# Environmental Ethics

*Duties to and Values in the Natural World*

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# 3 *Organisms: Duties to Organic Life*

"A SOLITARY ANT, afield, cannot be considered to have much of anything on his mind; indeed, with only a few neurons strung together by fibers, he can't be imagined to have a mind at all, much less a thought. He is more like a ganglion on legs."[1] Lewis Thomas, an astute biologist, seems to imply that ethically we need never mind about a lowly ant because neurologically an ant has no mind. Peter Singer, a sensitive defender of duties to sentient life, stops "somewhere between a shrimp and an oyster" and finds all lower animals, insects, and plants beyond moral consideration. "A life with no conscious experiences at all . . . is a complete blank; I would not in the least regret the shortening of this subjectively barren form of existence. . . . The life of a being that has no conscious experiences is of no intrinsic value."[2] My young son enjoys kicking up anthills to watch the ants' frenzied scattering. I once found him using a magnifying glass to sizzle an ant's abdomen. This much animated the captured ant and ended with an amusing pop. There might seem nothing wrong with either activity, because ants are mere ganglia on legs, beyond moral concern. Reverence for life does not extend this far.

Jesus sent 2,000 swine crashing to their deaths, an event which has dismayed even the most conservative interpreters of scripture, for whom the destruction seems cruel. Jesus also cursed and blighted a fig tree. Magical elements aside, interpreters have asked whether this was intemperate in Jesus, but none has shown any sympathy for the fig tree. Sympathy for a tree is misplaced affection. On the other hand, in the Genesis myth, God created all things and pronounced them good, and, after the tragic flood in the legendary days of Noah, reestablished his covenant not only with humans but "with every living creature . . . the birds, the cattle, and every beast of the earth." Noah's ark was the first endangered species project! So the other organisms are in God's covenant as much as humans.[3]

In college zoology I did an experiment on nutrition in rats, to

see how they grew with and without vitamins. When the experiment was completed, I was told to take the rats out and drown them. I felt squeamish but did it. In college botany I did an experiment on seedlings to test how they grew with this or that fertilizer. The experiment over, I threw out the seedlings without a second thought. While there can be an ethic about sentient animals, after that perhaps ethics is over, except as instrumental to sentient interests. (I cannot noticeably find that I am any smarter for having starved and drowned rats, and I think I could have taken it on good authority, as I do the vastest part of my science, that nitrogen, phosphorus, and potassium are all requisite for plant growth.)

We would not say that the needless destruction of a plant (or ant?) was *cruel*, but we might say that it was *callous*. Would this be an ethical judgment? We might be concerned not about what the *plant did feel* but about what the *agent did not feel.* That is not to value the plant's *sensitivity* but to disvalue the person's *insensitivity.* Sizzling ants for amusement, even though we think ants feel no pain, produces a sense of disgust. Kicking up anthills is juvenile vandalism. But that does not end the inquiry, because we are valuing sensitivity not *in* plants but in persons *to* something in plants. The question is not just about a missing feeling in the person but about a feeling that should be directed toward properties of the organisms, though the organisms feel nothing. Judgments of disgust and vandalism are parasitic on an admiration for something of value in the living organisms.

In the 1880s a tunnel was cut through a giant sequoia in what is now Yosemite National Park. Driving through the Wawona tree, formerly in horse and buggy and later by car, amused and impressed millions. The tree was perhaps the most photographed in the world. On holidays there was a waiting line. The giant blew over in the snowstorms of 1968–69, weakened by the tunnel, although it had long stood despite it. Some have proposed that the Park Service cut more drive-through sequoias, but the rangers have refused, saying that one was enough and that to do so is an indignity to a majestic sequoia. It is better to educate visitors about the enormous size and longevity of redwoods and their resistance to fire, diseases, insect pests; better to teach visitors to admire a durable, stalwart, marvelous tree, a sort of natural Ming classic. They will then wish to leave redwoods untouched. Is this valuing the redwoods intrinsically? Was the Wawona tree a mistake? Is it wrong (or just silly) to mutilate a sequoia to excite

tourists? Does this pervert the tree or pervert persons? Is this a "management" question and not an "ethical" question?

We have reached a critical divide, crossing into the headwaters that lead into the unexplored territory of environmental ethics in a primary sense. Does vegetation (a sequoia) count morally? Do we have duties to endangered species (*Discus macclintocki*, the Iowa Pleistocene snail)?[4] duties to landscapes and ecosytems (the Great Smoky Mountains)? These will be the explorations in succeeding chapters. The less adventurous (thinking themselves to be more rational) will draw back and return to familiar duties to persons and kindred sentient animals. But ethically responsible though this is on better mapped terrain, such persons do not yet have a primary environmental ethic—only an animal ethic and a secondary ethic concerning the environment. Much can be said for protecting human interests as carried by natural things (the values defended in Chapter 1). But now the question is deeper. There is much to be said urging concern for animal sentience in conflict with human interests. But we have left that question too. The question is not, Can they suffer? but, Are they alive? Sentience aside, is there anything of value in organisms, and how does it figure in an ethic?

This is perhaps not what ethics normally is, but that protest is not enough, because the question is whether ethics as normally conceived covers the whole field that properly belongs to it. Appeal to normal or familiar usage does nothing to settle revolutionary claims. We may want to change the meaning and scope, the connotation and denotation, of ethics. Some of the duties and concerns raised in the pages that follow may seem farfetched. But then most farsighted concerns have first seemed farfetched.

This issue is sometimes approached by asking what has *moral standing*—distinguished from the question who is a *moral agent.* That notion is useful but parasitic on the cultural idea of *legal standing.* It comes out of the courts, not out of value theory. The better question is what has value—standing on its own. Whatever has such resident value lays a claim on those who have standing as moral agents when they encounter such autonomous value. Just as, halfway down the phylogenetic levels of sentience, we abandoned the rhetoric and symbolism of *rights* in favor of what is *right,* we will also abandon the analogy of *moral standing* as we descend through organismic levels. But what remains always is the conviction that there is value, standing on its own, to which appropriate (= *right*) behavior is owed when those capable of duty

meet such free-standing value. Such value counts morally; there are right and wrong ways to act in encounter with it. (It does not follow that the discarded terms are useless in their appropriate ranges.)

## Objective Value in Organisms

Just as it is difficult to specify some particular essence that distinguishes humans from other sentient animals, it is difficult to distinguish by any single characteristic a living organism from nonbiotic matter, from computing machines, or from the communities in which organisms live. Biologists have looked for but never found "entelechy," animating force or spirit; organisms contain nothing but common chemicals. Still, these are organized at distinctively biological levels.

Organisms are self-maintaining systems; they grow and are irritable in response to stimuli. They reproduce, and the developing embryo is especially impressive. They resist dying. They post a careful if also semipermeable boundary between themselves and the rest of nature; they assimilate environmental materials to their own needs. They gain and maintain internal order against the disordering tendencies of external nature. They keep winding up, recomposing themselves, while inanimate things run down, erode, and decompose. Life is a local countercurrent to entropy. Organisms suck order out of their environment, stage an energetic fight uphill in a world that overall moves thermodynamically downhill. They pump out disorder. They can be healthy or diseased.

The constellation of these characteristics is nowhere found outside living organisms, although some of them can be mimicked or analogically extended to products designed by living systems, and some are found in spontaneous abiotic nature. A crystal reproduces a pattern and may restore a damaged surface; a planetary system maintains an equilibrium; a volcano may grow in countercurrent to entropy. A lenticular altocumulus cloud, formed as a standing wave over a mountain range, is steadily recomposed by input and output of airflow. A target-seeking missile adjusts its course by environmental feedback. Computers are cognitive processors and can be running well or poorly. Nevertheless, just as the animal precursors of human life fail in nonhumans to constitute a personality, these mechanical precursors of life fail to integrate into the pattern that we call an organism. Or perhaps

we should say that they did so over evolutionary time, and there emerged something greater than the precedents: life. The organism is a vital gestalt, notably more than mere physics and chemistry.

*Organisms as Normative Systems*

The "genius" of life is coded into genetic sets, which are missing in minerals, volcanoes, clouds, computers, and target-seeking missiles. An organism is thus a spontaneous cybernetic system, self-maintaining with a control center, sustaining and reproducing itself on the basis of information about how to make a way through the world. There is some internal representation that is symbolically mediated in the coded "program" of the goal that is held forth. There is motion toward the execution of this goal, a checking against performance in the world, by means of some sentient, perceptive, or other responsive capacities with which to compare match and mismatch. Organisms measure success. On the basis of information received, the cybernetic system can reckon with the vicissitudes, opportunities, and adversities that the world presents.

Something more than causes, if less than sentience, is operating within every organism. There is *information* superintending the causes; without it the organism would collapse into a sand heap. This information is a modern equivalent of what Aristotle called formal and final causes; it gives the organism a *telos*, "end," a kind of (nonfelt) purpose. Organisms have ends, although not always ends-in-view. All this cargo is carried by the DNA, essentially a linguistic molecule. Humans artificially impose an alphabet on ink and paper, but living things long before were employing a natural alphabet, imposing a code on four nucleotide bases strung as cross-links on a double helix. A triplet of bases stands for one of the twenty amino acids, and thus by a serial "reading" of the DNA, "translated" by messenger RNA, a long polypeptide chain is synthesized such that its sequential structure predetermines the bioform into which it will fold. Ever-lengthening chains, logical lines (like ever longer sentences) are organized into genes (like paragraphs and chapters), and so the story of life is told. Diverse proteins, lipids, carbohydrates, enzymes—all the life structures are "written into" the genetic library.

The genetic set is thus really a *propositional* set—to choose a deliberately provocative term—recalling how the Latin *proposi-*

*tum* is an assertion, a set task, a theme, a plan, a proposal, a project, as well as a cognitive statement. From this it is also a motivational set, unlike human written material, since these life motifs are set so as to drive the movement from genotypic potential to phenotypic expression. No book is self-actualizing. Given a chance, these molecules seek organic self-expression. They proclaim a life way, and with this they claim the other for self as needs may be, an assertive claim. An inert rock exists on its own, making no assertions over the environment and not needing it (although it did not come into being on its own). But the living organism cannot exist alone. It must claim the environment as source and sink, from which to abstract energy and materials and into which to excrete them. It "takes advantage" of its environment. Life thus arises out of earthen sources (as do rocks), but life turns back on its sources to make resources out of them (unlike rocks), because life is a propositional and motivational set.

The DNA representing life is thus a *logical set* not less than a biological set. Organisms use a sort of symbolic logic, use these molecular positions and shapes as symbols of life. In this sense, the genome is a set of conservation molecules. The novel resourcefulness lies in the epistemic content conserved, developed, and thrown forward to make biological resources out of the physicochemical sources. The presence of this executive steering core makes fitting the term "cybernetic," a word recalling a governor or helmsman. An open cybernetic system is partly a special kind of cause-and-effect system and partly something more: partly a historical information system discovering and evaluating ends so as to map and make a way through the world, partly a system of significances attached to operations, pursuits, resources.

The DNA codes the logic of a life carried on not merely at that level but at the environmental, phenotypical level. What occurs at the level of molecular biology mainfests itself, via a complicated translation and interaction from genotypic to phenotypic levels, at the native-range levels (macroscopic ranges for organisms larger than microbes), where such life is selected for or against as it is defended in its environment.

Even stronger still, the genetic set is a *normative set;* it distinguishes between what *is* and what *ought to be.* This does not mean that the organism is a moral system, for there are no moral agents in nature apart from persons, but that the organism is an axiological system, an evaluative system. So it grows, reproduces, repairs its wounds, and resists death. We can say that the physical

state the organism seeks, idealized in its programmatic form, is a valued state. *Value* is present in this achievement. *Vital* seems a better word for it than *biological.* We will want to recognize that we are not dealing simply with another individual defending its solitary life but with an individual having situated fitness in an ecosystem it inhabits. Still, we want to affirm here that the living individual, taken as a "point experience" in the web of interconnected life, is per se an intrinsic value. A life is defended for what it is in itself, without necessary further contributory reference, although, given the structure of all ecosystems, such lives necessarily do have further contributory reference. The organism has something it is conserving, something for which it is standing: its life. This is "Value Ownership" (Chapter 1) at a new location.

A favorite campground in the Rawah Range of the Rocky Mountains is adjacent to subalpine meadows of wildflowers: profuse displays of daisies, lupines, columbines, delphiniums, bluebells, paintbrushes, penstemons, shooting stars, and violets. The trailside signs for years read, "Please leave the flowers for others to enjoy." When I returned to the campground recently, the wasted wooden signs had been replaced by newly cut ones that read, "Let the flowers live!" Will the new signs be more effective? Do they represent a shifting environmental ethic? Is this only an aesthetic appeal? "Let lovely things be!" Is it a psychological appeal? "Don't vandalize!" Are the new signs subtly trying to recommend an experience? "Appreciate beautiful things!" Or is there a respect for life, replacing what on the earlier signs was only a respect for persons? (Would you recommend replacing signs that read, "Don't crosscut switchbacks," with new signs: "Give Earth a chance!"?) Perhaps the signs mean, "Let the flowers have their own standing!"

There seems no reason why such own-standing normative organisms are not morally significant.[5] That is, a moral agent in deciding his or her behavior ought to take account of the consequences for other evaluative systems. This will be "Following Nature in an Axiological Sense" (Chapter 1). We are not yet addressing the question of how morally significant butterflies or trees are, nor what justifiable considerations may outweigh such value, only establishing in principle what sorts of things can command our moral attention. The answer at this point is that organisms as spontaneous evaluative systems can. Being an organism is sufficient to do so, though (as later chapters argue) being an organism is not necessary for the presence of value that constrains

our conduct. Whether and how far such organismic goods may or must be sacrificed for the goods of others is a subsequent question. The competing, exchanging, and intermeshing of goods in every ecosystem means that the goods of organisms are contextually situated. Everything is what it is in relation to other things, but every organism is what it spontaneously seeks to be. Whether or not there is *Nature-as-a-whole*, there evidently are specific *natures* programmed into each species, exemplified in individual organisms, so that each organism has its own good. Such goods are values that claim our respect.

*Good Kinds, Bad Kinds, and Good-of-Their-Kinds*

Organisms have their own standards, fit into their niche though they must. They promote their own realization at the same time that they track an environment. They have a technique, a know-how. Every organism has a *good-of-its-kind;* it defends its own kind as a *good kind.* In that sense, as soon as one knows what a blue spruce is, one knows what a good blue spruce is. One knows the biological identity that is sought and conserved.

Among moral agents an actor may be *good-of-his-kind* and yet not a *good kind.* Jack the Ripper was a good murderer in the sense that he was clever and never caught, but being a murderer is reprehensible. Jack had a good of his own: as a normative system he sought to kill. But his norm was morally wrong. Among moral agents one has not merely to ask whether $x$ is a normative system but to judge the norm. But organisms, sentient or not, are amoral normative systems, and there are no cases where an organism seeks a good of its own that is morally reprehensible. Neither wolves nor nettles are bad because they defend their kinds of good. In organisms, the distinction between having a good-of-its-kind and being a good kind vanishes, so far as any faulting of the organism is concerned. To this extent, everything with a good-of-its-kind is a good kind and thereby has value.

One might say, however, of an organism which, during the course of pressing its normative expression, upset the ecosystem or caused widespread disease that it was a bad organism. In this sense *Choristoneura fumiferana,* the spruce budworm that is ravaging northeastern boreal forests, or *Plasmodium vivax,* the malaria parasite, or *Chlamydia,* the microbe that causes conjunctivitis in the bighorns in Yellowstone, might meaningfully be judged bad kinds, though each has a good-of-its-kind. If one does say this, one means that, though considered as normative organ-

ismic systems that have goods-of-their-kind and are intrinsically good kinds, still they are bad kinds instrumentally in the roles they play. If this is so, their own-standing goods might be overridden by other goods. We have nowhere intended in this account that some values cannot be overridden by others, and comparisons will follow. The point here is to get the theory clear: who counts, not how much. Even in "bad" cases there is value present in the offending organisms—value which, though it clashes with ours, is morally significant merely because the organism is a spontaneous evaluative system.

Remember, though, that an organism cannot be a good kind without situated environmental fitness. With rare exceptions, organisms are well adapted to the niches they fill. By natural selection their ecosystemic roles must mesh with the kind of goods to which they are genetically programmed. Despite the ecosystem as a perpetual contest of goods in dialectic and exchange, it is difficult to say that any organism is a bad kind in this instrumental sense either. The misfits are extinct, or soon will be. In spontaneous nature any species that preys upon, parasitizes, competes with, or crowds another will be a bad kind from the narrow perspective of its victim or competitor. But if we enlarge that perspective, it typically becomes difficult to say that any species is a bad kind overall in the ecosystem. An "enemy" may even be good for the "victimized" species, though harmful to individual members of it, as when predation keeps the deer herd healthy. Beyond this, the "bad kinds" typically play useful roles in population control, in symbiotic relationships, or in providing opportunities for other species. The *Chlamydia* microbe is a bad kind from the perspective of the bighorns, but when one thing dies, something else lives. After the pinkeye outbreak, the golden eagle population in Yellowstone flourished as never observed in recent times, preying on the bighorn carcasses. For them *Chlamydia* is a good kind instrumentally, as is *Choristoneura* for the birds that feed on it. The Cape May warbler, a jewel in the tree tops and usually rare, thrives during budworm outbreaks; other birds that eat the worms can nest twice in a season when normally they would be hard-pressed to complete one nesting.

Someone might say that even though an organism evolves to have a situated environmental fitness, not all such situations are good arrangements; some can be clumsy or bad, involving bad organisms in bad evolutionary patterns. For instance, humans with the hemoglobin deformity known as the sickle-cell trait acquire

resistance to malaria when they have one copy of the sickle cell gene but often die of anemia when they have two copies. This hemoglobin deformity persists in balanced polymorphism in a malarious environment because it is favorable to the heterozygotes, though often fatal to the homozygotes. It is rapidly selected against in a nonmalarious environment. So we could say that *Plasmodium vivax* (a mosquito-borne microbe that causes malaria) is a bad organism and that its situated environmental fitness in the human ecology is bad. Humans try to eliminate it by medical science.

This condition, however, is only partially a natural one. It seems to have appeared with the introduction of Malaysian agriculture into Africa about 2,000 years ago, a short-range feature on an evolutionary time scale. As a serious problem in Africa, malaria is a disease of civilization, as are most infectious diseases. Cultural innovations have often upset stable biological regimens, as in the current ecological crisis. Still, one might find examples of organisms with a situated environmental fitness that seem bad arrangements.

But the burden of proof is on a human evaluator to say why any natural kind is a bad kind and ought not to call forth admiring respect. Something may be a good kind intrinsically but a bad kind instrumentally in the system; these will be anomalous cases, however, soon edited out. There are also deformed organisms in nature, bad organisms of their kind, and even monstrosities that have no natural kind, unfitted for any habitat. Such individuals are immediately eliminated, although in the course of experimental mutation they are required if life is to continue. So even mutants and monsters play their roles in the trial and error by which the evolutionary ecosystem tracks changing environments and achieves new life forms. Earth may not be the best possible world, but it is the only one we know that has produced any life at all, and the life it has produced is, on the whole, a good thing. These claims about good kinds do not say that things are perfect kinds or that there can be no better ones, only that natural kinds are good kinds until proven otherwise.

We ought not to be misled by counterexamples such as a "good cancer cell." Unlike disease organisms, which do have a good of their own and which do have a function in the ecosystem, a good (healthy) cancer cell is not good of its kind. A cancer cell has no natural kind but is a good cell gone out of control, a misfit in the body. Further, the goodness of cells in the multicellular organism

is as instrumental parts in a whole. The intrinsic goodness of kind comes at the level of the organism, as well as at the species level. From the perspective of cell or organism, a good cancer cell is a contradiction in terms. A vigorously growing cancer cell is enroute to its own destruction.

Meanwhile, one does have to make a place, both biologically and philosophically, for death in the system. Without death there can be no life. If nothing much had ever died, nothing much could have ever lived. Even the aging processes that break down life, of which cancer is an example, are goods when incorporated into the system, though they are evils for individual organisms.

What is almost invariably meant by a "bad" kind is that an organism is instrumentally bad when judged from the viewpoint of human interests, often with the further complication that human interests have disrupted natural systems. The spruce budworm threat results from overaged forests too long sprayed in order to bolster the timber industry. This was doubtfully good even from the perspective of the spruce species. Malaria became epidemic with the introduction of agriculture; it was little threat to hunter-gatherer peoples. In 99 percent of cases, a "bad" kind means an organism with a role such that humans judge their interests to override the good-of-its-kind/good kind in spontaneous nature.

According to this environmental ethic, what the injunction, "Let the flowers live!" means is "Daisies, marsh-marigolds, geraniums, larkspurs are evaluative systems that express goods-of-their-kind and, in the absence of evidence to the contrary, are good kinds. There are trails here by which you may enjoy these flowers. Is there any reason why your human interests justify destroying good kinds?" The old signs, "Leave the flowers for others to enjoy," were application signs using a humanistic ethic. The new ones invite a change of reference frame.

*Organisms versus Human Machines*

We ought not be led astray by comparisons with artifacts. An objector may say that an automobile has a good-of-its-kind; it has needs, as when my car needs spark plugs. A computer can be running well or poorly; it defends its program, responds to input, adjusts its output. Yet no one thinks that machines are morally considerable. So why should we think that "organic machines" count morally?

The objection fails to distinguish between organisms and arti-

facts, and unless this distinction is made, there will be hopeless confusion. A car has no nature of its own; it does not exist by nature. An automobile is a means to human good; spontaneous nature could not conceivably have produced an automobile. Or, to make the point by playing with language, nature's "automobiles"—its things with genuinely "autonomous motion"—are living organisms. Cars have no self-generating or self-defending tendencies; they are called automobiles only by historical accident, because they are horseless carriages. When a human steps out of a car, she takes all the purposes, needs, programs, interests of the car away with her, all of which she gave to the car in the first place.

But none of this is true when a human walks away from a deer or a delphinium. The car does not "need" spark plugs except as a locution for, "I need plugs for my car." The car is not an automobile except insofar as it needs no horses to draw it. It must have a driver. Nor is the computer automatic; its program was written for it by a person, even if it is a program with elements of learning in it. Machines have an end only mediately as the extrasomatic products of human systems. But the tree has a *telos* before the logger arrives, and the logger destroys it. It is *auto-telic;* it has a law (Greek: *nomos*) on its own (= *autonomos*). It is on autopilot.

A Montana loggers' slogan runs, "The only good tree is a stump." That may be so from the loggers' perspective, who desire to remake trees into artifacts. *Good* then means *useful.* But from the *telos* of the tree, a stump is a bad tree. Organisms are healthy, thrive and flourish; they have self-generating, self-defending tendencies. We do not speak in this way of artifacts.

The values that attach to machines are therefore entirely instrumental, derivative from the persons who have created these instruments. But the values that attach to organisms result from their nonderivative, genuine autonomy (though environmentally situated) as spontaneous natural systems. The standards of performance, of excellence, are in the organism itself, relative to its reference frame. These are not absolute standards, but they are objective standards in that they are not generated by subjective human preferences. These are relative standards in that, at a level surrounding the organism, there exist further, systemic requirements by which the organism is tested as fit or misfit.

We remain in the humanistic reference frame when we talk of artifacts, but we enter the naturalistic reference frame when

we value organisms for their spontaneous, self-evaluative life. A machine is a good kind only because it is a good-of-my-kind; an organism can have a good-of-its-kind and be a good kind intrinsically, as well as be dialectically a short-range-bad-fitting-into-a-larger-good kind in an ecosystem. Machines are by us and for us; organisms live on their own. No machine is wild, but it is significantly the wildness of life that we treasure.

## Objective Life versus Subjective Life

Perhaps it is not enough to say positively why organisms count morally. Something must be said against the prevailing view that moral significance enters and exits with sentient interests or, more specifically, with the capacity to suffer pain and enjoy pleasure. W. K. Frankena concludes, "I can see no reason, from the moral point of view, why we should respect something that is alive but has no conscious sentiency and so can experience no pleasure or pain, joy or suffering."[6] Peter Singer agrees: "If a being is not capable of suffering, or of experiencing enjoyment or happiness, there is nothing to be taken into account."[7] "As nonconscious beings have no interests, so nonconscious life lacks intrinsic value."[8] But, we are replying, they do "take account" of themselves; and we should take account of them. They "stand up" for themselves, and so (in a more legal phrase) they should "have standing" with us. An objector can say, "The tree doesn't care, so why should I?" But the tree does care, in the only form of caring available to it; and why should I take no account of that form of caring because it is not my form of caring?

Hiking a wilderness trail in New Hampshire in July 1981, I encountered this sign, neatly printed on cardboard and posted at a backcountry campsite:

> DO NOT PEEL BARK FROM WHITE BIRCH TREES WITHIN 200 FEET OF CAMPS, TRAILS, ROADS, HUTS, OR OTHER PLACES WHERE PEOPLE CONGREGATE.
>
> White Mountain National Forest

I thought to myself, "Why the 200-foot limit?" The concern is not for the trees themselves, but only for their visibility by humans. If one mutilates white birch that are out of sight, who cares? Later, thinking that the sign would make a good discussion starter, I

wrote and asked for a copy. In prompt, concerned reply I received a long-distance call from an official of the forest wanting to know where the sign was. He was anxious to remove it because it was an old one. Current regulations prohibit defacing birch trees anywhere in the forest, with a $25 fine for offenders. Peeling bark damages trees, leaves them vulnerable to insect and fungal infestation, and is vandalism. Among multiple factors in this change of regulation, one seems to result from or in—or at least to invite—a subtle shift of ethic. "Let the birch trees live!"

W. K. Frankena says, "Why, if leaves and trees have no capacity to feel pleasure or to suffer, should I tear no leaf from a tree?"[9] Or peel no bark from a birch, out of sight of others? Should I not discourage my son from practicing with his ax on living birch and encourage him to use a fallen log instead? Birch is one of the few woods that will burn green, and its papery bark provides excellent kindling. But another forest sign at the trail junction urged, "Burn down [i.e., fallen] wood!" Why?

*Psychological and Genetic Preferences*

Life is an objective process in the world. No one will deny this—short of solipsism, phenomenalism, or insanity! Only some forms of life sponsor the subjective process characterized by inwardness, by psychological experience. Panpsychists claim that an elementary or attenuated feeling characterizes even plants and microbes. Lacking clear evidence for this belief, most persons judge sentience to accompany approximately the central nervous system and thus to be absent in flora and protozoans, lower invertebrates, and probably those forms with nerves and ganglia but little or no brain. There is no particular cause to expect a sharp cutoff point here; sentience likely emerges across a twilight zone, although nature sometimes surprises us with radical changes of state at narrow thresholds (as when water freezes at zero degrees Celsius). An environmental ethic that distinguishes between sentient and nonsentient life does not depend on whether the boundary is sharp or fuzzy.

The question is rather, Is there some reason to value only subjective life intrinsically and objective life only instrumentally, if at all? The question, notice, is not, "Does subjective life count more than objective life?" but, "Does only subjective life count?" To say that the threshold of our moral sensitivity is just the same as the threshold of felt sensitivity is to say that moral concern is directed only toward inwardness; its scope does not include out-

wardness except relationally. That is, in a sense, to make morality *subjective*, to attach it to subjects and deny it to objects. Only subjects—indeed, on Earth only human subjects—can be moral *agents*. But who are their moral *patients?*

We here hope to defend an *objective* morality, one with a focus on objective life. Environmental ethics is not merely an affair of psychology but of biology. Further, although in principle diverse kinds of experience might be valued, in practice the language that ethicists (illustrated by Frankena and Singer) usually use is restricted to that of pains and pleasures, suggesting a hedonist theory of value, as though pain is nature's only disvalue and pleasure its only value. Our environmental ethic will be more holistic. Pains and pleasures will be part of a larger picture, derivative from and instrumental to further values at the ecosystemic level, where nature evolves a flourishing community in some indifference to the pains and pleasures of individuals, even though pain and pleasure in the higher forms is a major evolutionary achievement.

Already, dealing with the *goods* of sentient organisms, we found it necessary to distinguish between *psychological interests* and *biological interests*. The coyote takes no felt interest in poisons in her drinking water; the elk takes an interest in the salty Polaroid paper, tossed aside as tourist trash, although the toxic chemicals are detrimental to the biological interests of both animals (and in due course result in psychological suffering; see Chapter 2).

Below the threshold of sentience (assuming this to be roughly the threshold of suffering and satisfaction), there are only biological interests. It is sometimes said that plants can have *needs* (as when a tree needs water) but can have no *interests*, because the only sorts of interests allowed are psychological interests. Joel Feinberg says, "Mindless creatures have no interests of their own."[10] True, beneath the level of awareness the word "interest" becomes strained because we factor out all psychological desires, which are often active in our ordinary use of that word. But some meaning is left, caught by "need" or "biological interest." Some things are good for, goods for, plants and insects; some are not.

Plants and insects have a well-being, and they respond with a (nonfelt) interest in this well-being, as when a tree sends roots down deeper for water or an ant (though but a ganglion on legs) scurries off with a crumb. *Escherichia coli*, a common bacterium, placed in a food supply with both lactose and glucose, prefers

glucose over lactose and eats the latter only after the former is gone. The microbe presumably does not have any options in this preference; the preset preference is hardwired into the genes. But this is the way genetic preferences operate, as opposed to the later-evolving neural and consciously expressed preferences.

*Stentor roeselii*, a trumpet-shaped, one-celled aquatic organism, has a mouth at the top and attaches itself by a foot to the substrate. If irritated, it may contract, or duck, bending first this way and then that, or reverse the ciliary movement of its peristome and sweep water currents away. It may withdraw into a mucous tube about the base, to return after a few minutes and, upon further irritation, repeat various avoidance reactions. But finally, with a jerk, it will break the attachment of its foot and swim away to attach itself elsewhere. *Difflugia urceolata*, a protozoan like a snail, builds a house of sand grains, carries it about, and retreats into it upon the approach of danger. Such organisms, though nerveless, are genuinely autonomous (= self-impelled) evaluative systems, even if it is also true that their behaviors work by genetic programs, biochemistries, instincts, or stimulus response mechanisms. They may have no autonomous options, but they defend a life as a good-of-its-kind.

There is an object-with-will, even though there is no subject-with-will. The organism is genetically programmed to argue, to probe, to fight, to run, to grow, to reproduce, to resist death. Some will protest that with words like these we sneak in a "closet awareness," as though the organisms were "trying," and elicit an ethical sympathy for a frustrated pathos that is not there. They have tendencies, but they intend nothing. But the point is that below the threshold of subjectivity life remains. It can yet flourish or be harmed. Life still has its commitments, something it values, a cybernetic program defended, goods of an objective kind, genetically based preferences. Such organisms have no envisaged goals, but why should we restrict value to mentally guided behavior when much behavior is guided by genes and instincts—and we do value this kind of behavior even in ourselves. Is there no reason to count this ethically, unless and until it is accompanied by sentience? Is not objective life too among the archetypes on which the world is built?

### *Subjective Experience and Objective Value*

Fishermen in Atlantic coastal estuaries and bays toss beer bottles overboard, a convenient way to dispose of trash. On the

bottom, small crabs, attracted by the residual beer, make their way inside the bottles and become trapped, unable to get enough foothold on the slick glass neck to work their way out. They starve slowly. Then one dead crab becomes bait for the next victim in an indefinitely resetting trap! Are those bottle traps of ethical concern, after fisherman have been warned about this effect? Or is the whole thing out of sight, out of mind, with crabs too mindless to care about? Should sensitive fisherman pack their bottle trash back to shore, whether or not crabs have much, or any, felt experience?

Although we may abandon the symbolism of *rights*, abandon even the appeal to some *moral* standing analogous to *legal* standing, we do not abandon the concept of *value* when we descend below sentience on the phylogenetic spectrum. To the contrary, *value* is a critical paradigm-indicator word. By value analysis differing paradigms can be detected. According to the reigning paradigm, there is no value without an experiencing valuer, just as there are no thoughts without a thinker, no percepts without a perceiver, no deeds without a doer, no targets without an aimer. Valuing is *felt* preferring; value is the product of this process.

Value is of two kinds, intrinsic and instrumental. Intrinsic values are psychological interest satisfactions desired without further contributory reference, pleasures good in themselves. Instrumental values contribute to further interest satisfactions. Objective things, living or not, may have instrumental value, contributing to subjective interest satisfactions. But they do not have intrinsic value. Intrinsic value requires a beholder, an experiencer. The beholder perhaps may not assign the value, but he at least admits and receives it. Such value is not (entirely) at his option. A redwood is thus valuable without his will but not without his awareness. Before his coming, there are only precursors of value; value does not emerge until these are thickened by the addition of human interests.

By this account, value exists only where a subject has an object of interest. David Prall concludes:

> The being liked, or disliked, of the object is its value. . . . Some sort of a subject is always requisite to there being value at all.[11]

Wilhelm Windelband agrees:

> Value . . . is never found in the object itself as a property. It consists in a relation to an appreciating mind, which satisfies the desires of

its will or reacts in feelings of pleasure upon the stimulation of the environment. Take away will and feeling, and there is no such thing as value.[12]

Ralph Barton Perry continues:

The silence of the desert is without value, until some wanderer finds it lonely and terrifying; the cataract, until some human sensibility finds it sublime, or until it is harnessed to satisfy human needs. Natural substances . . . are without value until a use is found for them, whereupon their value may increase to any desired degree of preciousness according to the eagerness with which they are coveted. . . . Any object, whatever it be, acquires value when any interest, whatever it be, is taken in it.[13]

W. M. Urban adds:

The value of an object consists . . . in its satisfaction of desire, or more broadly, fulfilment of interest.[14]

William James starkly portrays the utterly valueless world, suddenly transfigured as a gift of the human coming.

Conceive yourself, if possible, suddenly stripped of all the emotions with which your world now inspires you, and try to imagine it *as it exists*, purely by itself, without your favorable or unfavorable, hopeful or apprehensive comment. It will be almost impossible for you to realize such a condition of negativity and deadness. No one portion of the universe would then have importance beyond another; and the whole collection of its things and series of its events would be without significance, character, expression, or perspective. Whatever of value, interest, or meaning our respective worlds may appear endued with are thus pure gifts of the spectator's mind.[15]

In contrast, we here claim that in an objective gestalt some value is already present in nonsentient organisms, normative evaluative systems, prior to the emergence of further dimensions of value with sentience. Biology has steadily demonstrated how subjective life is a consequence of objective life, the one always the necessary sponsor of the other (so far as we know it on Earth). Objective life, when reaching sufficient levels of neural complexity, is often sufficient for subjective life. Why not value the whole process with all its product organisms, rather than restrict valuing to the subjective aspect of the process? When we exclaim, "Let

flowers, birch trees, crabs, ants, live!" there is excitement in the beholder; but what is valued is what is beheld. Insentient organisms are the *holders* of value although not the *beholders* of value. With such a prolife injunction in environmental ethics, humans are not so much lighting up value in a merely potentially valuable world as they are psychologically joining an ongoing defense of biological value. (We develop this value theory at the ecosystem level in Chapter 5.)

By this account some values are dependent on conscious preferences; others are not. Some portion of the value in a particular event may be preference-dependent and the rest of it not. Whether I value lettuce partly depends on my felt preferences (I may opt for cauliflower instead), but it partly depends on my biochemistry, to which my felt preferences are irrelevant. My biochemistry is genetically preset to value the vitamins and amino acids in nutrients, as *Escherichia coli* is hardwired to prefer glucose over lactose.

*Projecting Intrinsic Value?*

There is an intermediate position. Noticing that humans value most natural things by making them over resourcefully but value a limited number of wild things as they are in themselves, we say that humans are making instrumental uses of the former type of resource but are valuing the latter type intrinsically. That is, humans may value sequoias as timber but may also value them as natural classics for their age, strength, size, beauty, resilience, majesty.

Let-the-flowers-live valuing is of this kind; humans make no instrumental, consumptive use of the flowers. They do not pick them. But they do view them, a nonconsumptive use. This viewing constitutes the flowers' value, a value not previously present in the flowers independent of the human presence. Still, it is a value that, when it appears as a product of subjective awareness, is attached objectively to the flowers flourishing in the meadow, not attached instrumentally in relation to some resource use humans may make of them—for instance, as a bouquet. Value thus requires subjectivity, since only subjectivity can coagulate it in the world. But the value so coagulated, we will claim, is objectively intrinsic to the nonsentient life and not merely instrumental.

On these occasions natural things are not used, at least not used up, to satisfy human needs. Rather, they are valued, when humans encounter them, for what they are in themselves, and not just for the sake of human appreciation. That "$x$ is valuable" does mean

"interest is taken in $x$,"[16] but it need not mean "$x$ satisfies my desire," since I may take an interest in the wildflowers for what they are in themselves, not merely to satisfy my desires. Still there is no value until consciousness comes on scene, because consciousness is required for interest be taken in $x$. (In a way, however, that interest is "taken" in $x$ very nearly means that interest in $x$ is "satisfied," found worthwhile, satisfying. One "takes" an interest only to "satisfy" it.)

J. Baird Callicott, a keen advocate of the proper appreciation of nature, says that all intrinsic value is "grounded in human feelings" but is "projected" onto the natural object that "excites" the value. "Intrinsic value ultimately depends upon human valuers." "Value depends upon human sentiments."[17]

> The *source* of all value is human consciousness, but it by no means follows that the *locus* of all value is consciousness itself. . . . An intrinsically valuable thing on this reading is valuable *for* its own sake, *for* itself, but it is not valuable *in* itself, i.e. completely independently of any consciousness, since no value can in principle . . . be altogether independent of a valuing consciousness. . . . Value is, as it were, projected onto natural objects or events by the subjective feelings of observers. If all consciousness were annihilated at a stroke, there would be no good and evil, no beauty and ugliness, no right and wrong; only impassive phenomena would remain.[18]

This, Callicott says, is a "truncated sense" of value where "'intrinsic value' retains only half its traditional meaning." At the same time, "value is, to be sure, humanly conferred, but not necessarily homocentric."[19]

The word "project" here needs analysis. Motion picture projectors project an image when light travels from the projector to the screen, but we are not here to think of a value-bestowing ray. Nothing travels from the human valuer to the natural object. Rather, humans value trees somewhat as they color them green. The greenness of the tree is in my head, but it looks as though the tree is green. Out there are only electromagnetic waves of 550 nanometers. The greenness is projected, manufactured in my head and apparently hung onto the tree. Dogs, with black and white vision, project no greenness onto the same tree. I have no options about the greenness; I do have options about the valuing—to some extent. I can see the tree as board-feet of timber or as a poem (Joyce Kilmer). I can value it as an instrument to satisfy my desires, or I can see it as having intrinsic value.

In all this nothing travels from the human to the tree. The

"projection" is better called a "translation." The "value conferring" does not transmit anything to the tree, and in that sense the value never really gets outside the human head. The tree is *sending,* and the human is *receiving.* The human is not really doing any sending, nor the tree any receiving. The incoming signals from the tree are "translated" as green, and so the tree appears green. In one sense this is an illusion; in another it is not. There is no experience of green in the tree, but there is ample reality (radiation) out there, behind and exciting my experience. My coloring the tree green is mapping what is really there, though my mind is translating as it maps. My finding of intrinsic value in nature is to be modeled after my finding green. (Green insects, camouflaged on the leaves, are protected from predators who, though they have no experience of green, have other sense modalities that catch electromagnetic signals and distinguish wavelengths.)

To say that something is valuable means that it is able to be valued, if and when (human) valuers come along, but it has this property whether or not humans (or other valuers) ever arrive. To say that something is intrinsically valuable means that it is of such kind that were valuers to arrive they might value it intrinsically rather than instrumentally. The trilobites that went extinct before humans evolved were (potentially) intrinsically valuable. Undiscovered species on Earth now or on uninhabited planets are intrinsically valuable in this potential sense.

By this account there is no actual value ownership autonomous to the valued and valuable flower; there is a value ignition when humans come. Intrinsic value in the realized sense is subjectively generated, emerging relationally with the appearance of the subject-generator, although nothing is generated except under the field of force of the objective item valued. The object plays its necessary part, though this is not sufficient without the subject. Also, humans err: they can (and often do) value flowers insufficiently; they fail to appreciate what flowers are in themselves.

This theory of *anthropogenic intrinsic* value differs from the theory of *autonomous intrinsic* value that we are defending.[20] Notice that, although anthropogenic, it is not anthropocentric. Value is not self-regarding or even human-regarding, merely, though it is human-generated (anthropogenic). It is not centered on human well-being, though it is still tethered to human experience.

This compromise account is certainly to be welcomed over less enlightened humanistic accounts. It affords enormously more environmental respect and protection than weaker theories. It

is not yet a genuinely biological or ecological theory of value, however, but residually a psychological one, which refuses to burn all humanistic bridges behind as it enters the wilderness of environmental ethics.

Despite the language of value projection and conferral, if we try to take the term *intrinsic* seriously, it cannot refer to anything the object gains, to something *within* ("intra") the object, for the human subject does not really project anything to the natural object. We have only a "truncated sense" of *intrinsic.* All the *attributes* under consideration are objectively there before humans come, but the *attribution* of value is subjective. The object causally affects the subject, who is excited by the incoming data and translates this as value, after which the object appears as having value (and color). But nothing is really added *intrinsically* to the object at all; everything in the object remains what it was before. Despite the language that humans are the *source* of value which they *locate* in the natural object, no value is really located there at all. The only new event is that these properties are registered in—translated into felt values by—the perceptual apparatus of the beholder.

The features are all there in the object itself, which is why I value it for what it is in itself. But the value arises with my awareness. This is said to be the ignition (projection) of value, hitherto only potentially present. But is not this like looking for time in the clock that measures it, looking for a birthday party in the camera that photographs it? I seem to be assuming that, among all the phenomena in the universe, only one sort of thing, psychological interest, produces actual value intrinsically, although I recognize that myriads of things present in the world before, during, or after the presence of (human) valuers can excite such value. Actual value was not lost when the various species of trilobites went extinct, nor is value lost now when unknown species in tropical forests go extinct, bulldozed away unbeknown to humans.

Now, however, it appears that the term *intrinsic,* though claimed in a truncated sense for this view, is misleading. What is really meant is better specified by the term *extrinsic,*[21] the *ex* indicating the external, anthropogenic coagulation of the value, which is not *in—intrinsic,* internal to—the nonsentient organism, even though this value, once generated, is apparently conferred on the organism. The value is noncontributory in the sense that it is not utilized in some human reference frame: that is, not possessed in a rebuilt environment. The value is accepted, reflected, enjoyed

just as it is. Still, human consciousness realizes this value in the organism, which the organism did not have before but which, on encounter with humans, it does come to have extrinsically. We humans carry the lamp that lights up value, although we require the fuel that nature provides.

The value-generating event is something like the light in a refrigerator—only on when the door is opened. Values in flora and nonsentient fauna are only "on" when humans are perceiving them, and otherwise "off." That is, actual value is an event in consciousness, though of course natural items while still in the dark have potential intrinsic value.

But by now we begin to suspect that the anthropogenic account of intrinsic value is a strained saving of what is really an inadequate paradigm, that of the subjectivity of value conferral. For all the kindly language about intrinsic value in nature, the cash value is that, "Let the flowers live!" really means, "Leave the flowers for humans to enjoy" after all, because the flowers are valuable—able to be valued—only by humans even though when properly sensitive humans come along they do value these flowers for what they are in themselves.

A thoroughgoing value theory in environmental ethics is more radical than this; it fully values the objective roots of value with or without their fruits in subjectivity. Sometimes to be radical is also to be simpler. The anthropogenic theory of intrinsic value strains to insist on the subjectivity of value conferral while straining to preserve the object with all its properties. It admits that the exciting object is necessary for generating value. Surely this is a paradigm beset by anomalies, ready for overthrowing. A simpler, less anthropically based, more biocentric theory holds that some values are objectively there—discovered, not generated, by the valuer. A fully objective environmental ethics can quite enjoy a "translator" when subjective appreciators of value appear. It can value such appreciation (experienced respect) more highly than untranslated objective value. Value appreciates (increases) with humans. But such an ethic does not insist upon a translator for value to be present at all, else it commits a fallacy of the misplaced location of values.

Trees may not be colored without a perceiver, but they do exist per se. Is their value like their color or their existence? Trees have their norms and needs, defenses, programs; these are factors in their existence, and so value, coupling with existence defended, is not an analogue of color after all. Trees do appear to

be green, and perhaps we do not want to call the electromagnetic waves that are actually there "greenness." Trees are also valuable in themselves, able to value themselves; they stand on their own. By contrast with "greenness," we do want to say that "treeness" is objectively there, the tree with its life project defended. We want to call this valuable regardless of what "seems" to us. We shall be saying (in Chapter 5) that some values are already there, discovered, not generated, by the valuer because the first project here is really the natural object, nature's project; the principal *projecting* is nature creating formed integrity. Beside this, the human *projecting* of value is an epiphenomenon.

*Protecting Human Excellences?*

A still weaker account of value, yet one that much desires to protect the environment, interprets human encounters with nature in terms of human excellences.[22] Intrinsic values exist only in human subjects; natural objects never have intrinsic value at all either before or after humans come. But certain excellences of human character arise only with appropriate sensitivity toward natural things. Nature is like fine art, literature, music. It elevates character. This makes it a resource of a finer type (as well as, on everyday occasions, of a utilitarian type).

A morally mature person will say, "I do not want to be the type of person who values everything by cost-benefit analysis, nor by a what's-the-pleasure-in-it-for-me-and-my-kind analysis. One admirable trait in persons is being able to appreciate things outside themselves. The more at distance from their daily concerns, the finer this is. If I let whooping cranes go extinct, my grandchildren will say that their grandfather was callous, just as I now deplore my great-grandfathers who shot up the buffalo and passenger pigeons. I do not want such disrespect. There is something philistine, obnoxious, tacky about the mere consumer of nature—not to mention cutting drive-through sequoias or sizzling ants for amusement. Humans who lord it over nature do not lead fully worthwhile lives (see Chapter 6, pp. 227–28). Such actions are uncalled for. I want to be a bigger person than that. It is a condition of human flourishing that humans enjoy natural things, at least at times, as they flourish in themselves."

But why are such insensitive actions "uncalled for" unless there is something in the natural object that "calls for" a more appropriate attitude? We do not love wildflowers *for the pleasure they bring us.* They themselves *are* our pleasure; their flourishing is

that in which we take pleasure. But likewise it seems "unexcellent" to say that the excellence of human character is what valuing wildflowers is all about. Our excellence of character comes as the wildflowers give us pleasure, but they are strong to do this because they have value in themselves, which we humans are sensitive enough to track onto with subjective experiences. If the excellence of character really comes from appreciating *otherness*, then why not attach *value* to this otherness? Why praise only the *virtue* in the beholder? How can it be an ideal of human excellence to treasure for what it is in itself something that has no value in itself? We seem incoherently to be trying to value for its own sake and for our sake what has no sake! Why take a wildflower into account unless there is something there to take into account?

We do indeed want from nature high-quality scientific, recreational, aesthetic, character-building, and religious experiences. We want to learn frugality, simplicity, honesty, our place under the sun. We want to learn to respect life, to admire evolutionary speciation, ecosystem interdependence, to be sensitive to the natural world. But to say that the values here are nothing but concerns for human excellences reduces the admonition "Keep life wonderful" (Chapter 1, p. 26) to "Keep human life excellent," which misperceives the basic location of value ownership, even though it is correct that humans come to own these values. We covertly replace the question, "What is its good?" with "What is it good for?" and answer, "It is good for human excellences." We are not disinterested in a wild life but interested in our own interests. That hardly seems ethical. We may owe it to ourselves not to destroy the Rosetta Stone, but letting the wildflowers live is something we owe to the flowers, not merely to ourselves.

Perhaps one can value a fossil for its otherness, although it has no value in itself, and receive some excellence of character; the fossil is a memento of natural history, and I am enriched by respecting it. Perhaps one can value a wild river in its otherness, although the river has no value in itself; it is an event in geophysical nature, and I am stretched by contacting it. Neither fossil nor river has a self. But with organisms—the part of the environment considered in this chapter—there is a defended integrity, a life owned, which is objectively of value whether or not my excellent character is present. Living things do take account of themselves, and in that sense even nonpsychological lives have a somatic "self." The only sober account of treasuring such lives is that virtue in the beholder fundamentally reflects value in the beheld. My inward

excellence of character appropriates excellent characteristics in the wildflower, and this is why respectful behavior is appropriate. Art, literature, music are our human doing, but here we wish to value what does not depend on human consciousness, else we are not yet valuing living otherness.

## Human Interests and Organismic Values

Perhaps objectively valuing organisms, even if ethically and metaphysically plausible, is hopeless unless it can be made operational. Plants, insects, snails, crustaceans, though in principle to be counted morally, would in practice have no moral significance. R. D. Guthrie, who rejects the principle, rejects also the practice: "A human's act toward other organisms is, in and of itself, an amoral one. It becomes a moral act only when humans are affected. . . . The inclusion of other organisms as primary participants in our ethical system is both logically unsound and operationally unfeasible."[23] At the other extreme, Paul Taylor accepts the biocentric principle and says that the interests of plants and persons should have equal consideration. He claims that it can be as wrong to kill a plant as a person. "The killing of a wildflower, then, when taken in and of itself, is just as much a wrong, other-things-being-equal, as the killing of a human."[24] That seems incredible, and one wonders, if all organisms are to be equally counted morally (= to be counted equals?), how to escape a kind of paralysis of moral judgment—sometimes called Schweitzer's dilemma—in which we are unable to weigh competing claims. There are no criteria for judgment. Again, including other organisms seems operationally unfeasible.

Perhaps the intrinsic value of plants lies on the attenuating slope of a curve somewhat like those encountered in physics, where an actual field of force, measurably present at some location, falls off rapidly with distance and soon in practice vanishes, although it never in theory reaches zero. A small magnet has in theory an infinite field; in practice, the field is insignificant twenty centimeters away. Combining such curves for several groups would produce descending differential value curves along gradients, gradual or steep, with the general picture that the intrinsic value of sentient animals would be lower than that of humans, that of insects still less. The value of plants would be practically nil, a barely usable idea in ethics. Nature crosses various thresholds of emergent values.

Having refused (in Chapter 2) to be sentimental about sentient animals, sacrificing them to humans needs within the general patterns of an ecosystem, we do not want here to be sentimental about insects or plants. As in hunting, there is no reason for humans to deny their ecology. We eat plants, as we eat animals. But there is every reason for humans to affirm their ecology, and this means nonsentimentally and objectively to affirm the standing of the member components of Earth's biological communities. We want to affirm all life, not just sentient life. Being nonsentimental means valuing life that flourishes without sentiments, as do the wildflowers.

In making judgments at this level, however, the principle of the nonaddition of suffering will not work, since there is no suffering. We can substitute a principle of *the nonloss of goods.* The goods preserved by the human destruction of plants must outweigh the goods of the organisms destroyed; thus, to be justified in picking flowers for a bouquet one would have to judge correctly that the aesthetic appreciation of the bouquet outweighed the goods of the flowers destroyed. One might pluck flowers for a bouquet but refuse to uproot the whole plant, or pick common flowers (daisies) and refuse to pick rare ones (trailing arbutus) or those that reproduce slowly (wild orchids).

True, intrinsic values in plants are attenuated compared with those manifested in persons, but it does not follow that they can never enter an environmental ethic. The gradient of descending intrinsic values may seem like a slippery slope where we will get lost trying to stabilize any judgments of value, but the seeming downslopes may also be the incremental upslopes over which evolutionary nature has built up value—the upslope achievements of evolutionary history. And it is vital to remember that we are here speaking only of intrinsic worth, not instrumental worth functionally in an ecosystem, not what we will later call systemic value. In the latter values, plants exceed humans!

One should honor "well-being," but at various levels that can be an affair of individuals, of species, and even of ecosystems. We will be turning to the integration of species into ecosystems in chapters to follow. For the present, when only considerations of intrinsic value (well-being) obtain, value magnitudes will be something like this: highest in humans, descending across animal life in rough proportion to phylogenetic or neural complexity, lower in plant life, and least in microbes. That is only an intuitive

scale; it will need to be corrected by the detailed descriptions of biological science.

To see how the biological interests of plants or lower animals can on occasion outweigh those of humans, let us approach the issue from two directions—either aggregating the values of plants and animals, or trivializing the interests of humans. Consider the following cases, which involve one or both of these strategies. Are these cases where humans *should* lose?

- Chapman's rhododendron, *Rhododendron chapmanii*, is an attractive evergreen, federally listed as endangered. It is naturally rare, but made much more rare by clear-cutting its habitat for paper production, draining its bog habitat to replant pines, and digging clumps for the nursery trade. It now exists in only three locations in the deep South, a few hundred plants. Do human interests—a few more acres of pines, a few more rolls of newsprint, a few more ads—justify destroying the remaining plants? Does it make a difference whether there are human interests (or "excellences") on the side of conserving the species?
- Ginseng, *Panax quinquefolius*, once common, is much sought in the mistaken belief that its powdered roots prolong virility and vitality. It has been nearly exterminated in the Appalachian mountains, its only locality, with the roots sold mainly in China. The Orientals, prizing a similar ginseng, had virtually eradicated it when a Jesuit priest in Canada in the early 1700s found that the Appalachian plant was similar. Many tons were shipped to Asia, and ginseng became known as Appalachian gold. Ginseng sold in the 1970s for about $70 a pound of roots. Ought one to gather ginseng? Does the price make a difference? Suppose the belief were true that ginseng increases an aging man's fertility—either dramatically or slightly, either as a psychosomatic or a physiological effect. Would exterminating a species to produce a few more humans be justified?
- Should the Park Service cut more drive-through sequoias? (p. 95).
- Formerly, Boy Scout handbooks showed how to make temporary camp beds from evergreens. A tree was felled and springy boughs from the branches arranged as a mattress. Suppose that a backcountry canoeist in a remote Canadian

forest is spending a week at localities unlikely to be visited by others. Ought he to cut firs for more comfortable nights rather than take along a foam pad?

- Do your Christmas festivities, lasting about ten days, justify cutting a wild Colorado blue spruce, which if left uncut would have a life span of 150 years? Should real people use artificial Christmas trees, in addition to wearing fake furs? About thirty million trees are used in the United States each year, with ninety million seedlings replanted. Does it matter whether the trees are farmed or wild? Does a family gain more than the tree loses? What would the Christmas spirit be like in a family that thought too much of a blue spruce to sacrifice it for their festivities?
- Mike Borkowski, a Roosevelt University student, won an especially large old lobster in a charity raffle. Sandy Claws II weighed twenty-eight pounds and was estimated to be 105 years old. After the drawing, Mike announced, "I'm going to give it to the Shedd Aquarium (in Chicago), rather than to eat it. I figure it's got a few good kicks left in it. So let it live out the rest of its life in peace."[25] Do the age and size of the lobster make any difference, so that one might eat ordinary lobsters but spare this especially large one?
- You and your girl are on a picnic, having slipped away and found a meadow, and she has just said yes to your proposal. Is this an appropriate occasion to carve your initials together into the beech tree under which you have picnicked, a lasting souvenir of the memorable occasion?
- "Give a hoot, don't pollute!" One version of this National Park Service slogan is, "The birds, animals, and flowers are dying to tell us, 'Give a hoot, don't pollute!'" Are additional moral considerations introduced in the variant form? Is the slogan (with its "wise old owl") really a psychological device, a Bambi-type appeal, to get tourists to mind their trash? Or can there be some consideration of the flourishing of plants in pollution questions?
- Southeastern deciduous forests are often converted to pine-woods for timber production. Hardwoods, though also valuable for timber, take too long to mature; pine brings a quicker cash crop, used for pulp and newsprint. But the more environmentally oriented forestry officials urge, "Leave the hardwoods along the stream courses" in a strip a quarter-mile wide. Hardwoods reach their best development there

and provide a good mast crop for wildlife, whereas their removal destroys the precocious wildflower ground story, especially luxuriant in the spring before the leaves emerge. Additionally, the wildlife population is less affected, streams less polluted by soil erosion, and their temperatures better regulated if the streamside buffer zones are left. Should the justifications for all this be entirely humanistic—good public relations between paper companies and the local hunters? Does there lurk in such decisions some moral consideration, some appropriate appreciation of the vegetation, the ecosystem? Given a combination of humanistic and naturalistic reasons, would it be unjustifiable government intervention in business to require commercial timber operators to save belts of hardwoods along some streams?

- Horse packers in alpine wildernesses in the Rockies may be urged, or even required, by permit-granting agencies to carry feed rather than to picket their horses in the alpine meadows. Further, they may sometimes be urged or required to carry pellet feed, not hay, since weed seed mixed with the hay introduces dandelions, thistles, and the like, which become established initially along the disturbed trailsides or in grazed meadows, eventually to disrupt the vegetation elsewhere. (In ecological terms, weeds are r-selected species; especially in disturbed sites they outcompete the natives, likely to be k-selected species.) Is this only a matter of leaving the flowers for others to enjoy? Ought there to be any consideration for letting the native flowers live, at least in wilderness areas, as uninterrupted as possible by human activities?
- Certain rare species of butterflies occur in African hummocks (slightly elevated forested ground) on the grasslands. It was formerly the practice of unscrupulous collectors to go in, collect a few hundred specimens, and then burn out the hummock with the intention of destroying the species, thereby driving up the price of their collections. Is the wrong here only a failing in human excellence, or is there a butterfly good-of-its-kind that constrains permissible human action?

The answers to such questions are admittedly rough. Answers to ethical (and legal and political) questions, indeed to most value

questions, are often rough in the sense that they resist calculation and logical proof. "Did his silence really count as deception?" "Was the actress's reputation much damaged by that sensationalist article, considering how attendance doubled afterward at the play?" But it does not follow that the answers are subjective because they are rough. The deception or damage being discovered is not in the ethicists' or jurists' minds; they seek to estimate what actually took place in the world.

Answers in environmental ethics can be even more rough because the questions are novel. They involve immeasurable and seemingly incommensurable values. An answer must be approximate, but approximation ought not to be confused with mere opinion. Damage to wildflowers, trees, butterflies is real; it actually takes place in the world. We must not assume that there can be no objectivity without commensurability and quantification. To the contrary, what the ethical subject is trying to do, especially in environmental ethics, is to make an objective appraisal of values manifest in the natural world, of what is at stake there, and to place human experiences on that scene as one kind—perhaps the richest but not the only kind—of value that counts morally. In that sense we sometimes have to evaluate (appraise the value of) what we do not personally value (have any preference for, any attraction to). We discover duties, past preferences. That requires a considerable objectivity in ethics and value judgment.

The answers to such questions are also impure. It is frequently impossible to isolate human interests from the interests of sentient animals and organic goods. Mixed motives are always present, and we find it difficult to be sure which elements are—or ought to be—there and in what proportion. Considering their instrumental and systemic importance in ecosystems, it is usually possible to ally preserving plants or lower animals on the side of some humanistic gain that counterbalances, more or less, other humanistic gains to be obtained through destroying such plants or lower animals. But the interdependencies of goods in an ecosystem are like that. Even in traditional ethics, motives are mixed. "Buy a raffle ticket to the charity ball!" "Honesty is the best policy." In environmental ethics the intermixing of human, animal, and plant interests is even more confusing than is that between humans within culture. Humans and the natural world have entwined destinies, as does so much else in an ecosystem. But the fact that components are mixed does not mean that they are not significantly present.

The task of environmental ethics is to identify and adjudicate all these components. Little theory and no formulas exist for doing that now, and we must rely largely on intuitions, trying to judge these critically as best we can in the light of what we are learning in the biological and ecological sciences, improving judgments by what we are coming to experience in more sensitive, less anthropocentric encounters with the natural world. We are doing more objective evaluating, less subjective valuing. Decisions will be made. Because they are borderline decisions, it is better to make them thoughtfully than thoughtlessly.

39. Stephen R. Kellert, *Public Attitudes toward Critical Wildlife and Natural Habitat Issues*, Phase 1 (Washington, D.C.: U.S. Fish and Wildlife Service, 1979), p. 107.

40. Genesis 9.3; Exodus 20.13.

41. José Ortega y Gasset, *Meditations on Hunting* (New York: Scribner, 1972), pp. 110–11.

42. "Maine's Moose Controversy," pamphlet prepared by the National Wildlife Federation, Washington, D.C., 1983.

## CHAPTER 3

1. Lewis Thomas, *The Lives of a Cell* (New York: Bantam Books, 1975), p. 12. Thomas, however, holds that the ant colony, as distinct from individuals, shows intelligence. For an introductory account of the marvels of ant life, see Edward O. Wilson, *Biophilia* (Cambridge, Mass.: Harvard University Press, 1984), pp. 23–37.

2. Peter Singer, *Practical Ethics* (Cambridge: Cambridge University Press, 1979), p. 92, and *Animal Liberation* (New York: New York Review Books, 1975), p. 188.

3. Mark 5.1–20, 11.12–25; Matthew 8.28–34; 21.18–22. The fig tree story was probably originally a parable, and the destruction of the pigs need not have been Jesus' intention but rather a popular misunderstanding of whatever took place. Elsewhere Jesus teaches that God cares for sparrows, lilies, and the grass of the fields, and that humans are worth much more than sparrows. The Noah story is in Genesis 6–9, the quotation from Genesis 9.10. See also Hosea 2.18.

4. The Iowa Pleistocene snail, a relic of preglacial times, survives in a population of a few thousand in northeastern Iowa's nonglaciated driftless area, notably in a cave in Bixby State Park. The species was first described as a fossil and later found to have survived the Ice Age. A search for the extent of this species discovered several new species, also Ice Age relicts. See *Endangered Species Technical Bulletin* 3, no. 8 (August 1978): 5, with further details from Dean Roosa, State Ecologist, State Preserves Advisory Board, Des Moines, Iowa. These species survive by the double good luck that, during the Ice Age, some snails chanced to live in a nonglaciated area and, later, during subsequent climatic warming, some chanced to live in cool environments, like cave entrances, that resembled the Pleistocene period. That they survive by freakish accident can make one wonder about duties to preserve them.

5. Two useful discussions are Kenneth E. Goodpaster, "On Being Morally Considerable," *Journal of Philosophy* 75 (1978): 308–325; Robin Attfield, "The Good of Trees," *Journal of Value Inquiry* 15 (1981): 35–54.

6. W. K. Frankena, "Ethics and the Environment," in K. E. Goodpaster and K. M. Sayre, eds., *Ethics and Problems of the 21st Century* (Notre

Dame, Ind.: University of Notre Dame Press, 1979), pp. 3–20, citation on p. 11).

7. Peter Singer, "All Animals Are Equal," in Tom Regan and Peter Singer, eds., *Animal Rights and Human Obligations* (Englewood Cliffs, N.J.: Prentice-Hall, 1976), pp. 148–62, citation on p. 154.

8. Peter Singer, "Not For Humans Only: The Place of Nonhumans in Environmental Issues," in Goodpaster and Sayre, *Ethics and Problems*, pp. 191–206, citation on p. 200.

9. Frankena, "Ethics and the Environment," p. 11.

10. Joel Feinberg, "The Rights of Animals and Unborn Generations," in William T. Blackstone, ed., *Philosophy and Environmental Crisis* (Athens: University of Georgia Press, 1974), pp. 43–68, citation on p. 53.

11. David W. Prall, *A Study in the Theory of Value*, University of California Publications in Philosophy, vol. 3, no. 2 (Berkeley: University of California Press, 1921), p. 227.

12. Wilhelm Windelband, *An Introduction to Philosophy*, trans. Joseph McCabe (London: T. Fisher Unwin, 1921), p. 215.

13. Ralph Barton Perry, *General Theory of Value* (Cambridge, Mass.: Harvard University Press, 1926, 1954), pp. 125, 115–16.

14. W. M. Urban, "Value and Existence," *Journal of Philosophy, Psychology and Scientific Methods* 13 (1916): 449–465, citation on p. 453.

15. William James, *Varieties of Religious Experience* (New York: Longmans, Green, 1925), p. 150.

16. Perry, *General Theory of Value*, p. 116.

17. J. Baird Callicott, "Non-anthropocentric Value Theory and Environmental Ethics," *American Philosophical Quarterly* 21 (1984): 299–309, citation on p. 305.

18. J. Baird Callicott, "On the Intrinsic Value of Nonhuman Species," in Bryan G. Norton, ed., *The Preservation of Species* (Princeton, N.J.: Princeton University Press, 1986), pp. 138–172, citation on pp. 142–43, 156.

19. Ibid., pp. 143, 160.

20. This kind of account is given by Frankena, "Ethics and the Environment," pp. 13–19, where it is called "inherent value" as opposed to "intrinsic value." See also Robin Attfield (*The Ethics of Environmental Concern* [New York: Columbia University Press, 1983], pp. 151–53), who accepts both "inherent value" and (nonanthropogenic) "intrinsic value."

21. This is the traditional terminology. "No objective existent has strictly intrinsic value; all values in objects are extrinsic only. . . . The goodness of good objects consists in the possibility of their leading to some realization of directly experienced goodness" (C. I. Lewis, *An Analysis of Knowledge and Valuation* [LaSalle, Ill.: Open Court, 1946], p. 387). All that nonsentient organisms offer is the standing possibility of valuation; they do not have intrinsic value, nor do they gain it by human conferral.

22. Thomas E. Hill, Jr., "Ideals of Human Excellence and Preserving Natural Environments," *Environmental Ethics* 5 (1983): 211–24.

23. R. D. Guthrie, "The Ethical Relationship between Humans and Other Organisms," *Perspectives in Biology and Medicine* 11 (1967): 52–62, citation on p. 53.

24. Paul W. Taylor, "In Defense of Biocentrism," *Environmental Ethics* 5 (1983): 237–43, citation on p. 242.

25. Quoted in an Associated Press release from Chicago, 12 February 1984.

## CHAPTER 4

1. John Rawls, *A Theory of Justice* (Cambridge, Mass.: Harvard University Press, 1971), p. 512.

A shorter version of this chapter appeared as "Duties to Endangered Species," *BioScience* 35 (1985): 718–26, © AIBS 1985; reprinted in Rolston, *Philosophy Gone Wild* (Buffalo, N.Y.: Prometheus Books, 1986), pp. 206–20. For an introduction to these issues, see Bryan G. Norton, ed., *Preservation of Species* (Princeton, N.J.: Princeton University Press, 1986).

2. Council on Environmental Quality and the Department of State, *The Global 2000 Report to the President* (Washington, D.C.: U.S. Government Printing Office, 1980), vol. 1, p. 37; vol. 2, pp. 327–33.

3. Endangered Species Act of 1973, sec. 2 (a) (1) Public Law 93-205, 87 Stat. 884.

4. TVA v. Hill, 437 U.S. 153 (1978) at 173, 184, 185.

5. Stuart Hampshire, *Morality and Pessimism* (New York: Cambridge University Press, 1972), pp. 3–4.

6. Joel Feinberg, "The Rights of Animals and Unborn Generations," in W. T. Blackstone, ed., *Philosophy and Environmental Crisis* (Athens: University of Georgia Press, 1974), pp. 43–68, citation on p. 56. Feinberg holds that the duty to preserve species is more important than any rights of individual animals but is not a duty that can properly be attributed to species as a whole.

7. Paul Ehrlich and Anne Ehrlich, *Extinction* (New York: Random House, 1981), pp. xi–xiv.

8. Norman Myers, *The Sinking Ark* (Oxford: Pergamon Press, 1979).

9. "Statement of Thomas Eisner," *Endangered Species Act Oversight*, Hearings, 8 and 10 December 1981 (Washington, D.C.: U.S. Government Printing Office, 1982), pp. 295–97.

10. James Fisher, Noel Simon, Jack Vincent, and IUCN staff, *Wildlife in Danger* (New York: Viking Press, 1969), p. 19.

11. Norman Myers, "Conserving Our Global Stock," *Environment* 21, no. 9 (November 1979): 25–33.