

WE ARE APPROACHING WHAT I would term a critical inflection point in the evolution of global society. Such inflection points occur when new advances in our understanding converge in some meaningful way with our existing social, cultural, economic, and historical circumstances and practices, allowing us to glimpse new opportunities. Sustainability is a term that is easily applied to so many things that we constantly risk diluting its power as a concept, but without doubt it represents nothing less than a reconceptualization of our relationship with both the planet and the community.

The task for scholars and administrators in our nation's colleges and universities is to register the significance of this inflection point and to consider how best to refigure institutions to accommodate and advance the new transdisciplinary teaching and research critical to our collective well-being.

New Challenges, New Solutions

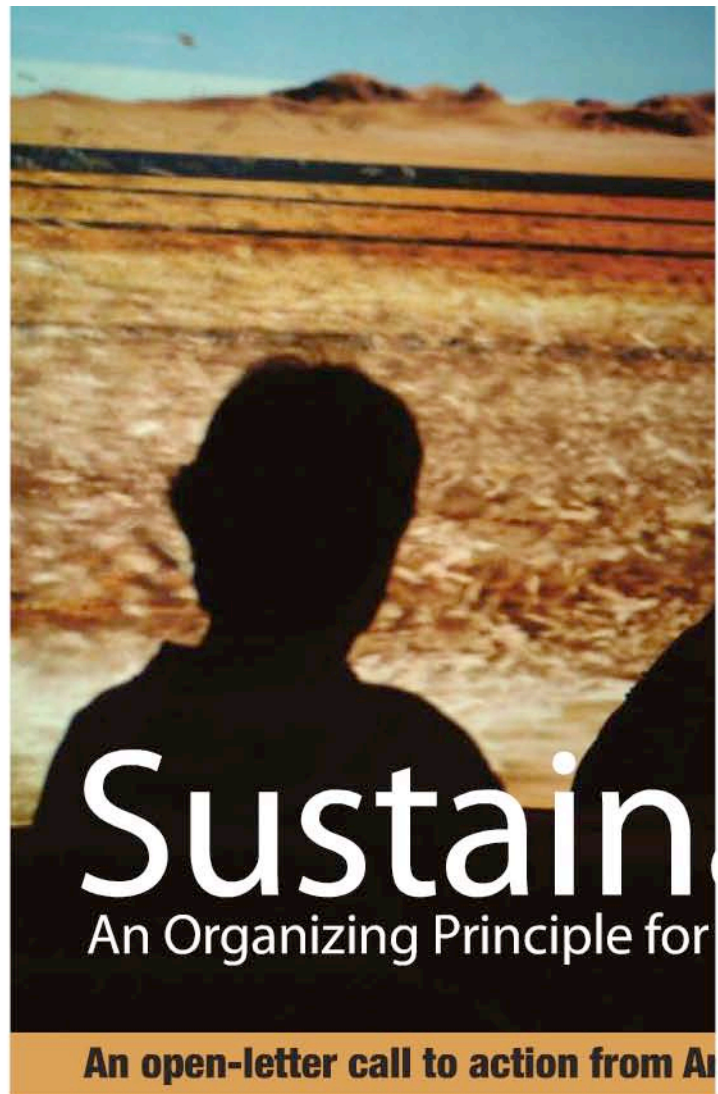
With a global population of 6.5 billion that is projected to increase to 8.5 billion by mid-century, we face challenges of unimaginable complexity, both as a species and, more narrowly, in terms of our American standard of living and quality of life as a nation. The increasing interconnectedness and integration of societies and economies worldwide makes us interdependent, but we are all wholly dependent on the dynamic and interactive system of complex biogeochemical cycles that makes life on earth possible in the first place.

Yet despite our efforts to advance our understanding, there remain both incomprehension and complacency regarding the extent to which the Earth is falling increasingly under our influence as the dominant life-form.

As we impinge more and more on natural systems—with our planet falling increasingly under the domination of a single species with the capacity to modify natural systems, extract and consume resources, and generate waste on a scale that even in the recent past would have been unimaginable—we must assume challenges that remain beyond our historic and present capacity to solve.

We are at a critical juncture in the evolution of our relationship to the environment, and universities must take the lead in addressing issues of sustainability.

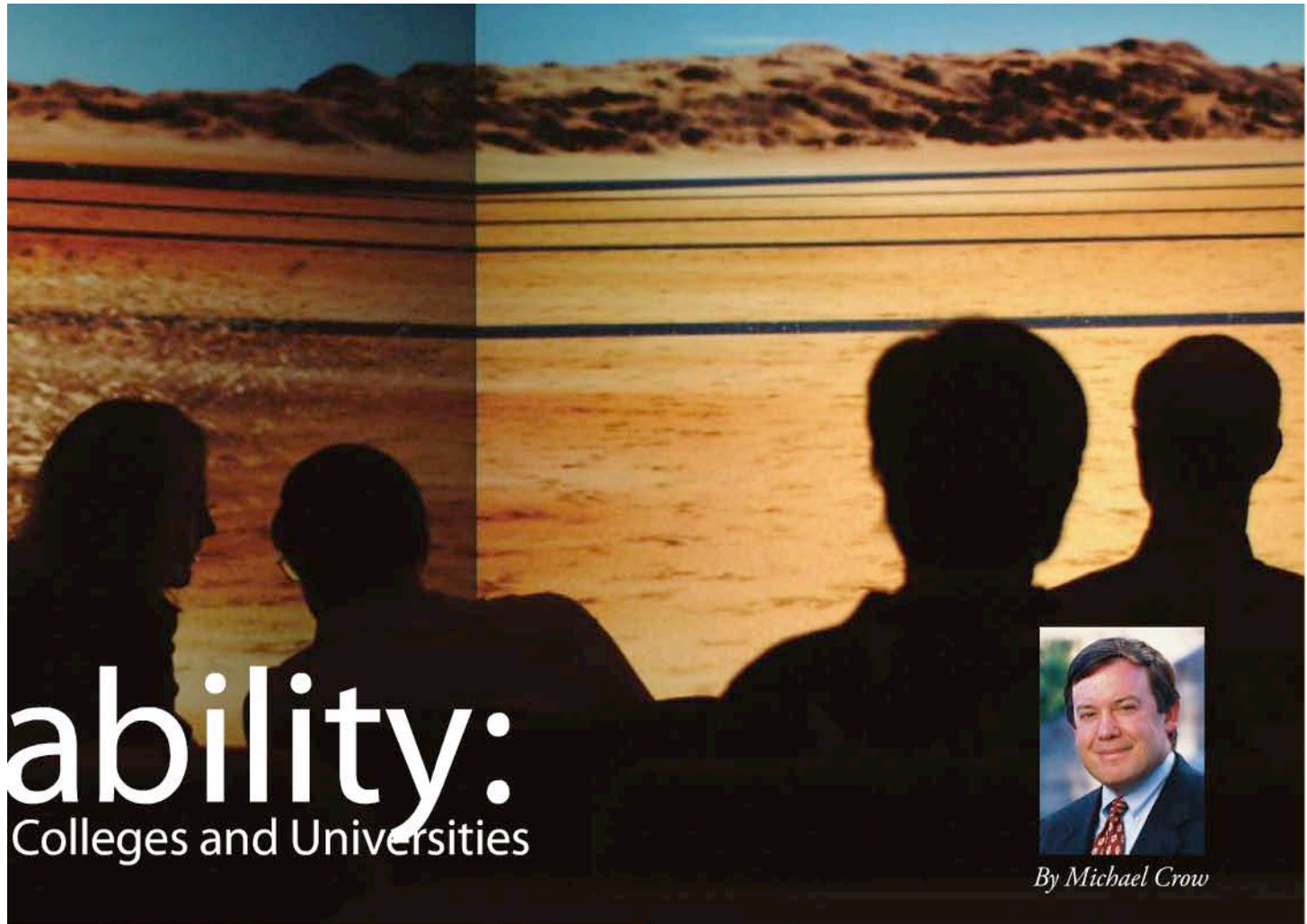
Nations are falling further behind, both in terms of developing the basic infrastructure necessary to maintain quality of life and an adequate standard of living for all citizens, and in balancing the needs of humanity with the long-term consequences of human



impact on environmental systems.

The concept of sustainability, sometimes mistakenly equated with an exclusive focus on the environment, is at once straightforward and far more complex than one might suspect. Sustainability embraces environmental concerns, certainly, but its implications are far richer, spanning issues intrinsic to economic development, health care, environmental planning and urbanization, energy, chemicals, materials, agriculture, national security, business, industry, and government—in short, all the concerns of daily life in societies around the globe. Sustainability acknowledges the needs of human societies but in its framing seeks a balance between social values, including equity and justice, and the environment.

We are at a critical juncture in the evolution of our relationship to the environment—the long-term sustainability of our nation and even our planet remains in doubt—and universities must take the lead in addressing issues of sustainability. Academic communities cannot be removed from the front lines of social change, and our universities must serve as a forum for cultural, economic, political, and social reform. Universities are transformational catalysts for societal change and perform functions essential to our collective survival, but we must confront the fact that we do not fully understand the implications of human impact on the environment and are not adequately prepared to advance policies



ability:

Colleges and Universities



By Michael Crow

Arizona State University's president.

In the Decision Theater at ASU, scientists, students, and others can see alternate future environmental scenarios through 3-D visualizations.

regarding the optimal intersection of human and natural systems.

The central question that confronts us is whether we will be able to choose wisely among alternative future trajectories, and in this sense our academic institutions are the keepers of the keys. Our colleges and universities generate the knowledge necessary both in terms of scientific and technological knowledge and the ability to wisely govern the world that we have made.

But universities are a thousand-year-old institutional form and change very slowly, maintaining their existing organizational structures and core cultures unaltered whenever possible. While we do not understand the long-term effects of our impact on the planet, we have even less knowledge about how to organize our academic institutions to confront this challenge.

A New American University

At Arizona State University we are in the midst of an effort both to reconceptualize a public metropolitan research university *and* to redefine public higher education through the creation of a prototype solution-focused institution that combines the highest level of academic excellence, maximum societal impact, and inclusiveness to as broad a demographic as possible.

The paradigm is conceptually framed as the "New American

University," and because the institution is predicated on *excellence, access, and impact*, I believe that it has relevance for colleges and universities both in this nation and abroad. Sustainability is at the core of this conception, not simply because interdisciplinary research on human-dominated environmental systems has long been one of the strengths of the university, but because we made an explicit institutional commitment to sustainability.

The problems that we face require multiple approaches and an integration of disciplines. Thus, as our front line of engagement in sustainability, we conceived an academic entity construed across disciplinary boundaries, bringing together scientists, engineers, and scholars from a broad community of disciplines, engaging the expertise and influence of leaders from business, industry, and government to develop solutions to pressing real-world problems.

With a planning gift of \$25 million from Julie Ann Wrigley, president and CEO of the Julie Ann Wrigley Foundation (a philanthropic foundation committed to the environment, health care, and education), the Global Institute of Sustainability (GIOS) was launched in November 2004 to catalyze and advance interdisciplinary research on environmental, economic, and social sustainability.

If academic institutions are to succeed, each must leverage its strengths. ASU was already uniquely positioned to play a central ►

SUSTAINABILITY:
AN ORGANIZING PRINCIPLE FOR COLLEGES AND UNIVERSITIES



The ASU campuses boast a number of LEED-certified buildings, including this interdisciplinary science and technology facility (left). Research facilities include the Biodesign Institute (middle); an alternative fuels project in its laser lab helps explain how plants turn light into energy (right).

role in providing science-based solutions to address the challenges of sustainable development, especially as these bear on the burgeoning Phoenix megalopolis, including:

- the impacts of rapid growth on a semiarid ecosystem;
- water-resource management;
- human health and well-being;
- ecosystem viability; and
- biological diversity.

Leveraging our growing prominence in earth-system sciences, we decided to deploy our capacity to apply authoritative insight, prototype decision-support tools, and institutional mechanisms to improve the relationship between social and ecological systems through a continuum of understanding, prediction, adjustment, and adaptation. Together with resource managers, industry leaders, and local, regional, and state policymakers, ASU has positioned itself to tackle complex issues associated with sustainability.

Our sustainability initiative also provides a framework to connect the university to institutions similarly interested in collaborat-

ASU's sustainability initiative provides a framework to connect the university to institutions similarly interested in collaborating on applications relevant to the global community.

ing on applications relevant to the global community. GIOS thus has developed productive partnerships with a number of premier institutions around the world, including **Stanford University**, **Harvard University**, **MIT**, the **University of Washington**, the **Instituto Tecnológico de Monterrey** (Mexico), **Cambridge University** (U.K.), the **University of Cape Town** (South Africa), and the **Indian Institute of Technology** in Delhi.

To prepare students capable of integrating a broad range of disciplines in a rapidly changing world, we have conceptualized and launched the School of Sustainability, the first of its kind anywhere in the world. With both undergraduate and graduate degree programs, the school is educating a new generation of leaders through

collaborative, transdisciplinary, and problem-oriented training that addresses the environmental, economic, and social challenges of the twenty-first century. Teaching and research in the school seeks adaptive solutions to such issues as rapid urbanization, water quality and scarcity, habitat transformations and the loss of biodiversity, and the development of sustainable energy, materials, and technologies.

Time for Commitment

There is much at stake, and now is the time for academic leaders to commit their institutions to advancing what is nothing less than an evolutionary transformation in our collective consciousness. The world is not yet on a trajectory that is sustainable, and thus it is incumbent on academic communities to demonstrate persuasively that the advancement of social interests is wholly compatible with sound environmental stewardship.

If we are to harness our knowledge to address the complex challenges we face in reconciling development goals with the environmental limits of the planet, academic leaders must be willing to rethink and reconfigure their institutions to foster teaching and research that seek to guide a conscious transition towards a more sustainable relationship with the Earth.

Sustainability has every potential to become a new principle for organizing knowledge production and application and for reorganizing our institutions. Sustainability is a concept with as much transformative potential as justice, liberty, and equality, and we must foster its discourse and implementation in our academic institutions.

Inflection points such as this are rare, and given what is at stake we must not hesitate to make the necessary investment. We are in the critical early stages of the advancement of a sector critical to the well-being of human society and ultimately crucial to our continued economic development. At this stage there is everything to win and everything to lose in the effort to advance sustainability, and we must maintain our focus if we are not to lose our way. **U**

Michael Crow is president of Arizona State University.