Introduction

Sustainability: Taking the Long View

by **Camille M. Kirk**
Guest Editor

The number of cars in the world increased at an annual rate of 2.8 percent between 1980 and 1996, faster than the annual rate of population growth during those years (Harrison and Pearce 2001a). Carbon dioxide in the atmosphere has increased about 30 percent over pre-industrial levels (Harrison and Pearce 2001b). If you are reading this article by electric light provided by a coal-fired utility plant, approximately 97 percent of the stored energy in the coal burned for that electricity was wasted in conversion and transmission, leaving only 2 to 3 percent to actually power the light bulb (Harrison and Pearce 2001c). We are losing species in our most populated areas, largely due to habitat loss, at perhaps 100 times the "normal" rate and that is conservatively estimated to increase by at least tenfold in the next 25 years (Harrison and Pearce 2001d).

Many of us have seen similar figures about the human impact on the environment. Our present land use and resource consumption patterns present us with the challenge of meeting our needs without compromising the ability of others, including other species, to meet their needs, now and in the future. This is the moral and practical challenge that the sustainability movement proposes to meet. Higher education is not exempt from this challenge. To the contrary, you will learn in the following pages that higher education has a special obligation to lead the way because it plays a role in producing leaders, policy makers, and citizens of the world. Additionally, it uses a large share of resources on its campuses to carry out the traditional mission of teaching, research, and service.

For some, the term "sustainability" might call to mind buildings with solar panels on the roof, generating off-the-grid electricity. While building design and construction with sustainability in mind leads to fewer environmental impacts and helps conserve resources and money, "green" architecture is not all there is to creating a truly sustainable higher education institution. There are many components of "greening" the campus, from changing the curriculum to mitigating traffic impacts to implementing environmental

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management systems, and finding leaders at all levels on campus to take charge of various sustainability efforts. In this special issue, you will find a wide range of articles by many formative thinkers and experts in the field of sustainable planning.

This issue of *Planning for Higher Education* marks an important step for the Society for College and University Planning. By committing considerable resources to the topic of sustainability in higher education, both with this issue of the journal and with initiatives such as the April 2003 sustainability telecast, SCUP takes a leadership role in both the debate about the role of sustainability in higher education and in the planning and implementation of sustainable programs and projects on campuses around the world.

As planners and leaders, we can ask ourselves what our educational institutions can do differently and better to ensure intergenerational success and well-being. One starting point is what we teach our students and how we practice our teachings. Anthony Cortese describes how higher education can take a leading role in modeling and educating for sustainability, citing examples from colleges and universities around the United States. One impetus for realizing Cortese's vision comes from prospective students. To this end, Keith Wheeler and John Byrne discuss the incorporation of sustainability education into K–12 standards. But this may be a Pyrrhic victory if students reach college only to find that sustainability education is largely considered an elective course, rather than imbued in all facets of university life. The United States lags behind many other countries in sustainability education and research, which is apparent in Wynn Calder and Richard Clugston's comprehensive overview of international efforts to connect institutions of higher education with sustainable development. Such efforts include some of the outcomes from the 2002 World Summit on Sustainable Development in Johannesburg, South Africa. This article helps us understand the challenges that lie ahead for the United States and how it can learn from its international compatriots.

Another step in creating a sustainable institution is to undertake a campus environmental assessment and, based on the results, shape policies and practices that mitigate or overcome deficiencies and impacts uncovered in the assessment. Ann Rappaport and Sarah Hammond Creighton describe the role of environmental assessment tools as part of more comprehensive environmental planning on campus, with a particular look at the Climate Initiative at Tufts University as a case study of how to devise policy and practice by treating the campus as a complex system in which all aspects of campus life are understood as opportunities to practice stewardship. Joshua Pearce and Christopher Uhl relate the creation of a campus sustainability policy at The Pennsylvania State University, based on the initiative of an ad hoc group of its own faculty scientists well-versed in the causes and effects of global climatic change. They describe a step-by-step process that facilitated the implementation of sustainability practices on campus. Julian Keniry describes the use of Environmental Management Systems (EMS) to guide the practice of sustainability on campuses. She notes that the success of EMS depends in part upon the cultivation of

"Sustainability" Defined

As Nancy Tierney writes on page 13, for the purposes of this journal, sustainable activities are those that meet contemporary needs without compromising the ability of future generations to meet their needs. This definition derives from the Brundtland Commission (1987) report and has been accepted by many as the root meaning of sustainability. According to the *Oxford English Dictionary* (1993), the word "sustainability," as an adjective to describe that which is "capable of being maintained at a certain rate or level," seems to appear first in 1972. To put this in context, Aldo Leopold's *A Sand County Almanac*, a collection of essays on a land ethic and conservation, was first published in 1949; Rachel Carson's *Silent Spring*, a treatise on the unintended ills caused by the pesticide DDT and considered by many to be the catalyst for the environmental movement in many industrialized nations, was published in 1962; and the first Earth Day was celebrated in 1970. Over the last 30 years, as scientists, environmentalists, and policy makers more closely examined the world's ecological systems, the word "sustainability" has gathered force and turned into a movement. Reports from the field started coming back, raising our awareness of ecosystem degradation; air pollution; global climate change; depletion of freshwater stores; loss of biodiversity; major industrial accidents, such as Bhopal, resulting in thousands of deaths; and chronic industrial pollution, such as that found in Cancer Alley in Louisiana. It is doubtful that many of us would wish to turn the clock back to pre–Industrial Revolution times and suffer the miseries and uncomfortable conditions of those centuries. However, we can strive to improve and even radically alter the systems we've created over the last 200 years to acknowledge our burgeoning understanding of the role of contemporary human impacts on our planetary environment and our social relations with each other.

leaders who will champion campus environmental responsibility as well as the allocation of resources necessary for its implementation.

Keniry's observation brings us to another key element in creating a sustainable institution: leadership. Without supportive leadership, campus sustainability efforts have a hard time attracting the resources and compliance they need to succeed. Tom Wojciechowski discusses who can and should lead campus efforts toward greater sustainability as well as the importance of and opportunities for such environmental leadership based on his experiences at Northland College, an institution known for its environmental focus. Wojciechowski addresses one of the major challenges Northland faced: transitory leadership. He concludes that linking student learning to on-campus sustainability produced the majority of Northland's "greening" successes. In his Viewpoint piece, David Orr outlines Peter Senge's concept of the learning organization, an organization in which room is made for people to rethink organizational goals in response to a broader context. In this case, the context is ecological degradation and the challenge is to learn ways to "sustainably provision" our institutions. Orr then considers how the modern higher education institution might transform itself into a true learning organization, a key component of which is strong leadership.

Institutions have an important research role to play in educating the populace about sustainability. Faculty work—whether basic theoretical research, modeling and analysis, or applied research—serves to further our understanding of our planet and human interaction with it. Phillip Waite considers the implications of Walter Firey's landmark study of natural resource use for campus planners pursuing sustainability. Firey's model classifies practices of natural resource use in three ways: as ecologically possible, economically gainful, and culturally adoptable; only those practices that satisfy all three should be considered sustainable. Waite tests the application of this approach to a campus recycling program initiated at the University of Idaho. William Rees, one of the creators of ecological footprint analysis (EFA), provides an explanation of the EFA tool for assessing the ecological impact of specific populations. He discusses how EFA might be applied in a campus setting and some of the difficulties in doing so.

Anthony Bernheim cites ecological footprint analysis as evidence to remind us why we need to consider environmental sustainability when planning our campuses. He presents a workshop model for structuring a green campus design and development process, arguing that the workshop process is crucial to educating participants, who will then be better able to make informed decisions and arrive at a consensus about what "green" means. William Browning describes the advantages of green building in general and for educational institutions in particular. He debunks some of the myths that have kept green building from becoming more widespread (e.g., prohibitive costs) and points to three key steps for facilitating a successful green building planning and design process. Policies that support sustainable design can help campus planners in their efforts to obtain financing timed to green construction schedules as well as provide design guidelines. Authors Arnold Sowell, Amanda Eichel, Leon Alevantis, and Maureen Lovegreen review the effort in California to champion sustainable design and building practices through recommendations of the state's Sustainable Building Task Force, which culminated in an executive order from the governor. They outline the recommendations as applied to the University of California, California State University, and California Community Colleges systems. They discuss several building projects around the state as exemplary models but also point to some of the barriers to integrating sustainable building practices more systematically.

While "greening" buildings is critical to achieving any measure of sustainability on campus, efforts cannot stop with buildings. Campuses are often likened to cities, and with respect to the operational needs of a campus, that metaphor rings true. Traffic and transportation, land use and landscape design, storm water runoff, energy use, and facilities maintenance and operations all can be subjected to scrutiny from a green perspective and made more sustainable, more efficient, and more cost-effective in many cases, especially where government regulations (such as for air and water quality) may force expensive compliance when traditional management methods are used. Several authors delineate ways to approach campus planning and operations sustainably. Will Toor notes that transportation to and from campuses in fossil-fuel-burning automobiles constitutes one of the largest environmental impacts of most educational institutions and often affects town-gown relations. He details strategies for reducing the number of vehicle miles traveled by campus employees and students as part of an approach known as "transportation demand management," citing specific examples from U.S. colleges and universities. Carol Franklin, Teresa Durkin, and Sara Pevaroff Schuh survey recent efforts to revise traditional

views of the campus landscape to incorporate sustainability as part of campus development policies and practices as well as to expand the role of the campus landscape itself as a vital pedagogical tool. They describe the process of generating an Environmental Master Plan for a campus based on their work with the University of North Carolina at Chapel Hill. And Walter Simpson discusses a number of key organizational elements that have helped establish successful energy sustainability efforts on campus based on his work at the State University of New York at Buffalo. He pays particular attention to the crucial role played by facilities management and reminds us of the importance of documenting the work that is done in moving a campus toward energy sustainability, noting that results need to be tracked and celebrated.

William Moomaw concludes with an overview of the themes addressed in this special issue and at the same time argues for the need to realign institutional values with the goals of sustainability. He observes that, while we may point to many excellent sustainability projects and efforts at colleges and universities, few of them have adopted a comprehensive approach. Sustainability, then, is still marginal to how colleges and universities define themselves. And it is critical that we reposition sustainability as a centrifugal force, impelling our institutions of higher education to push continually farther in all directions to protect our future generations and their ability to meet their needs in healthy ways environmentally, aesthetically, socially, and economically.

We recognize that some aspects of sustainability are not covered in this issue, not because they are any less important, but due to constraints of space, time, and other resources. We hope that these constraints will spur further debate and contributions in the pages of *Planning for Higher Education* and at SCUP conferences, workshops, and other venues. You are encouraged to write letters to the editor or, better yet, articles for submission, and to propose conference sessions and workshops to fill in gaps in this issue.

One final note: The top headline of the November/December 2002 issue of *School Construction News* boldly declares: "Survey Finds Need for International College and University Construction." The article reported that existing institutions need to add space just to keep up with current enrollment figures. Further, with an expected increase of more college-age students, many nations will not only need to expand current facilities, but also will need to build new campuses. As I read this article, I found myself wondering if this special issue on sustainability and higher education could make a difference in the planning, construction, operations, and curricula of any of these needed renovations and new campuses. Are we here in time to make a difference? Is our voice strong enough to be heard, and heeded, in the various halls and offices where decisions are made? These are questions that have haunted planners in every age. I passionately hope that the answer in this case is yes, we are here in time and with convincing evidence and models to make a difference and to fulfill our mission as planners and designers to craft a better future.

References

Carson, R. 1962. *Silent Spring*. Cambridge, Mass.: Riverside Press.

Harrison, P., and F. Pearce. 2001a. Part 1: Overview: Population and Consumption Trends. *AAAS Atlas of Population and Environment*, edited by Victoria Dompka Markham. Washington, D.C.: American Association for the Advancement of Science and Berkeley, Calif.: University of California Press. Retrieved February 9, 2003, from the World Wide Web: www.ourplanet.com/aaas/pages/overview03.html.

———. 2001b. Part 1: Overview: The Scale of Our Presence. *AAAS Atlas of Population and Environment*, edited by Victoria Dompka Markham. Washington, D.C.: American Association for the Advancement of Science and Berkeley, Calif.: University of California Press. Retrieved February 9, 2003, from the World Wide Web: www.ourplanet.com/aaas/pages /overview01.html.

———. 2001c. Part 2: Atlas: Population and Natural Resources. *AAAS Atlas of Population and Environment*, edited by Victoria Dompka Markham. Washington, D.C.: American Association for the Advancement of Science and Berkeley, Calif.: University of California Press. Retrieved February 9, 2003, from the World Wide Web: www.ourplanet.com/aaas/pages/natural01.html.

———. 2001d. Part 2: Atlas: Population and Biodiversity. *AAAS Atlas of Population and Environment*, edited by Victoria Dompka Markham. Washington, D.C.: American Association for the Advancement of Science and Berkeley, Calif.: University of California Press. Retrieved February 9, 2003, from the World Wide Web: www.ourplanet.com/aaas/pages/bio01.html.

Leopold, A. 1949. *A Sand County Almanac*. New York: Oxford University Press.

School Construction News. 2002. Survey Finds Need for International College and University Construction. *School Construction News* 5(7): 1, 12.

"sustainable, a." *Oxford English Dictionary Additions Series*. Vols. 1–2. Ed. John Simpson and Edmund Weiner. Oxford: Clarendon Press, 1993. *OED Online*. Oxford University Press.

World Commission on Environment and Development (Brundtland Commission). 1987. *Our Common Future*. Oxford: Oxford University Press.