



Social and Behavioral Sciences
for the 21st Century
Strategic Planning for Research at
UND

“A university should wish to feed the mental leaders of the next generation. For this *nothing can take the place of contact with the living spirit of research, original work, creative authorship.*” [emphasis added]

GB Halsted, “Original Research and Creative Authorship the Essence of University Teaching,” *Science*, 1:203-207, 1895

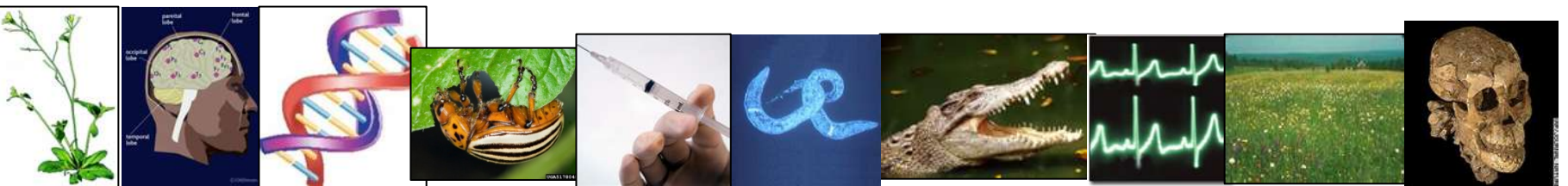


Why are we here?

"The best way to predict the future is to create it."

-- Peter F. Drucker

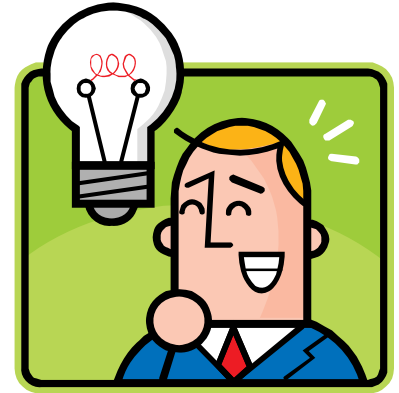
- Conversation about social and behavioral sciences research at UND
- Critical input into development of a strategic plan for research
- Identify existing strengths and core resources
- Identify gaps
- Identify opportunities, especially interdisciplinary ones
- Identify barriers to research progress



The Strategic Planning Process

Faculty forums on

- Life Sciences
- Physical Sciences & Engineering
- Social & Behavioral Sciences
- Arts & Humanities

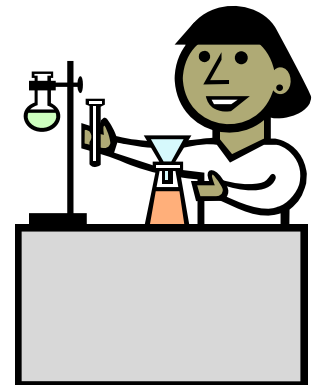


Faculty-private sector forum on Life Sciences Enterprise

Summaries of each forum posted on our blog:

<http://undresearch21stcentury.wordpress.com>

Opportunities for input on our blog



The Strategic Planning Process

Faculty committee to help draft strategic plan

Kim Porter, Kathleen McClennan, Julia Zhao, Richard Schultz, Jonathan Geiger, Mike Poellot, Cindy Anderson, Stephen Ralph

Plan posted on web for comment

<http://undresearch21stcentury.wordpress.com>

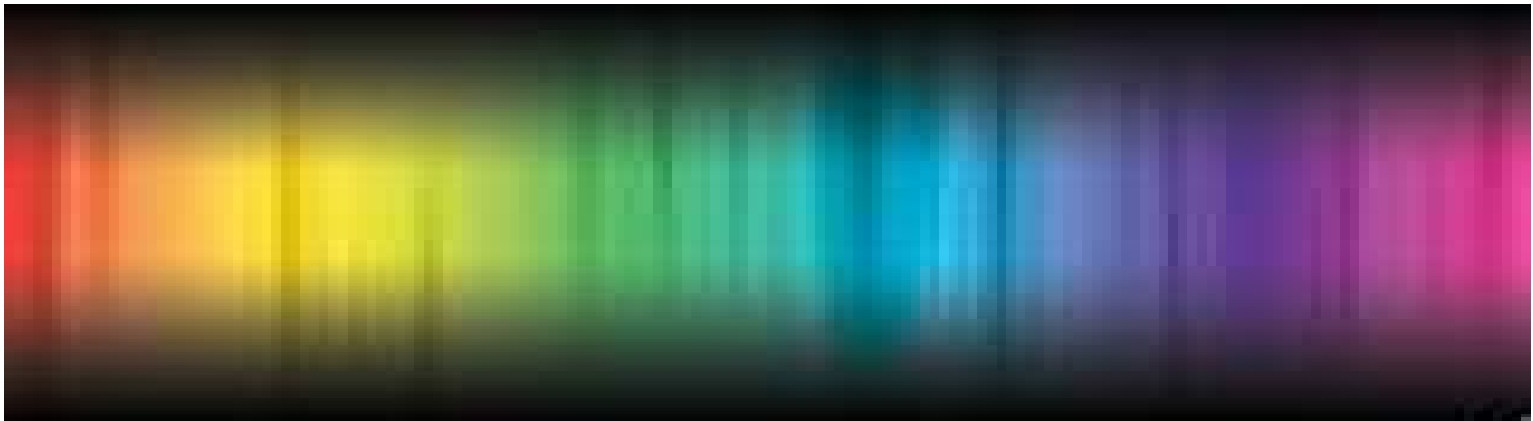


Plan finalized and presented to President Kelley

*Research at all points of the spectrum is
valuable*

Fundamental ←————→ **Applied**

Curiosity-Driven ←————→ **Problem-Driven**



Context

- *External-*
 - *World of science*
 - *Economics*
 - *Environment*
- *Local*
 - *UND*
 - *North Dakota*



UN Millennium Development Goals



1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria & other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development



AAAS PRESIDENTIAL ADDRESS

Science and Technology for Sustainable Well-Being

John P. Holdren

Science, 319:424-434, 2008.

3 Pillars of Human Well-Being

- **Economic conditions and processes**
- **Sociopolitical conditions and processes**
- **Environmental conditions and processes**



S&T can address shortfalls in development of adequate technologies for food production, clean water and sanitation, clean and efficient energy supply

Dr. Holdren is currently the President's Science Advisor

A European Conference on Challenges for the Social Sciences and Humanities

RESPONDING TO MAJOR SOCIETAL CHALLENGES

- Who can give convincing answers to questions such as:
- ☐ What will the world look like in 2025?
- ☐ How can creativity be fostered in economy and society?
- ☐ What compromises are necessary to preserve the environment?
- ☐ Why does intolerance still thrive?
- ☐ Which policies can better help feed the world?
- ☐ Are high rates of unemployment among young people unavoidable?
- ☐ How will climate change affect the regions of Europe?
- ☐ Are security policies threatening freedoms and rights?
- ☐ How to combine national, European and other cultural and political identities?



New societal challenges for the European Union

New challenges for social sciences and the humanities

ftp://ftp.cordis.europa.eu/pub/fp7/ssh/docs/booklet_new_societal_challenges_en.pdf

Social Challenges of Global Change



Four major social challenges

- How do we deal with demographic challenges?
- How do we deal with limitations of resources and ecosystems services?
- How do we establish social cohesion while increasing equity at various levels?
- How do we adapt institutions to address global change?

Cross-cutting themes

- System changes and transitions
- Relationships between different scales
- The role of perceptions and values
- What directions could research go to address these issues?

The 11th European Conference on Psychology

"A rapidly changing world - challenges for psychology"

Peace, Human Rights and Psychology

Psychology is becoming increasingly more important with regard to negotiations, post-conflicts issues, human rights, children's situation in conflicts, and challenges between psychological practice and human rights.

Contemporary Changes and Diversities in Everyday Lives

What has psychology to offer with regard to the changes in the format of everyday lives that follow from demographic changes, as the new gender division of work, increased divorce rates, or immigration changing neighbourhoods and schools?

Organizational Psychology, one of the areas most affected by the rapid changes and where healthy change is one of many researched topics.

<http://www.ecp2009.no/thescientificprogram.cfm>

Twenty-first century ethical challenges for psychology

First, increasing patterns of delivering services over substantial distances by electronic means (i.e., telepsychology) demand consideration.

Second, we must parse our ethical obligations to individuals, to groups, and to society at large as our influence working behind the scenes as "invisible" psychologists grows.



[Koocher GP](http://www.ncbi.nlm.nih.gov/pubmed/17638436). Am Psychol. 2007 Jul-Aug;62(5):375-84.
<http://www.ncbi.nlm.nih.gov/pubmed/17638436>

Paul Krugman on the Challenges of Economics

Professor of Economics, Princeton; Columnist, *New York Times*;
Nobel Laureate



Question: What challenges does the discipline of economics face?

[T]he biggest challenge is that the method that has worked so well for economics is probably close to its limits... more and more the key issues in economics are . . . involve the limits of rationality; involve the places where people don't have the ability to assess all of the data they have where people are . . . don't make rational choices.

[T]here is a rapidly growing field of behavioral economics . . . Isn't all economics behavioral? But what that means to the economist is that means okay, . . . people are apparently not maximizing the utility function the way economists like to assume – which is a very, very good way to understand a lot of human behavior – but they appear to be doing something else. So **all of those approaches – trying to understand what people actually do – that's behavioral. . . . There will never be a point at which good economic analysis is automatically incorporated into behavior**

<http://bigthink.com/ideas/4157>

A New Biology for the 21st Century:

Ensuring the United States Leads the Coming Biology Revolution
National Research Council, 2009

- **Finding solutions to major societal needs**
 - Sustainable food production
 - Protection of the environment
 - Renewable energy
 - Improvement in human health



Interactions between Social Science and Biology

- In Britain, several centers lead studies of biology by social scientists:

Cesagen—Centre for Economic and Social aspects of Genomics

Egenis—uses philosophy-based approaches to study genomics questions

Innogen—studies innovation in genomics & life sciences; helping to shape UK participation in synthetic biology

Natural History Museum in London used Cesagen’s work on public engagement to build on public observations of river conditions by fly fishermen; this led to regulatory changes in how water quality is assessed



Medicine

- **“We know that the greatest improvements in the nation’s health will result from a better understanding of social and behavioral factors that affect health.”**

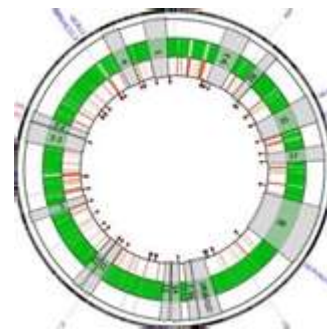
SL Syme, Chair, IOM Committee on Promoting Health: Intervention Strategies from Social and Behavioral Research http://books.nap.edu/openbook.php?record_id=10059&page=49

- **“The understanding and treatment of conditions such as schizophrenia are ripe for a revolution.”** “A decade for psychiatric disorders,” *Nature*, 463:9, 2010.



- **NIH Roadmap**

- Building blocks, biological pathways, and networks
- Molecular libraries and molecular imaging
- Structural biology
- Bioinformatics & computational biology
- Nanomedicine
- Human microbiome project
- Epigenomics



<http://www.cancer.gov/researchandfunding/NIHRoadmap>

Critical Issues in Geology

- **Global Climate Change** Forecasting outcomes of human interactions with earth's natural systems is limited by incomplete understanding of geologic and environmental processes
- **Energy and Mineral Resources** critical to functioning of society and to national security
- **Land-Use Management**
- **Natural Hazards** (earthquakes, tsunamis, volcanoes, hurricanes, wildfires, floods)
- **Nuclear Test-Ban Treaty Monitoring**
- **Water Resources** Availability and quality are vital to well-being of society and of ecosystems



In North Dakota

Natural resources

Oil—4th largest oil-producing state

Natural gas

Coal—enough to supply electricity to ND for 800 years

Hydroelectric power

Geothermal energy

Wind—enough to supply electricity to 25% of US households

Agriculture/biofuels—biodiesel, EtoH

Uncluttered airspace



In North Dakota

- Strong economy, 4% unemployment
- ≈ 6% Native American population
- Mainly rural; 30% of population in Red River Valley
- Agriculture is 38% of the economy
- Highly educated workforce
- UND is one of only 43 public universities to have both a law school and a medical school
- UND has one of the top two aerospace schools in the country
- GFAFB



An Encouraging Word



As Vannevar Bush, who served as scientific advisor to President Franklin Roosevelt, famously said: “Basic scientific research is scientific capital.” An investigation...might not pay off for a year, or a decade, or at all. And when it does, the rewards are...enjoyed by those who bore its costs, but also by those who did not. That’s why the private sector under-invests in basic science—and why the public sector must invest in this kind of research.

--**President Barack Obama**, addressing the National Academy of Sciences on April 28, 2009

In Conclusion...

“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.” —Charles Darwin

“We must become the change we want to see.” --Ghandi

