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The Conceptual Foundations of the Land Ethic

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Callicott develops the philosophical implications of Leopold's land ethic. He shows how it is rooted in the eighteenth-century Scottish Sentimentalist School of David Hume and Adam Smith, which contended that ethics is based in natural sympathy or sentiments. Leopold, adding a Darwinian dimension to these thoughts, extended the notion of natural sentiments to ecosystems as the locus of value. Callicott argues that Leopold is not claiming that we should sacrifice basic human needs to the environment, but rather that we should see ourselves as members of a wider ecological community.

The two great cultural advances of the past century were the Darwinian theory and the development of geology. . . . Just as important, however, as the origin of plants, animals, and soil is the question of how they operate as a community. That task has fallen to the new science of ecology, which is daily uncovering a web of interdependencies so intricate as to amaze—were he here—even Darwin himself, who, of all men, should have least cause to tremble before the veil. (Aldo Leopold, fragment 6B16, no. 36, Leopold Papers, University of Wisconsin-Madison Archives)

I

As Wallace Stegner observes, *A Sand County Almanac* is considered "almost a holy book in conservation circles," and Aldo Leopold a prophet, "an American Isaiah." And as Curt Meine points out, "The Land Ethic" is the climactic essay of *Sand County*, "the upshot of 'The Upshot.'" One might, therefore, fairly say that the recommendation and justification of moral obligations on the part of people to nature is what the prophetic *A Sand County Almanac* is all about.

But, with few exceptions, "The Land Ethic" has not been favorably received by contemporary academic philosophers. Most have ignored it. Of those who have not, most have been either nonplussed or hostile. Distinguished Australian philosopher John Passmore dismissed it out of hand, in the first book-length academic discussion of the new philosophical subdiscipline called "environmental ethics." In a more recent and more deliberate discussion, the equally distinguished Australian philosopher H. J. McCloskey patronized Aldo Leopold and saddled "The Land Ethic" with various farfetched "interpretations." He concludes that "there is a real problem in attributing a coherent meaning to Leopold's statements, one that exhibits his land ethic as representing a major advance in ethics rather than a retrogression to a morality of a kind held by various primitive peoples." Echoing McCloskey, English philosopher Robin Attfield went out of his way to impugn the philosophical respectability of "The Land Ethic." And Canadian philosopher L. W. Sumner has called it "dangerous nonsense." Among those philosophers more favorably disposed, "The Land Ethic" has usually been simply quoted, as if it were little more than a noble, but naive, moral plea, altogether lacking a supporting theoretical framework—i.e., foundational principles and premises which lead, by compelling argument, to ethical precepts.

The professional neglect, confusion, and (in some cases) contempt for "The Land Ethic" may, in my judgment, be attributed to three things: (1) Leopold's extremely condensed prose style in which an entire conceptual complex may be conveyed in a few sentences, or even in a phrase or two; (2) his departure from the assumptions and paradigms of contemporary philosophical ethics; and (3) the unsettling practical implications to which a land ethic appears to lead. "The Land Ethic," in short, is, from a philosophical point of view, abbreviated, unfamiliar, and radical.

Here I first examine and elaborate the compactly expressed abstract elements of the land ethic and expose the "logic" which binds them into a proper, but revolutionary, moral theory. I then discuss the controversial features of the land ethic and defend them against actual and potential criticism. I hope to show that the land ethic cannot be ignored as merely the groundless emotive exhortations of a moonstruck conservationist or dismissed as entailing wildly untoward practical consequences. It poses, rather, a serious intellectual challenge to business-as-usual moral philosophy.

II

"The Land Ethic" opens with a charming and poetic evocation of Homer's Greece, the point of which is to suggest that today land is just as routinely and remorselessly enslaved as human beings then were. A panoramic glance backward to our most distant cultural origins, Leopold suggests, reveals a slow but steady moral development over three millennia. More of our relationships and activities ("fields of conduct") have fallen under the aegis of moral principles ("ethical criteria") as civilization has grown and matured. If moral growth and development continue, as not only a synoptic review of history, but recent past experience suggest that it will, future generations will censure today's casual and universal environmental bondage as today we censure the casual and universal human bondage of three thousand years ago.

A cynically inclined critic might scoff at Leopold's sanguine portrayal of human history. Slavery survived as an institution in the "civilized" West, more particularly in the morally self-congratulatory United States, until a mere generation before Leopold's own birth. And Western history from imperial Athens and Rome to the Spanish Inquisition and the Third Reich has been a disgraceful series of wars, persecutions, tyrannies, pogroms, and other atrocities.

The history of moral practice, however, is not identical with the history of moral consciousness. Morality is not descriptive; it is prescriptive or normative. In light of this distinction, it is clear that today, despite rising rates of violent crime in the United States and institutional abuses of human rights in Iran, Chile, Ethiopia, Guatemala, South Africa, and many other places, and despite persistent organized social injustice and oppression in still others, moral consciousness is expanding more rapidly now than ever before. Civil rights, human rights, women's liberation, children's liberation, animal liberation, etc., all indicate, as expressions of newly emergent moral ideals, that ethical consciousness (as distinct from practice) has if anything recently accelerated—thus confirming Leopold's historical observation.

III

Leopold next points out that "this extension of ethics, so far studied only by philosophers"—and

therefore, the implication is clear, not very satisfactorily studied "is actually a process in ecological evolution" (p. 202). What Leopold is saying here, simply, is that we may understand the history of ethics, fancifully alluded to by means of the Odysseus vignette, in biological as well as philosophical terms. From a biological point of view, an ethic is "a limitation on freedom of action in the struggle for existence" (p. 202). . . .

Let me put the problem in perspective. How, . . . did ethics originate and, once in existence, grow in scope and complexity?

The oldest answer in living human memory is theological. God (or the gods) imposes morality on people. And God (or the gods) sanctions it. A most vivid and graphic example of this kind of account occurs in the Bible when Moses goes up on Mount Sinai to receive the Ten Commandments directly from God. That text also clearly illustrates the divine sanctions (plagues, pestilences, droughts, military defeats, etc.) for moral disobedience. Ongoing revelation of the divine will, of course, as handily and as simply explains subsequent moral growth and development.

Western philosophy, on the other hand, is almost unanimous in the opinion that the origin of ethics in human experience has somehow to do with human reason. Reason figures centrally and pivotally in the "social contract theory" of the origin and nature of morals in all its ancient, modern, and contemporary expressions from Protagoras, to Hobbes, to Rawls. Reason is the wellspring of virtue, according to both Plato and Aristotle, and of categorical imperatives, according to Kant. In short, the weight of Western philosophy inclines to the view that we are moral beings because we are rational beings. The ongoing sophistication of reason and the progressive illumination it sheds upon the good and the right explain "the ethical sequence," the historical growth and development of morality, noticed by Leopold.

An evolutionary natural historian, however, cannot be satisfied with either of these general accounts of the origin and development of ethics. The idea that God gave morals to man is ruled out in principle—as any supernatural explanation of a natural phenomenon is ruled out in principle in natural science. And while morality might *in principle* be a function of human reason (as, say, mathematical calculation clearly is), to suppose that it is so *in fact* would be to put the cart before the horse. Reason appears to be a delicate, variable, and recently emerged faculty. It cannot, under any circumstances, be supposed to have evolved in the absence of complex linguistic capabilities which depend, in turn, for their evolution upon a highly developed social matrix. But we cannot have become social beings unless we assumed limitations on freedom of action in the struggle for existence. Hence we must have become ethical before we became rational.

Darwin, probably in consequence of reflections somewhat like these, turned to a minority tradition of modern philosophy for a moral psychology consistent with and useful to a general evolutionary account of ethical phenomena. A century earlier, Scottish philosophers David Hume and Adam Smith had argued that ethics rest upon feelings or "sentiments"—which, to be sure, may be both amplified and informed by reason. And since in the animal kingdom feelings or sentiments are arguably far more common or widespread than reason, they would be a far more likely starting point for an evolutionary account of the origin and growth of ethics.

Darwin's account, to which Leopold unmistakably (if elliptically) alludes in "The Land Ethic," begins with the parental and filial affections common, perhaps, to all mammals. Bonds of affection and sympathy between parents and offspring permitted the formation of small, closely knit social groups, Darwin argued. Should the parental and familial affections bonding family members chance to extend to less closely related individuals, that would permit an enlargement of the family group. And should the newly extended community more successfully defend itself and/or more efficiently provision itself, the inclusive fitness of its members severally would be increased, Darwin reasoned. Thus the more diffuse familial affections, which Darwin (echoing Hume and Smith) calls the "social sentiments," would be spread throughout a population.

Morality, properly speaking—i.e., morality as opposed to mere altruistic instinct—requires, in Darwin's terms, "intellectual powers" sufficient to recall the past and imagine the future, "the power of language" sufficient to express "common opinion," and "habituation" to patterns of behavior deemed, by common opinion, to be socially acceptable and beneficial. Even so, ethics proper, in Darwin's account, remains firmly rooted in moral feelings or social sentiments which were—no less than physical faculties, he expressly avers—naturally selected, by the advantages for survival and especially for successful reproduction, afforded by society.

The protosociobiological perspective on ethical phenomena, to which Leopold as a natural historian was heir, leads him to a generalization which is remarkably explicit in his condensed and often merely resonant rendering of Darwin's more deliberate and extended paradigm: Since "the thing [ethics] has its origin in the tendency of interdependent individuals or groups to evolve modes of co-operation, . . . all ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts" (pp. 202–3).

Hence, we may expect to find that the scope and specific content of ethics will reflect both the perceived boundaries and actual structure or organization of a cooperative community or society. *Ethics and society or community are correlative.* This single, simple principle constitutes a powerful tool for the analysis of moral natural history, for the anticipation of future moral development (including, ultimately, the land ethic), and for systematically deriving the specific precepts, the prescriptions and proscriptions, of an emergent and culturally unprecedented ethic like a land or environmental ethic.

IV

Anthropological studies of ethics reveal that in fact the boundaries of the moral community are generally coextensive with the perceived boundaries of society. And the peculiar (and, from the urbane point of view, sometimes inverted) representation of virtue and vice in tribal society—the virtue, for example, of sharing to the point of personal destitution and the vice of privacy and private property—reflects and fosters the life way of tribal peoples. Darwin, in his leisurely, anecdotal discussion, paints a vivid picture of the intensity, peculiarity, and sharp circumscription of "savage" mores: "A savage will risk his life to save that of a member of the same community, but will be wholly indifferent about a stranger." As Darwin portrays them, tribespeople are at once paragons of virtue "within the limits of the same tribe" and enthusiastic thieves, manslaughterers, and torturers without.

For purposes of more effective defense against common enemies, or because of increased population density, or in response to innovations in subsistence methods and technologies, or for some mix of these or other forces, human societies have grown in extent or scope and changed in form or structure. Nations—like the Iroquois nation or the Sioux nation—came into being upon the merger of previously separate and mutually hostile tribes. Animals and plants were domesticated and erstwhile hunter-gatherers became herders and farmers. Permanent habitations were established. Trade, craft, and (later) industry flourished. With each change in society came corresponding and correlative changes in ethics. The moral community expanded to become co-extensive with the newly drawn boundaries of societies and the representation of virtue and vice, right and wrong, good and evil, changed to accommodate, foster, and preserve the economic and institutional organization of emergent social orders.

Today we are witnessing the painful birth of a human supercommunity, global in scope. Modern transportation and communication technologies, international economic interdependencies, international economic entities, and nuclear arms have brought into being a "global village." It has not yet become fully formed and it is at tension—a very dangerous tension—with its predecessor, the nation-state. Its eventual institutional structure, a global federalism or whatever it may turn out to be, is, at this point, completely unpredictable. Interestingly, however, a corresponding global human ethic—the "human rights" ethic, as it is popularly called—has been more definitely articulated.

Most educated people today pay lip service at least to the ethical precept that all members of the human species, regardless of race, creed, or national origin, are endowed with certain fundamental rights which it is wrong not to respect. According to the evolutionary scenario set out by Darwin, the contemporary moral ideal of human rights is a response to a perception—however vague and indefinite—that mankind worldwide is united into one society, one community, however indeterminate or yet institutionally unorganized. As Darwin presciently wrote:

> As man advances in civilization, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him. This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races. If, indeed, such men are separated from him by great differences of appearance or habits, experience unfortunately shows us how long it is, before we look at them as our fellow-creatures.

According to Leopold, the next step in this sequence beyond the still incomplete ethic of universal humanity, a step that is clearly discernible on the horizon, is the land ethic. The "community concept" has, so far, propelled the development of ethics from the savage clan to the family of man. "The land ethic simply enlarges the boundary of the community to include soils, waters, plants, and animals, or collectively: the land" (p. 204).

As the foreword to *Sand County* makes plain, the overarching thematic principle of the book is the inculcation of the idea—through narrative description, discursive exposition, abstractive generalization, and occasional preachment—"that land is a community" (viii). The community concept is "the basic concept of ecology" (viii). Once land is popularly perceived as a biotic community—as it is professionally perceived in ecology—a correlative land ethic will emerge in the collective cultural consciousness.

V

Although anticipated as far back as the mid-eighteenth century—in the notion of an "economy of nature"—the concept of the biotic community was more fully and deliberately developed as a working model or paradigm for ecology by Charles Elton in the 1920s. The natural world is organized as an intricate corporate society in which plants and animals occupy "niches," or as Elton alternatively called them, "roles" or "professions," in the economy of nature. As in a feudal community, little or no socioeconomic mobility (upward or otherwise) exists in the biotic community. One is born to one's trade.

Human society, Leopold argues, is founded, in large part, upon mutual security and economic interdependency and preserved only by limitations on freedom of action in the struggle for existence—that is, by ethical constraints. Since the biotic community exhibits, as modern ecology reveals, an analogous structure, it too can be preserved, given the newly amplified impact of "mechanized man," only by analogous limitations on freedom of action—that is, by a land ethic (viii). A land ethic, furthermore, is not only "an ecological necessity," but an "evolutionary possibility" because a moral response to the natural environment—Darwin's social sympathies, sentiments, and instincts translated and codified into a body of principles and precepts—would be automatically triggered in human beings by ecology's social representation of nature (p. 203).

Therefore, the key to the emergence of a land ethic is, simply, universal ecological literacy.

VI

The land ethic rests upon three scientific cornerstones: (1) evolutionary and (2) ecological biology set in a background of (3) Copernican astronomy.

Evolutionary theory provides the conceptual link between ethics and social organization and development. It provides a sense of "kinship with fellow-creatures" as well, "fellow-voyagers" with us in the "odyssey of evolution" (p. 109). It establishes a diachronic link between people and nonhuman nature.

Ecological theory provides a synchronic link—the community concept—a sense of social integration of human and nonhuman nature. Human beings, plants, animals, soils, and waters are "all interlocked in one humming community of cooperations and competitions, one biota." The simplest reason, to paraphrase Darwin, should, therefore, tell each individual that he or she ought to extend his or her social instincts and sympathies to all the members of the biotic community though different from him or her in appearance or habits.

And although Leopold never directly mentions it in *A Sand County Almanac*, the Copernican perspective, the perception of the Earth as "a small planet" in an immense and utterly hostile universe beyond, contributes, perhaps subconsciously, but nevertheless very powerfully, to our sense of kinship, community, and interdependence with fellow denizens of the Earth household. It scales the Earth down to something like a cozy island paradise in a desert ocean.

Here in outline, then, are the conceptual and logical foundations of the land ethic: Its conceptual elements are a Copernican cosmology, a Darwinian protosociobiological natural history of ethics, Darwinian ties of kinship among all forms of life on Earth, and an Eltonian model of the structure of biocenoses all overlaid on a Humean–Smithian moral psychology. Its logic is that natural selection has endowed human beings with an affective moral response to perceived bonds of kinship and community membership and identity; that today the natural environment, the land, is represented as a community, the biotic community; and that, therefore, an environmental or land ethic is both possible—the biopsychological and cognitive conditions are in place—and necessary, since human beings collectively have acquired the power to destroy the integrity, diversity, and stability of the environing and supporting economy of nature. In the remainder of this essay I discuss special features and problems of the land ethic germane to moral philosophy.

The most salient feature of Leopold's land ethic is its provision of what Kenneth Goodpaster has carefully called "moral considerability" for the biotic community per se, not just for fellow members of the biotic community:

> In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, *and also respect for the community as such.* (p. 204, emphasis added)

The land ethic, thus, has a holistic as well as an individualistic cast.

Indeed, as "The Land Ethic" develops, the focus of moral concern shifts gradually away from plants, animals, soils, and waters severally to the biotic community collectively. Toward the middle, in the subsection called "Substitutes for a Land Ethic," Leopold invokes the "biotic rights" of *species*—as the context indicates—of wildflowers, songbirds, and predators. In "The Out-look," the climactic section of "The Land Ethic," nonhuman natural entities, first appearing as fellow members, then considered in profile as species, are not so much as mentioned in what might be called the "summary moral maxim" of the land ethic: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (pp. 224–25).

By this measure of right and wrong, not only would it be wrong for a farmer, in the interest of higher profits, to clear the woods off a 75 percent slope, turn his cows into the clearing and dump its rainfall, rocks, and soil into the community creek, it would also be wrong for the federal fish and wildlife agency, in the interest of individual animal welfare, to permit populations of deer, rabbits, feral burros, or whatever to increase unchecked and thus to threaten the integrity, stability, and beauty of the biotic communities of which they are members. The land ethic not only provides moral

considerability for the biotic community per se, but ethical consideration of its individual members is preempted by concern for the preservation of the integrity, stability, and beauty of the biotic community. The land ethic, thus, not only has a holistic aspect; it is holistic with a vengeance.

The holism of the land ethic, more than any other feature, sets it apart from the predominant paradigm of modern moral philosophy. It is, therefore, the feature of the land ethic which requires the most patient theoretical analysis and the most sensitive practical interpretation.

VII

As Kenneth Goodpaster pointed out, mainstream modern ethical philosophy has taken egoism as its point of departure and reached a wider circle of moral entitlement by a process of generalization: I am sure that *I*, the enveloped ego, am intrinsically or inherently valuable and thus that *my* interests ought to be considered, taken into account, by "others" when their actions may substantively affect *me*. My own claim to moral consideration, according to the conventional wisdom, ultimately rests upon a psychological capacity—rationality or sentiency were the classical candidates of Kant and Bentham, respectively—which is arguably valuable in itself and which thus qualifies *me* for moral standing. However, then I am forced grudgingly to grant the same moral consideration I demand from others, on this basis, to those others who can also claim to possess the same general psychological characteristic.

A criterion of moral value and consideration is thus identified. Goodpaster convincingly argues that mainstream modern moral theory is based, when all the learned dust has settled, on this simple paradigm of ethical justification and logic exemplified by the Benthamic and Kantian prototypes. If the criterion of moral values and consideration is pitched low enough—as it is in Bentham's criterion of sentiency—a wide variety of animals are admitted to moral entitlement. If the criterion of moral value and consideration is pushed lower still—as it is in Albert Schweitzer's reverence-for-life ethic—all minimally conative things (plants as well as animals) would be extended moral considerability. The contemporary animal liberation/rights, and reverence-for-life/life-principle ethics are, at bottom, simply direct applications of the modern classical paradigm of moral argument. But this standard modern model of ethical theory provides no possibility whatever for the moral consideration of wholes—of threatened population of animals and plants, or of endemic, rare, or endangered species, or of biotic communities, or most expansively, of the biosphere in its totality—since wholes per se have no psychological experience of any kind. Because mainstream modern moral theory has been "psychocentric," it has been radically and intractably individualistic or "atomistic" in its fundamental theoretical orientation.

Hume, Smith, and Darwin diverged from the prevailing theoretical model by recognizing that altruism is as fundamental and autochthonous in human nature as is egoism. According to their analysis, moral value is not identified with a natural quality objectively present in morally considerable beings—as reason and/or sentiency is objectively present in people and/or animals—it is, as it were, projected by valuing subjects.

Hume and Darwin, furthermore, recognize inborn moral sentiments which have society as such as their natural object. Hume insists that "we must renounce the theory which accounts for every moral sentiment by the principle of self-love. We must adopt a more *public affection* and allow that the *interests of society* are not, *even on their own account*, entirely indifferent to us." And Darwin, somewhat ironically (since "Darwinian evolution" very often means natural selection operating exclusively with respect to individuals), sometimes writes as if morality had no other object than the commonweal, the welfare of the community as a corporate entity:

> We have now seen that actions are regarded by savages, and were probably so regarded by primeval man, as good or bad, solely as they obviously affect the welfare of the tribe,—not that of the species, nor that of the individual member of the tribe. This conclusion agrees well with the belief that the so-called moral sense is aboriginally derived from social instincts, for both relate at first exclusively to the community.

Theoretically then, the biotic community owns what Leopold, in the lead paragraph of "The Outlook," calls "value in the philosophical sense"—i.e., direct moral considerability—because it is a newly discovered proper object of a specially evolved "public affection" or "moral sense" which all psychologically normal human beings have inherited from a long line of ancestral social primates (p. 223).

VIII

In the land ethic, as in all earlier stages of social–ethical evolution, there exists a tension between the good of the community as a whole and the "rights" of its individual members considered severally. . . .

In any case, the conceptual foundations of the land ethic provide a well-formed, self-consistent theoretical basis for including both fellow members of the biotic community and the biotic community itself (considered as a corporate entity) within the purview of morals. The preemptive emphasis, however, on the welfare of the community as a whole, in Leopold's articulation of the land ethic, while certainly consistent with its Humean–Darwinian theoretical foundations, is not determined by them alone. The overriding holism of the land ethic results, rather, more from the way our moral sensibilities are informed by ecology.

IX

Ecological thought, historically, has tended to be holistic in outlook. Ecology is the study of the relationships of organisms to one another and to the elemental environment. These relationships bind the *relata*—plants, animals, soils, and waters—into a seamless fabric. The ontological primacy of objects and the ontological subordination of relationships, characteristic of classical Western science, is, in fact, reversed in ecology. Ecological relationships determine the nature of organisms rather than the other way around. A species is what it is because it has adapted to a niche in the ecosystem. The whole, the system itself, thus, literally and quite straightforwardly shapes and forms its component species.

Antedating Charles Elton's community model of ecology was F. E. Clements and S. A. Forbes's organism model. Plants and animals, soils and waters, according to this paradigm, are integrated into one superorganism. Species are, as it were, its organs; specimens its cells. Although Elton's community paradigm (later modified, as we shall see, by Arthur Tansley's ecosystem idea) is the principal and morally fertile ecological concept of "The Land Ethic," the more radically holistic superorganism paradigm of Clements and Forbes resonates in "The Land Ethic" as an audible overtone. In the peroration of "Land Health and the A-B Cleavage," for example, which immediately precedes "The Outlook," Leopold insists that

> in all of these cleavages, we see repeated the same basic paradoxes: man the conqueror *versus* man the biotic citizen; science the sharpener of his sword *versus* science the searchlight on his universe; land the slave and servant *versus* land the collective organism. (p. 223)

And on more than one occasion Leopold, in the latter quarter of "The Land Ethic," talks about the "health" and "disease" of the land—terms which are at once descriptive and normative and which, taken literally, characterize only organisms proper.

In an early essay, "Some Fundamentals of Conservation in the Southwest," Leopold speculatively flirted with the intensely holistic superorganism model of the environment as a paradigm pregnant with moral implications. . . .

Had Leopold retained this overall theoretical approach in "The Land Ethic," the land ethic would doubtless have enjoyed more critical

attention from philosophers. The moral foundations of a land or, as he might then have called it, "earth" ethic would rest upon the hypothesis that the Earth is alive and ensouled—possessing inherent psychological characteristics, logically parallel to reason and sentiency. This notion of a conative whole Earth could plausibly have served as a general criterion of intrinsic worth and moral considerability, in the familiar format of mainstream moral thought.

Part of the reason, therefore, that "The Land Ethic" emphasizes more and more the integrity, stability, and beauty of the environment as a whole, and less and less the biotic right of individual plants and animals to life, liberty, and the pursuit of happiness, is that the superorganism ecological paradigm invites one, much more than does the community paradigm, to hypostatize, to reify the whole, and to subordinate its individual members.

In any case, as we see, rereading "The Land Ethic" in light of "Some Fundamentals," the whole Earth organism image of nature is vestigially present in Leopold's later thinking. Leopold may have abandoned the "earth ethic" because ecology had abandoned the organism analogy in favor of the community analogy as a working theoretical paradigm. And the community model was more suitably given moral implications by the social/sentimental ethical natural history of Hume and Darwin.

Meanwhile, the biotic community ecological paradigm itself had acquired, by the late thirties and forties, a more holistic cast of its own. In 1935 British ecologist Arthur Tansley pointed out that from the perspective of physics the "currency" of the "economy of nature" is energy. Tansley suggested that Elton's qualitative and descriptive food chains, food webs, trophic niches, and biosocial professions could be quantitatively expressed by means of a thermodynamic flow model. It is Tansley's state-of-the-art thermodynamic paradigm of the environment that Leopold explicitly sets out as a "mental image of land" in relation to which "we can be ethical" (p. 214). And it is the ecosystemic model of land which informs the cardinal practical precepts of the land ethic.

"The Land Pyramid" is the pivotal section of "The Land Ethic"—the section which effects a complete transition from concern for "fellow-members" to the "community as such." It is also its longest and most technical section. A description of the "ecosystem" (Tansley's deliberately nonmetaphorical term) begins with the sun. Solar energy "flows through a circuit called the biota" (p. 215). It enters the biota through the leaves of green plants and courses through plant-eating animals, and then on to omnivores and carnivores. At last the tiny fraction of solar energy converted to biomass by green plants remaining in the corpse of a predator, animal feces, plant detritus, or other dead organic material is garnered by decomposers—worms, fungi, and bacteria. They recycle the participating elements and degrade into entropic equilibrium any remaining energy. According to this paradigm

> land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil. The circuit is not closed; . . . but it is a sustained circuit, like a slowly augmented revolving fund of life. (p. 216)

In this exceedingly abstract (albeit poetically expressed) model of nature, process precedes substance and energy is more fundamental than matter. Individual plants and animals become less autonomous beings than ephemeral structures in a patterned flux of energy. According to Yale biophysicist Harold Morowitz,

> viewed from the point of view of modern [ecology], each living thing . . . is a dissipative structure, that is it does not endure in and of itself but only as a result of the continual flow of energy in the system. An example might be instructive. Consider a vortex in a stream of flowing water. The vortex is a structure made of an ever-changing group of water molecules. It does not exist as an entity in the classical Western sense; it exists only because of the flow of water through the stream. In the same sense, the structures out of which biological entities are made are transient, unstable entities with constantly changing molecules, dependent on a constant flow of energy from food in order to maintain form and structure. . . . From this point of view the reality of individuals is problematic because they do not exist per se but only as local perturbations in this universal energy flow.

Though less bluntly stated and made more palatable by the unfailing charm of his prose, Leopold's proffered mental image of land is just as expansive, systemic, and distanced as Morowitz's. The maintenance of "the complex structure of the land and its smooth functioning as an energy unit" emerges in "The Land Pyramid" as the *summum bonum* of the land ethic (p. 216).

X

From this good Leopold derives several practical principles slightly less general, and therefore more substantive, than the summary moral maxim of the land ethic distilled in "The Outlook." "The trend of evolution [not its "goal," since evolution is ateleological] is to elaborate and diversify the biota" (p. 216). Hence, among our cardinal duties is the duty to preserve what species we can, especially those at the apex of the pyramid—the top carnivores. "In the beginning, the pyramid of life was low and squat; the food chains short and simple. Evolution has added layer after layer, link after link" (pp. 215–16). Human activities today, especially those like systematic deforestation in the tropics, resulting in abrupt massive extinctions of species, are in effect "devolutionary"; they flatten the biotic pyramid; they choke off some of the channels and gorge others (those which terminate in our own species).

The land ethic does not enshrine the ecological status quo and devalue the dynamic dimension of nature. Leopold explains that "evolution is a long series of self-induced changes, the net result of which has been to elaborate the flow mechanism and to lengthen the circuit. Evolutionary changes, however, are usually slow and local. Man's invention of tools has enabled him to make changes of unprecedented violence, rapidity, and scope" (pp. 216–17). "Natural" species extinction, i.e., species extinction in the normal course of evolution, occurs when a species is replaced by competitive exclusion or evolves into another form. Normally speciation outpaces extinction. Mankind inherited a richer, more diverse world than had ever existed before in the 3.5 billion-year odyssey of life on Earth. What is wrong with anthropogenic species extirpation and extinction is the *rate* at which it is occurring and the *result*: biological impoverishment instead of enrichment.

Leopold goes on here to condemn, in terms of its impact on the ecosystem, "the world-wide pooling of faunas and floras," that is, the indiscriminate introduction of exotic and domestic species and the dislocation of native and endemic species, mining the soil for its stored biotic energy, leading ultimately to diminished fertility and to erosion; and polluting and damming water courses (p. 217).

According to the land ethic, therefore: Thou shalt not extirpate or render species extinct; thou shalt exercise great caution in introducing exotic and domestic species into local ecosystems, in extracting energy from the soil and releasing it into the biota, and in damming or polluting water courses; and thou shalt be especially solicitous of predatory birds and mammals. Here in brief are the express moral precepts of the land ethic. They are all explicitly informed—not to say derived—from the energy circuit model of the environment.

XI

The living channels—"food chains"—through which energy courses are composed of individual plants and animals. A central, stark fact lies at the heart of ecological processes: Energy, the currency of the economy nature, passes from one organism to another, not from hand to hand, like coined

money, but, so to speak, from stomach to stomach. Eating *and being eaten*, living *and dying* are what make the biotic community hum.

The precepts of the land ethic, like those of all previous accretions, reflect and reinforce the structure of the community to which it is correlative. Trophic asymmetries constitute the kernel of the biotic community. It seems unjust, unfair. But that is how the economy of nature is organized (and has been for thousands of millions of years). The land ethic, thus, affirms as good, and strives to preserve, the very inequities in nature whose social counterparts in human communities are condemned as bad and would be eradicated by familiar social ethics, especially by the more recent Christian and secular egalitarian exemplars. A "right to life" for individual members is not consistent with the structure of the biotic community and hence is not mandated by the land ethic. This disparity between the land ethic and its more familiar social precedents contributes to the apparent devaluation of individual members of the biotic community and augments and reinforces the tendency of the land ethic, driven by the systemic vision of ecology, toward a more holistic or community-per-se orientation.

Of the few moral philosophers who have given the land ethic a moment's serious thought, most have regarded it with horror because of its emphasis on the good of the community and its deemphasis on the welfare of individual members of the community. Not only are other sentient creatures members of the biotic community and subordinate to its integrity, beauty, and stability; so are *we*. Thus, if it is not only morally permissible, from the point of view of the land ethic, but morally required, that members of certain species be abandoned to predation and other vicissitudes of wild life or even deliberately culled (as in the case of alert and sentient whitetail deer) for the sake of the integrity, stability, and beauty of the biotic community, how can we consistently exempt ourselves from a similar draconian regime? We too are only "plain members and citizens" of the biotic community. And our global population is growing unchecked. According to William Aiken, from the point of view of the land ethic, therefore, "massive human diebacks would be good. It is our duty to cause them. It is our species' duty, relative to the whole, to eliminate 90 percent of our numbers." Thus, according to Tom Regan, the land ethic is a clear case of "environmental fascism."

Of course Leopold never intended the land ethic to have either inhumane or antihumanitarian implications or consequences. But whether he intended them or not, a logically consistent deduction from the theoretical premises of the land ethic might force such untoward conclusions. And given their magnitude and monstrosity, these derivations would constitute a *reductio ad absurdum* of the whole land ethic enterprise and entrench and reinforce our current human chauvinism and moral alienation from nature. If this is what membership in the biotic community entails, then all but the most radical misanthropes would surely want to opt out.

XII

The land ethic, happily, implies neither inhumane nor inhuman consequences. That some philosophers think it must follows more from their own theoretical presuppositions than from the theoretical elements of the land ethic itself. Conventional modern ethical theory rests moral entitlement, as I earlier pointed out, on a criterion or qualification. If a candidate meets the criterion—rationality or sentiency are the most commonly posited—he, she, or it is entitled to equal moral standing with others who possess the same qualification in equal degree. Hence, reasoning in this philosophically orthodox way, and forcing Leopold's theory to conform: if human beings are, with other animals, plants, soils, and waters, equally members of the biotic community, and if community membership is the criterion of equal moral consideration, then not only do animals, plants, soils, and waters have equal (highly attenuated) "rights," but human beings are equally subject to the same subordination of individual welfare and rights in respect to the good of the community as a whole.

But the land ethic, as I have been at pains to point out, is heir to a line of moral analysis different

from that institutionalized in contemporary moral philosophy. From the biosocial evolutionary analysis of ethics upon which Leopold builds the land ethic, it (the land ethic) neither replaces nor overrides previous accretions. Prior moral sensibilities and obligations attendant upon and correlative to prior strata of social involvement remain operative and preemptive.

Being citizens of the United States, or the United Kingdom, or the Soviet Union, or Venezuela, or some other nation-state, and therefore having national obligations and patriotic duties, does not mean that we are not also members of smaller communities or social groups—cities or townships, neighborhoods, and families—or that we are relieved of the peculiar moral responsibilities attendant upon and correlative to these memberships as well. Similarly, our recognition of the biotic community and our immersion in it does not imply that we do not also remain members of the human community—the "family of man" or "global village"—or that we are relieved of the attendant and correlative moral responsibilities of that membership, among them to respect universal human rights and uphold the principles of individual human worth and dignity. The biosocial development of morality does not grow in extent like an expanding balloon, leaving no trace of its previous boundaries, so much as like the circumference of a tree. Each emergent, and larger, social unit is layered over the more primitive, and intimate, ones.

Moreover, as a general rule, the duties correlative to the inner social circles to which we belong eclipse those correlative to the rings farther from the heartwood when conflicts arise. Consider our moral revulsion when zealous ideological nationalists encourage children to turn their parents in to the authorities if their parents dissent from the political or economic doctrines of the ruling party. A zealous environmentalist who advocated visiting war, famine, or pestilence on human populations (those existing somewhere else, of course) in the name of the integrity, beauty, and stability of the biotic community would be similarly perverse. Family obligations in general come before nationalistic duties and humanitarian obligations in general come before environmental duties. The land ethic, therefore, is not draconian or fascist. It does not cancel human morality. The land ethic may, however, as with any new accretion, demand choices which affect, in turn, the demands of the more interior social–ethical circles. Taxes and the military draft may conflict with family-level obligations. While the land ethic, certainly, does not cancel human morality, neither does it leave it unaffected.

Nor is the land ethic inhumane. Nonhuman fellow members of the biotic community have no "human rights," because they are not, by definition, members of the human community. As fellow members of the biotic community, however, they deserve respect.

How exactly to express or manifest respect, while at the same time abandoning our fellow members of the biotic community to their several fates or even actively consuming them for our own needs (and wants), or deliberately making them casualties of wildlife management for ecological integrity, is a difficult and delicate question.

Fortunately, American Indian and other traditional patterns of human–nature interaction provide rich and detailed models. Algonkian woodland peoples, for instance, represented animals, plants, birds, waters, and minerals as other-than-human persons engaged in reciprocal, mutually beneficial socioeconomic intercourse with human beings. Tokens of payment, together with expressions of apology, were routinely offered to the beings whom it was necessary for these Indians to exploit. Care not to waste the usable parts and care in the disposal of unusable animal and plant remains were also an aspect of the respectful, albeit necessarily consumptive, Algonkian relationship with fellow members of the land community. As I have more fully argued elsewhere, the Algonkian portrayal of human–nature relationships is, indeed, although certainly different in specifics, identical in abstract form to that recommended by Leopold in the land ethic.... Is the land ethic prudential or deontological? Is the land ethic, in other words, a matter of enlightened (collective, human) self-interest, or does it genuinely admit nonhuman natural entities and nature as a whole to true moral standing?

The conceptual foundations of the land ethic, as I have here set them out, and much of Leopold's hortatory rhetoric, would certainly indicate that the land ethic is deontological (or duty oriented) rather than prudential. In the section significantly titled "The Ecological Conscience," Leopold complains that the then-current conservation philosophy is inadequate because "it defines no right or wrong, assigns no obligation, calls for no sacrifice, implies no change in the current philosophy of values. In respect of land-use, it urges *only* enlightened self-interest" (pp. 207–8, emphasis added). Clearly, Leopold himself thinks that the land ethic goes beyond prudence. In this section he disparages mere "self-interest" two more times, and concludes that "obligations have no meaning without conscience, and the problem we face is the extension of the social conscience from people to land" (p. 209).

In the next section, "Substitutes for a Land Ethic," he mentions rights twice—the "biotic right" of birds to continuance and the absence of a right on the part of human special interest to exterminate predators.

Finally, the first sentences of "The Outlook" read: "It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value. By value, I of course mean something far broader than mere economic value; I mean value in the philosophical sense" (p. 223). By "value in the philosophical sense," Leopold can only mean what philosophers more technically call "intrinsic value" or "inherent worth." Something that has intrinsic value or inherent worth is valuable in and of itself, not because of what it can do for us. "Obligation," "sacrifice," "a conscience," "respect," the ascription of rights, and intrinsic value—all of these are consistently opposed to self-interest and seem to indicate decisively that the land ethic is of the deontological type.

Some philosophers, however, have seen it differently. Scott Lehmann, for example, writes,

> Although Leopold claims for communities of plants and animals a "right to continued existence," his argument is homocentric, appealing to the human stake in preservation. Basically it is an argument from enlightened self-interest, where the self in question is not an individual human being but humanity—present and future—as a whole.

Lehmann's claim has some merits, even though it flies in the face of Leopold's express commitments. Leopold does frequently lapse into the language of (collective, long-range, human) self-interest. Early on, for example, he remarks, "in human history, we have learned (I hope) that the conqueror role is eventually *self*-defeating" (p. 204, emphasis added). And later, of the 95 percent of Wisconsin's species which cannot be "sold, fed, eaten, or otherwise put to economic use," Leopold reminds us that "these creatures are members of the biotic community, and if (as I believe) its stability depends on its integrity, they are entitled to continuance" (p. 210). The implication is clear: the economic 5 percent cannot survive if a significant portion of the uneconomic 95 percent are extirpated; nor may *we*, it goes without saying, survive without these "resources."

Leopold, in fact, seems to be consciously aware of this moral paradox. Consistent with the biosocial foundations of his theory, he expresses it in sociobiological terms:

> An ethic may be regarded as a mode of guidance for meeting ecological situations so new or intricate, or involving such deferred reactions, that the path of social expediency is not discernible to the average individual. Animal instincts are modes of guidance for the individual in meeting such situations. Ethics are possibly a kind of community instinct in-the-making. (p. 203)

From an objective, descriptive sociobiological point of view, ethics evolve because they contribute to the inclusive fitness of their carriers (or, more reductively still, to the multiplication of their carriers' genes); they are expedient. However, the path to self-interest (or to the self-interest of the selfish gene) is not discernible to the participating individuals (nor, certainly, to their genes). Hence, ethics are grounded in instinctive feeling—love, sympathy, respect—not in self-conscious calculating intelligence. Somewhat like the paradox of hedonism—the notion that one cannot achieve happiness if one directly pursues happiness per se and not other things—one can only secure self-interest by putting the interests of others on a par with one's own (in this case long-range collective human self-interest and the interest of other forms of life and of the biotic community per se).

So, is the land ethic deontological or prudential, after all? It is both—self-consistently both—depending upon one's point of view. From the inside, from the lived, felt point of view of the community member with evolved moral sensibilities, it is deontological. It involves an affective–cognitive posture of genuine love, respect, admiration, obligation, self-sacrifice, conscience, duty, and the ascription of intrinsic value and biotic rights. From the outside, from the objective and analytic scientific point of view, it is prudential. "There is no other way for land to survive the impact of mechanized man," nor, therefore, for mechanized man to survive his own impact upon the land (p. viii).

STUDY QUESTIONS

1. What are three reasons for the professional neglect and confusion regarding Leopold's land ethic, according to Callicott?
2. How is the land ethic different from classical and mainstream modern ethical philosophy, such as Kant's and Bentham's systems? (Take note of Goodpaster's criticisms, on which Callicott draws here.)
3. Does Callicott successfully argue for the natural basis of value in the interaction between valuers (humans) and the environment? Can you see any problems with this view?
4. Leopold wrote, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." This passage has been interpreted by some to mean that humans should be sacrificed if they interfere with the good of the biotic community. Callicott tries to modify this statement, removing the misanthropic implications. Go over his defense. Has Callicott strengthened or weakened Leopold's land ethic by modifying it as he does?

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Eco-interests

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Johnson, Lawrence E. 1991. "Eco-Interests" in *A Morally Deep World: An Essay on Moral Significance and Environmental Ethics*. Cambridge: Cambridge University Press, pp. 202–229.