

Progress Report

2008 – 2010



 Center for the Study of
Interdisciplinarity

Highlights

*

Extramural funding

- Over \$2m in funded extramural research in the first 2 years of operation
- Over \$1m in pending extramural research proposals submitted in year 3 (as of 12/1/10)
- Another \$1m in extramural research proposals planned for year 3
- Asked by NSF to run a \$50k workshop on the meaning of 'transformative research' (Dec '10)

**

Promoting Interdisciplinarity at UNT

- CSID-sponsored activities involve more than 50 faculty members from across UNT
- Undergraduates (from the Honors College and McNair Scholars Program) and graduate students (from Philosophy and the College of Information) participate in CSID research
- Future of the University Speakers Series
- Interdisciplinarity@UNT Workshop Series
- Helping faculty and graduate student researchers address questions of 'broader impacts'

Making an impact

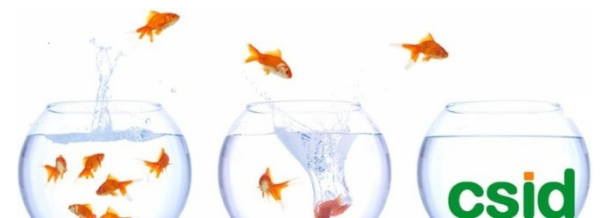
- *The Oxford Handbook of Interdisciplinarity*, Special Issue of *Social Epistemology*
- *New York Times* Op-Ed, Nov '10
- Influencing peer review systems at public S&T funding agencies worldwide (e.g., at a Washington, DC workshop; for the EC at CSID's Brussels workshop)
- Institutionalizing interdisciplinarity: CSID led in the creation of two professional associations (one national, one international) concerned with interdisciplinarity





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I. EXECUTIVE SUMMARY

When the University of North Texas approved the creation of the Center for the Study of Interdisciplinarity (CSID) in November, 2008, it created the world's first institute devoted to the study of interdisciplinarity writ large. There are thousands¹ of interdisciplinary centers at universities around the world, but no other university has a center devoted to investigating the nature of interdisciplinary research and education.

National Universities are characterized by institutes and centers that are recognized as among the world leaders in a field. CSID provides a unique platform for UNT, offering global leadership in a subject of significant and growing importance.

In the space of just over two years CSID has become recognized as an international leader in the study of interdisciplinarity. Indicators of this rise to prominence include the publication of the first compendium of interdisciplinarity, *The Oxford Handbook of Interdisciplinarity* (page 10), CSID Director Robert Frodeman's role as keynote speaker at four recent or upcoming interdisciplinary conferences (in Ithaca, Helsinki, Richmond, and Newcastle), the interest of the White House Office of Science and Technology Policy in our work, as well as Frodeman's recent role as part of an external review panel for the University of British Columbia's College for Interdisciplinary Studies – the three other reviewers being from Harvard, Duke, and York Universities (page 24). At the same time, Assistant Director Britt Holbrook is now recognized internationally as an expert in the broader impacts of STEM research. Together, Frodeman and Holbrook were asked to convene a workshop for the European Commission in Brussels in December 2010 on the interdisciplinary peer review of STEM proposals.

CSID continues to build momentum in funding and organizational leadership. Since its founding, CSID has attracted more than \$2m in grants (see pages 6-7). In the spring of 2011 CSID is co-hosting an international conference on interdisciplinarity at UNT, and this summer CSID is co-sponsoring the inaugural meeting of the International Network of Inter- and Transdisciplinarity (INIT) in the Netherlands (see page 32).

Through CSID, UNT is becoming recognized as a leader in the theory and practice of interdisciplinarity.

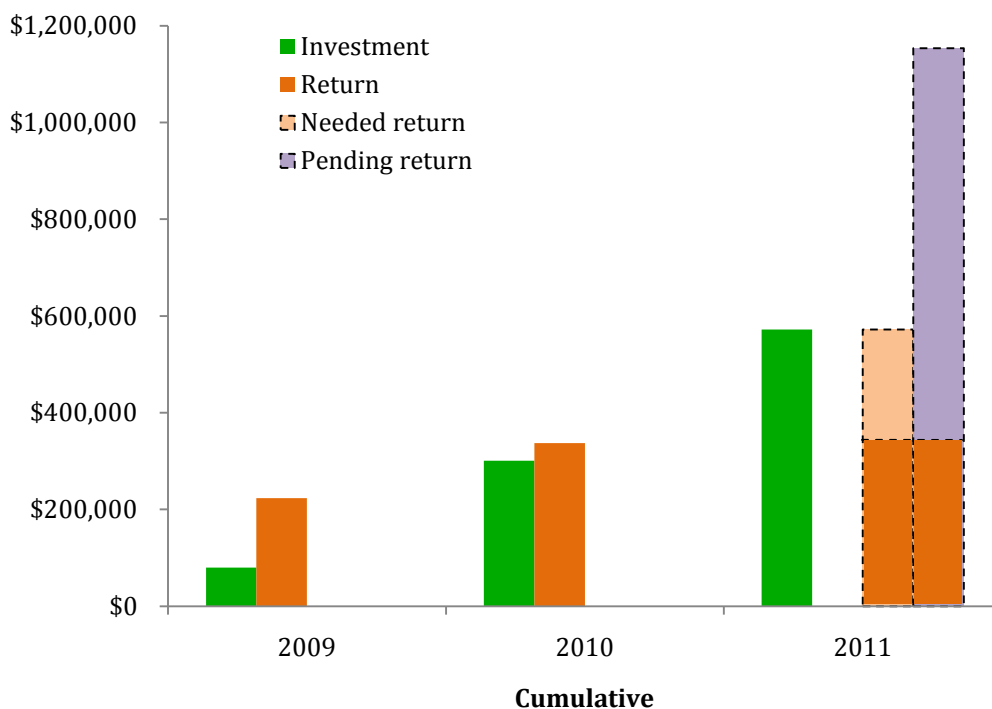
IN WHAT FOLLOWS we summarize the work to date of CSID, and outline opportunities for the future. To date, UNT's investment in CSID has paid back financially, theoretically, and in terms of international reputation for the university. CSID is a signal example of UNT's commitment to reach Tier 1 research status.

¹ "Data from the Gale research group indicate that nearly 10,000 research centers are based at American colleges. The top 25 research universities average nearly 100 research centers (94.6) per institution. There are thus often more research centers than disciplinary departments on such a campus. The vast majority of those centers are interdisciplinary, at least in name and self-presentation." Jacobs, J.A. "Interdisciplinary Hype." *Chronicle of Higher Education*, 22 November, 2009 at: <http://chronicle.com/article/Interdisciplinary-Hype/49191/>.

II. RETURN ON INVESTMENT

According to the metrics approved in the creation of the Center for the Study of Interdisciplinarity (CSID), UNT's return on the investment in CSID is to be calculated in terms of 'revenue neutrality' – the state when UNT's investment and the return on that investment are equal. The return on investment is calculated as the sum of the following:

- (1) IDCs from any grants received by CSID Fellows or associated faculty/staff (i.e., grants on which Fellows or associated faculty/staff are listed as PI, co-PI, or Senior Personnel);
- (2) 10% of IDCs from grants received by others at UNT who benefitted from CSID involvement in the proposal writing, but that do not include any CSID Fellow or affiliated faculty/staff as Senior Personnel;
- (3) All support (direct costs + IDCs) secured for faculty, staff or graduate students who are members of BIC teams.²



CSID initially proposed to achieve revenue neutrality within 3 years. However, we surpassed revenue neutrality in year 1 and year 2, and we are on course to exceed revenue neutrality again in year 3.³

² BIC teams have yet to be formed as of 2010.

³ Potential return is calculated using only proposals already submitted as of November, 2010.



III. EXTRAMURAL GRANTS

CSID Directors

1. *National Science Foundation, Grant No. 083038 (Frodeman PI, Holbrook Co-PI; \$394,000)*

CSID's long term research project in the philosophy of peer review seeks to understand the tradeoffs in the redefinition of peer review, e.g., between scientific autonomy and accountability.

research

- [Theory of Interdisciplinarity](#)
- [Oxford Handbook of Interdisciplinarity](#)
- [NSF's Broader Impacts](#)
- [Philosophy of Peer Review](#)
- [Philosophical Dimensions of Climate Change](#)
- [Case Studies](#)
- [Workshops & Meetings](#)

a special issue of Social Epistemology on the US National Science Foundation's Broader Impacts Merit Review Criterion December 2009

Click on the cover to view table of contents
Click [here](#) for restricted access to the journal's contents.

Guest Editor J. Britt Holbrook

In 1997, the National Science Foundation (NSF) altered its merit review criteria for grant proposals to raise the profile of the societal impacts of public funding for basic scientific and technical research. Scientists and engineers were now being asked not only to propose scientifically and technically excellent work (*What is the intellectual merit of the proposed activity?* NSF asks), but also to account for its societal relevance (*What are the broader impacts of the proposed activity?* NSF also asks).

The Broader Impacts Criterion (BIC) was greeted

SOCIAL EPISTEMOLOGY
A Journal of Knowledge, Culture and Policy

Volume 13 Number 3-4 July-December 2011

Guest Editor J. Britt Holbrook

US National Science Foundation's Broader Impacts Criterion

Routledge

[Comparative Assessment of Peer Review \(CAPR\)](#) is a three year project (2008-2011) funded by the NSF's Science of Science & Innovation Policy (SciSIP) program. [CAPR](#) is studying the interdisciplinary nature of the peer review processes across 6 US and foreign public science agencies, with particular focus on how different agencies attempt to integrate broader societal impacts issues into the review of grant proposals.

2. NASA Grant NNX08AQ67G: New Directions: Science, Humanities, Policy (Frodeman PI; \$157,000)



CSID has been funded by NASA across the period of 2008-2011 to further its investigations in the Ethical and Philosophical Dimensions of Climate Change and the science of science policy.

To date, philosophical considerations of climate change have centered on questions of ethics and environmental justice. The Center for the Study of Interdisciplinarity seeks to expand the conversation concerning climate change by exploring the full range of philosophical and societal concerns and by integrating these concerns with recent thinking about science policy. As part of the latter point, CSID's research into climate change issues will synergize with its ongoing research into the interdisciplinary nature of the peer review

CSID Faculty Fellows

1. Rada Mihalcea

Rada has been awarded three grants during her tenure as a CSID Fellow, totaling over \$500k. Her funders include the National Science Foundation, the National Endowment for the Humanities, and Google.

2. Andrew Torget

Andrew has been awarded one grant during his tenure as a CSID Fellow, \$50k from the National Endowment for the Humanities for a Digital Startup project. Rada Mihalcea is serving as co-PI on this project.

3. Matthew Traum

Matt has become PI, co-PI, or Senior Personnel on over \$1M in funding – most of which has come from the National Science Foundation – since becoming a CSID Fellow.

4. Elaine Wittenberg Lyles

Elaine is co-PI on a \$130k grant from the National Institutes of Health.





IV. PUBLICATIONS

CSID Director Frodeman (h-index 9, g-index 17)⁴ and Assistant Director Holbrook (h-index 3, g-index 4) have not only exceeded the publication standard set in the approved CSID proposal,⁵ but also they have published work that is having a broader impact on the real world. Most notable in regard to broader impact are *The Oxford Handbook of Interdisciplinarity* and *Social Epistemology: A Journal of Knowledge, Culture and Policy. Special Issue: US National Science Foundation's Broader Impacts Criterion* (see details, pages 10-11).

1. Frodeman, Robert. "Experiments in Field Philosophy." *The New York Times*, November 23, 2010.
2. Holbrook, J.B. "Accountable Science: The COMPETES Act Needs to Demonstrate an Accountability Attitude." *Science Progress*. September 2010.
3. Frodeman, R. "Introduction," *The Oxford Handbook of Interdisciplinarity*. Oxford Univ Pres, 2010 (xxix-xxxix).
4. Frodeman, R. *The Oxford Handbook of Interdisciplinarity*. Editor-in-chief. Oxford Univ Pres, 2010.
5. Holbrook, J.B. "Peer Review," in *The Oxford Handbook of Interdisciplinarity*, Robert Frodeman, Julie Thompson Klein, Carl Mitcham, eds. Oxford: Oxford University Press, 2010, 321-32.
6. Holbrook, J.B. "Congress and NSF's 'Broader Impacts' Merit Review Criterion," in *Usable Science: A Handbook for Science Policy Decision Makers*. Science Policy Assessment and Research on Climate Change (SPARC): April 2010, 16.
7. Holbrook, J.B. Guest Editor of *Social Epistemology: A Journal of Knowledge, Culture and Policy. Special Issue: US National Science Foundation's Broader Impacts Criterion*. 23 (3-4), July – December 2009.
8. Frodeman, R. "Intellectual Merit & Broader Impact: The National Science Foundation's Broader Impacts Criterion & the Question of Peer Review," with

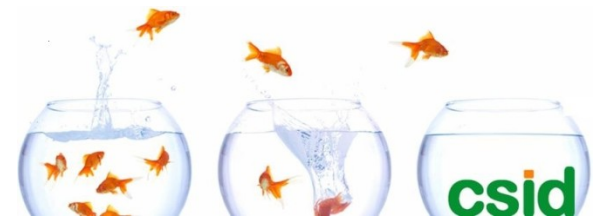
⁴ Calculations of h-index and g-index for Frodeman and Holbrook made using Google Scholar.

⁵ CSID is committed to producing 4 peer reviewed articles per year.

Jonathan Parker, in *Social Epistemology*, Jul-Dec 2009, Vol 23, Issue 3 / 4 (p337-45).

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9. Frodeman, R. "How geoscientists think and learn," *Eos Trans. AGU*, 2009, 90 (31), 265–266. Co-authored with Kastens, K. A., C. A. Manduca, C. Cervato, C. Goodwin, L. S. Liben, D. W. Mogk, T. C. Spangler, N. A. Stillings, and S. Titus.
10. Frodeman, R. "Dedisciplining the Humanities," *Alif* 29 (2009), co-authored with graduate student Jennifer Rowland.
11. Holbrook, J.B. "Putting Darwin in his Place: the Need to Watch our Language," second-authored with Paul S. Braterman, in *The American Biology Teacher* 71 (2), February 2009, 84-88.
12. Holbrook, J.B. and Frodeman, R. "A Center for the Study of Interdisciplinarity – Not Just another Interdisciplinary Center," in the *Association for Integrative Studies Newsletter* 30 (4), December 2008.

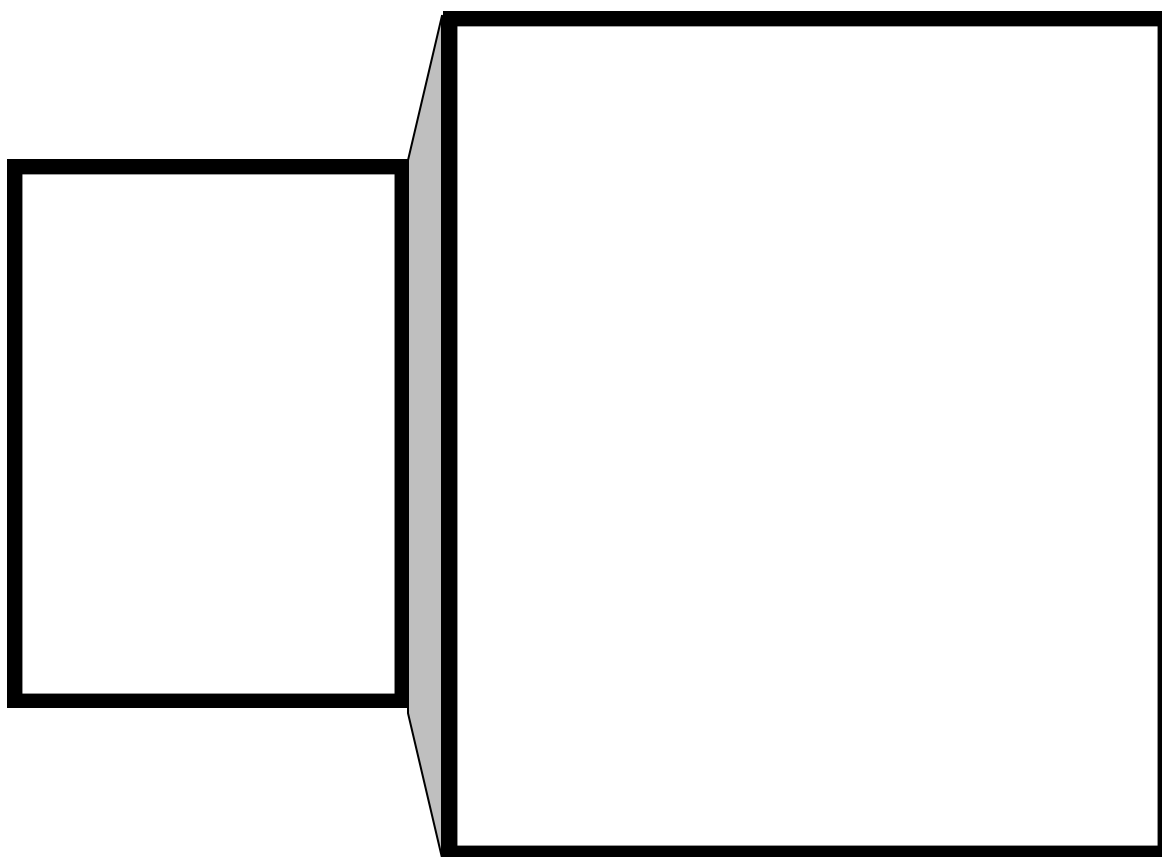


The Oxford Handbook of Interdisciplinarity

Interdisciplinarity, as concept & practice, is as important outside academia as within, and in fact is a primary means of bridging the university - public divide. Introducing a greater degree of order into the field of interdisciplinary research, education, & practice, the *Handbook* draws out new relations for the promotion of collaborative activities in other areas of social life, from work and business to law and government.

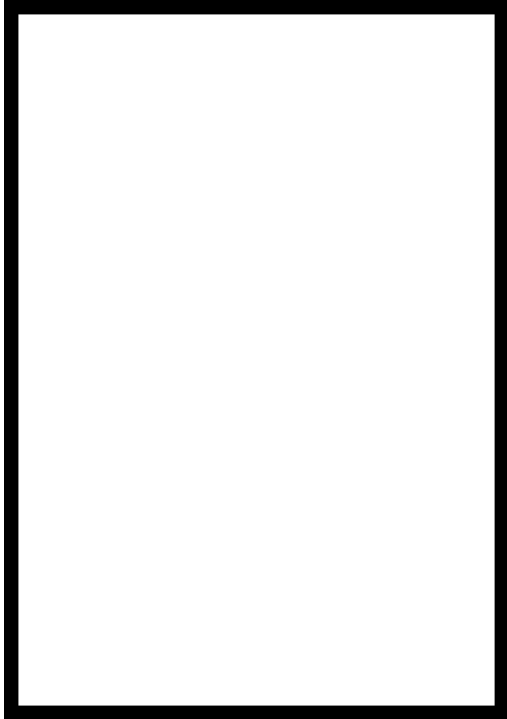
On sale in the UK since June 2010 and in the US since August 2010.

Currently #77 in Amazon.com's Top 100 Questions & Answers Reference Books. Reached as high as # 50 in sales of reference works.



Special Issue of *Social Epistemology*

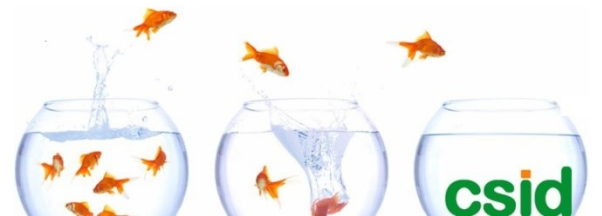
Guest-edited by Holbrook and containing contributions from Frodeman, Parker, and Burggren/Monticino.



The first edited work concerned with the question of the broader impacts of research, this volume traces the impact of NSF's BIC (broader impacts criterion) since its inception. Featuring articles from scientists, philosophers, STS scholars, informal science education and public outreach professionals, and instructors in responsible conduct of research, it has become an essential reference within the NSF, and for scientists, engineers, policy makers, and citizens interested in the return on their investments in basic research.

This material is based upon work supported by the National Science Foundation under Grant No. 064957.

Joanne Tornow, Executive Secretary of NSF's current Task Force on Merit Review, purchased 25 copies for use by the Task Force and others at NSF. Holbrook and Frodeman have met with Tornow, and she attended the December, 2010 Brussels workshop on broader impact that the European Commission asked CSID to organize.



V. CSID LEADERSHIP

Directors

Robert Frodeman

J. Britt Holbrook (Assistant Director)

Steering Committee

Warren Burggren (Biology)

Mary Harris (Education)

Melinda Levin (RTVF)

James Meernik (Political Science)

William E. Moen (Library & Information Sciences)

UNT Faculty Fellows

Adam Briggie (Philosophy)

Sarah Fredericks (Philosophy)

Rada Mihalcea (Computer Science & Engineering)

David Taylor (English)

Andrew Torget (History)

Matthew Traum (Mechanical & Energy Engineering)

Elaine Wittenberg-Lyles (Communication Studies)

Senior Fellows



Steve Fuller is Professor of Sociology at Warwick University in the United Kingdom. Fuller has organized two global cyberconferences for the UK's Economic and Social Research Council: one on public understanding of science (1998), and another on peer review in the social sciences (1999).

Fuller's major areas of research include the future of the University and critical intellectuals, the emergence of intellectual property in the information society, the interdisciplinary challenges in the natural and social sciences, the political and epistemological consequences of the new biology.

Among his major publications are *Social Epistemology* (1988), *Philosophy of Science and its Discontents* (2nd edn.) (1993), *Philosophy, Rhetoric and the End of Knowledge* (2nd edn.) (2003), *Science* (1997), *The Governance of Science: Ideology and the Future of the Open Society* (2000), *Thomas Kuhn: A Philosophical History of Our Times* (2000), *Knowledge Management Foundations* (2002) and *Kuhn vs Popper: The Struggle for the Soul of Science* (2003).

Carl Mitcham Professor of Humanities at the Colorado School of Mines where he is Director of the Hennebach Program for the Humanities, supported by a major endowment from Ralph Hennebach.

Carl Mitcham earned degrees from the University of Colorado (BA, MA) and Fordham University (PhD) and has held faculty appointments previously at Berea College (Kentucky), St. Catharine College (Kentucky), Brooklyn Polytechnic University, and Pennsylvania State University.

He has also served in visiting positions at the Universidad de Puerto Rico, Mayagüez (1988), Universidad de Oviedo (1993), the Universities of Tilburg and Twente, Netherlands (1998), and as Fulbright Professor at the Universidad de País Vasco, Spain (2003-2004). Additionally, Mitcham is a Faculty Affiliate of the Center for Science and Technology Policy Research, University of Colorado, Boulder, and Adjunct Professor, European Graduate School, Saas Fee, Switzerland.



Julie Thompson Klein is Professor of Humanities, English, and Interdisciplinary Studies as well as a Faculty Fellow in the Office for Teaching and Learning at Wayne State University in Detroit, Michigan.



Besides co-editing and contributing to the *Oxford Handbook of Interdisciplinarity*, Klein's most recent books includes *Creating Interdisciplinary Campus Cultures* (Bass/AACU, 2010), *Humanities, Culture, and Interdisciplinarity: The Changing American Academy* (SUNY, 2005), and *Mapping Interdisciplinary Studies* (AACU, 1999).

Klein recently received two prestigious recognitions for her distinguished contributions to interdisciplinary and transdisciplinary research and education: the Ramamoorthy & Yeh Transdisciplinary Distinguished Achievement Award from the Academy of Transdisciplinary Learning & Advanced Studies as well as the the Joseph Katz Award from the Association for General and Liberal Studies.



Daniel Sarewitz is a Professor of Biology at Arizona State University and the Director of the Consortium for Science, Policy and Outcomes.

Sarewitz's work focuses on understanding the connections between scientific research and social benefit, and on developing methods and policies to strengthen such connections.

His most recent book is *Living with the Genie: Essays on Technology and the Quest for Human Mastery* (co-edited with Alan Lightman and Christina Desser; Island Press, 2003). He is also the co-editor of *Prediction: Science, Decision-Making, and the Future of Nature* (Island Press, 2000) and the author of *Frontiers of Illusion: Science, Technology, and the Politics of Progress* (Temple University Press, 1996). He has also written many other articles, speeches, and reports about the relationship between science and social progress.

Prior to taking up his current position as director of the Center for Science, Policy, and Outcomes, he was the director of the Geological Society of America's Institute for Environmental Education.

From 1989-1993, Sarewitz worked on Capitol Hill, first as a Congressional Science Fellow, and then as science consultant to the House of Representatives Committee on Science, Space, and Technology.

VI. Taking Interdisciplinarity into the Field

Interdisciplinarity is increasingly viewed as the best means of for organizing academic knowledge for solving real-world problems. Real-world problems require scientists, humanists, and educators to work not only with other academics, but also with members of the public and private sectors - decision makers, NGOs, and stakeholders groups. We call this "field philosophy" or "field academics" to emphasize the importance of taking academic knowledge into settings where its ideas are tested by real-world challenges.



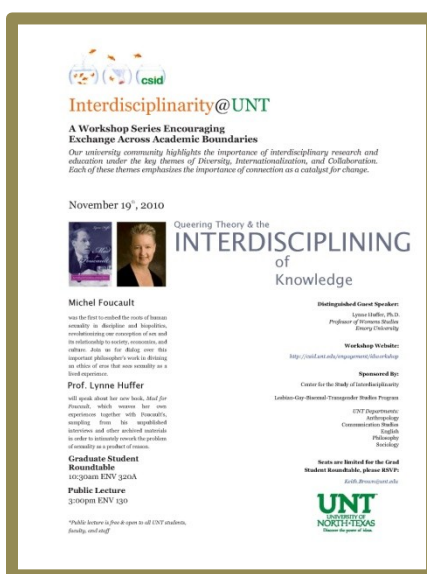
What counts as 'the field' can vary from the wilds of Cape Horn to the halls of funding agencies in Washington, DC or Brussels. The point is that academic production is shaped by the need to be engaged with real-world problems.

CSID has taken its approach to research and education into the field across the world. Below, we outline our field activities by country and/or continent, including the US, Europe, and Asia.



USA

1. 11/19/2010. First **Interdisciplinarity@UNT Workshop**, *Michel Foucault: Queering Theory & the Interdisciplining of Knowledge*. Co-sponsored by the LGBT Studies Program and the Departments of Anthropology, Communications, English, Philosophy, & Sociology. This workshop brought Prof. Lynne Huffer (Womens Studies, Emory Univ) to deliver a talk as well as interact in classrooms with students from the supporting departments.



2. 11/04 - 11/05/2010. Frodeman and Holbrook attended an **NSF Workshop**: "Interdisciplinary Collaboration in Innovative Science & Engineering Fields" in **Boston**. This meeting brought together researchers and policy makers to discuss how to maximize interdisciplinary communication to advance knowledge while taking into account broader societal impacts.
3. 11/02/2010. Frodeman featured speaker at University of Richmond's 2010 Cimmel Colloquium: [Liberal Arts and Interdisciplinarity](#).
4. 10/06 - 10/10/2010. CSID Team traveled with fellows from UNT's Philosophy & Religion Studies Department to the [32nd annual meeting of the Association for Integral Studies](#) in San Diego, CA. Frodeman and Holbrook delivered a roundtable presentation with Ricardo Rozzi on "Sustainability as Interdisciplinarity."


5. 10/01 - 10/3/2010. Frodeman delivered an invited talk, "De-disciplining Philosophy: A New Model for the Humanities" at the conference [Enhancing Communication in Cross-Disciplinary Research](#) in Coeur d'Alene, Idaho.
6. 08/17/2010. Frodeman invited by the School of Humanities & Sciences at Ithaca College to be the Keynote speaker for their **Humanities & Sciences Faculty Forum on Interdisciplinarity**. Frodeman focused on what interdisciplinarity means for the dialog between the Humanities & the Sciences, how it figures into curricular discussions, and what its relation is to integrative learning and teaching.
7. 05/20 – 05/21/2010. CSID directors participated in **3TEP workshop at UNT** to explore the theory and practice of a problem-oriented, interdisciplinary approach to philosophy. As a topical focus for this task, participants explored issues at the interface of technology and the environment.
8. 4/22 – 4/23/2010. Frodeman & Holbrook organized and led a workshop in

Comparative Assessment of Peer Review
A CSID Project

UNT

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CAPR Workshop

 **CAPR Workshop** - CSID held a workshop on 22 and 23 April in Washington, DC, to bring together CAPR researchers, researchers with related expertise, and some of the main users of this research for a mid-term assessment and re-orientation of CAPR research. This both allowed users to affect the course of this research and aid with the dissemination of CAPR results beyond the academic community.

The following powerpoint presentations are available from the workshop:

- [Workshop Introduction](#) Robert Frodeman
- [National Science Foundation](#) Jim Lightbourne
- [National Institutes of Health](#) Alan Willard
- [Natural Sciences and Engineering Research Council of Canada](#) Bill Milson
- [National Oceanographic and Atmospheric Administration](#) Nancy Beller-Simms
- [European Commission](#) Alan Cross
- [The Dutch Technology Foundation \(STW\)](#) Rens Vandeberg
- [CAPR Overview and Survey](#) J. Britt Holbrook and Steven Hrotic
- [CAPR Digital Repository](#) William Moen and Serhiy Polyakov

Additional information about the workshop [available here](#).



Washington, DC. Bringing together CAPR researchers, researchers with related expertise, and some of the main users of this research for a mid-term assessment & re-orientation of CAPR research, this workshop both allowed users to affect the course of this research as well as aid with the dissemination of CAPR results beyond the academic community.



9. 02/25/2010. Frodeman delivered invited lecture to students, faculty, & staff at **Wichita State University**: "[Sustainability as Interdisciplinarity](#)."
10. 01/27/2010. Holbrook presented "An Ecosystem Approach to Performance Management" at the **National Oceanic and Atmospheric Administration**.
11. 10/29 – 10/31/2009. CSID contingent present papers at the annual meeting of the [Society for the Social Studies of Science](#) in Washington, D.C. Frodeman, "Sustainability as Interdisciplinarity"; Holbrook, "Developing Metrics for the Intangible Returns on Investments in Scientific and Technological Research"; and Briggie, "Philosophy in Science Policy: Three Points of Insertion."
12. 10/08 – 10/11/2009. CSID contingent including Holbrook, Hrotic, and Parker presented at the [31st Annual Association for Integrative Studies Conference](#) in Tuscaloosa, AL.
13. 09/30/2009. Holbrook addresses UNT **Undergraduate Philosophy Forum** on "Philosophy as Interdisciplinarity."
14. 09/28 – 09/29/2009. Frodeman & Holbrook spoke at the "[International Workshop on 'Philosophy of Interdisciplinarity'](#)" at **Georgia Tech**. Frodeman, "Interdisciplinarity and the Limits of Knowledge"; Holbrook, "Interdisciplinary Communication."
15. 09/21/2009. Frodeman presented "What is Interdisciplinarity" at the **Center for Science and Technology Policy Research**, University of Colorado, Boulder.
16. 07/23/2009. Holbrook invited to discuss "[Ethics of Science in Society](#)" at Department of Chemistry REU Program at **Texas A&M University-Commerce**.
17. 05/20 – 05/22/2009. Holbrook presented "The Use and Abuse of Societal Impacts Criteria in Grant Proposal Peer Review" at [International Peer Review Workshop](#). Hosted by the **Potomac Institute for Policy Studies**, this workshop aimed at facilitating the exchange of information and share experiences among funding agencies relating to their respective peer review processes. The process of peer review relating to scholarly journals is also an issue that will be explored.

Europe

1. 9/18 – 9/20/2010. Frodeman & Holbrook traveled to Hamburg, **Germany**, for the [2010 Philosophy of/as Interdisciplinarity Network Workshop](#). Profs. Frodeman & Holbrook helped this year's host, Prof. Jan Schmidt, and last year's host, Prof. Michael Hoffman, lead discussions in sharpening the focus of what philosophy can contribute to the conceptual and practical challenges posed by interdisciplinary research and engagement.
2. 9/15 – 9/17/2010. Frodeman & Holbrook traveled to Geneva, **Switzerland**, for "[Implementation in Inter- and Transdisciplinary Research: Practice and Teaching](#)." The conference was co-hosted by the Network for Transdisciplinary Research (TD-Net) & the Human Ecology Group at the University of Geneva. Frodeman, "Dedisciplining Philosophy"; Holbrook, "On the Phrase 'It may be good in theory, but not in practice': How a focus on implementation might affect our thoughts on inter- and transdisciplinarity."
3. 11/19 – 11/21/2009. Frodeman & Holbrook contribute to TD-Net Workshop, "Integration in Inter- and Transdisciplinary Research: Forging Collective Concepts, Methods and Practices - Changing Structures," Berne, **Switzerland**.
4. 07/08 – 07/10/2009. Frodeman leads a Plenary session at the 16th Biennial meeting of Society for the Philosophy of Technology in Twente, **Netherlands**.
5. 05/12 – 05/14/2009. Holbrook invited to participate in US-Norwegian workshop, [Reconciling Supply of and Demand for Research in the Science of Science and Innovation Policy](#) in Oslo, **Norway** which brought together academics,



practitioners, and those with feet in both worlds to examine how science policy research does (or does not) support the information needs of science policy decision makers, and steps that might be taken to improve such connections.



6. 03/17 – 03/18/2009. Research Funding and the Good Life co-sponsored by [CEPTES](#), at the University of Twente (NL), Made possible by a CSID financial contribution from its CAPR project, and co-organized by CSID Director Robert Frodeman, this meeting was held to examine differences between **US and EU/Dutch** ways of assessing the broader impacts of science and technology. Issues explored include: (1) how 'broader impacts' or 'societal relevance' is understood, and (2) what role a funding institutions could have in realizing a reflective scientific practice.

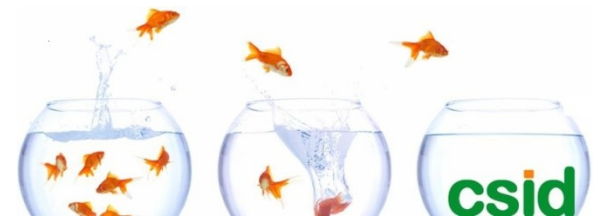
Asia

8/24 - 8/30/2010. CSID contingent presents at the [Society for Social Studies of Science](#) in Tokyo, **Japan**.

1. Adam Briggles (Faculty Fellow) & Steven Hrotic (Post-Doc Fellow) present on the topic "Post-Modernity and Military Technology: Metaphysics & Ethics in the Revolution in Military Affairs." Their panel considered how despite the historic place of technological innovations profoundly affecting the nature of warfare and statecraft, the latest wave of technological innovations seems qualitatively different—post-modernity arriving at the military world in the sociological and philosophical dimensions of what is known as RMA—the current Revolution in Military Affairs.
2. [J. Britt Holbrook](#) (Asst. Director), Steve Fuller (Senior Fellow) and [Sarah Fredericks](#) (Faculty Fellow) present on Science, Technology, Ethics, and Policy. The panel will explore the broader meaning of accountability in research. Even if investments in science can be more effectively translated into an increased economic standard of living, this does not automatically address wider societal concerns. This panel aims to inspire others in STS to bring their expertise to bear on the science of science policy.

Webinars

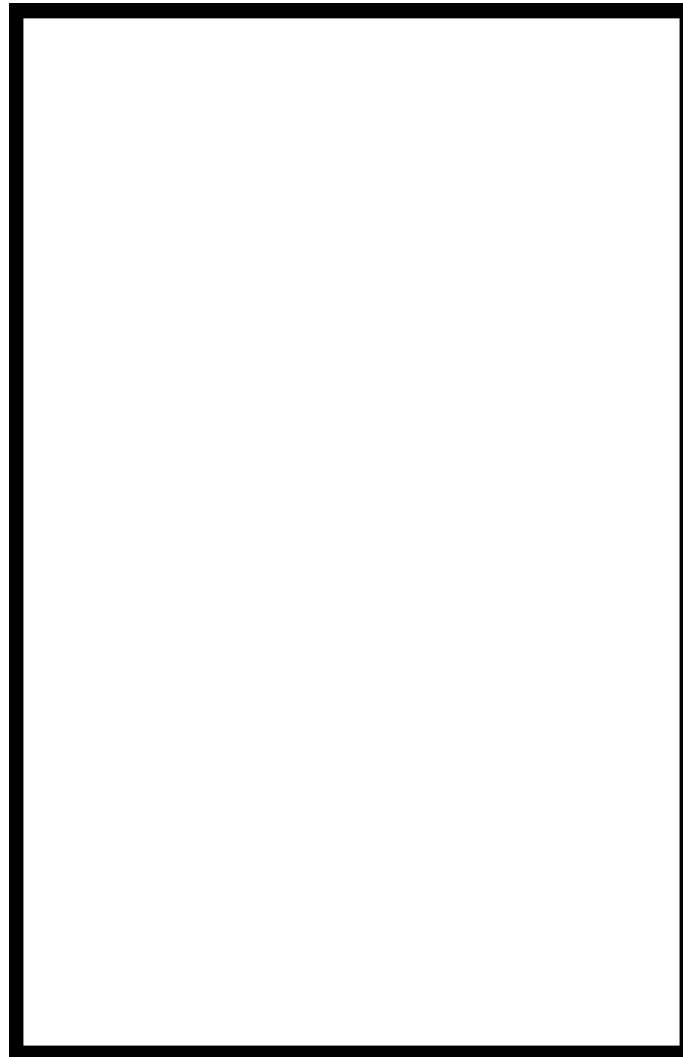
05/12/2010. Holbrook presented "Broader Impacts: What's the Big Idea?" at the Broaden Your Impact webinar hosted by the Centers for Ocean Science Education Excellence.



VII. ENGAGEMENT

Outreach

1. Robert Frodeman and J. Britt Holbrook were the CSID representatives at a meeting in New York to discuss ***the state of the art in interdisciplinary and transdisciplinary research and education***. The meeting also included CSID Senior Fellow Julie Thompson Klein, Lorraine Marshall from Murdoch University in Australia, td-net co-director Christian Pohl, and representatives from the Association for Integrative Studies, Rick Szostak and Machiel Keestra.
2. Co-Sponsor of 2010 Artistically Denton

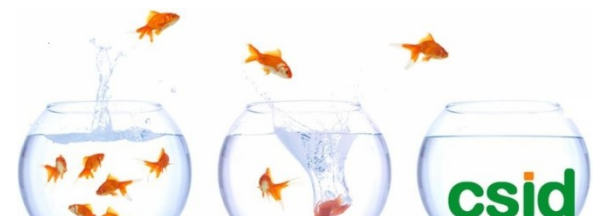


Education

1. Spring 2010. Frodeman, PHIL 5960.006: Theory & Practice of Interdisciplinarity.
2. Spring 2010. Frodeman, PHIL 4750.001: Philosophy & Public Policy
3. 10/27/2009. Holbrook served as guest speaker at Cross Timbers Middle School in Grapevine, Texas. Holbrook addressed Grapevine-Colleyville ISD gifted and talented middle school students competing in the [Future Problem Solving Program](#) about the problem of invasive species.

Publicity

1. 10/01/2010. *The Oxford Handbook of Interdisciplinarity* was favorably reviewed on the Director's Blog at Montclair State University's Creative Research Center.
2. 06/01/2010. **DotEarth@NYTimes.com quotes CSID** Director Robert Frodeman in surveying how researchers & policy specialists think more could be done to lessen the dangers associated with managing Big Risks, like the current deep sea drilling disaster in the Gulf of Mexico.
3. 05/27/2010. **Nature quotes CSID** Assistant Director Britt Holbrook and CSID Steering Committee member Warren Burggren in its extended article on NSF's broader impact criterion and on how the criterion itself is affecting how scientists approach doing research. [Click here for the article.](#)
4. 9/23/2010. After being sent an email from Frodeman concerning the philosophical dimensions of climate change as well as the broader impacts criterion, **Congressman Daniel Lipinski** remarked, "There are a variety of science and technology policy programs that are popping up across the country. They can be found in public policy schools, economics departments, business schools, and other places, even philosophy departments. I'm looking forward to hearing more about these programs, including what kind of students they attract and where those students go upon graduation."
5. 9/23/2010. CSID Senior Fellow Daniel **Sarewitz testified before Congress** in the same hearing.
6. 03/22/2010. **Frodeman quoted** in *The Daily Iowan* article "[UI Looks Across Areas in Research.](#)"



Awards

1. Graduate Research Fellow Jonathan Parker selected as the 36th [R.E.A.L. fellow](#).
2. Graduate Research Fellow Nathan Bell selected as the 35th [R.E.A.L. fellow](#).
3. CSID Faculty Fellow Rada Mihalcea for winning UNT's inaugural [Early Career Award for Research and Creativity](#) .

Consulting

1. CSID asked by Alan Cross, head of European Commission on Science & Technology Policy, to present to policy makers at EU on Comparative Assessment of Peer Review.
2. Robert Frodeman invited to be one of four external reviewers for the University of British Columbia's College for Interdisciplinary Studies.

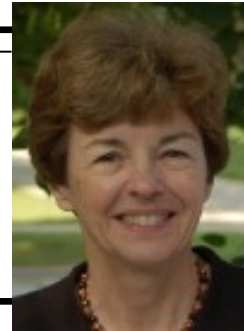
VIII. SPEAKERS

CSID Speakers Series



09/03/2009. CSID Fellow Elaine Wittenberg-Lyles delivered a talk on her recent research activity, "Developing and Sustaining a Productive Interdisciplinary Research Team."

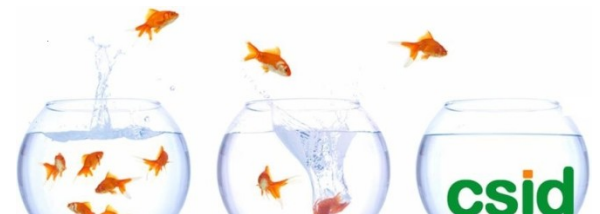
04/29/2009. Jane Harris Cramer, Associate Director of the Center for Biology Education at UW-Madison, deliver a presentation entitled "Advising Researchers on Broader Impacts - Approaches at UW-Madison"



Tsjalling Swierstra, CSID visiting scholar from the Netherlands, delivered two talks:

04/27/2009. "Biotechnology and Brave New World."

04/13/2009. "NEST Ethics."



11/04/2008. Simone van der Burg from the University of Twente in the Netherlands presented "Societal Impacts of Sound-Light Technologies."



Steve Fuller, CSID Senior Fellow, was the inaugural participant in the CSID Speakers Series.

09/16/2008. "Transformative Research: Easy to fund. Hard to institutionalize. Why?" Co-sponsored by [TXCDX](#)

09/17/2008. "What would Lincoln and Darwin make of today's science and politics?" Co-sponsored by Dept of Political Science & Pi Sigma Alpha.

09/18/2008. "Why Intelligent Design is Worth Fighting For." Co-sponsored by Philosophy and Religion Studies.

Future of the University Series



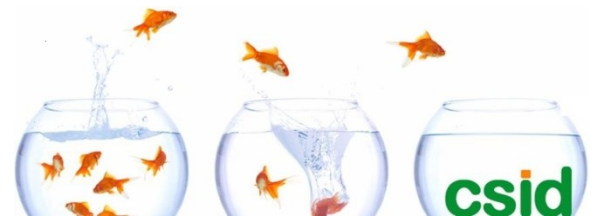
09/03/2009. Iain Thomson, Professor of Philosophy at the University of New Mexico, delivered the inaugural keynote, "Heidegger on the Crisis & the Future of the University," for the first annual UNT Phi Sigma Tau Student Philosophy Symposium. CSID co-sponsored this talk in support of the new Philosophy & Religion Studies Honors Society.

02/15/2010. John H. Marburger, III, gave a talk "Universities as Natural Phenomena." Former Science Policy advisor to President George W. Bush and the Director of the Office of Science and Technology Policy in that administration, Dr. Marburger currently serves as the Vice President for Research SUNY-Stonybrook.



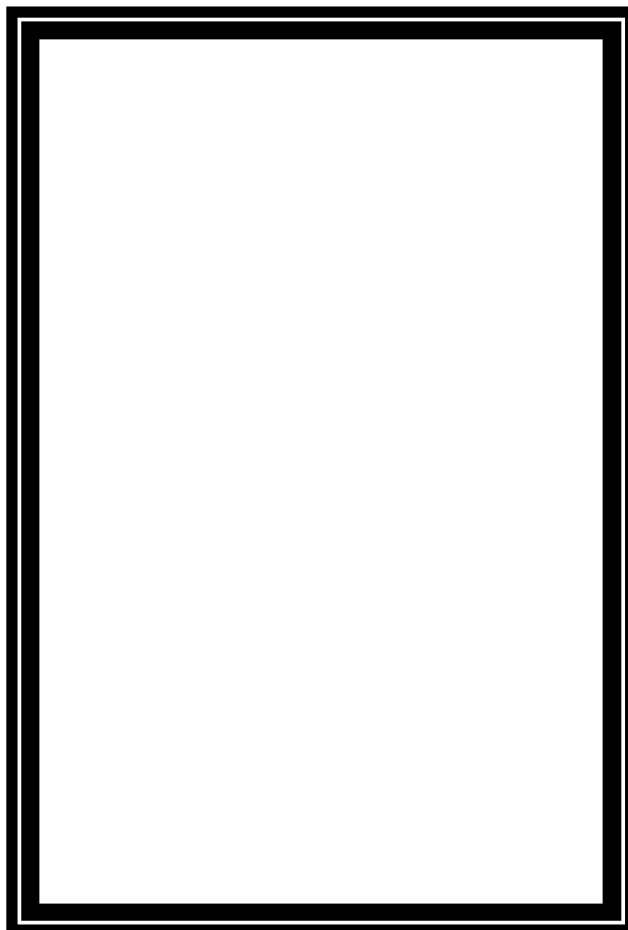
10/28/2009. Professor Edward Ayers, President of the University of Richmond, presented "The Hidden Crises and Opportunities of Higher Education."

09/23/2009. Bruce Kuklick, University of Pennsylvania Professor of American History, presented "Public Intellectuals and the Future of the University; or Who Put the 'American' in American Philosophy?"



What Are You Going To Do with That Degree?

This series takes seriously the duty to think student outcomes in our community. Guest speakers explore the novel career possibilities available to philosophy majors through the examination and incorporation of entrepreneurial thinking.



1. April 2011. William Wallace. Founder, Success North Dallas.
2. February 2011. Chad Bush. Director of Strategic Transactions at Dunn & Bradstreet.
3. 12/01/10. Anthony Mendes. Director, the Murphy Center for Entrepreneurship, "Combining Entrepreneurial Opportunities with your Philosophy Degree"
4. 10/04/10. Robert L. Frodeman. "Taking Philosophy into the Field."

IX. PENDING ACHIEVEMENTS

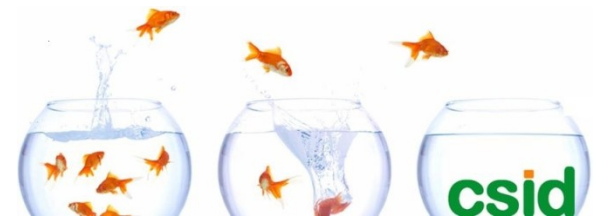
Grant proposals

CSID Faculty Fellow **Sarah Fredericks** has submitted a proposal to the NSF Environmental Sustainability program to design an off-grid, sustainable modular building suitable for storage, office, and classroom space and to monitor the energy, economic, environmental, and social sustainability of the building. This **\$300k** grant proposal, “Modular Construction Using Spent Shipping Containers for Environmental Sustainability on Academic Campuses,” was submitted September 23, 2010. Sarah writes: “Dr. **Matt Traum** of Mechanical and Energy Engineering [also a CSID Faculty Fellow] is the PI. I am a Co-PI along with Dr. Ruthanne Thompson of Biology; Dr. Yong Tao of Mechanical and Energy Engineering; and Dr. Marilyn Wiley, of Finance, Insurance, Real Estate and Law. This proposal has certainly already helped us learn about each other’s research and ways of working together which we will use in the future.”

In addition to the proposal he submitted with Sarah Fredericks as co-PI, **Matt Traum** has also submitted several other proposals. He writes:

With CSID summer support, Dr. Traum was able to author 5 research proposals to seek extramural research funding. Of these research proposals 3 included interdisciplinary colleagues outside of mechanical and energy engineering. The following list denotes Dr. Traum’s submitted and pending research proposals supported by CSID in 2010 Summer:

1. “Buoyant Plume Models for Displacement Ventilation,” American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) [External], **\$219,015**, Sandra K. S. Boetcher (PI), Matthew J. Traum (Co-PI), Submitted May 7, 2010.
2. “CAREER: Interlacing Thermal-Fluids with Nano-Science via Porous Barrier Energy Transport,” National Science Foundation (NSF) Faculty Early Career Development Award (CAREER) [External] **\$431,763**, Matthew J. Traum (PI), Submitted July 20, 2010.
3. “Renewable Energy Research and Training Opportunities for Installed Utility-Scale Wind Turbines at UNT,” Texas State Energy Conservation Office (SECO) [External], **\$200,000**, Todd Spinks (PI), Matthew J. Traum (Co-PI), original grant submitted October 29, 2010; revised grant submitted August 6, 2010.
4. “Gas Expansion and Energy Conversion in a Multiphase Fluid,” National Science Foundation (NSF) Particulate and Multiphase Processes Program [External], **\$296,204**, Duncan Weathers (PI), Carlos Ordonez (PI),



Matthew J. Traum (Co-PI), to be submitted before September 23, 2010.

5. "Modular Construction Using Spent Shipping Containers for Environmental Sustainability on Academic Campuses," National Science Foundation (NSF) Environmental Sustainability Program [External] **\$300,000**, Matthew J. Traum (PI), Yong Tao (Co-PI), Marilyn Wiley (Co-PI), Ruthanne Thompson (Co-PI), Sarah Fredericks (Co-PI), to be submitted before September 23, 2010.

In addition to teaming Matt and Sarah, CSID Assistant Director Britt Holbrook also reviewed Matt's CAREER proposal and offered comments to help him improve the broader impacts statement, as well as the integration of research and education in the proposal.

- In total, CSID has over \$1m in already submitted proposals for Fall 2010.

Grant proposals planned for submission

The CSID Directors plan to submit an **EAGER proposal for \$300k to NSF** for exploratory work on a potentially transformative approach to research on interdisciplinarity. This proposal is preparatory to an anticipated \$5m center for research on interdisciplinary collaboration from NSF.

CSID Faculty Fellow Elaine Wittenberg Lyles is planning to submit a proposal to NIH in June, 2011. She writes:

This summer, CSID provided research funds (\$4,500) to fund two graduate research assistants. As a result of this funding two manuscripts were written and submitted to journals (both consisting of data analysis provided by the students – and students are listed as co-authors on the manuscripts). Additionally, a pilot project was conducted and data collected. One of the graduate students who worked with me this summer has elected to enroll in special problems credit to enable her to finish data analysis from the pilot project. Overall, this work contributes to feasibility and usability testing of an intervention that will be the basis of an **NIH R21 application for June 2011**.

CSID Faculty Fellow Andrew Torget also has plans for proposal submission in the near future. He writes:

So we've been putting together a research team that consists of my Digital Scholarship Lab, the University of Texas's Center for American

History, the Texas General Land Office, and the UNT library. We're also in the process of putting together a grant proposal for this project that we will submit to the **National Endowment for the Humanities** for their next round of research grants for their Humanities Collections and Reference Resources grants (for about **\$350,000**). Using this as a basis, I am also submitting a similar proposal to the **American Council of Learned Societies for their Digital Innovation Fellowships (\$85,000 in support)**.

- In total, CSID will be submitting additional proposals in excess of \$1m this spring semester.

Publications

1. Frodeman, R. "Interdisciplinary Philosophy: Managing Knowledge in the Age of Accountability". Upcoming 2011 in Proceedings of the 6th International Conference on Environmental Future: Interdisciplinary Progress in Environmental Science & Management. Can knowledge be defined for ID work, its interconnectedness, its production arrangements and integration, and what are the barriers to such ID work?
2. Holbrook, JB. "The Use of Societal Impacts Considerations in Grant Proposal Peer Review: A Comparison of Five Models," accepted for publication in *Technology and Innovation – Proceedings of the National Academy of Inventors*.
3. Frodeman and CSID Faculty Fellow Adam Briggie have submitted a paper on peer review to *Technology in Society*.
4. CSID Postdoctoral Fellow Steven Hrotic has submitted "Peer Review and Academic Morals" to *Social Epistemology*.
5. Frodeman, Holbrook, and CSID Post-bac Research Fellow Kelli Barr are currently co-authoring a chapter on academic metrics for the book, *The Good Life in a Technological Age*, under contract with Routledge.
6. Holbrook and CSID Senior Fellow Carl Mitcham are currently co-authoring a chapter on technology and the environment for 3TEP volume.
7. Frodeman and Briggie are currently co-authoring a chapter on technology and the Gulf oil spill for 3TEP volume.



Into the Field

1. 03/07 – 03/09/2011. “A New Practice of Philosophy: Taking Philosophy Beyond Disciplinary Bounds.” Co-sponsored with the Department of Philosophy & Religion Studies. This international conference attracts philosophers who are developing new (often interdisciplinary) models for philosophic engagement and to foster a community of practice among philosophers who are developing new approaches of engaged philosophy.
2. 02/25 – 02/26/2011. **Second Interdisciplinarity@UNT Workshop**, “Leaping Interdisciplinary Divides in a Single Bound! A Comic Studies Symposium.” Co-sponsored with CAS Departments of Communications, English, RTVF and the College of Library & Information Sciences and the UNT Libraries. This meeting will explore *Comics Across the Curriculum*, *Comics Across Culture*, *Comics Across the Community*, and *Comics Across the Classroom*. Highlighting the diverse UNT faculty who use comics or Comics Studies in their teaching and research, panels will also examine the community connections and interdisciplinary value of bringing comics into student-centered learning environments!
3. June 2011: CSID co-sponsors the inaugural conference of the **International Network for Interdisciplinarity & Transdisciplinarity** in Utrecht, the Netherlands.
4. 12/08 – 12/15/2010. **Co-organized workshop sponsored by the European Commission: Assessing “Broader Impact” in Research Grant Applications, Brussels**. With funding agencies worldwide being called upon to demonstrate greater accountability, the challenge to successfully integrate societal impacts in the funding process remains acute. In the light of the debate on simplification, a political commitment to see research as part of the wider system for innovation, and in view of the coming debate on future orientations, this presenters see it as timely to take stock of current practices and to consider options for the future.

X. THE FUTURE OF CSID



Building on Success

In the space of 2 years CSID has become a national and international player in interdisciplinary research. At the same time, CSID has met and exceeded all of the internal UNT benchmarks—qualitative, quantitative, and financial—that were agreed upon at the time of its funding. CSID is not only making significant contributions to UNT’s reputation, adding to the momentum for reaching Tier 1 or Research University status. CSID is also both submitting its own grants *and* increasing grant activity across the university.

When Frodeman came to UNT in the fall of 2004, the Department of Philosophy and Religion Studies (PRS) had little in the way of a culture of grantsmanship. One or two faculty members had been part of federal grants; but in the majority of cases, and in all cases concerning large grants, PRS faculty members were merely supplementary personnel on grants submitted by scientists.

Note where PRS now stands compared to the 10 leading philosophy PhD programs in terms of the attracting of sponsored research:

Institution	Department	PI \$ since 2005	Career \$ as PI	\$ in active grants	\$ w/ PI of diff. discipline
UNT*	Philosophy	1,017,014	1,910,432	1,109,135	45,534
Stanford	Philosophy	727,056	2,946,519	628,555	473,070
Carnegie-Mellon	Philosophy	640,817	1,159,842	2,132,416	3,280,783
Duke	Philosophy	399,411	738,516	103,077	1,142,306
USC Columbia	Philosophy	349,703	458,203	5,534,352	4,083,852
Penn State	Philosophy	235,550	321,600	0	0
NYU	Philosophy	168,876	285,401	168,876	0
U Chicago	Philosophy	99,998	147,798	0	0
Arizona	Philosophy	99,770	310,190	220,770	0
UC Boulder	Philosophy	69,069	69,069	0	0
Rice	Philosophy	0	0	0	91,790
Pittsburgh	Philosophy	0	564,552	0	0

*UNT Phil w/ Chile grants	21,178,014	22,071,432	6,259,135	18,454,584
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(Total dollar⁶ awards from US funding sources: numbers were obtained by working from the rankings of top doctoral programs in the recent report of the National Research Council and cross-checking various sources, such as departmental websites, personal CVs, and funding agency websites⁷.)

This chart shows that UNT PRS is now ranked first nationally — by 28.5% over its nearest rival — among philosophy departments in attracting grant research.⁸

CSID embodies a similar culture of grantmanship. Moreover, in addition to its own work, CSID is promoting this cultural change across the humanities, arts, and social sciences at UNT. CSID helps PRS faculty with grant applications and engages faculty and graduate students across campus seeking to increase interdisciplinarity and sponsored research — a role that Britt Holbrook has taken the lead in.⁹

Return on Investment

The university — in particular, the Provost's office and CAS — has made a significant investment of resources into CSID. What type of 'return', financial and otherwise, has come back to the university?

The bar graph on page five (above) lays out the basic economics of CSID—that by agreed-upon metrics CSID has exceeded expectations for years 1 and 2, and is on track to do the same in year 3. Moreover, as summarized on page two and throughout, sizable intangible or reputational returns have also resulted from CSID activities.

There are strong indications that CSID is poised to have an even greater impact in the future. So, for instance: Michael Gorman, program officer at NSF, has told Frodeman that he intends to make the CSID website the “port of entry” for all materials that result from the recent NSF-funded workshop on interdisciplinarity, held at Boston University November 3 and 4, 2010. Moreover, in an email dated December 17, 2010, Gorman and Julia Lane of the NSF have offered CSID \$50,000 — unprompted — to convene a workshop on the meaning of transformative research, to be held at NSF.

To mention two additional examples: Representative Dan Lipinski of Illinois referred to CSID's work in his introductory remarks at the September meeting of the House

⁶ IDC rates vary from campus to campus, and were in any case not available.

⁷ "A Data-based Assessment of Research-Doctorate Programs in the United States" published by the National Research Council.

⁸ UNT's PRS was not included in NRC's rankings, since their data stopped in 2007, before PRS obtained the PhD program.

⁹ Holbrook has worked with members of PRS, the UNT Research Development Team, the College of Information, the Toulouse Graduate School, and with UNT Libraries. He is also the point of contact for securing secured all CSID Faculty Fellows.

subcommittee on science and education, and the White House Office of Science and Technology Policy (OSTP) contacted Frodeman in July about meeting with them to discuss questions of accountability and broader impacts. Frodeman met with OSTP staffers on August 19, 2010 to discuss questions of scientific accountability.



The point is not simply to suggest that CSID is becoming well-known in the right circles. CSID's work over the last two years has led to a number of developing opportunities both nationally and internationally. A number of possibilities with significant potential economic AND cultural return now lie before us:

- NSF is contemplating creating a \$5mil center proposal competition for a 'Center for the Study of Interdisciplinary Collaboration.' Frodeman, Holbrook, and CSID products are well known to the program officers who are behind this effort.
- Frodeman has received encouragement from current and past NSF IGERT officers to put in an IGERT proposal rooted in interdisciplinarity. Frodeman has also discussed this possibility with Vish Prasad.
- As part of the planning for the CSID-European Commission workshop on peer review (held on December 13 and 14, 2010), Frodeman and Holbrook are in discussions with NSF and EC officials about a large, jointly funded research proposal on the 'philosophy of metrics.'
- In the December, 2010 phone conversation where Gorman asked CSID to run a workshop for NSF on the meaning of "transformative research", Gorman noted that this could easily lead to a sizably larger grant on the subject in the future.

This is in addition to a number of smaller possibilities (e.g., in the \$50-100k range) that CSID will be pursuing.

Next Steps

We face a tight funding climate both nationally and locally. We believe CSID can help here, and with UNT's goal of becoming a NRU.

There are a number of new, large grant opportunities that CSID is poised to submit. But doing so, as well as continuing its current work across campus and around the globe, will require continued university support. The humanities have traditionally lacked a 'team science' approach to research; given contemporary societal challenges, and today's budget climate, it is essential to create teams of humanists who can practice efficiencies of scale in order to grasp major opportunities.

We therefore propose the following 'next steps' for CSID:

1. Solidify Holbrook's position at UNT



2. Hire three new Research Professors within CSID
 3. Consider the creation of a research cluster centered within CSID
 4. Find new, larger space for CSID
1. Britt Holbrook is central to the success of CSID. Without him, there would be no CSID—only a lone professor with a graduate student or two, struggling to find time for center activities between teaching and committee work. In addition to a growing amount of publishing, Holbrook both submits grants for CSID and assists others across PRS and across campus in the submission of grants – both CSID Fellows and others.

Holbrook is now being courted, as people recognize his unique set of talents spanning philosophy, policy, and grantsmanship. His position at UNT needs to be regularized.

2. Major universities are typically surrounded a penumbra of research institutions that are partially funded by the university, partially by outside sources such as government grants. We believe CSID could become a signature institute for UNT.

In the past, Frodeman and Dean (now Provost) Burggren discussed the possibility of massively increasing the size of CSID. The data of the first two years suggest that there is a clear economic and reputational upside to doing so. There is no center or institute like CSID in North America—and analogues are also difficult to find in Europe as well. CSID represents a case of ‘niche marketing’ in an area of sustained and growing interest—interdisciplinarity.

As the graph on page 5 above shows, CSID has run in the black each of its first two years of existence, and is poised to do the same in year three. We are limited in our potential for additional grant-getting *not* by opportunities, but by manpower. This past September we passed on a \$400k grant opportunity because we simply did not have the staff to write the grant, given all the other activities in which we are involved.

We therefore propose three new Research Assistant Professor positions for CSID. We propose that with these positions we guarantee the first 2 years of funding. In year three, funding drops to 6 months, with the other months covered by grants.

3. The PRS department is already the best department in the world in environmental ethics and philosophy. As CSID research has discovered, PRS is now the #1 PhD program in terms of extramural research funding. CSID and PRS can build on this success by the creation of a research cluster hire framed around

the study of interdisciplinarity, broader impacts, transformative research, innovation, and the like.

CSID has identified a number of philosophers and humanists from around the world who are engaged in something like UNT's interdisciplinary approach to field philosophy. Possible targets include:

- Michael O'Rourke of the Philosophy Department at the University of Idaho, who has over \$2.7 million in sponsored research, including \$300k as PI for his Interdisciplinary Toolbox Project
 - Paul Thompson of Michigan State, who has more than \$4 million in sponsored research across his career
 - Kyle Powys Whyte of Michigan State, a young investigator who has been co-PI on a number of recent grants with Thompson
 - Heather Douglas of the University of Tennessee, a younger scholar who currently has a \$140,000 NSF grant.
4. Recommendations 2 and 3 both involve increasing the size of CSID. We are already bursting the seams of our current offices. Therefore, our third recommendation: a larger space to house the new and improved CSID.

We realize that these are difficult requests to make in the current funding climate. But we also believe that CSID represents an absolutely unique opportunity¹⁰ for UNT that should be protected, supported, and grown.

¹⁰ The University of British Columbia is considering the creation of a Center for the Study of Interdisciplinarity—and that NSF is considering creating a \$5mil competition for a center for the study of interdisciplinary collaboration.

