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Ethical Principles for Smart Growth

Steps Toward an Ecological Ten Commandments

Ethics begins where the law and economics leave off. The ethical principles we adhere to are manifest in the sum total of the value judgments we make in our personal and collective lives. The assumption in Western culture is that the world exists as an environment outside the human sphere, distinct from it, external to it. The environment is thought of as something that—with the use of technology—we are both empowered and entitled to manipulate at will to meet ever-growing, ever-changing human needs.

In academic circles we are only now beginning to argue that we need to get smart about how we manage and manipulate the world. It's about time, don't you think? The appeal for smart growth has been slow in coming, but the consequences of "stupid" growth (unrestrained growth, aimless growth, anarchic growth) are becoming too apparent to ignore. Clearly the appeal for smart growth is the wave of the future. After all, who could possibly be against it, if all it is contrasted with is stupid growth? No one would deny that smart growth is an ethical imperative.[1] All we need bicker about from now on is, who gets to call what smart?

The difficulty with this whole framework, however, is that in an ecosystem, systemwide troubles are bigger than merely human problems. By pursuing what we have come to recognize and embrace as smart growth we may be missing a much larger point about the human prospect. Indeed, to the extent that we think we can manipulate the natural environment at will to maximize human benefit, we are in danger of fine-tuning disaster.

In short, the elegance of smart growth blinds us to its arrogance. Rather than avoiding extinction we may merely be making it more efficient. We may think we are growing in a smart fashion, but human growth itself may be the problem in the larger system. We need to have the courage to entertain the question: In a world already choked by the human enterprise, where so much of the natural world suffers from our collective species footprint, isn't smart growth an oxymoron, an arrogant contradiction in terms?

To be effective and enduring, smart growth needs to develop two fundamental attributes. First, it will require rethinking all priorities in light of the objective constraints of the biogeochemical processes of the ecosystem. Second, it will require a strong ethical foundation that grounds the human enterprise beyond the

1 The proposition that conventional patterns of economic growth should stop altogether has been forwarded by some as a moral imperative. This notion has gained prominence since the publication of the influential Report to the Club of Rome, entitled *Limits to Growth* (Meadows and Club of Rome 1972; Meadows, Meadows and Randers 1992). Many who challenged the notion of limits to growth did so in strong moral terms as well (Walter 1981; Beckerman 1995).

logic of energy efficiency, materials recycling and systems optimization. All these things will be required, but more is needed—much more. At the core, smart growth requires a new guiding metaphor for human existence based on self-imposed self-restraint—not merely enlightened self-interest or deferred gratification. If smart growth is going to mean anything more than a trendy phrase of the week for the *hipgeoisie*[2] a new kind of environmental ethic will need to take hold of the public mind. This new ethic needs in turn to be born of a newly informed awareness of place in the broader ecosystem, of which we remain only a single constituent species.

To achieve this sense of place we need to learn to acknowledge and accept four simple truths:

1. We did not create the world; we cannot control it; we should not destroy it.
2. We must learn instead to live as ecologically responsible citizens within Earth's ecosystem, rather than continue to struggle against it, seek vainly to dominate it, or strive pathetically to live as if we could ignore it.
3. We are embedded as participants in a patterned system of materials exchange and energy flow, governed by the second law of thermodynamics.
4. If we wish to survive as a species, we had better learn the house rules before—in our ignorance of them or our stubborn refusal to take them seriously—we drive ourselves into extinction.

In short, infinite growth in a finite system is not possible. Smart growth is by definition self-limiting. It is important to get the numbers straight in this regard, because the rhetoric of public discourse and daily economic life is confusing. It is not uncommon, for example, to hear phrases like "steady growth" or "sustained growth" in discussions about the economy. In the larger biological system, however, it becomes apparent that the illusion of steady, sustained or continuous growth is simply not possible. In the long run, all economies function as subsets of ecosystems, so it is important to establish the fundamental laws of ecosystems firmly in our minds. At the level of organisms and populations, growth is best understood as a phase phenomenon. Individual organisms or populations go through a growth phase in their development, but this is not—indeed it cannot be—a permanent state of affairs. Unrestrained growth is not feasible; nor is it

2 The self-styled "hip" bourgeoisie.

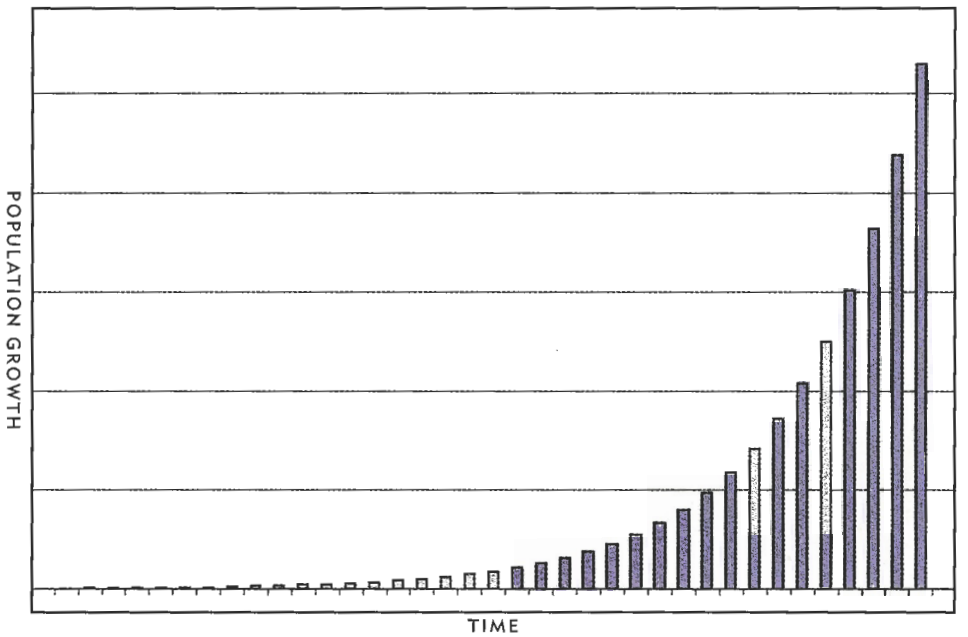

Figure 1 A model of a hypothetical exponential growth pattern of a population produces a J-shaped curve. This can lead to an explosive growth of a total population over time even though the growth rate (R) remains constant and low.

healthy. A steady growth rate is potentially explosive since a constant rate of growth (R) in reproducing organisms leads to an exponential growth of the population as a whole. The typical form of exponential population growth takes on the appearance of a J-shaped curve, with a long period of gradual growth followed by a rapid expansion of organisms in a very short period (Figure 1). No biological system can tolerate this kind of growth pattern on the part of one of its constituent species for very long. If the population itself shows no change in its reproductive behavior, sooner or later it is subject to the external limits of habitat or nutrient availability, and it overshoots, then rapidly collapses when the limit of the environmental carrying capacity (K) is exceeded (Figure 2).

Over time, there may be nothing fixed or permanently determined in what is referred to as the carrying capacity of a system, with reference to any one population. It could—at least in theory— expand or increase if the population were to adjust to another pattern of consumption or self-maintenance. In principle, this might mean that populations could periodically exceed their carrying capacity in a given system, but in subsequent periods they could enjoy an increased carrying capacity and expand to that new level before overshooting and collapsing.

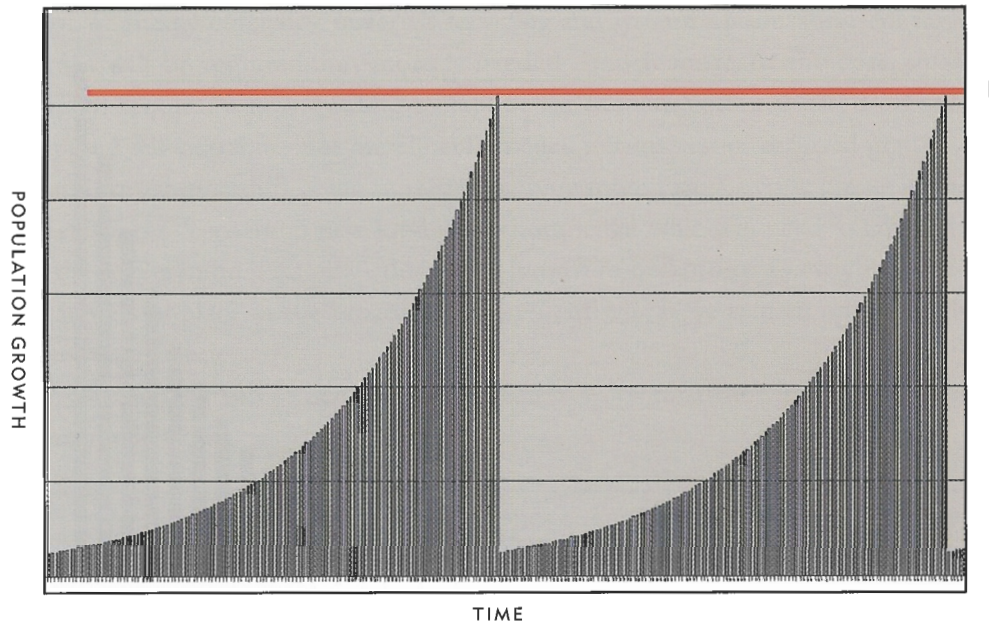

Figure 2 Populations that grow at a constant rate (R) experience o J-shaped growth curve followed by an abrupt collapse when the total population exceeds the environmental carrying capacity (K). If some reproducing individuals are able to survive, the pattern of overshoot and collopse can repeat itself again and ogain.

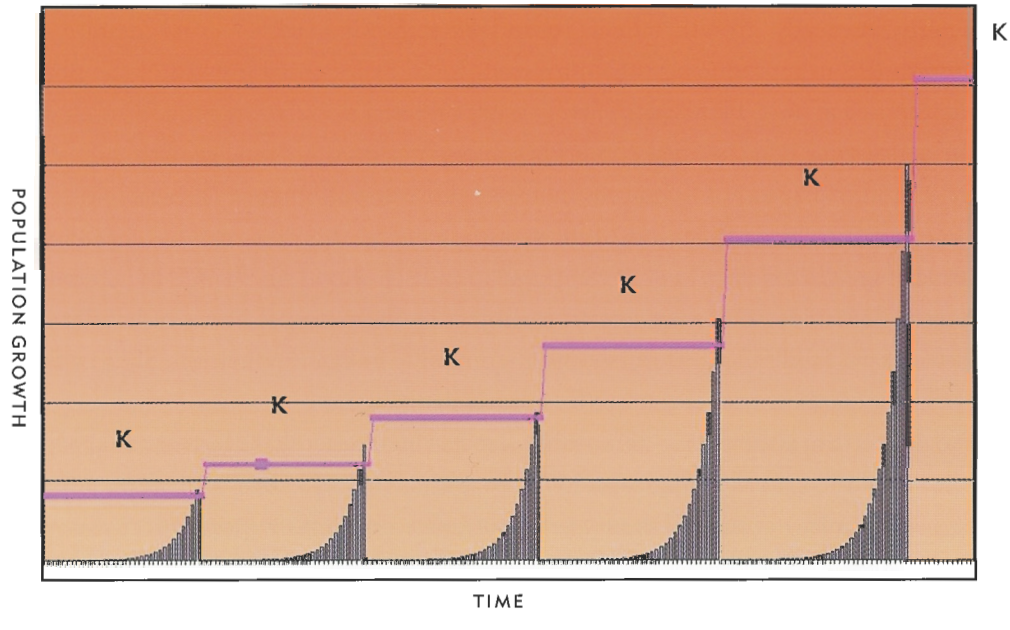

Figure 3 A population that grows at a constant rate (R) can expand over time *if* the carrying capacity (K) of the system increases. With a constant rate of growth it is still subject to boom ond bust cycles of overshoot and collapse, ond if the carrying capacity is momentarily increased, the omplitude of the boom and bust cycles can increase, even though the overshoot and collapse syndrome remains the same.

Mathematically, this can be modeled simply as a system with a population growing at a steady rate, but one within which the carrying capacity (K) expands over time after periodic episodes of population collapse (Figure 3).

Of course there is nothing in an ecosystem that assures that the carrying capacity of an individual species *will* expand over time. Quite the contrary. When populations overshoot and collapse, they can frequently be quite destructive to their life support systems—the complex web of organisms that provide the biogeochemical cycling required for the steady flow of nutrients, water and energy that each organism requires. So, it is quite often the case that the phenomena of constant growth—which leads repeatedly to a syndrome of overshoot and collapse—systematically diminishes the carrying capacity of a system over time with regard to a particular organism. Thus, although the fundamental population growth pattern (boom-bust) of a population may not change, its actual population can decline over time in response to a deteriorating carrying capacity caused, in part, by the environmental devastation of repeated overshoot and collapse events (Figure 4).

It follows from the basic dynamics of populations in ecosystems that if smart growth is to assure the long-term survival of the population concerned, growth must be self-limiting. Each population must stabilize at a level below the carrying capacity (K) of the system concerned. If the carrying capacity is declining, the self-limiting stabilization must occur rapidly, and for this to happen the rate of growth must decline to near zero. The net increment of population added at each interval takes on the shape of a bell-shaped curve, whereby the net increment builds to a maximum point and then declines to zero (Figure 5).

On the most fundamental level, smart growth must start with the affirmation that we need to design within the possible in the complex biogeochemical system that we inhabit. It is not smart to design systems that are not possible to sustain. There are no externalities in an ecosystem so we must abandon sectoral thinking (predicated on growth of particular sectors) for systems thinking (predicated on the stability and self-maintenance of the health of the system as a whole). Those who advocate smart growth will need to recognize and embrace the fact that in healthy populations, as in healthy individuals, growth is a phase through which life forms move on the way to maturity. Continuous growth is not possible in healthy organisms or healthy populations. It is, in fact, the sign of pathology and imminent death. Physicians point out that continuous growth is the ideology of a cancer cell. It is little wonder that urban policies predicated on the fiction of continuous growth leave us with a pattern of urban sprawl that resembles a form of cancer on

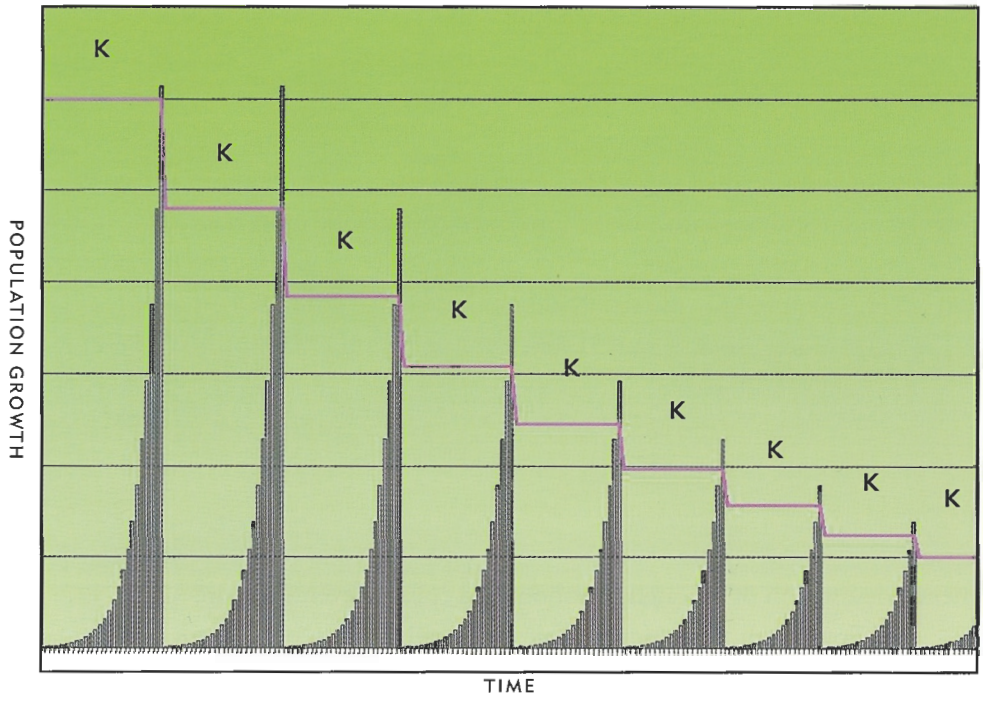

Figure 4 Corrying copocity (K) can also decline over time. The overall dynamics of a populotion can remain the same, but if each time it overshoots and collapses, the carrying capacity of its environment declines, then when it grows again it will not reach its former total before it collapses yet again. This can be said to be a constant growth pottern, but it does not appear to be smart growth because each boom and bust episode diminishes subsequent chances for survival over time.

the land.[3] The ethical principles for smart growth reflect a new and sober assessment of the problematic character of growth and a renewed sense of place for the human prospect in a complex ecosystem.

In 1949, Aldo Leopold wrote an essay entitled "The Land Ethic," which appeared as the last chapter in his famous work, *A Sand County Almanac.* In this essay he expressed the thought that ethical systems evolve as human communities extend their sense of responsibility:

> The extension of ethics...is actually a process in ecological evolution. Its sequences may be described in ecological as well as in philosophical

3 See the U.S. Geological Survey's cartographic representation of urban growth in the San Francisco Bay area at: *http://geo.arc.nasa.gov/esdstaff/william/urban.mpg.*

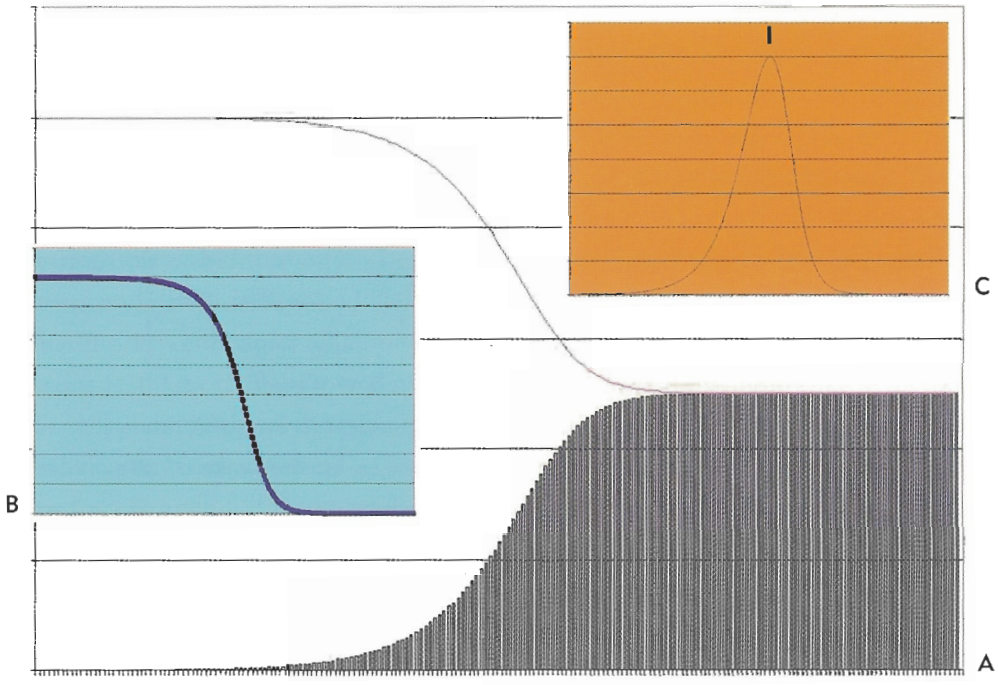

Figure 5 Growth is a phase in the evolution of an organism or a population as it moves toward maturity. In stable, sustainable populations the growth rate declines to near zero (A) and the population stabilizes without exceeding its carrying capacity (B). During the growth phase, average periodic increments in population reach a peak at the point of inflection (I), after which the increment added to the population declines in each successive period (C). Smart growth is self-limiting.

terms....The first ethics dealt with the relations between individuals....Later accretions dealt with the relation between the individual and society.... There is as yet no ethic dealing with man's relation to land and to the animals and plants which grow upon it. Land...is still property. The land-relation is still strictly economic, entailing privileges but not obligations. The extension of ethics to this third element in human environment is, if I read the evidence correctly, an evolutionary possibility and an ecological necessity. It is the third step in a sequence. The first two have already been taken. Individual thinkers since the days of Ezekiel and Isaiah have asserted that the despoliation of the land is not only inexpedient but wrong. Society, however, has not yet affirmed their belief. I regard the present conservation movement as the embryo of such an affirmation. (Leopold 1966, 238-239).

Fifty years after these words were written, we would do well to reflect upon them with an eye to evaluating whether or not we have made significant progress in developing the land ethic of which Leopold wrote so passionately.[4]

Deriving a land ethic of this nature will of necessity involve a profound shift in the core metaphors of Western culture. For a long time we in Western cultures have come to believe that the environment is external to us; that we can exploit it at will; and that we are entitled, empowered and even anointed to do so. If we make a mess of things, so the thinking goes, we will be forgiven if we are contrite, and we will be entitled to make a new start—usually somewhere else further "west" or out on some putative frontier. This ideology of continuous linear expansion toward an ever-receding frontier leaves devastation in its wake, but we do not bother ourselves overly much with the waste stream in the wake of our civilization. Instead, some of the most intelligent and curious minds among us are encouraged by this culture of expansion to conquer new frontiers onwards and upwards in a seemingly unquenchable thirst for new space and resources to subdue.[5]

This species arrogance is not limited to Earth alone. The thrust of our popular mythology encourages us to believe that it quite natural "to boldly go where no man has gone before." In popular culture, we can no longer distinguish fact from science fiction. Serious scientist and technicians—not just Star Trekkies—talk about mining the moon or promising near-Earth asteroids. Most recently, the prospect of finding water on the moon or on Mars was portrayed by a breathless group of scientists and techno-boomers as an indication that we may be able to tap these water resources as a potential source of hydrogen and oxygen to fuel further expansion missions into space. The impulse to leave Earth and colonize other parts of the accessible solar system is now deeply engrained in the rhetoric surrounding our space program. Scientists talk of seeding Mars with microbial life to encourage the development of greenhouse gases and create an atmosphere more like what we have come to inherit on Earth. On some levels there are troubling signs that otherwise sober and serious individuals believe this is both possible and good.

Those of us more focused on the precariousness and fragility of life forms and their associated ecosystems here on Earth recognize that the spaceship dream and the colonization of Mars are sadly misguided delusions. Moreover, we feel passionately that the human prospect is still worth trying to preserve on Earth. After

4 The Harvard Seminar on Environmental Values devoted the year 1999-2000 to a reconsideration of Leopold's thoughts on the land ethic (Harvard University 1999).

5 For an extended discussion of the concept of nature and the importance of the frontier experience in Western cultures, see Weiskel (1983).

all, we already live on the largest inhabitable spaceship in the known universe. If we prove ourselves through our blindness or stubbornness incapable of sustaining human life on this precious, richly endowed sphere, on what grounds do we think we will be successful on barren rocks anywhere else?

Because of Western culture's technological arrogance and its collective fascination with perpetual expansion and growth, it is becoming increasingly apparent to the wider world that we will need a radical transformation of this culture's core values and ethics if human survival is to be assured. The transition involved in adopting new principles for survival may prove very difficult; cultures do not smile kindly on major challenges to their core beliefs. Nevertheless, despite the difficulty of implementing them, the principles themselves are clear to see and can form the basis of a new deontological approach to environmental ethics. Others should feel free to refine the following list, but it can at least serve as a starting point for discussion.

In our public and private lives we should always and everywhere seek to act personally and collectively (for example, tax, spend, regulate, legislate and litigate, etc.) so as to follow these proposed Ecological Ten Commandments:

1. Design within the possible; reinsert the human enterprise within Earth's biogeochemical cycles, sustained by throughput solar energy;
2. Substitute the consumption of nonrenewable resources with renewable ones;
3. Reduce the consumption of renewables to at or below their rate of renewal;
4. Enter nothing into the waste/nutrient stream that cannot be "eaten" safely by other organisms that you can live with;
5. Allocate the accumulated fruits of production in a more—rather than less—equitable and just fashion (large and growing inequities of assets and power are inherently destabilizing in an ecosystem and must be avoided);
6. Measure and monitor environmental conditions affecting the safety, health and welfare of all species (ecosystems must deliver benefits to all constituent species or they cease to be functioning systems and rapidly collapse);
7. Educate and inform the public about the circumstances it must confront and the "footprint" that human cultures generate in the broader ecosystem;
8. Entitle and empower local human communities to manage their resources sustainably (human communities cannot be salvaged "on average" or "in

general"; if they don't survive in their own unique and particular ways, the human enterprise cannot be sustained);

9. Cajole, exhort and convince those who do not follow these precepts of ecological citizenry to mend their ways; and
10. Expose, denounce, condemn and seek to punish those who consistently and intentionally violate these precepts of responsible ecocitizenry—including those who otherwise wish to present themselves as "respectable" public leaders.

Perhaps the notion of ten commandments is a bit of a misnomer. The ethical principles enumerated here are not the same as rules or policy prescriptions. They should be understood more broadly as guidelines to keep in mind in shaping specific rules, laws, economic incentives, tax provisions, citizen and community initiatives, and business and professional agreements. At any point we should ask ourselves whether specific proposals support or violate these basic principles of environmental ethics. The objective of ethical reflection in the context of smart growth is not to pretend we can achieve moral purity, but rather to urge each of us individually and collectively to devise effective guidelines for responsible behavior in socially equitable and ecologically sustainable communities.

References

Beckerman, Wilfred. 1995. *Small is stupid: Blowing the whistle on the Greens.* London, England: Duckworth.

Harvard University, University Committee on the Environment. 1999. *The land ethic revisited: Ownership, stewardship and moral responsibility in an ecosystem.* Harvard Seminar on Environmental Values, 1999–2000. Available at *http://ecoethics.net/hsev/sche1999.htm.*

Leopold, Aldo. 1966. *A Sand County almanac: with essays on conservation from Round River.* New York, NY: Ballantine Books.

Meadows, Donella H., and Club of Rome. 1972. *The limits to growth: A report for the Club of Rome's project on the predicament of mankind.* New York, NY: Universe Books.

Meadows, Donella H., Dennis L. Meadows and Jorgen Randers. 1992. *Beyond the limits: Confronting global collapse, envisioning a sustainable future.* Post Mills, VT: Chelsea Green.

Walter, Edward. 1981. *The immorality of limiting growth.* Albany, NY: State University of New York Press.

Weiskel, Timothy C. 1983. Rubbish and racism: Problems of boundary in an ecosystem. *Yale review* (Winter):225–244.