Frederick Steiner, *Human Ecology: Following Nature's Lead*, Washington, DC: Island Press, 2002; 237 pages. ISBN 1-995

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In 1970, Scottish-American landscape architect Ian McHarg published the path-breaking book, *Design with Nature*, which outlined a systematic, ecological approach to analyzing and evaluating human settlement. Specifically, McHarg proposed a geographically based land-use planning technique—a forerunner of the Geographic Information System (GIS)—which involved the layering of relevant elements such as sun-and-shadow, slope, geology, hydrology, soil, distribution of flora and fauna, airshed, tidal inundation, and even demographic features. In the words of one renowned architect, McHarg advocated "a kind of Feng Shui without the superstition."

In *Human Ecology: Following Nature's Lead*, Frederick Steiner, dean of the School of Architecture at the University of Texas, picks up McHarg's baton and runs with it. Steiner first seeks "to explore how nature and culture interact in human settlements" and, second, "how an understanding of such interactions informs how we shape our homes, neighborhoods, landscapes, city-regions, and nations" (p. xvii).

One does not need to look far for examples of how the interactions of culture and nature fail to inform the design of human settlements: generic American subdivisions spreading without rhyme nor reason; construction in floodplains, on barrier islands, and on steep slopes; homes plopped down on lots with no thought to sunlight or views; hills gouged out to create flat spots; marshes filled in; waterways diked and buried. The list is long.

Steiner hopes that *human ecology* can develop sufficiently to correct this failure. He defines "human ecology" as the study of the human organism in relation to its environment (p. 96). This phrase brings to the fore the central theme of environmental studies: dynamic interaction of culture with nature and nature with culture. The book's photos, which impressively depict the ways nature and culture intertwine—straight rows of giant deciduous trees in a park, the trunks of vines growing through an iron fence, round bales of hay—graphically drive this point home.

The concept of a fundamental human-and-nature divide has permeated the Western tradition, from Socrates's peculiar statement (according to Plato) that he had nothing to learn from "trees and open country" but only the people of Athens, to Descartes' utterly dubious assertion that "I am really distinct from my body, and can exist without it."

As Steiner formulates it, human ecology entails the rejection of any substantive division between the human and the natural. In terms of architecture and settlement, we assume at our peril that the human is ontologically separate from the natural. The fundamental lesson of ecological science is that no grouping of organisms, *Homo sapiens* not excluded, is ontologically distinct from the environment.

For Steiner, landscapes, or "land mosaics," are tangible manifestations of the interface between nature and culture. The land is the canvas on which we leave our mark. Humans alter the lay of the land with farms, fences, roads, windbreaks, canals, and so forth. In Europe, this is often more obvious than in North America, where "ecologists are more accustomed to studying relatively pristine landscapes" (p. 8).

The organization of the book is straightforward. Through the bulk of the volume, Steiner traces the interaction of culture with nature as manifested in human settlement spatially, from homes to the ecosphere as a whole. But before doing so, Steiner argues for a "new ecology" which stresses stochasticity and disequilibria rather than balance in nature—the central thesis of Daniel Botkin's widely read *Discordant Harmonies*.

While Steiner does not put the issue in these terms, what is at stake is the rejection of the metaphysics of nature-as-machine expounded by numerous scientists, philosophers, and theologians: Galileo, Kepler (who instructively claimed "My aim is to show that the celestial machine is to be likened not to a divine organism but rather to a clockwork"), Hobbes, Descartes, Paley, Newton, and others. According to this model, nature is a grand and exquisite machine operating according to the deterministic laws of physics. Derivative of the mechanical view of nature is the belief that natural systems are understandable, predictable, and susceptible to manipulation.

Against this, evoking Paul Sears's famous 1964 essay, "Ecology—A Subversive Subject," Steiner points out that new ecology is proving to be subversive to the

mainstream mechanistic tenets of modern science. If a lesson of ecology is that nature is neither exhaustively predictable nor reliably malleable, then human control of nature—a paramount goal of modern science—is a chimera. Rather, the goal of the new ecology, put into practice in *human* ecology, is to design settlements harmonious with and accounting for the stochasticity of natural process.

Steiner outlines eight basic principles of human ecology: systems thinking, culture, structure and function, ecological boundaries, interaction, diversity, adaptation, and holism (p. 20). The remainder of the book is dedicated tracing these eight conceptions from the local to the global—specifically, from local habitats and communities through regional landscapes and nations to the biosphere as a whole. Steiner ends by pointing out that religion either encourages the perception of a human-and-nature divide and the control of nature (as in Christianity), or, conversely, "provides [the] ethical glue to stick us to each other and to the Earth" (p. 170), as in pantheistic traditions.

While Steiner is masterful at tracing the eight principles of human ecology through spatial hierarchies (mostly through interesting observations and descriptions of his travels), as a philosopher I was often left wondering how the observations at different spatial levels fit into the overall argument the book. For example, in the last chapter, Steiner details interesting descriptions of present-day Rome, but it is not clear how this is supposed to inform human ecology.

Despite any imperfections in logic, the importance of the book is calling for a radical paradigm shift in the way we design our homes, neighborhoods, cities, and regions. Rejection of any divide between the human and the natural and rediscovery of the intimacy of culture and nature cannot be understated now that the entire globe bears the mark of the human hand. The future of human history will be the way this plays out, for good or ill.

The contribution of *Human Ecology* is to point us down the path of contextualizing the design of our settlements with an eye to patterns of natural process, rather than simply ignoring them as we typically do now. This, of course, requires much nuance. Thus, as Steiner himself would certainly admit, we have a long, long way to go.

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Joel A. Tickner, editor, *Precaution, Environmental Science and Preventative Public Policy,* Washington, DC: Island Press, 2003; 406 pages. ISBN 1-332

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At the intersection of science and public policy, few ideas have become so ingrained and frequently used in debate as "sound science." It is bandied about by advocates of regulation and deregulation, by supporters of various technologies and by their opponents, by environmentalists and by industry. It is used so often to support such vastly different outcomes that an innocent bystander could be excused for believing the term has no real meaning at all, it being solely a totem by which participants in the policy-making process signify their respect for objectivity rather than special interest.

In recent years, a new catch phrase has come to dominate almost all debates about protecting the environment and public health: "the precautionary principle." Generally, it is invoked by those hoping to convey the belief that a particular action, technology, or product has not been suitably tested for human or environmental safety. Yet, it too suffers from a lack of clarity in customary use.

Precaution, Environmental Science and Preventive Public Policy, a volume of essays edited by Joel A. Tickner, promises to explain the role of science in implementing the precautionary principle and begin to resolve some of these ambiguities. Tickner is among the most influential of the precautionary principle's scholarly advocates, and one of the co-conveners of the now famous Wingspread Conference on the Precautionary Principle, so promising to resolve this important matter makes the book "must reading" for supporters, opponents, and the undecided. Unfortunately, it does not live up to its potential.

Problems begin with its attempts to impart greater definition to the term. Not even the contributors themselves can agree on how to define the precautionary principle, or in which circumstances it might be necessary to call upon it. On one hand, Theofanis Christoforou notes that "The precautionary principle is not automatically applied whenever there is uncertainty, as the potential harm may be considered to be acceptable" (p. 244). But, on the other hand, says Romeo Quijano, "The ultimate goal under the pre-