Greater Than Conference
Portland, Maine
July 28, 2009

Working Across the Sectors to Address the Complex Challenges of Sustainability

Jonathan Fink, Director
Global Institute of Sustainability
Arizona State University
What do the four sectors offer?

- **Academia**
  - Educate
  - Convene
  - Integrate
  - Discover

- **NGOs**
  - Advocate
  - Defend
  - Inform
  - Solicit

- **Corporations**
  - Invest
  - Employ
  - Innovate
  - Contribute

- **Governments**
  - Negotiate
  - Regulate
  - Protect
  - Fund
Personal background

• Geology professor at ASU (studied volcanoes)
• Department Chair, VP Research, Sustainability Director
• Helped promote interdisciplinary culture at ASU
• Focus on research that cuts across sectors
Institutional background - ASU

- One of the largest universities in the U.S. (~67,000 students)
- Four campuses in metro Phoenix; one administration
- Interdisciplinary, global, socially relevant, use-inspired
- Access, Excellence, Impact
Institutional background - ASU

- One of largest universities in U.S. (~ 67,000 students)
- Four campuses in metro Phoenix; one administration
- Interdisciplinary, global, socially relevant, use-inspired
- Access, Excellence, Impact
- **Sustainability largest institutional priority since 2002**
ASU’s Global Institute of Sustainability

- First degree-granting School of Sustainability (BS, MS, PhD)
- University-wide Sustainability Research Federation
- Decision Theater links research to community’s policy needs
- University practices that reflect principles of sustainability
**Emphases**

- Global urbanization
- Energy and materials
- Water quantity and quality
- Biodiversity
- Values and ethics
- Business practices

**Courses**

- Earth Systems Engineering
- International Development
- Principles of Sustainability
- Quantitative Methods
- Science, Technology, & Policy
- State Lands

“The world’s first, So the world lasts”
ASU Sustainability Practices

- Solid waste: Revamping recycling with Waste Management
- Transportation: Flexcar; transit passes; $$$ parking; light rail
- Energy: 2-9 MW photovoltaic PPA
- Buildings: All new buildings LEED Silver and above
- Food: Sodexho replaced by Aramark due to green practices
- Comprehensive green purchasing policies
- Water conservation: modifying plumbing and landscaping
- Electronic display of building performance across university
The university of the future

The traditional model of the US research university — based on the pre-eminence of the single-discipline department — needs to be stretched and challenged.

The American research university is a remarkable institution, long a source of admiration and wonder. The idyllic, wooded campuses, the diversity and energy of the student populations, and, most of all, the sheer volume of public and private resources available to train them, have long made them the envy of the world. Seen from the inside, however, everything is not quite so rosy. Setting aside the inevitable complexity of medical schools, which have separate healthcare and finance issues, the structure of the US research universities is straightforward and consistent. The bedrock of each university is a system of discipline-based departments. The strength of these departments determines the success and prestige of the institution as a whole.

This structure raises a few obvious questions. One is the relevance of the department-based structure to the way scientific research is done. Many argue that in a host of areas — ranging from computational biology and materials science to pharmacy and climate science — much of the most important research is now interdisciplinary in nature. And there is a sense that, notwithstanding years of efforts to adopt to this change by encouraging interdisciplinary collaboration, the department-based structure of the university is essentially at odds with such collaboration.

A second set of issues surrounds the almost static nature of the departmental system. In a country where most things are highly fluid, the fields covered by departments, as well as the pecking order between them, have remained largely unchanged for many years. As people and money have flowed, particularly over the past two decades, to the south and the southeast, the strongest US universities and departments remain embedded in the northeast and in California. League tables drawn up by the National Academy of Sciences and others show little movement in this pecking order, ever since several decades.

Another, perhaps more contentious, issue concerns the relevance of the modern research university to the community it serves. The established model, whatever else its strengths and weaknesses, reflects the desire of the middle classes for a graduate education that prepares them for lifelong, or a stable career. But how does it serve a society in which people may have to retain and retrain their careers throughout their adult lives? These questions are being asked throughout American academia, but nowhere more so than at Arizona State University (ASU), a huge public university that is expanding to meet the needs of the United States' fastest-growing major city (see page 368). Michael Crow, its president, is executing an ambitious plan to replace the traditional model with one in which both influence and research excellence are concentrated not in departments, but in large, broadly based interdisciplinary centres with clear commercial or societal goals.

Whatever its outcome, this experiment will not of itself uproot the traditional university system. Incremental changes, notably the establishment of stronger multidisciplinary entities such as Bio-X at Stanford University in California, and several new centres at Harvard, may have a greater bearing on the overall development of the system. But ASU's effort already tells us plenty about the likely direction of the research universities in the up-and-coming regions of America. The university of the future will be inclusive of broad swaths of the population, actively engaged in issues that concern them, relatively open to commercial influence, and fundamentally interdisciplinary in its approach to both teaching and research.
ASU as “The university of the future”

The university of the future

The traditional model of the US research university — based on the pre-eminence of the single-discipline department — needs to be stretched and challenged.

... President, is executing an ambitious plan to replace the traditional model with one in which both influence and research excellence are concentrated not in departments, but in large, broadly based interdisciplinary centers with clear commercial or societal goals.”
The university of the future

The traditional model of the US research university — based on the pre-eminence of the single-discipline department — needs to be stretched and challenged.

The American research university is a remarkable institution. Another, perhaps more contentious, issue concerns the relevance of modern research universities to society.

"[ASU’s] President, is executing an ambitious plan to replace the traditional model with one in which both influence and research excellence are concentrated not in departments, but in large, broadly based interdisciplinary centers with clear commercial or societal goals."

Much of this recognition grew from our sustainability program...
Sustainability challenge:

How to speed the adoption of renewable energy by linking expertise throughout the innovation supply chain?
**Sustainability challenge:**
How to speed the adoption of renewable energy by linking expertise throughout the innovation supply chain?

**Solution:**
ASU’s comprehensive solar energy initiative
ASU Solar Energy Initiative

- ASU has longstanding solar research strengths
- Unique assets along entire solar innovation supply chain
- Working with government and industry to expand markets

**New materials**
- Solid State Electronics Ctr: 30 labs & $40M (AZ, Industry)

**Power Conversion**
- Flexible Display Ctr: $100M facility+ $95M (Army, Industry)

**Power System Engineering**
- Power System Engineering Research Ctr (NSF, Industry)

**Module System Testing**
- Only PV Test Lab in US (DOE, Industry)

**Building Systems**
- Coll. Design: city planning BIPV (Industry)

**New Markets**
Sustainability challenge: How to apply local and regional lessons to global problems?

Solution: Use Decision Theater to connect science with policy in diverse settings
Decision Theater

- Lets non-experts explore future policy options
- Can apply to environmental, social and economic issues
- Commercial applications can generate revenue
- Global network being built: Dubai, Beijing, Wuhan, Harbin
- Governor, state agencies, cities, NGOs all use Theater
Sustainability challenge:

How to restore a degraded ecosystem while also creating economic opportunity and social well-being in a developing country?
Sustainability challenge:
How to restore a degraded ecosystem while also creating economic opportunity and social well-being in a developing country?

Solution:
Mongolian Grasslands Restoration Project
Mongolian grasslands and biofuels

- Restoration of grasslands can simultaneously reduce rural poverty, reduce air pollution and create biofuels industry
- Has potential for widespread global relevance
- Partners: Inner Mongolia U, Tsinghua U, ASU, BP-China, Inner Mongolian Gov’t, Chinese Gov’t, US Gov’t
- Example of Triple Bottom Line Win
Take-aways

• Sustainability solutions need multiple perspectives
• Everyone can contribute
• Do what you’re good at
• Leverage and promote cross-sector partnerships
• Teach and learn from next generations
Take-aways

• Sustainability solutions need multiple perspectives
• Everyone can contribute
• Do what you’re good at
• Leverage and promote cross-sector partnerships
• Teach and learn from next generations

• What can we do together?