

Why Sustainability?

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An unexamined life is not worth living.

—Socrates

Introduction

We are in the midst of a *sustainability revolution*. Every day environmentalists, members of the “wise use” movement, and government officials from the United Nations and the industrialized and third world countries are embracing the concept of “sustainable development.” How is this apparent consensus possible when so many diverse groups and individuals have such different value systems and goals?

Conservation biologist Reed Noss believes that sustainability as a notion is popular because it represents the perfect middle ground in human and natural resource conflicts. To protect wilderness and biodiversity would demand radical changes in the way we do business as a society. On the other hand, embracing sustainability is safe and non-threatening. “How on earth could anyone be opposed to sustainability?” asks Noss (1991:120).

In the speak-easy world of politics, sustainability is popular precisely because of its lack of meaning. This often gives the illusion that everyone is in agreement; that an activity must be good because it is “sustainable”; that things are fine just the way they are;

and that, while minor changes may be required, major societal changes which are inevitably painful are unnecessary.

While we all may agree on the word, we would not all agree with a particular definition of sustainability. Thus we are still faced with reconciling the conflicting goals of diverse groups, agencies, and governments with regard to land and resource management.

The purpose, then, of this winter issue of THE GEORGE WRIGHT FORUM is to bring together an array of individuals who have thought a great deal about sustainability, sustainable design, and our role in the universe around us.

Sustainable development

The term "sustainability" first became popular with Lester Brown's book *Building a Sustainable Society*, and with the IUCN's *World Conservation Strategy*, both of which appeared in 1980. Since then, several other groups have called for sustainable initiatives of one form or another:

- The World Commission on Environment and Development (WCED), chaired by Gro Harlem Brundtland, published a report calling for sustainable development worldwide (WCED 1987).
- The Ecological Society of America launched a Sustainable Biosphere Initiative (Lubchenco et al. 1991).
- The U.S. government, under the direction of Vice President Al Gore, is currently pursuing a national strategy for sustainable development and has established a Presidential Council on Sustainable Development.
- The U.S. National Park Service, through its 75th-anniversary "Vail Agenda," is now integrating sustainable design principles into park planning and facility design.

Building on these initiatives, the next George Wright Society conference, scheduled for April 1995 in Portland, Oregon, will have "Sustainable Society and Protected Areas" as its theme.

There are many who define sustainability as "that which can be sustained." According to this definition, there is no difference between "sustainability" and traditional concepts of sustained-yield harvest using single-species or single-resource management. Such "sustainable harvest"

focuses on the relationship of rates of harvest to reproductive rates of a given resource. The resource is considered in virtual isolation from its environment, with no consideration given to ecological linkages except simple correlations with its food base and other features that have clear and direct repercussions for reproductive and mortality rates (Schemnitz 1980, McEvoy 1988).

This use of the term "sustainability" parallels the approach of the Brundtland Commission in adopting sustainable development as the pivotal concept of its report *Our Common Future*. The Commission defined development as sustainable if it "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987:8). They expanded on this human-centered approach by further defining sustainable development as economic growth. "If needs are to be met on a sustainable basis," they stated, "the Earth's natural resource base must be conserved and enhanced.... It will be necessary to turn to methods that produce more fish, fuelwood, and forest products under controlled conditions" such as aquaculture and tree farms (WCED 1987:57-58). In the view of the Brundtland Commission and others (such as Norgaard 1988), sustainable ecosystem management implies more sophisticated manipulation of the biosphere, with multi-national planning and cooperation to raise worldwide living standards while protecting critical life-support systems and the ability of resources to renew themselves.

The Brundtland Commission urged us to see human populations

not just in terms of numbers, but also as a "creative resource." Yet Vitousek et al. (1986:368-373; cited by Orr 1992a:7) estimated that humans now use, directly and indirectly, 40% of the net primary productivity of terrestrial ecosystems on the planet, thus changing climate, exterminating species, and toxifying ecosystems (Orr 1992a:7). Increasing economic productivity and enhancing lifestyles worldwide will inevitably mean diverting increasing amounts of energy and resources to human purposes, leaving less to support the complex ecosystems of which we are a part.

Therefore, an approach to sustainability based on human-centered utilitarian values cannot be succeed in the long-run.

Sustainability and ecological thinking

There is a growing sense of apprehension about society's efforts to manipulate ecosystems. Eckersley (1992: 52) stated that "nature is not only more complex than we presently know but also quite possibly more complex ... than we *can* know."

With the power we wield, the consequences of a mistake are greater than ever before. In the U.S., just one aspect of the consequences of our traditional approach to the environment is evident in the endangered species dilemma. For a time, the debate over the spotted owl in the Pacific Northwest was reduced to arguments over how many jobs would be lost to save a few owls. Following the Forest Summit, led by President Clinton in April 1993, a Forest Ecosystem Management Assessment Team was assigned to evaluate alternative options for forest management and their ef-

fects on the entire spectrum of species associated with old-growth forest ecosystems. In carrying out its charge, the team found that owls were just the smallest tip of the forest-ecosystem iceberg. They found that their assignment involved assessing the effects of forest management options on 524 species of mushrooms and other fungi; 106 of mosses and other bryophytes; 142 of lichens; 127 of vascular plants; 102 of slugs, snails, and other molluscs; 18 of amphibians; 38 of birds; 27 of mammals; and more than 7,000 of insects and other arthropods (Thomas 1993).

Taken individually, conserving each of these species seems like an insurmountable task. Falk (1990) stated that government acquisition and preservation of habitat for every geographic variant of every rare species would require an impossibly large investment of capital. Instead, he proposed investment in off-site genetic conservation such as germplasm banks and cultivated populations.

However, Thomas (1993) seemed to come to the realization that more important than the species themselves are the functional linkages among them. This situation is similar to that faced by quantum physicists when they began to look at scales smaller than the smallest known particles. Instead of finding still more minute particles, they found only "probabilities of existence." They realized that it is not the particles themselves that are important, but rather their interactions and interrelationships. The same holds true as we examine ecosystems more closely. While it might be possible to conserve species in zoos or conserve their genetic materials frozen in test

tubes, this misses the essence of their existence. What's important is not the species themselves, but their interrelationships. As physicist Fritjof Capra put it, "It's not the dancers, but the dance" (Capra 1978).

When we degrade the environment, it's not the loss of species that is of ultimate importance, but rather the loss of connections and dynamic interrelationships. As we raze forests, or drain wetlands, as toxic pollutants seep from dumps or are released into waterways and the sea, what does this do to the connections? Humans are woven into this web of connections as well. What are the consequences of each decision we make?

Sustainability and ethical thinking

There is an illusion that sustainability can be achieved through technological and scientific processes. Inherent in our scientific studies and the development of technology is the use of models to simplify complex systems with the intent of enhancing our understanding. The result is an illusion that we have sufficient understanding to manipulate these systems. The consequence of maintaining this illusion is that each technological "fix" directed at one problem creates a dozen more problems in need of fixing (Ludwig et al. 1993).

To help achieve sustainability, the Ecological Society of America proposed research focused on understanding the underlying processes of ecosystems in order to prescribe more effective management strategies (Lubchenco et al. 1991). Norgaard (1988) proposed that "flow resource systems" such as the services of soil microbes that affect atmospheric

gases must be understood and managed, both locally and globally.

But resource problems are not technological problems; they are human problems. The solutions lie not in better technology but in addressing our cultural beliefs and practices that are disrupting the capacities of ecosystems to sustain themselves.

Some believe that adopting a sustainable approach means increasing recycling, reducing waste, and selecting "green" products. While these are important steps, they are superficial steps that fail to address the fundamental problems. Ecosystems do not, and cannot, expand their life-sustaining capacities in response to the expanding desires of cultures or exploding global populations. We must, instead, look within ourselves as we move towards a sustainable life.

Resolving the problems of sustainability will require greater philosophical depth and perspective. The words "sustainable development" do not carry with them any sense of the moral vision that is needed. To move towards a sustainable life will require that we shed our anthropocentric notions that humans somehow live at the center of the universe. A sustainable life is based on the knowledge that humans are simply a part of larger global processes, and that it is our responsibility through our actions to build and not destroy these processes and, according to Heidegger (1962), allow for the potential of beings on the earth.

In order to accomplish this, we need a population that is both ecologically literate and competent. Ecological literacy is more than technological

cleverness. Ecological competence implies education and experience that develop the practical art of living well in a particular place (Orr 1992a:84).

While we believe that we are undergoing an explosion of knowledge, the fact is that some kinds of knowledge are growing while others are in decline. Among the losses are vast amounts of genetic information from the wanton destruction of biological diversity, due in no small part to knowledge put to destructive purposes. With the absorption of cultures into a worldwide, homogeneous and cosmopolitan society, we are also losing the intimate and productive knowledge of our landscape (Orr 1992a:152). In the words of Barry Lopez: "Year by year, the number of people with first-hand experience in the land dwindles ... herald[ing] a society in which it is no longer necessary for human beings to know where they live except as those places are described and fixed by numbers."

Society is always looking for a technique; a clever and easy way to get out of a seemingly intractable situation. The solution does not lie in managing ecological systems, or managing technology, but in learning how to manage ourselves within these systems.

Sustainable design

What then, does sustainable thinking based on ecology have to say about design?

- Left to itself, nature evolves in ways that tend to create systems that are stable over long periods of time within relatively narrow limits (Orr 1992a:58).
- The concept of sustainability implies the recognition of limits in-

herent in ecological systems. The same recognition must become an integral part of social values, laws, and institutions that affect everyone (Orr 1992a:178).

- A solution is good when it is in harmony with the larger patterns in which it is contained (Berry 1981).
- Good solutions "solve for pattern"; that is, they solve more than one problem while creating no new ones (Berry 1981).
- Our linear industrial systems should be replaced with cyclical ones that emulate nature; ones in which waste products from one process become a key resource for another, and nothing is wasted (Train 1993:12).

David Orr (1992b) said it best when he described ecological design (or sustainable design) as: "the set of perceptual and analytic abilities, ecological wisdom, and practical wherewithal essential to making things that fit in a world of microbes, plants, animals, and entropy. In other words, [sustainable design] is the careful meshing of human purposes with the larger patterns and flows of the natural world, and careful study of those patterns and flows to inform human purposes."

Instead of viewing nature as a set of limits, we should consider it a model for the design of housing, cities, neighborhoods, farms, technologies, and regional economies. The case for regarding nature as a model rests on the recognition that the biosphere is a catalogue recorded over millions of years of what works, including life forms and biological processes. A new aesthetic would evolve from sus-

tainable design; an aesthetic based on a healthy, vibrant, and thriving ecosystem. And when an ecosystem is unhealthy or not thriving due to past development, building and design should heal the scars (Orr 1992a).

Bob Berkebile, a prominent Kansas City architect and one of the contributors to the USNPS's *Guiding Principles of Sustainable Design*, suggests that "we're rediscovering that we can create buildings and neighborhoods that respond to their environment, just as a living system would" (Gilman 1993:9).

Clearly, there is simply no way we can achieve a sustainable future without major changes in our built environment. We need to go beyond minimizing the impact of each design decision—enlightened mitigation—and adopt a design process that responds to existing ecological conditions, a process that emulates the efficiency and diversity of nature and that is adaptive and evolving. This will involve shrinking our urban footprint and returning land to natural habitat. Much of our hard pavement should be replaced with urban forestry and wildlife corridors, and the rest with porous pavement to reestablish natural drainage patterns. "If we allow the systems we've hidden—like streams and sewers—to come back to the surface, we'll become more aware that they are important components of a living system, and we'll accept more of the responsibility for managing, supporting and restoring them" (Gilman 1993:11).

Because sustainable design describes an ideal, it is vulnerable to our human tendency to distort the meaning of a term when it is convenient.

Aldo Leopold wrote, "All ethics so far evolved rests upon a single premise: that the individual is a member of a community of interdependent parts. ... The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals"; collectively, "the land" (Leopold 1949:203). Sheldon (1993:3) added, "If we human beings learn to see the intricacies that bind one part of a natural system to another and then to us, we will not argue about the importance of wilderness preservation, or over the question of saving endangered species, or why we need to develop means by which we can protect private land as well as public land, or how communities must base their economic futures not on short-term exploitation, but on long-term sustainable development. If we learn, finally, that what we need to manage is not the land so much as ourselves *in* the land, we will have turned the history of American land use on its head."

Sustainability, respect, and responsibility

So what is sustainability? Sustainability is not a list of do's and don'ts. It is not a set of techniques that can be found in a manual and mechanically applied. As with respect, where there is no one set of rules that one can follow in order to be judged "a respectful person" by society, there also is no set of rules that one can follow to achieve sustainability.

Perhaps sustainability is not something to be defined, but to be declared. It is an ethical, guiding principle based on actions and consequences, limitations, an awareness of

trade-offs, and a sense of responsibility. Responsibility for the present, not simply to strive for a built environment with much lower environmental impacts while enhancing health, community, and quality of life. Laudable though this effort is, we should strive for restorative design with *no net environmental impacts or even a positive contribution to the environment whenever we build in it*. And, above all, responsibility for the potential of all the unborn generations of beings on our planet.

Contributors

The journey towards sustainability is as much a personal journey as a professional one. It is not surprising then, that several of the authors included in THE GEORGE WRIGHT FORUM have chosen to share their personal thoughts and processes in their journey towards sustainability, and our place in the world around us.

Phil Pister is a fisheries biologist with the Desert Fishes Council who single-handedly saved a desert fish species in a bucket as the only spring it inhabited dried up. He argues that society is torn between greed and self-preservation. The solution to this conundrum is to put an emphasis on public education. We have relied on the scientists in the past; it is time to look to the philosopher to help us through these great moral debates. We must learn to think at "right angles" to gain a new perspective. Finally, Pister believes that we need a transformation of society's relationship with nature because, while we concentrate on saving species, morality may be the endangered species.

J. Baird Callicott, a professor of philosophy at the University of Wis-

consin, is recognized as an expert on the writings and philosophy of Aldo Leopold. In his essay, Callicott presents a brief history of the American experience in conservation and preservation, based on the philosophies espoused by Gifford Pinchot and John Muir. He argues that preservation and conservation are obsolete concepts and believes we must find a new way of thinking about this intractable problem. Uncomfortable with the terminology of "sustainable development," Callicott believes that sustainable thinking should reflect the symbiotic relationship between people and land, a concept advanced by Leopold. He believes that Leopold's "harmony with nature" is the correct and logical answer. Callicott argues that ecosystems should be managed, but not for commodity production. Rather, they should be managed for their own health and integrity.

Stephen Viederman, president of the Jessie Smith Noyes Foundation, takes a decidedly economic view of our human-environment relations. Describing nature as capital, he attempts to lay out a new economics for sustainability. He identifies the sources of unsustainability in our society, and then proceeds to take on the Herculean task of identifying the principles, the goals, and the characteristics of sustainability. Politics today reflects the values of competing special interests. Viederman believes that politics must instead reflect a broader set of values. He concludes his essay with an appeal for logic and science, yet asks that we not fear emotion and spirit.

Gary Meffe, a research biologist at the University of Georgia's Savannah River Ecology Laboratory, believes

that we have allowed politics and economics to direct resource management. While many believe that the "real world" is based on economic reality, Meffe argues that the real world actually consists of the immutable laws of nature. This requires a paradigm shift away from the outdated socioeconomic system currently in place, which is responsible for our current predicaments. He believes that we must mature as a species, and drop our techno-arrogant thinking. Land managers are compelled to recognize natural laws rather than political expediency and short-term economic gain. Lastly, he agrees with Pister that the answer lies in the education of our children.

The *Denver Service Center*, the design and construction center for the U.S. National Park Service, published *Guiding Principles of Sustainable Design*, a collaborative effort of individuals representing professional design and conservation groups, various offices of the USNPS and national and local governmental agencies, and ecotourism resort operators in October 1993. Site design is a process of intervention involving the sensitive integration of circulation, structures and utilities within natural and cultural environments. The *Guiding Principles of Sustainable Design* suggests that the goal of sustainable development and sustainable building design is to create optimum relationships between people and their environments. The suggested principles to be used in the design and management of park and other visitor facilities emphasize environmental sensitivity in planning, design, construction, operation and maintenance; the use of non-toxic ma-

terials, resource conservation, and recycling; the integration of visitors with natural and cultural settings; and to affect not only immediate behaviors but also the long-term beliefs and attitudes of visitors. The long-term objective of sustainable design is to minimize resource degradation and consumption on a global scale.

Javier Barba is a Spanish architect who strives to develop connections with the surrounding environment and incorporates a sense of place in projects built around the world. Through examples of his work he takes us on a journey of what he calls creative sustainable architecture. He believes that the very nature of architecture is creating a relationship between humankind and the earth and sky. Yet his dream to build a complete new island points to the inherent struggle between having respect for the environment, and our urge to modify and change the environment. This dichotomy points out the difficulty in trying to develop a sustainable approach to design and planning.

Joan Hirschman, formerly a landscape architect with the USNPS, is an assistant professor at California Polytechnic State University, Pomona. She is concerned that the term "sustainability" is popular because it can mean so many things to so many people. Sustainability cannot be trendy, and must be long-term. She is a strong supporter of the Denver Service Center sustainability initiative and takes us on a very personal journey into the conversion of information into abilities and motivation. She believes that three things are required: values, motivations, and institutions.

David Cox, a professor of Veteri-

nary Medicine, along with graduate students Val Beasley and Paul Andrews, explore alternative concepts of sustainability. They contend that economic and ecological considerations are not mutually exclusive. Focusing on the Pacific Northwest timber debate, Cox argues that the adversarial barriers long a part of the environmental-economic debate must be broken down and that long-term economic well-being depends on ecological well-being.

John Reynolds, deputy director of the U.S. National Park Service, outlines the evolution of design within the agency once a decision to build a facility has been made. He discusses the Brundtland Commission's definition of sustainable development as furthering the well-being of people. More

importantly, he recognizes the essential basis of sustainability as an attitude of respect for all life.

John R. Anfield, director of planning for Peak National Park in England, describes national parks in Europe, detailing examples from England. Located in the midst of densely populated Europe, these national parks cannot be considered natural and untouched; in fact, communities are encompassed within many European national parks. With the primary aim of these parks to conserve the environment, this suggests the pursuit of sustainable lifestyles. Anfield summarizes efforts being made to ensure that growing tourism is compatible with conservation of national park values in Europe.

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