

HOLISM

Although the centrality of holism in both ecology and environmental ethics is indisputable, the meaning of the concept within each field is difficult to define with precision.

HOLISM AND REDUCTIONISM

Holism might be understood best in contrast to reductionism. Reductionism is arguably the central approach to Western science, traceable back to the ancient Greek Milesian school of thought (c. sixth century B.C.E.), which attempted to discern the fundamental stuff out of which all else emanates. Reductionistic science assumes that the experienced world is understandable only through an examination of its component parts, and that through such an examination we discern the reality of the whole. For an environmental reductionist, for example, a species is nothing but a placeholder for a collection of specimens.

The popular expression of reductionism is that the whole is merely the sum of its component parts.

In *Nature's Economy* (1994) the environmental historian Donald Worster portrays holism as a reaction to the influence of reductionism, from Gilbert White's "Cult of Selborne" reacting against the perceived evils of Linnaean fragmentation to John Ray and Henry More rejecting the reductionism of a Newtonian-Baconian mechanistic view of nature. He observes that "the idea of holism . . . has ebbed and flowed with extraordinary persistence throughout the modern period" (Worster 1994, p. 21).

In contrast to reductionism, holism asserts that the whole is greater than the sum of the parts: Holists believe that certain properties or qualities that emerge at the level of the collective do not exist in the parts and also are not predictable from a knowledge of the properties or qualities of the parts before their integration into wholes. For example, a holist might point to the quality of life as a property of a living organism that does not exist in the atoms or in the molecules of which living organisms are composed.

Although it sometimes is assumed that both the science of ecology and environmental ethics are inherently holistic, both contain theories that range from the manifestly holistic to the strictly reductionistic. Among classic examples in ecology, Frederic E. Clements's "superorganismic" conception of the biota (the idea that what now are called ecosystems are themselves living organisms) is manifestly holistic, whereas Henry A. Gleason's "individualistic concept" of the biota (the idea that certain plants and animals often are found together because they are adapted individually to similar environmental conditions) is strictly reductive. Among classic examples in environmental ethics, Aldo Leopold's land ethic (which makes the "integrity, stability and beauty" of "the biotic community" the measure of right and wrong) is clearly holistic, whereas Paul W. Taylor's biocentrism (which provides equal intrinsic value for all living beings individually) is strictly reductive. It is therefore a mistake to assume that holism is a defining characteristic of ecology or that all environmental ethics are holistic.

ETHICAL HOLISM

Ethical holism stands in opposition to ethical reductionism: The belief that only individuals as more or less traditionally conceived (e.g., human individuals, other individual animals, and individual plants) matter morally. The focus of most popular environmental concern is on wholes: on species, such as the black-footed ferret, not on individual ferrets; on forests, such as the plains of the Yellow Dog River in Michigan's Upper Peninsula, not on individual trees; on whole ecosystems, such as the Florida Everglades;

and even on titanic features of the environment such as the atmosphere, the ocean, and climate. Ethical holists assign moral significance to wholes over and above the individuals they encompass.

Ethical holists assert that environmental wholes are direct objects of moral concern, often claiming that they have intrinsic value. As was noted above, however, not all environmental ethicists are holists. An ethical reductionist might argue, for example, that the good of a species can be accounted for by considering the good of the individual specimens that make it up. As to objects of popular environmental concern such as the atmosphere, the oceans, and the biosphere as a whole, a reductionist might argue that protecting them from damage is necessary to ensure the well-being of individual humans or, in the case of reductionistic animal ethicists, the welfare of individual animals. By contrast, an ethical holist would argue that a species, an ecosystem, a biotic community, or even nature as a whole deserves ethical consideration. Ethical holisms appear to be premised on corresponding ontological holisms.

ONTOLOGICAL HOLISM

Ontological holism is the claim that the reality of the whole transcends the reality of its constituent parts. The principal support for ontological holism is the alleged existence of emergent properties belonging to wholes that neither exist among the parts nor are predictable from knowledge of the properties of the parts and the way the parts relate to one another. Ontological reductionism, in contrast, is the claim that the properties of wholes are always reducible to—that is, are found in or predictable from—the properties of their component parts. Only the parts are real; the whole is not. A social reductionist, for example, would argue that individual human beings are real but human societies are not; societies are simply aggregates or collections of interacting individual human beings. An ecological reductionist would argue that individual plant and animal species populations are real but biotic communities are not; a biotic community is, as Gleason put it, a "coincidence" of species populations that are adapted to the same environmental conditions, such as temperature and rainfall.

To counter reductionism, holists invoke the emergent properties of wholes. A social holist might point out that societies exhibit properties, such as political institutions, that are not found in individual human beings. A biological holist might point out that a species has a minimum viable population (the smallest number of specimens necessary to assure the perpetuation of the species for the foreseeable future), a property not found in any of the specimens. An ecological holist might point out that ecosystems modulate local climates—areas of standing forests, for example, have

lower summer temperatures than areas in the same climate region that have had their forest cover removed—but that the individual trees do not modulate their local climate. Because reductionists cannot deny the existence of whole-level properties, dispute centers on the predictability of those properties from the interaction of the properties of the parts.

Holists also contend that wholes exert downward causation on their parts. A social example would be the way political institutions shape the physical and mental properties of individual people. Would a contemporary Swede be the same individual if his parents had thrown in with the Communist revolution in China when he was born in the 1940s and he had experienced the physical hardships and relentless political indoctrination of the Cultural Revolution in the 1960s? Thus, the properties of the society that individuals find themselves in exert downward causation on the individual humans who compose those societies. An evolutionary example would be the way a species supposedly adapts to an ecological niche in a biotic community. If the niche is what the species is adapted to and is conceivable only as an emergent property of the community, the community is real because it exerts downward causation on its parts: the individual species that compose a biotic community, whether or not the niche property is predictable from knowledge of the community's parts and their mutual relationships.

As the last example suggests, ontological holists implicitly assert the existence of a hierarchy of wholes. Individual species populations are the parts of a biotic community, whereas specimens are the parts of a species population. That invites holists to reduce ontological reductionism to absurdity. What are the parts of specimens? Their individual living cells is one plausible answer. In that case, are only cells real whereas specimens are not? And what are the parts of cells? Their individual molecules. And the parts of molecules? Their individual atoms. This regression is not infinite, but it terminates in something so remote from the ordinary experience and conception of reality—subatomic particles, quarks, or superstrings—that only the most obdurate reductionist would endorse such an ontology. Thus, social reductionists appear to be merely arbitrary, drawing the line at individual human beings, not the individual cells of which humans are composed, but refusing to acknowledge the reality of social wholes composed of individual humans. Ecological reductionists such as Gleason appear to be equally arbitrary, drawing the line at individual species populations, not the individual specimens of which they are composed, but refusing to acknowledge the reality of biotic communities composed of individual species populations.

RADICAL (METAPHYSICAL) HOLISM

Radical holism is the assumption that the embeddedness of organisms in their ecological matrix serves essentially to erase the individual. That is, ecological interconnectedness eliminates the individual, which is subsumed by the reality of the whole. Popular expressions of this might include the slogan "all is one" or metaphorical expressions such as the "web of life," a web lacking nodes that one might recognize as individuals, or, as Worster characterizes holism, a view "in which all nature is approached as a *single indivisible unity*" (Worster 1994, p. 21; emphasis added).

One also can glimpse flirtations with this more untempered form of holism in certain variations of the environmental ethic of Deep Ecology. Arne Naess, the founder of this school of thought, was influenced, through his study of the philosophy of Mohandas Gandhi, by ancient Indian metaphysics, according to which there is one being, *Brahman*, and all plurality is *maya*: illusory appearance. In his essay "Deep Ecology: A New Philosophy of Our Time?" (1984) the Deep Ecologist Warwick Fox provides an example of a holism that borders on the radical or metaphysical variety when he comments on what fellow Deep Ecologists Bill Devall and George Sessions endorse in their book *Deep Ecology* (1985) as "the central intuition" of the theory:

It is the idea that we can make no firm ontological divide in the field of existence. In other words, the world simply is not divided up into independently existing subjects and objects, nor is there any bifurcation in reality between the human and the non-human realms. . . . To the extent that we perceive boundaries, we fall short of deep ecological consciousness. (Fox 1984, p. 66)

Some ecofeminist philosophers have strenuously objected to the radical holism of Deep Ecology because it not only obliterates distinctions between humans and nature but also obliterates distinctions among humans. They point in particular to important gender and class distinctions and the different ways in which men and women relate to nature (Salleh 1984).

Holistic theories of environmental ethics have been subject to the charge of environmental fascism. In *The Case for Animal Rights* (1983) the animal-welfare ethicist Tom Regan levels this charge against holistic theories in general and specifically against the holistic Leopold land ethic:

[It is difficult to reconcile] the *individualistic* nature of moral rights with the more *holistic* view of nature emphasized by many of the leading environmental thinkers. . . . It is difficult to see how the notion of the rights of the individual could find a home within a view that, emotive connotations to one side, might be fairly dubbed "environmental fascism." (Regan 1983, pp. 361–362).

Some proponents of holism in environmental ethics have acknowledged that certain holistic theories of environmental ethics may be ecofascist, especially radical holism, but that the Leopold land ethic is not (Nelson 1996; Callicott 1999). Leopold regarded the land ethic as an addition to, not a substitute for, the human-centered ethics that has been inherited from the past. Thus, concern for the "integrity, stability, and beauty of the biotic community" (the principal measure of right and wrong in the land ethic) (Leopold 1949, pp. 224–225) does not necessarily trump concern for human welfare and human rights. Although Leopold did not work out a system for adjudicating conflicts between the indications of a holistic environmental ethic and the indications of an individualistic human-oriented ethic, J. Baird Callicott (1999) tried to do that on his behalf and thus rescue the land ethic from any hint of ecofascism. However, according to Michael Nelson (1996), that may take the teeth out of the land ethic (that is, make it less robust) and render it "a paper tiger."

SEE ALSO *Animal Ethics; Biocentrism; Callicott, J. Baird; Deep Ecology; Ecosystem Health; Land Ethic; Leopold, Aldo; Naess, Arne; Species; Taylor, Paul.*

BIBLIOGRAPHY

- Callicott, J. Baird. 1999. "Holistic Environmental Ethics and the Problem of Ecofascism." In *Beyond the Land Ethic: More Essays in Environmental Philosophy*. Albany: State University of New York Press.
- Davall, Bill, and George Sessions. 1985. *Deep Ecology: Living as if Nature Mattered*. Salt Lake City, UT: G. M. Smith.
- Fox, Warwick. 1984. "Deep Ecology: A New Philosophy of Our Time?" *Ecologist* 14: 194–200.
- Leopold, Aldo. 1949. *A Sand County Almanac, and Sketches Here and There*. New York: Oxford University Press.
- McIntosh, Robert P. 1985. *The Background of Ecology: Concept and Theory*. Cambridge, UK, and New York: Cambridge University Press.
- Nelson, Michael P. 1996. "Holists and Fascists and Paper Tigers ... Oh My!" *Ethics and the Environment* 2: 102–117.
- Regan, Tom. 1983. *The Case for Animal Rights*. Berkeley: University of California Press.
- Salleh, Ariel K. 1984. "Deeper Than Deep Ecology: The Eco-Feminist Connection." *Environmental Ethics* (Winter): 339–345.
- Taylor, Paul W. 1986. *Respect for Nature: A Theory of Environmental Ethics*. Princeton, NJ: Princeton University Press.
- Worster, Donald. 1994. *Nature's Economy: A History of Ecological Ideas*. 2nd edition. Cambridge, UK, and New York: Cambridge University Press.

Michael P. Nelson