Some Thoughts on Fostering Transdisciplinary Research---Heading Towards a “Discovery Collaborative Incubator”

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Council of Scientific Society Presidents
Panel on
“Transdisciplinary Research & Education”
Friends, Colleagues & Collaborators:

Dr. Julie Williams,
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Academic Outreach, UNH

Since ‘04: Engaged Scholars Academy
http://www.unh.edu/engagement/scholars/

Since ‘11: Research & Engagement Academy
http://www.unh.edu/engagement/research/

Dr. Michael San Francisco
Interim Vice President for Research,
Associate VP for Research for
Faculty Development, TTU

Since ‘11: Transdisciplinary Research Academy
http://www.depts.ttu.edu/vpr/transdisciplinary/index.php
Some Simple Definitions...  
(Courtesy of Wikipedia)

**Multidisciplinary Research (MDR):** The involvement of more than one discipline around problem solving...

**Interdisciplinary Research (IDR):** Combining two or more disciplines into *something new* that *crosses boundaries*...

**Transdisciplinary Research (TDR):** A research strategy that crosses (*spans?*) *many disciplinary boundaries* to create a *holistic approach*, especially around a *new field of discovery*...
Conceptually...

**MDR** is simple interaction focused towards a solution, with no cross-boundary discovery; basically opaque, temporary and linear...

**IDR** collaboration is rich interaction towards a new approach to problem solving involving cross-boundary reinvention; basically resulting in new permanent disciplines...

**TDR** collaboration results in profound reinvention, usually at the frontiers of discovery; resulting in new holistic fields that span many disparate disciplines...
2004 National Academies’ Report on Interdisciplinary Research (IDR)

**Some recommendations:**
- Undergraduates should seek out IDR
- Graduate students should broaden their disciplinary expertise
- Researchers and faculty members should embrace IDR
- Educators should facilitate IDR
- Academic institutions should adapt policies and procedures to enhance IDR

Some findings:

- The imperative for IDR
- Creating an ID culture
- Ensuring diversity in IDR and education
- Processes for creating an ID team
- ID education
- Supporting and sustaining IDR
- Measuring the outcomes of IDR

http://www.aaas.org/cspsp/interdisciplinary/guide/
2011 MIT White Paper on IDR

Recommendations:
- Ensure federal support for agencies
- Establish convergent ecosystems
- Reform peer review
- Balance large scale and small scale investments
- Improve IDR within the federal agencies
- Educate, expand and support the next generation of convergent researchers

Goal 1: *Move from IDR to TDR*:
- Develop and foster massive knowledge networks
- Expand educational paradigms to model transdisciplinary approaches
- Expand support for shared core facilities
- Ensure that appointment and promotion policies recognize transdisciplinary collaboration
- Revamp administrative policies to encourage transdisciplinary collaboration

http://www.amacad.org/arise2/
Goal 2: Promote cooperative, synergistic interactions among academic, government and private sectors throughout the discovery and development process:

- Establish “grand challenges”
- Develop new models for research alliances
- Enhance permeability between industry and academia
- Reinvent technology transfer
- Develop policies around university and academic common interests
- Increase coordination between government, university and industry

http://www.amacad.org/arise2/
The Internal Dialogue: What Faculty Say in Listening Sessions---

“We would like a Community of Scholars around...”

“Would you help us organize a group to do ______?”

“I am from _____ and I good at _____, how can I join this effort?”

“Tell us more about the NSF INSPIRE Program...”

“The _____ Foundation is interested in this _____disciplinary approach. I want to know more...”
The Internal Dialogue: What Students Say in Listening Sessions---

“The world is increasingly collaborative...”

“We want learning to prepare us for the world”

“Our best classes involve cohort learning...”

“In my mentor’s lab group, undergraduates, graduate students and senior researchers all collaborate while crossing disciplinary boundaries”

“In my summer internship, I worked with engineers, policy analysts and social scientists as a team...”
TTU Transdisciplinary Research Academy

- Faculty-focused...
- True interest at the intersections...
- Keen desire to collaborate...
- Serious desire to contribute...
- Year long academy
- Catalyze free ranging discussions
- Tangible outcomes (e.g., IGERTS, institutes, grad programs)

Extensive hands-on learning:
- Team building
- Federal agencies
- Foundations
- State agencies
- Corporate R&D
- Grant writing experts
- Dean nominated individuals or self-assembled teams
- Mentoring by senior faculty
- Self-assembled topics or grand science challenge projects
- $10 to 20k support per group

- Drs. Hans Hansen, Patrick Metze and Jill Patterson
- New “Center for Social Impact”
- Oral/written histories of Texas Death Row Inmates
- State contract
UTK “Discovery Collaborative Incubator” Ideas

- TTU components plus...
- Faculty & student focused... cohort-based
- Role of Sigma Xi
- Eventually involve ORNL/UHS/UTGSM/UTIA/UT Vet School
- Carnegie Community Engaged Effort and Partners
  - Community colleges
- Incubate “Community of Scholars”
- Promote self-assembly initiators
- Faculty Development Team
- Acceleration through micro-investing
- Downstream ORU Funding
- Essential celebration
- Reward system dialogue (P&T)
Delighted to Participate in This Important Conversation!

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