metabolism is biological fact. Trees appear to be green, but perhaps we do not want to call the electromagnetic waves actually there 'greenness'. Meanwhile, trees photosynthesize with or without humans watching them. Matters can be better or worse for the tree, and this amounts to saying that the tree on its own has its goods and harms.

There are still more objections. It might be that *x* has a good of its own, but that the pursuit of that value is bad for people, for example poison oak or skunks. That *x* has a good of its own does not entail that the good of *x* should be promoted. Do not forget the distinction with which we started: 'What is *x*'s good?' versus 'What is *x* good for?' Disease germs have a good of their own, but we do not wish to promote that good, because disease is not good for us. The first is biological fact; the second is a normative judgment. Some kinds of plants or animals can, of course, at times be bad for people. No one denies that.

The deeper question here is more comprehensive, more objective. Are these bad kinds in an otherwise good place? Leave people out. Might it be that *x* has a good of its own, but the pursuit of that value is

bad for the ecosystem, for example weeds or parasites? Here, however, if we return to basic Darwinian theory, in wild nature biologists discover 'niches' which each of these organisms is found to be located as an 'adapted fit'. That invites thinking about the interdependence and community in which organisms participate. If so, we need to move from 'x has a value of its own' to 'x is valuable in the system'. If x serves a role as an adapted fit, we might often find that x expresses some value not otherwise present in the system, enriches it by being there. There are individual goods, yes; but individual goods have to be fitted into a good adapted fit in ecosystems. With a more systemic set of facts, in wild nature there are no 'weeds'. The burden of proof will be on those who single out skunks, weasels, poison oak, as bad kinds.

There are parasites, but parasitism is a subroutine in a larger value-capture system. The whole idea of parasitism is conceptually parasitic on values elsewhere present and flourishing enough to be parasitized. The parasite that loses skills borrows those skills because these remain in the host. The disvalue, parasitism, is privative on some value, autonomous life; and all life is interdependent. Parasites can be important in ecosystem stability, population control, metabolism; parasites have niches and roles like all other organisms.

Seldom does the system as a whole degenerate. Sometimes it may, as when climates turn colder or drier, but even then new skills appear. On a planetary scale, there is the overall increase of diversity and complexity we earlier considered. If one values life at all, one must value it genetically, collectively, as understood in the term 'biodiversity'. Every individual organism is a distributive increment in a collective good – at least presumably.

Ethics and biology have had uncertain relations over recent centuries. An often-heard argument forbids moving from what *is* (a description of biological facts) to what *ought to be* (a prescription of duty); some worry that we here commit this naturalistic fallacy. We find what biologically *is* in nature and conclude that something valuable is there, something we may say we *ought* to protect. But does it not rather seem that the facts here are value facts, when we are describing what benefits the tree? Such value is pretty much fact of the matter. If we refuse to recognize such values being objectively there, have we committed some fallacy? Rather, the danger is the other way round. We commit the subjectivist fallacy if we think all values lie in subjective

experience, and, worse still, the anthropocentrist fallacy if we think all values lie in human options and preferences.

If spontaneous natural lives are of value in themselves, and if humans encounter and jeopardize such value, it would seem that humans ought not to destroy values in nature, not at least without overriding justification producing greater value. Perhaps some of these plant kinds are bad kinds (poison oak), but in their place they are adapted fits, presumably well suited for life in their niches. The counter risk is a fallacy of misplaced value, a humanistic mistake taking value to lie exclusively in the satisfaction of our human preferences.

Ethics is significantly a matter of respecting others for what they are in themselves, separate from my self-interests. That is altruism. But a humanistic ethic is not really yet 'altruistic' towards any non-human others; even an animal rights ethics finds value only in our animal cousins. Environmental ethics, the most altruistic of ethics, takes account of all other living organisms. This nowhere denies tradeoffs and degrees of significance and value. Given their own biological needs, humans too have to make their way through the world, and this requires defending themselves (against poison oak) and capturing values present in plants and animals, for food and shelter. Humans do so not only as biological agents, but also as moral agents. We have, if you like, a right to eat; we also have a responsibility to respect the vitalities of the fauna and flora around us. A full ethics is inclusive of every living organism.

SPECIES

At the species level, responsibilities increase. So does the intellectual challenge of defending duties to species. What are species? The question is scientific, one to be answered by biologists. Do humans have duties towards them? The question is ethical, to be answered by philosophers. On a biological level, species are historical lineages. *Ursus arctos* (the grizzly bear) is an ongoing dynamic bear-bear-bear sequence, a specific form of life historically maintained over generations for thousands of years. The sow is impelled to reproduce and care for her cubs. The individual represents (re-presents) a species in each new generation. It is a token of a type, and the type is more important than the token.

As with plants, classical ethicists will find species often (though not always) to be useful natural resources. But they find that species obscure objects of direct moral concern. Species, though they can be

endangered, cannot 'care' – thus the objection we heard before returns. They just come and go. Of the species that have inhabited Earth, 98 per cent are extinct. Most ethicists say that one ought not needlessly destroy endangered species; virtuous persons are not vandals. But many will give humanistic reasons, and think this enough. Humans are no doubt able to value biodiversity with instrumental uses, medically, agriculturally, industrially. But can there be intrinsic value at the species level? Can a species be value-able all by itself? That can seem puzzling. A species has no self defending its life. There is no analogue to the nervous hook-ups or metabolisms that characterize individual organisms. So now we must ask whether conserving a singular somatic identity is the only process that is valuable.

Plants and animals not only defend their own lives; they defend their kinds. Such kinds are the dynamism of life. A shutdown of the lifestream on Earth is the most destructive event possible. In threatening Earth's biodiversity, the wrong that humans are doing is stopping the historical vitality of life. Every extinction is an incremental decay in this stopping of life. 'Ought species *x* to exist?' is a distributive increment in the collective question, 'Ought life on Earth to exist?' As 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,

A species is another level of biological identity reasserted genetically over time. Identity need not attach solely to the centred or modular organism; it can persist as a discrete, vital pattern over time. The genetic set, in which the *telos* (Greek for 'end', 'purpose', or 'goal') is coded, is as evidently the property of the species as of the individual through which it passes. Value is something dynamic to the specific form of life. The species is a bigger event than the individual with its interests or sentience. The appropriate survival unit is the appropriate location of persistent valuing, where the defence of life goes on in regeneration, as individual members of a species are given over to survival of their kind.

Ecosystems evolve organisms that attend to their immediate somatic needs (food, shelter, metabolism) and that reproduce themselves in the very next generation. In the birth-death-birth-death system, a series of replacements is required. Reproduction is typically assumed to be a need of individuals, but as any particular individual can flourish somatically without reproducing at all, indeed may be put through

duress and risk or spend much energy reproducing, by another logic we can interpret reproduction as the species staying in place by its replacements. In this sense, a female jaguar does not bear cubs to be healthy herself. Rather, her cubs are *Panthera onca* recreating itself by continuous performance.

A female animal does not have mammary glands nor a male testicles because the function of these is to preserve its own life; these organs are for defending the line of life bigger than the somatic individual. The locus of the value that is defended over generations is as much in the form of life, because the individuals are genetically disposed to sacrifice themselves in the interests of reproducing their kind. The individual is a receptacle of the form, and the receptacles are broken while the form survives, but the form cannot otherwise survive,

The species line is the *vital* living system, the whole, of which individual organisms are the essential parts. The species defends a particular form of life, pursuing a pathway through the world, resisting death (extinction), by regeneration maintaining a normative identity over time. We said earlier that natural selection picks out whatever traits an organism has that are valuable to it, relative to its survival. But if we ask what is the character of this value, it is not the somatic survival of the organismic individual; this value-ability is the ability to reproduce. That the locates value-ability that is innate or intrinsic within the organism, but it equally locates the value-ability as the capacity to re-produce a next generation, and a next generation positioned to produce a next generation after that. Indeed, natural selection is rather careless with individuals; the test to which it puts them is whether they can pass on the historical lineage.

Species as historical lines have a defended biological identity, though they do not have any subjective experience. Species are quite real; that there really is a jaguar-jaguar-jaguar sequence is about as certain as anything we believe about the empirical world. Species are lively and full of life; they are processes; they have a kind of unity and integrity. The species line also is value-able, capable of conserving a biological identity. Indeed, it is more real, more value-able than the individual, necessary though individuals are for the continuance of this lineage. If it makes any sense to claim that one ought not to kill individuals without justification, it makes more sense to claim that one ought not to extinguish species lines, without extraordinary justification. This is a kind of super-killing.

ECOSYSTEMS

Individuals do not exist except as members of species. Species, in turn, do not exist except in niches in ecosystems. Life takes place in community. So our inquiry into the value of life must take place at the scale of the ecosystem. 'A thing is right', concluded Aldo Leopold, 'when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise' (1968, pp. 24-25). Humans can value ecosystem communities instrumentally; they need sustainable ecosystems. But can ecosystems be the object of duty because they are valuable all by themselves?

Again, there is a deeper worry, partly scientific and partly philosophical. Perhaps ecosystems exist in too loose a way to be valuers. They are nothing but aggregations of their more real members, like a forest is (some say) nothing more than a collection of trees. We can value collections, as of postage stamps, but this is just the aggregated value of individual stamps. Still, an ecosystem is rather different. Nothing in the stamp collection is alive; the collection is no community; it is neither self-generating nor self-maintaining.

We need ecology to discover what biotic community means as an organizational mode. Then we can reflect philosophically to discover the values there. An ecosystem has no brain, no genome, no skin, no self-identification, no *telos*, no unified programme. It does not defend itself against injury or death. It is not irritable. So it can sometimes seem as if an ecosystem is too low a level of organization to be the direct focus of concern. Ecosystems do not and cannot care; they have no interests about which they or we can care.

But this is to misunderstand ecosystems, to make a category mistake. To fault *communities* because they do not behave like organismic *individuals* is to attribute to one level what is appropriate only for another. One looks for selection pressures and adaptive fit, not for irritability or repair of injury, for speciation and life support, not for resisting death. We must think more systemically, and less organismically.

An ecosystem generates a spontaneous order that envelopes and produces the richness, beauty, integrity and dynamic stability of its component parts. Though these organized interdependencies are loose in comparison with the tight connections within an organism, all these metabolisms are as vitally linked as are liver and heart. The equilibrating ecosystem is not merely a mass of push-

pull forces. It is an equilibrating of values. The selective forces in ecosystems at once transcend and produce the lives of individual plants and animals.

Evolutionary ecosystems over geological time have increased the numbers of species on Earth from zero to five million or more. Superimposed on this, the quality of individual lives in the upper trophic rungs of ecological pyramids has risen. One-celled organisms evolved into many-celled, highly integrated organisms. Photosynthesis evolved and came to support locomotion – swimming, walking, running, flight. Stimulus-response mechanisms became complex instinctive acts. Warm-blooded animals followed cold-blooded ones. Neural complexity, conditioned behaviour and learning emerged. Sentience appeared – sight, smell, hearing, taste, pleasure, pain. Brains evolved, coupled with hands. Consciousness and self-consciousness arose. Persons appeared with intense concentrated unity. The products are valuable, able to be valued by these humans; but why not say that the process is what is really value-able, able to produce these values?

The system is a kind of field with characteristics as vital for life as any property contained within particular organisms. Philosophers, sometimes encouraged by biologists, may think ecosystems are just epiphenomenal aggregations. This is a confusion. Any level is real if there is significant downward causation. Thus the atom is real because that pattern shapes the behaviour of electrons; the cell because that pattern shapes the behaviour of amino acids; the organism because that pattern coordinates the behaviour of hearts and lungs; the community because the niche shapes the morphology and behaviour of the jaguars within it. Being real requires an organization that shapes the existence and the behaviour of member/parts.

Axiologically, in the more comprehensive levels, the terms 'instrumental' and 'intrinsic' need now to be expanded. Ecosystems have 'systemic value'. But if we want to know what is value-able, able to create value, why not say that it is the productivity of such ecosystems bringing into existence these phenomena that, when we arrive, we humans are able to value as the biodiversity of our planet. Values are intrinsic, instrumental and systemic, and all three are interwoven. It would be foolish to value the golden eggs and disvalue the goose that lays them. It would be a mistake to value the goose only instrumentally. A goose that lays golden eggs is systemically valuable. How much more

so is an ecosystem that generates myriad species; or even, as we next see, an Earth that produces billions of species, ourselves included.

EARTH

Viewing Earthrise, Edgar Mitchell was entranced, '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' (Kelley, 1988, captions to photographs 42-45). Michael Collins, too, was Earthstruck: 'When I travelled to the Moon, it wasn't my proximity to that battered rockpile I remember so vividly, but rather 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' (1980, p. 6).

Earth seen from space brings a moment of truth. This is the only biosphere, the only planet with an ecology. Earlier the challenge was to evaluate persons, animals, plants, species, ecosystems; but environmental valuing is not over until we have risen to the planetary level. Earth is really the relevant survival unit. Conservation biology requires conserving the biosphere. But valuing the whole Earth is unfamiliar and needs philosophical analysis. Can we have duties to our planet?

Only in the last century, Darwin's century more or less, have we learned the depth of historical change on this planet, life continuing over billions of years. Now, facing a new century, we humans have the understanding and the power to alter the history of the planet on global ecological scales. The future cannot be like the past, neither the next ten thousand years like the past ten thousand, nor even the next five hundred years like the last five hundred years. All this brings urgent new duties. We worried throughout most of this past century, the first century of world wars, that humans would destroy themselves in interhuman conflict. Fortunately, that fear has subsided somewhat. Unfortunately, a new one is rapidly replacing it. The worry for the coming century is that humans may destroy their planet and themselves with it.

We are entering a millennium. The challenge of the last millennium has been to pass from the medieval to the modern world, building modern cultures and nations, an explosion of cultural development. The challenge of the present millennium is to contain

those cultures within the carrying capacity of the larger community of life on our planet. On our present heading, much of the integrity of the natural world will be destroyed within the next century. Continuing development at the pace of the last century for another millennium will produce sure disaster. If we humans are true to our species epithet, 'the wise species' needs to behave with appropriate respect for life. That will involve an interhuman ethics. It will involve an interspecific ethics, where the only moral species discovers that all the others, though not moral agents, are morally considerable. Finally, most ultimately, it will involve an Earth ethics, one that discovers a global sense of obligation to this whole inhabited biosphere.

We may seem to be going to extremes. Earth is, after all, just earth. The belief that dirt could have intrinsic value is sometimes taken as a *reductio ad absurdum* in environmental philosophy. Dirt is vital to us but dirt is not the sort of thing that has value by itself. Put like that, we agree. An isolated clod defends no intrinsic value and it is difficult to say that it has much value in itself. But that is not the end of the matter, because a clod of dirt is integrated into an ecosystem; earth is a part, Earth the whole. Dirt is product and process in a systemic sense. We should try to get the global picture, and switch from a lump of dirt to the Earth system in which it has been created.

Earth is, some will insist, a big rockpile like the moon, only one on which the rocks are watered and illuminated in such way that they support life. So maybe it is really the life we value and not the Earth, except as instrumental to life. We do not have duties to rocks, air, ocean, dirt or Earth; we have duties to people, or living things. We must not confuse duties to the home with duties to the inhabitants. Conservation is for people, not an end in itself.

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. Earth is all dirt, we humans too arise up from the humus, and we find revealed what dirt can do when it is self-organizing under suitable conditions. This is pretty spectacular dirt,

Really, the story is little short of a series of 'miracles', wondrous, fortuitous events, unfolding of potential; and when Earth's most

complex product, *Homo sapiens*, becomes intelligent enough to reflect about this cosmic wonderland, everyone is left stuttering about the mixtures of accident and necessity out of which we have evolved. For some the black mystery will be numinous and signal transcendence; for others the mystery may be impenetrable. Perhaps we do not have to have all the cosmological answers. Nobody has much doubt that this is a precious place, a pearl in a sea of black mystery.

We will not be valuing Earth objectively until we appreciate this marvellous 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.

Do not humans sometimes value Earth's life-supporting systems because they are valuable, and not always the other way round? Is this value just a matter of late-coming human interests? Or is Earth not historically a remarkable, valuable place, a place able to produce value prior to the human arrival, and even now valuable antecedently to the human uses of it? 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. In that sense, a valuable Earth is the foundational value. 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.

HUMANS

But humans, you will object, are being too much left out of this global picture. After all, even if there are some values out there in non-human nature, humans are on top of the value pyramid. They count most of all. Beside them, any intrinsic values in wild animals, or plants, or species lines, or even ecosystems are relatively insignificant. Humans are the only evaluators who can reflect about what is going on, who can deliberate about what they ought to do to conserve. When humans do this, they must set up the scales; and humans are the measurers of things. So what really counts is people and what they have at stake in their landscapes.

In practice, as well as in principle, we must put humans at the centre of conservation. Be pragmatic about it; no conservation policy

can succeed unless people are persuaded that it is in their best interests. Intrinsic value in nature can never outweigh our own enlightened self-interests. International agreements never work unless the participating nations think these cooperations in their best national interests. *A fortiori*, nations collectively are not going to cooperate in conserving nature unless doing so is perceived to be in the best human interest. Humans are going to look out after themselves; they are highly unlikely to pay much attention to intrinsic values in nature without incentive.

This global commons is typically referred to as 'humanity's common heritage'. In recent years, however, much that was formerly tacit in this rich natural heritage has become explicit, owing to our new powers for modifying and degrading the biosphere. We are simultaneously coming to realize that this heritage is, ultimately, the creative, prolific system we inhabit. 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. That is why going from earth to Earth is not a matter of quantitative aggregation of clods of dirt, of real estate instrumental to our preference satisfaction, but of a qualitative change going from the ground under our feet to the ground of our being. We commit a fallacy of misplaced value to see this common ground as nothing but a national resource.

Maybe, beyond such national interests, at the international level even this insisting on 'our common human heritage' at the centre of the picture is another of those half-truths that skews all the answers. The surprise of the last century, and the lesson still to be learned as we enter the new millennium, is that nature is always with us. Nature is the milieu of culture. Nature is the womb of culture, but a womb that humans never entirely leave.

The four critical items on our human agenda are: population, development, peace and environment. All are global; all are local; all are intertwined; in none have we modern humans anywhere yet achieved a sustainable relationship with our Earth. The combination of population growth, escalating consumerism, struggles for power between and within nations, and resulting environmental degradation seriously

threatens the poor today and will increasingly threaten the rich in the future. Our human capacities to alter and reshape our planet are already more profound than our capacities to recognize the consequences of our activity and deal with it collectively and internationally.

The mission of the United Nations today is to transform conflicts within and between nations into cooperation. Since the 1992 United Nations Conference on Environment and Development (UNCED), that mission has come to include the promotion of sustainable development. I offer a vision, a re-vision: that the mission of the United Nations of tomorrow will include enabling all nations to cooperate in sustaining and respecting the biosphere.

Foreign affairs are domestic affairs in a global Earth ethics. If the issue is saving the Earth, we do not have any foreign policy, because Earth is not a foreign country. If a particular action affects the Amazon, that is Brazilian domestic policy, but it is inseparable from the domestic policies of the other eight nations whose boundaries include the Amazon River. Because the Amazon drains nearly a quarter of all the freshwater runoff on Earth, and because the photosynthesis in the Amazon is significant on a global scale, and because a disproportionate percentage of the Earth's biological richness is at stake there, what happens there is also a domestic concern for earthlings in the United States.

Many of Earth's natural resources, unevenly and inequitably distributed, have to be allowed to flow across national lines if there is to be a stable community of nations. People have a right to water; that seems plausible and just. But then consider the nations in relation to the hydrology of the planet: At least 214 river basins are multinational. About 50 countries have 75 per cent or more of their total area falling within international river basins. An estimated 35-40 per cent of the global population lives in multinational river basins. In Africa and Europe, most river basins are multinational. The word 'rival' comes from the Latin word for river, *rivus*, in reference to those who share flowing waters. With escalating population and pollution levels, sharing water has become increasingly an international issue.

In an ethics that provides for a shared commons, the international fabric will have to be stable and dynamic enough so that a nation that is not self-contained can contain itself within the network of international commerce. This involves living in a dynamism comprising a community of nations in which access to resources allows them to be redistributed

across national lines sufficiently for nations to repair their own resource deficiencies through international trade. Unless such commerce can be arranged, the environment will suffer. Human rights to a decent environment, to a fair share of the world's resources and goods, will be denied. Insecurity, hunger, and a sense of injustice will breed despair and outrage that will find a voice in violence, war, terrorism.

But demanding our rights and fair share is, again, only half the truth. If pushed to the whole, this pushing becomes as much part of the problem as part of the answer. Perhaps the most entrenched problem is this forever putting ourselves first, never putting ourselves in our place in the fundamental biosphere community in which we reside. If we ask, 'What is the matter?' the deepest problem may be this conviction that nothing matters unless it matters to us. That disrupts first our nations and our cultures; it disrupts secondly and damages our life-support systems on Earth. Our welfare, our well-being, is a matter of living in sustainable communities, human and natural; this flourishing requires policies and behaviour that keep population and development in harmony with landscapes. It is going to be difficult to keep peace with each other until we are at peace with our environment.

What we want is not just 'riches', but a 'rich life', and appropriate respect for the biodiversity on Earth enriches human life. There is something subjective, something philosophically naive, and even something hazardous in a time of ecological crisis, about living in a reference frame in which one species takes itself as absolute and values everything else in nature relative to its potential to produce value for itself.

Humans belong on the planet; they will increasingly dominate the planet. But we humans, dominant though we are, want to be a part of something bigger, and this we can only do by sometimes drawing back to recognize the intrinsic values in nature. Unless and until we do this, we cannot truly know who and where we are. It is not simply what a society does to its poor, to children or women, to its immigrants and minorities, to people with physical or mental impairments, to slaves or future generations that reveals the character of that society, but also what it does to its fauna, flora, species, ecosystems and landscapes. *Homo sapiens*, we have called ourselves, the wise species. But none of us can truly be wise in ignorance of the intrinsic values in nature.

The United Nations ought to unite all nations in finding ways to live on this one Earth, at both local and global levels. A sustainable

biosphere underlies and takes priority over sustainable development. UNESCO can lead the way in relating the nations to nature, requiring radical re-organization of our education, our sciences and our cultures. That is our most critical agenda for the next century, the next millennium.

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