

BOOK REVIEWS

Andrew Brennan. *Thinking about Nature: An Investigation of Nature, Value, and Ecology*. London: Routledge; Athens: University of Georgia Press, 1988. xiii, 235 pages. \$30.00, cloth; \$15.00, paper.

In the last few years the literature in environmental philosophy has been surprisingly vigorous, with nearly two dozen book-length works published or in press. Andrew Brennan, a Scottish philosopher at the University of Stirling, here contributes perhaps the most careful of them all in terms of keeping philosophy ecologically honest. He gives far more attention to the literature of scientific ecology than do most others, with keen attention to just what sort of environmental ethics has ecological support.

Brennan calls his position *eco-humanism* and concludes that scientific ecology can indeed shape an ethic of respect for nature. "Eco-humanism claims that, among the relevant frameworks that political and ethical thinking ought to use is one deriving from scientific ecology" (p. 6). Aphoristically put, "what we are and ought to be is partly determined by where we are" (p. 7). "My business in this book is to consider our attitude to nature, the moral standing, if any, of other natural things apart from ourselves, and the question of whether the biological sciences—in particular ecology—can give us the insight or information that may help us plot a sensible strategy for our future dealings with nature" (p. 12).

Brennan is skeptical of holistic and anti-reductionistic approaches because of their "somewhat mystical appeals to holism and a dismissal of reductionist explanations" (p. 28). He considers J. Baird Callicott (pp. 28–29, 34–35, 143–144), Arne Naess and the deep ecologists (pp. 28–29, 139–145), Fritjof Capra (pp. 33–35), and others who have a "mistaken conception of ecology as a science and of the metaphysics that is associated with it" (p. 29). Brennan wants an ethic derived from "*scientific* ecology" as contrasted with "*metaphysical* ecology" (p. 31).

Capra's view is based on particle physics with its highly abstract mathematical theories. In the realm of quarks and S-matrices (the latter now somewhat out of vogue), one can legitimately wonder whether physicists are not getting back as much reflections of their minds (idealism) as representations of nature (realism). "The observed patterns of matter are reflections of patterns of mind" (p. 34, quoting Capra; cf. p. 65). Capra joins his Kantian philosophy of physics with Eastern mysticism and advocates a philosophical idealism. According to Brennan, he gets into trouble when, switching levels from quarks to ecosystems, he invokes scientific ecology to further support this idealism, claiming not only a

holism that makes the fauna, flora, and landscape in an ecosystem interdependent, but also joining mind to matter, self to world, humans to nature in a unified whole.

Callicott also falls into this mystical linkage of quantum physics to ecology, self to world—really a nondiscriminating fusion of the subjective self and the objective world that claims to solve the problem of intrinsic value in nature by dissolving the boundary between humans and nature. “The self comes to be extended to embrace the things around it; not all my parts are under my skin. But if I am valuable, then so too is the system within which I exist, for I am—in some mysterious way—one with it.” Thus, although we “overcome the old problem of how to find value outside the valuing subject,” that gain is at the price of “metaphysical nonsense” (p. 143).

In truth, Brennan retorts, scientific ecology supports nothing of this kind. Ecosystem processes are what they are objectively and independently of human observers; there is nothing in the phenomena that ecology describes to support either a Kantian epistemology or idealist metaphysics at the noumenal level. Nor is there any way to solve the problem of objectivity and subjectivity in value by taking a cue from quantum physics and fusing intrinsic value in the human self with intrinsic value in the natural environment (pp. 34–35). Here Brennan is right and his caution important. If quarks exist, the Yellowstone ecosystem is made of quarks, but the levels are so vastly different that we cannot generalize from observer dependent phenomena in quantum physics to the relation of the human self to the Yellowstone ecosystem. If there is an interdependence in an ecosystem that funds ethics, this will have to be shown without benefit of physics.

Capra is a physicist, not an ecologist; he uses ecology loosely as additional support for a position really worked out by crossing particle physics with Oriental mysticism. On that account, though guilty of Brennan’s charges, he is perhaps not the most felicitous choice of targets for criticism. Still, he illustrates a tendency frequently found among metaphysical ecologists, elsewhere illustrated among the deep ecologists, to fall into an easy, vague holism.

In contrast to metaphysical holism, scientific ecology is epistemologically reductionist and realist. Although the field of natural history is complex, scientific ecology succeeds by analysis of parts. By observation and experiment it isolates interacting units and describes and explains the function of the whole by understanding these parts. Scientific ecology is also metaphysically “physicalist” (p. 82), in contrast to the philosophical idealists Brennan criticizes. Nevertheless, Brennan argues, this “modest materialism” (p. 77), with its epistemological reduction, does not imply “ontological reduction” (p. 72). “Successful reduction need not have any ontological consequences” (pp. 77–78; cf. pp. 82–83, 87). “In order to be a physicalist, one does not need to hold that certain categories of physical things are more fundamental than others” (p. 82). “Wholes are just as

real as their parts—no more so and no less so.” “It would be odd to argue that acorns and carburetors are more fundamental than the things of which they are parts.” Logically and ecologically “we abandon the doctrine of the ontological priority of parts” (p. 84). Although ecosystems are composed of atoms and organisms, ecosystems are as real as atoms or organisms.

This conclusion does not yet answer the question whether an ecosystem is a structurally, causally integrated, unified system that is more than a sum of its parts. “One of the important problems facing the philosophy of ecology . . . is the question of whether ecosystems are items that are more like trees, or items that are more like a sum of fairly unrelated parts” (p. 83). “Certain wholes, those that are unified and causally integrated, will be more than merely the sum of their parts, for they have properties—powers—which their parts lack, that is, properties that are not inherited from any part on its own” (p. 87). These are “emergent” properties (p. 88).

Indeed, adaptive fitness, the central principle of evolutionary theory, is senseless in physics or chemistry. Some think that, though distinctive to biology, the concept of fitness operates at the organismic level, not at a distinctive ecosystem level, but Brennan holds that natural selection cannot be understood outside ecosystems. Likewise, the concepts of niche, succession, and food web are ecosystemic, not organismic concepts. Consider also Gause’s principle of competitive exclusion, one of the traditional “laws” of ecology. “When two competing species coexist in a stable environment, then they do so as a result of niche differentiation; if the habitat precludes niche differentiation, however, then one of the competitors will eliminate the other” (p. 50). That certainly seems to posit structural levels beyond any examined in organismic biology, to say nothing of physics or chemistry.

Scientific ecologists have covered a spectrum in their analysis of what an ecosystem is. S. A. Forbes and F. E. Clements held that a plant community is “a complex organism” or “superorganism,” and thus highly integrated and structured; H. A. Gleason insisted that a plant community was “merely the fortuitous juxtaposition of plants,” and thus quite unstructured (pp. 45–47). Recent ecologists have a tendency to treat ecosystems as stochastic processes, but if “communities are not structured according to any principles other than those governing random walks or distributions of playing cards,” then those who try to base ethics on ecology have been misled (p. 44). Although stochastic processes are certainly present in ecosystems, this does not mean ecosystems have no distinctive, emergent structures. Because Brennan is a determinist (a soft determinist with regard to human decisions, p. 20), he holds that ecosystems are causal systems from the “bottom up.” “But this does not rule out all kinds of ‘top down’ explanations” (p. 107). Contrary to Elliott Sober, “there are non-causal explanations of a biologically interesting kind, to be given at population and community levels” (p. 108).

Ecosystems have properties "supervenient" on the "basic properties" of their organismic and abiotic parts. Brennan is not comfortable with the idea of intrinsic value in nature, as contrasted with instrumental value. He substitutes for this an analysis in terms of "supervenience and essence" (chap. 8) to get at "what truth there is in holism" (p. 119). So far as I know, Brennan here makes the first effort to apply the concept of supervenience, philosophically in vogue in other circles, to scientific ecology. What an organism is, its species, is its essence; its role in an ecosystem is supervenient on that essence. "The *natural kind* of an organism is an *essential*, not a contingent or *accidental* feature of it" (p. 115). Some organisms have different strategies in different environments; the role of an organism can depend not only on what it is from the skin in, but on where it finds itself from the skin out. "No realised niche, then, can be an essential property of the organism that occupies it" (p. 116). "This role supervenes on characteristics that are internal to the organism and on others that are external to it." "Community roles, ecological functions, or whatever we want to call these characteristics, are thus important supervenient, rather than intrinsic properties of organisms" (p. 117).

An organism's defense of its own life-kind, which others (myself included) have tried to call an intrinsic value, is thus its essence. Its role in a community, which might be thought an instrumental value, is supervenient. Both sets of properties, essence and supervenience, are required to explain and to gain appropriate respect for an ecosystem. "The traditional account of an item's essential nature leaves out many of its significant properties. . . . The complete biological story about what an item is thus includes its species membership (essential properties) and also its community roles (supervenient properties). . . . There are facts about communities, patterns to community structure and ways of describing biological systems in general which reveal communities to be more than inheritors of properties of their components" (p. 124).

With his description of ecosystems both worked out scientifically and philosophically analyzed, Brennan turns to ethics. "What I now wish to suggest is that ecology is capable of funding significant extensions of awareness—including a revision of values." "It has the potential for reinterpreting some of the categories that are of fundamental importance in our ethical thinking" (p. 136). To establish his claims, Brennan has to look both at what others in environmental ethics have said, as well as what has been said in standard, nonenvironmental, humanist ethics.

Brennan finds utilitarianism (including Garrett Hardin's theory of the commons), Kantian deontological views, and social contract theories all incapable of being extended to place humans in ecosystems with an appropriate appreciation of their role and respect for the place they inhabit (chap. 11). "The ideally rational agent of the original position is too shadowy a beast to be recognisably

human at all, while the eager pursuit of the utilitarian paradise leads all too quickly to self-indulgence and extravagance" (p. 183).

The chief problem with universalistic ethics, "a context-free account of morality," is that it ignores ecosystems. "What ecology shows is . . . that what kinds of things we are, what sort of thing an individual person is, and what sort of options for fulfilment and self-realisation are open, are themselves very much context-dependent" (pp. 162–63). "Modern ethical theory . . . suffers from ignoring ecological facts of life. In brief, my complaint is that notions like *good*, *rationality*, *interest*, *desire*, *obligation*, *freedom* and the other key notions of ethical theory have been applied in ecologically careless ways" (p. 174).

The biocentric outlook (represented by Paul Taylor) has an organismic focus that gets too little from ecology (p. 138); its ethics centers on organismic individuals, neglecting the species and ecosystem level. "Taylor's theory distributes worth in the wrong way . . . and is silent about issues that are of serious moment" (pp. 148–49). He cannot value nonbiotic nature correctly, nor can he convincingly discriminate differences of value, since he ascribes equal inherent worth to every living thing (pp. 186–89).

Nor is deep ecology adequate. "Deep ecology . . . as a whole suffers from an attempt to give simplistic answers to complex questions, as well as lacking an overall unity and coherence" (p. 139). It gets too much from ecology, thinking that scientific ecology supports a metaphysics of idealism, interdependence, and self-realization when a human identifies with the natural world as an extended self. Especially when Naess takes "*self-realisation* as the core of the deep position," or when Callicott coalesces subjective self and objective world, this supposedly deep ecology really falls unawares into an "anthropocentric perspective." It does not value otherness; it envelops fauna and flora in self. "The initial problem was whether we could really maintain that things other than moral agents were themselves items of moral standing. . . . The resulting morality is no improvement on anthropocentric morality; the radical extension of the agent is not a genuine extension of moral considerability" (p. 144). All ethics, environmental ethics included, will require some identification with the other, but an adequate environmental ethic must take otherness seriously.

At this point Brennan turns to my own effort to treat ecosystems as having *systemic value*. He finds this concept close to the land ethic in Aldo Leopold's memorable injunction that "a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community" (p. 151, citing Leopold). Systemic value arises when organisms that have their own intrinsic value are incorporated into instrumentally valuable relationships with each other. In addition to intrinsic and instrumental value, which focus on organic individuals, there is systemic value at the community level, with productive results that exceed any value defended by specific individuals. My concept of *systemic value* is admittedly an

exploratory analysis, and it may not stand the test of criticism. It arises from a dissatisfaction with the terms *intrinsic* and *instrumental* applied at the ecosystem level. The former term suggests too much for-what-it-is-in-itself, the latter too much reference only contributing to something else that does have intrinsic value.

Neither term applies well to a decentralized, evolutionary ecosystem that exists neither for itself nor makes uses of its components, but is rather an open matrix in which life is created and supported. Although there is no central agent, the system is active, not passive. That systemic process, of which all fauna, flora, and humans are the products, itself has value because it produces values. To take the global view, Earth is a valuable system, able to produce values, before and after this or that particular organism, humans included, do their own local valuing, finding themselves able to value the productive system they inhabit. Sentient creatures enjoy *subjective* values, felt experiences; all organisms own *objective* values, biological vitality; the system has *projective* value, resulting in its projects, including all fauna, flora, landscapes, and ecosystems. As Brennan recounts my view, "The ecosystem *places, produces, and promotes* individual things" (p. 152).

Brennan rejects systemic value. "A natural system, like a natural community, has no good of its own, and so cannot be harmed or helped in its own right." "Natural communities have no ends to serve, no purpose in their development, and no goods of their own." "The attempt to fund moral respect for nature on some notion of systemic good or value thus has to be abandoned" (pp. 155–56). Evolutionary ecosystems have no directions, despite the appearance of more species and more diversity over time. The production of diversity is not a tendency of the system; it simply happened; and even if there were such a tendency, we cannot infer value from diversity (p. 164).

Although Brennan hopes to substitute for these troublesome concepts his innovative concepts of essence and supervenience, which were creatively introduced earlier when describing structures in ecosystems, they are not brought back into play and integrated into his axiological and ethical analysis. If the patterns and structures in ecosystems, which Brennan has been at pains to defend, are not in some way or other valuable, and yet are still ethically considerable, how does this follow from supervenience any more easily than it does from intrinsic value? Are judgments coupling or contrasting essence and supervenience more calculable than those weighing intrinsic, instrumental, and systemic value? We can have duties to an organism in terms of its essence. Can we have duties to an ecosystem in terms of its supervenience?

It is difficult to see any net gain in conceptual clarity. Brennan insists that we respect living things because "their autonomy, their ability to forge an identity amidst the vicissitudes of their environment make them something more than merely functional components of larger systems" (p. 195). He insists that

ecosystemic patterns are so significant, vital, important, serious, real, that they inform ethical judgments. "All natural objects, communities and systems are proper objects of moral consideration" (p. 197). This is certainly a near approach to objective value, both at organismic and ecosystem levels. One might as well say that essential properties (those in organisms) are intrinsic values, and that supervenient properties (those in ecosystems) are either instrumentally or systemically valuable or both.

Brennan is perhaps just allergic to any value vocabulary. Two-thirds of the way through the book, and despite its subtitle, Brennan concludes that "the term 'value' itself is not very helpful" (p. 165). "I prefer to resist using notions like 'good', 'worth' or 'value' " (p. 196). He denies intrinsic value in nature, or at least he is agnostic about this, and he hopes to find other cognitive frameworks with which to affirm that fauna, flora, landscapes, and ecosystems are morally considerable. "My position can be defended without appeals to the existence of natural or objective values" (p. 197). Perhaps, but if one is going to jettison "good," "worth," and "value," then "essence" and "supervenience" are going to have to be worked pretty hard to support ecological humanism with its environmental ethics.

Although Brennan is unwilling to lodge value in ecosystems—arguing that ecosystems do not have enough identity to have goods of their own—he is surprisingly teleological with his geomorphology. "Even the simply inanimate forge their identities and have characteristics that reflect their environment. A living thing maintains its identity. . . . But a land form, a rocky crest, a river likewise persists in the face of pressures of drought, erosion and the rock cycle" (p. 196; cf. p. 198). "Even the land forms around me deserve my respect, deserve ethical consideration simply by being what they are, where they are and interacting with other items in the way they do" (p. 197). But, he insists again, they do not have value. "It is better, I think, to avoid such a controversial use of the notion of value and stick instead to the natural origins of things and their ways of maintaining their identity as grounds for moral consideration of them" (p. 200).

Avoiding controversy and sticking to the simpler view, we move from natural origins (facts, including supervenient facts) to moral consideration (duties). But just what is the argument from *is* to *ought*? Brennan is not clear here. Perhaps the intermediate step of discovering, among the facts, values objectively present and defended—intrinsically, instrumentally and systemically—is less controversial than the stark jump from natural origins to moral consideration.

Meanwhile, although ecosystems have no good of their own, rivers, mountains, and rocky crests do have an identity they maintain! Perhaps too they have an essence, and supervenient properties. It seems odd, especially for one so versed in scientific ecology, to be more generous to landforms than to ecosystems. Does scientific ecology support this? By now too, one wonders whether

the concept of mountains, rivers, and rocky crests as maintaining an identity that warrants moral consideration is any less controversial than the rejected concepts of intrinsic, instrumental, and systemic value.

Is it not simpler and less controversial to think of mountains, rivers, and rocky crests as products of systemic Earth processes without identities on their own? They may be particular and unique, resultants with an identity that warrants a proper name. They may have trends or even a kind of integrity as the result of formative geomorphic processes. They may have value in result, but they do not forge any identities. They have no programs they execute. By contrast, biological organisms, also products of Earth processes, actively defend an identity. At the same time, mountains and rivers, like forests and grasslands, are not accidents on Earth, despite random elements in their composition. They recur again and again, around the globe, over the millennia, as systematic expressions or projects of creative Earth geomorphic and biological processes. Viewed so, both landforms and ecosystems, although lacking any identity or telos, are to be understood and valued not so much intrinsically as systemically. There is value-producing pattern even where there is no genetic program.

Brennan likes ecosystems as the matrix of both nature and culture. "One of the central pieces of ecological insight . . . is that each thing is *what* it is in part by being *where* it is." "Organism and environment are complementary, each inseparable from the other" (p. 173). (The relevance of the essence-supervenience distinction seems to be fading.) Nor is culture exempted from this complementarity. "All human life is lived within some natural context and . . . it is in terms of that context that the identities of very different human lives are forged" (p. 185). "Any ethic by which we are to live has to recognise our location in natural and social systems" (p. 195). Brennan is a pluralist; he wants a society that is open to diversity. Yet, even a humanism ought and must be ecological; hence, Brennan's choice of the label "ecological humanism" (p. 184) for his position.

What is the ethical content of ecological humanism? Brennan concludes with an appeal for what he calls "ethical polymorphism," something like Christopher Stone's ethical pluralism (chap. 13). This promises to allow freedom and include all the richness of fauna, flora, landscapes, and human culture. Certainly there are different rules for treating humans, trees, species, and ecosystems. "Within the confines of environmental ethics we are confronted with the need to recognise that no one systematisation of ethics will do justice to its complex structure" (p. 190). "I want to take seriously the idea that morality is *polymorphic*" (p. 186). Ethics too is a kind of community affair, and the pluralism is gain, not loss; the multiple ethical perspectives integrate, says Brennan, into "the *ethical holism* which I endorse" (p. 192; cf. p. 197). Now we have a better holism than those earlier rejected, one that integrates persons into communities by "the phenomenon of identification, of coming to care about things other than ourselves," and that is the appropriate "self-realisation," contrasted with the inappropriate forms

earlier criticized (pp. 193–94). This may be true, but there is also in the end, as so often in an ethics that eschews unity and wends through a complex pluralism, a certain sense of muddling through.

Nevertheless, Brennan has made an interesting and illuminating contribution to environmental philosophy, especially notable because he takes ecosystem science as seriously and circumspectly as any philosopher working in the field. This work alone should convince any reader that environmental philosophy, though indeed relevant and applied, is a major theoretical undertaking.

Holmes Rolston, III*

* Department of Philosophy, Colorado State University, Fort Collins, CO 80523.