



The Center for Nanotechnology in Society at
Arizona State University

NSF #0937591 September 1, 2010 – August 31, 2015

PI: David H. Guston, *Arizona State University*

Co-PIs: Elizabeth Corley, *Arizona State University*
Clark Miller, *Arizona State University*
Dietram Scheufele, *University of Wisconsin, Madison*
Jan Youtie, *Georgia Institute of Technology*

Annual Report for the Period
September 1, 2014 to August 31, 2015

This report includes work conducted at three collaborating universities of NSEC/CNS-ASU: Arizona State University, Georgia Institute of Technology, and the University of Wisconsin-Madison.

2. Table of Contents

Project Summary	3
List of Center Participants, Advisory Boards, and Participating Institutions	5
Quantifiable Outputs – Table 1	54
Mission, Significant Advances, and Broader Impacts.....	54
Highlights	71
Strategic Research Plan	81
Research Program, Accomplishments, and Plans	84
a. RTTA 1	
b. RTTA 2	
c. RTTA 3	
d. RTTA 4	
e. TRC 1	
f. TRC 2	
g. VIRI	
Center Diversity – Progress and Plans	127
Education.....	131
Outreach and Knowledge Transfer.....	149
Shared and Other Experimental Facilities	160
Personnel	162
Publications and Patents	166
Biographical Information	309
Honors and Awards	313
Fiscal Sections.....	315
Cost-Sharing	335
Leverage	342
Current and Pending Support	354

(2. Table of Contents continued)

Tables

Table 1	54
Table 2	126
Table 3A	147
Table 3B	148
Table 4A	164
Table 4B	165
Table 5	345
Table 6	346

3. Project Summary

The Nanoscale Science and Engineering Center/Center for Nanotechnology in Society at Arizona State University (NSEC/CNS-ASU) combines research, training, and engagement to develop a new approach to governing emerging nanotechnologies. CNS-ASU uses the research methods of “real-time technology assessment” to enable a strategic vision of anticipatory governance through enhanced foresight capabilities, engagement with lay publics, and integration of social science and humanistic work with nanoscale science and engineering research and education.

CNS-ASU has two types of integrated research programs, as well as educational and outreach activities (themselves well-integrated with research). Its real-time technology assessment programs are: RTTA 1, Research and Innovation Systems Assessment, which uses bibliometric and patent analyses to understand the evolving dynamics of the NSE enterprise; RTTA 2, Public Opinion and Values, which uses surveys and quasi-experimental media studies to understand changing public and scientists’ perspectives on NSE; RTTA 3, Anticipation and Deliberation, which uses scenario development and other futuring techniques to foster deliberation on plausible NSE applications; and RTTA 4, Reflexivity and Integration, which uses participant-observation and other techniques to assess the Center’s influence on reflexivity among NSE collaborators and other Center participants. Second, the thematic research clusters (TRCs), which pursue fundamental knowledge and create linkages across the RTTAs, are: TRC 1, Equity, Equality and Responsibility; and TRC 2, Urban Design, Materials, and the Built Environment (“Nano and the City”).

The Center’s major conceptual-level achievements have been validating anticipatory governance as a richly generative strategic vision and advancing the related agenda of responsible innovation, e.g., with the workshop on synthetic biology. Its major operations-level achievements include: 1) demonstrating capacities for foresight, engagement, and integration that constitute anticipatory governance; 2) completing the “end-to-end” activities by linking multiple RTTA capacities for (the earlier) TRC 2 to create novel insights in a study of nanotechnology and the brain and for TRC 1 to create novel insights into equity and nanotechnology; 3) deepening the integration of NSE researchers into CNS-ASU; and 4) building collaborations for informal science education (ISE) on the societal aspects of NSE.

Programmatic achievements in the reporting year include: reporting to OSTP on international NSE publication and patent data; mounting a third study of public opinion regarding nano and other emerging technologies; analyzing data from the at-scale conduct of the Futurescape City Tours; analyzing data from the major study of CNS-ASU participants; conducting workshops to train scientists and engineers to engage with the developing world; pioneering collaborative work on anticipatory life cycle assessment.

The Center’s principal **intellectual merit** derives from the large-scale, interdisciplinary ensemble that underpins it. The ability to generate creative scholarship, embrace and facilitate interactions among disparate approaches to understanding nanotechnologies, and build complementary capacities to tap that knowledge for governance, is the critical intellectual contribution to which CNS-ASU aspires. The Center’s work has a substantial impact on scholarship, not only in terms of publications and citations but also through hosting international visitors. For **broader impact**, the Center has coupled research, education, and outreach activities exceptionally well by training significant numbers of new scholars from the social sciences and NSE, incorporating forefront research into a new winter school for early career scholars, new courses and ISE opportunities, and returning lessons learned and techniques developed for outreach back to the classroom. The Center has broadened the participation of under-represented groups by cultivating junior scholarship and raising issues of equity, gender, and disability as objects of programmatic study. The Center has enhanced the infrastructure for research and education by leading the creation of a new journal, organizing community-defining conferences, producing community-defining sources of knowledge, serving as an international hub for scores of scholars, sharing data and instruments widely, and disseminating its results aggressively to its academic peers as well as to public, scientific, industry, and policy audiences through traditional means and increasingly through new media.

4. List of Center Participants, Advisory Boards, and Participating Institutions

4. (a) LIST OF CENTER PARTICIPANTS

Participants receiving Center support:

ASU

Elizabeth Adams	Faculty Associate	Engin. Academic & Student Affairs
Braden Allenby	Professor	Civil & Environmental Engineering
Jean Andino	Associate Professor	Engineering Matter, Transport & Energy
Moshe Apelas	Associate Professor	Engineering Computer Science
Andrew Askland	Director	Center for Law, Science & Innovation
Denise Baker	Faculty Associate	Social & Behavioral Sciences
George Basile	Executive Director	Decision Theatre for a Desert City
Ira Bennett	Assistant Research Professor	Consort. for Science, Policy & Outcomes
Philip Bernick	Assistant Professor	English
Mimmo Bonanni	Associate Librarian	Cyberinfrastructure Services
Christopher Boone	Professor	Human Evolution & Social Change
Prasad Boradkar	Associate Professor	Architecture & Landscape Architecture
Katja Brundiars	Academic Associate	Global Institute of Sustainability
Harvey Bryan	Professor	Architecture & Landscape Architecture
Marilyn P. Carlson	Professor	Mathematics & Statistics
Matthew Chew	Faculty Associate	Global Institute of Sustainability
Nalini Chhetri	Lecturer	Global Institute of Sustainability
Netra Chhetri	Assistant Professor	Consort. for Science, Policy & Outcomes
David Conz	Lecturer	Letters & Sciences
Elizabeth Corley	Associate Professor	Public Affairs
Kevin Corley	Assistant Professor	Management
Kurt Creager	Executive Director	Stardust Center
Peter Crozier	Professor	Engineering Matter, Transport & Energy
Sandwip Dey	Professor	Engineering
Rodolfo Diaz	Professor	Electrical Engineering
Chris Diehnelt	Assistant Research Professor	Biodesign Institute
Gary Dirks	Director	LightWorks
Travis Doom	Program Specialist	Consort. for Science, Policy & Outcomes
Thomas Duening	Director	Entrepreneurial Programs
Mary Anne Duggan	Assistant Research Professor	Sanford Sch. of Social & Family Dynamics
Terrie Lee Ekin	Director	CLAS Research Administration
Karin Ellison	Associate Director	Biology & Society
James Elser	Regents' Professor	Life Sciences
Scott Endsley	Vice President	System Design for Quality Improvement
Sandy Epstein	Sr. Mgr. Strategic Bus. Dev.	Decision Theatre
Joseph Eschrich	Coordinator Sr., Res. & Ops.	Center for Science & the Imagination
Timothy Eschrich	Process Engrg. Manager	Ctr. for Solid State Electronics Research
Mahmud Farooque	Associate Director	Consort. for Science, Policy & Outcomes
Tricia Farwell	Professor	Journalism & Mass Communication
Edward Finn	Director/Assistant Professor	Arts, Media and Engineering
Adelheid Fischer	Staff	Innovation Space
Erik Fisher	Assistant Professor	Political Science
Matthew Fraser	Associate Professor	Sustainable Engrg. & Built Environment
Sylvain Gallais	Clinical Professor	Languages & Cultures

Joel Garreau	Lincoln Professor of Law	Law
Alexandra Gino	Faculty Associate	Consort. for Science, Policy & Outcomes
Jay Golden	Assistant Professor	Global Institute of Sustainability
Aaron Golub	Assistant Professor	Geographical Sciences & Urban Planning
Deborah Gonzalez	Chief Academic Officer	University Public Schools
Stephen Goodnick	Professor	Electrical Engineering
Gisela Grant	Internship Coordinator	Politics & Global Studies
Kimberly Grout	Coordinator Senior	Global institute of Sustainability
Subhro Guhathakurta	Professor	Geographical Sciences & Urban Planning
Devens Gust	Professor	Chemistry & Biochemistry
David H. Guston	Professor	Political Science
Ed Hackett	Professor	Human Evolution & Social Change
Rolf Halden	Associate Professor	Biodesign Institute
Mark Hannah	Assistant Professor	English
Jiping He	Professor	Bioengineering
Renata Hejduk	Associate Professor	Architecture & Landscape Architecture
Stephen Helms Tillery	Assistant Professor	Bioengineering
Mark Henderson	Professor	Engineering
Kirsten Hendrickson	Lecturer	Chemistry & Biochemistry
Joseph Herkert	Lincoln Associate Professor	Humanities & Arts
James Hershauer	Professor	Management
William Heywood	Assistant Clinical Professor	Design
Lori Hidingar	Managing Director	Consort. for Science, Policy & Outcomes
Keith Hjelmstad	Professor	Sustainable Engrg. & Built Environment
Chong Ho Yu	Systems Analysis	ALTI Research & Outreach
Kiril Hristovski	Assistant Professor	Technology & Innovation
Ben Hurlbut	Assistant Professor	Life Sciences
Mary Ingram-Water	Lecturer	Barrett Honors College
Minu Ipe	Clinical Associate Professor	WPC Management
Marco Janssen	Associate Professor	Ctr. for Study of Institutional Diversity
John Johnson	Emeritus Professor	Social Transformation
Paul Johnson	Dean	Engineering
Erik Johnston	Assistant Professor	Public Affairs
Stephen Johnston	Professor	Biodesign Institute
Christopher Jones	Assistant Professor	History
Kamil Kaloush	Associate Professor	Sustainable Engrg. & Built Environment
Sayfe Kiaie	Associate Dean	Engineering
Yushkim Kim	Assistant Professor	Public Affairs
William Kimbel	Virginia M. Ullman Professor	Human Evolution & Social Change
Gordon Knox	Director	University Art Museum
Anatoli Korkin	Director	Research & Economic Affairs
Joseph Kullman	Sr. Media Relations Officer	FSE Marketing & Public Affairs
Timothy Lant	Assistant Research Professor	Decision Theatre for a Desert City
Karen Leong	Associate Professor	Social Transformation
Nancy Levinson	Director	Design
Rachel Levinson	Indus. & Gov. Rel. Liaison	Research & Economic Affairs
Merlyna Lim	Assistant Professor	Consort. for Science, Policy & Outcomes
Mary Laura Lind	Assistant Professor	Engineering Matter, Transport & Energy
Stuart Lindsay	Regents' Professor	Biodesign Institute
Jason Lloyd	Project Coordinator	Consort. for Science, Policy & Outcomes
Jose Lobo	Associate Professor	Global Institute of Sustainability

George Maracas	Research Professor	Electrical Engineering & Sustainability
Gary Marchant	Lincoln Professor of Law	Law
Joan McGregor	Professor	Philosophy
Chad McAllister	Staff	Chemistry & Biochemistry
Michael Mehaffy	Faculty Associate	Geographical Sciences & Urban Planning
Jeri Meeks	Bus. Operations Manager Sr.	OKED Finance
Kostalena Michelaki	Associate Professor	Human Evolution & Social Change
Clark A. Miller	Associate Professor	Political Science
Tom Moore	Professor	Chemistry & Biochemistry
Torin Monahan	Assistant Professor	Justice & Social Inquiry
Loren Olson	Clinical Assistant Professor	Arts Media & Engineering
Dan O'Neill	Lecturer & Director	Technology & Innovation
Scott Muir	Administrator & Librarian	Library Downtown
Alan Nelson	Director	Biodesign Institute
Robert Ott	Associate Director	Occupational Health & Safety
Robert Pahle	Assistant Research Professor	Decision Theatre for a Desert City
Mary Jane Parmentier	Senior Lecturer	Letters & Sciences
Darren Petrucci	Professor	Architecture & Landscape Architecture
Patrick Phelan	Professor	Engineering Matter, Transport & Energy
Rhonda Phillips	Professor	Community Resources/Development
S. Thomas Picraux	Professor	Materials Research
Kenneth Polasko	VP Business Development	AZ Technology Enterprises
Jonathan Posner	Assistant Professor	Mechanical & Aerospace Engineering
George Poste	Chief Scientist	Complex Adaptive Systems Initiative
Paul Privateer	Associate Professor	Film & Media Studies
Subramanian Rajan	Professor	Sustainable Engrg. & Built Environment
B. Ramakrishna	Associate Professor	Materials
Charles Redman	Director	Global Institute of Sustainability
Kristine Reich	Faculty	Social Work
Jennifer Richter	Visiting Assistant Professor	Consort. for Science, Policy & Outcomes
Barry Ritchie	Professor	Physics
Bruce Rittman	Regents' Professor	Biodesign Institute
Jason S. Robert	Associate Professor	Life Sciences
Ariel Rodriguez	Assistant Professor	Community Resources/Development
Aaron Rothman	Specialist	Phoenix Urban Research Laboratory
Mark Ryan	Adjunct Professor	Design
Carlo Sammarco	Professor	FabLab
Hava Samuelson	Professor	Jewish Studies
Daniel R. Sarewitz	Professor	Science & Society
Anne Schneider	Professor	Justice & Social Inquiry
Dawn Schwenke	Research Professor	Health Management & Policy
Kimberly Scott	Associate Professor	Social Transformation
Thomas Seager	Associate Professor	Sustainable Engrg. & Built Environment
Cynthia Selin	Assistant Professor	Global Institute of Sustainability
Nancy Selover	Academic Associate	Global Institute of Sustainability
Don Seo	Associate Professor	Chemistry & Biochemistry
RF (Rick) Shangraw	President	ASU Foundation
Nisha Sherma	Research Technician	Biodesign Institute
Michael Sullivan	Director	Hispanic Research Center
Leandra Swanner	Lecturer	Barrett Honors College
Emily Talen	Professor	Geographical Sciences & Urban Planning

Colin Tetreault	Faculty Associate	Global Institute of Sustainability
Jekan Thanga	Assistant Professor	Earth & Space Exploration
Trevor Thornton	Professor	Electrical, Computer, & Energy Engineering
David Tinapple	Assistant Professor	Arts Media & Engineering
Cesar Torres	Assistant Professor	Engineering Matter, Transport & Energy
Michael Tracy	Director	Center for Cancer Research
Sander van der Leeuw	Dean and Professor	Sustainability/Human Evol. & Soc. Change
Warren Van Egmond	Adjunct Faculty	Mathematics
Steven VanGinkel	Assistant Research Scientist	Environmental Biotechnology
Wim Vermass	Professor	School of Life Sciences
Myla Vicenti Carpio	Assistant Professor	American Indian Studies
Ajay Vinze	Professor	WPC Information Systems
Qiangbin Wang	Professor	Biodesign Institute
Xiao Wang	Assistant Professor	Biomedical Engineering
Andrew Webber	Vice Provost & Professor	Graduate Education
Paul Westerhoff	Professor	Sustainable Engrg. & Built Environment
Jameson M. Wetmore	Professor	Human Evolution & Social Change
Roxanne Wheelock	Web Administrator	International Languages & Cultures
Philip White	Professor	Industrial Design
Arnim Wiek	Assistant Professor	Global Institute of Sustainability
Joann Williams	Research Professor	Chemistry & Biochemistry
Neal Woodbury	Professor	Chemistry & Biochemistry
Chong Yu	Systems Analyst Principle	ALTI Research & Outreach
Gregg Zachary	Professor	Consort. for Science, Policy & Outcomes
Frederick Zenhausern	Professor	Biodesign Institute

Collaborators

Wendoly Abrego	Sust. Communities Prog. Mgr.	Phoenix Revitalization Corporation
Jessica Adamick	InterNano Project Mgr.	National Nanomanufacturing Network
Greg Adamson	Honorary Fellow	University of Melbourne
Perry Allen	Teacher	Arizona School for the Arts
Roger Angel	Univ. of AZ, Regents' Prof.	Astronomy
Richard Applebaum	Univ. of California, Berkeley	Global & International Studies
Stathis Arapostathis	Lecturer	University of Athens
Simone Arnaldi	University of Padua	CIGA
Peter Asaro	Rutgers, Assistant Professor	Philosophy
Geri Augusto	Brown University	Public Policy
Davis Baird	Clark University	Academic Affairs
Shawn Barcelona	Univ. of California, Berkeley	Center for Nanotechnology in Society
Richard Barke	Associate Professor	Georgia Institute of Technology
Ardeth Barnhart	Univ. of AZ, Co-Director	AZ Research Institute for Solar Energy
Indrani Barpujari	The Energy & Resources Inst.	Science and Technology
Rob Barnett	Dir. of Envir. Systems	PING Inc.
Deborah Bassett	Univ. of WA, Dir Social Stud.	Workforce Development
Ottavia Bassetti	Board Member	The Bassetti Foundation
Rebecca Bates	AAAS Sci. & Tech Pol Fellow	National Science Foundation
Shawn Beckman	Sr. V.P. Market. & Strategy	SDC Materials
Larry Bell	Sr. V.P. Strategic Initiatives	Museum of Science
Michael Bennett	Professor, Law	Northeastern University
Frazier Benya	Natl. Acad. Engin., Prog. Offc.	Engineering, Ethics, & Society
Kavita Berger	AAAS, Project Director	Science, Technology & Security Policy

Robby Berloznik	Director	Flemish Institute Society & Technology
Andrew R. Binder	NC State Univ., Asst. Prof.	Communication
David Bjornstad	UT Battelle	Environmental Sciences
Regina Blakely	Instructional Designer	Regina Blakely Consulting
John Bobalek	Dept. of Treasury, Prog. Mgr.	Bureau of Engraving & Printing
Larry Bock	Chairman	Luxe Ventures
Jason Boehm	Director, Prog. Coord. Offc.	Natl. Inst. of Standards & Technology
Marianne Boenink	Univ. of Twente, Lecturer	Philosophy
Cathy Boggs	Cal., Santa Barbara, Dir. Ed.	Center for Nanotechnology in Society
Greg Book	Georgia Tech, Asst. Dir.	Nanotechnology Research Center
Valerie Bonham	Executive Director	Pres. Comm. for Study of Bioethical Issues
Line Bonneau	Said Bus. School, Res. Fellow	Science, Innovation and Society
Jason Borenstein	Georgia Tech, Professor	Graduate Research Ethics Program
Chris Bosso	Northeastern University	Public Policy and Urban Affairs
Ann Bostrom	University of Washington	Public Affairs
Daryl Boudreaux	President	Boudreaux and Associates
Robert Bowman	Queens Univ. Belfast, Dir.	Center for Nanostructured Media
Kevin Boyack	President	SciTech Strategies, Inc.
Timothy Boyd	Teacher	Bioscience High School
Barry Bozeman	Georgia, Professor	Public Administration & Policy
Suzanne Brainard	Univ. of Washington, Ex. Dir.	Center for Workforce Development
Donald Braman	George Washington, Prof.	Law
Russell Brandon	Participant	
Philip Brey	Department Chair/Professor	University of Twente
Susan Brienza	Shareholder	Ryley, Carlock & Applewhite Attorneys
Sage Briggs	Cal.-Santa Barbara, Fin. An.	Physics
Simone Browne	Texas-Austin, Asst. Prof.	Sociology
Will Bruder	President	Will Bruder & Partners Ltd.
Karl Bryant	Cal., Santa Barbara, Asst. Pr.	Sociology and Women's Studies
Ava Buchanan	Macalester College, Teach Ast.	Environmental Studies
Jill Buschbacher	City of Phoenix, Proj. Mgr.	Community & Economic Development
Francesco Calabrese	Advisory Research	MIT SENSEable City Lab
Brian Calaway	Program Director	Odysee of the Mind
Jane Calvert	Edinburgh, Academic Fellow	Social & Political Science
Jennifer Rei Cameron	Sr. Content Specialist	Arizona Science Center
Austin Campbell Myer	Participant	
Luis Campos	Associate Professor	University of New Mexico
Heather Canary	University of Utah, Asst. Prof.	Communication
Stephanie Cantu	Project Coordinator	Kolbe Corp.
David Caudill	Villanova Univ., Prof. of Law	Law
Darlene Cavalier	Founder	SciStarter
Thomas Chermack	Colorado, Asst. Professor	Organizational Performance & Change
Parag Chitnis	NSF, Deputy Div. Director	Molecular & Cellular Biosciences
Michael Chorost	Author	
Jennifer Cleary	Rutgers, Sr. Project Mgr.	Planning & Public Policy
Michael D. Cobb	NCSU, Associate Professor	Political Science
Mary Beth Cochran	Education Services Coord.	Arizona Science Center
Christopher Coenen	Scientific Staff	Karlsruhe Institute of Technology
Sarah Cohn	Evaluation & Research Mgr.	Science Museum of Minnesota
Susan Collier-Monarez	Sr. Sci. Adv., Sci. & Tech. Dir.	U.S. Dept. of Homeland Security
Harry Collins	Cardiff University, Professor	Social Sciences

Napier Collyns	Co-Founder	Global Business Network
Joseph Conti	Wisconsin-Madison, Prof.	Sociology and Law
Craig Cormick	Australian Gov., Manger	Department of Innovation
Kevin Costa	Administrative Director	Synthetic Biology Engineering Research Ctr.
Bridget Costello	Children's Museum of Phoenix	Director of Development
Susan Cozzens	Georgia Tech, Asst. Dean	Public Policy
Kurt Creager	President & CEO	Urbanist Solutions
Wendy C. Crone	Wisconsin, Professor	Engineering Physics
Stephen Crowley	Boise State Univ., Assoc. Prof.	Philosophy
Angelica Cruz	Co-Founder & COO	SySTEM Schools, Inc.
Edward Cupoli	Chief Economist	SEMATECH
Sari Custer	Sr. Mgr. Guest Experience	Arizona Science Center
Michael Dahlstrom	Iowa State Univ., Asst. Prof.	Greenlee School of Journalism & Comm.
Dorothy Dankel	Bergen, Researcher	Center for Study of Sciences & Humanities
Marian Deblonde	Antwerp, Researcher	Environment & Sustainable Development
Jason Delborne	Associate Professor	North Carolina State University
Bruna De Marchi	Bergen , Guest Researcher	Sciences & the Humanities
Peter deLeon	Colorado, Denver, Professor	Public Affairs
Jeff Desroches	Bus. Development Manager	ATMI, Inc.
Terry Devitt	Wisconsin, Science Writer	Science & Technology
Ricardo Dominguez	Calif., San Diego, Assoc. Prof.	Visual Arts
Heather Douglas	Univ. of Waterloo, Assoc. Prof.	Philosophy
Robin Downey	Genomics & Society Advisor	Genome British Columbia
Fanie Duvenghughe	Manager	Microchip
Jake Dunagan	Research Director	Institute for the Future
Sharon Dunwoody	Wisconsin, Professor	Journalism & Mass Communication
Darrin Durant	York University, Asst. Prof.	Science and Technology Studies
Kevin Dwyer	Sundt Construction, Inc.	Senior Paralegal
Grace Eden	Univ. of Oxford, Sr. Res. Assoc.	Computer Science
Kathleen Eggleston	Notre Dame, Res. Scientist	Science & Technology
Ken Eklund	Serious Game Designer	Game Designer
Shirin Elahi	Scenario Architect	Complex Global Risks
Kirsten Ellenbogen	Sr. Dir. Lifelong Learning	Science Museum of Minnesota
Kevin Elliott	South Carolina, Assoc. Prof.	Philosophy
Robert Evans	Cardiff Univ., Reader	Social Sciences
Jose Faria	Unicamp, Professor	Medicine
Elizabeth Farrell	New Hampshire, Coord.	Culture & Sustainability, Food & Society
Leili Fatehi	Minnesota, Adj. Assoc. Prof.	Law
James Faubion	Rice, Professor	Anthropology
Art Felsinger	Independent Professional	
Ulrike Felt	Univ. of Vienna, Professor	Social Studies of Science
Patrick Feng	Assistant Professor	University of Calgary
A. Fernandez-Ribas	Georgia Tech	Public Policy
Aaron Fichtner	Rutgers, Director	Research & Evaluation
Ulrich Fiedeler	Austrian Academy of Science	Institute of Technology Assessment
Guillermo Foladori	Universidad de Zacatecas	Nanotechnology
Torsten Fleischer	Deputy Head of Research	Karlsruhe Institute of Technology
Guillermo Foladori	Universidad de Zacatecas	Nanotechnology
Rider Foley	Assistant Professor	University of Virginia
John Fortner	Wash. Univ, Asst. Professor	Engineering
Sharon Friedman	Lehigh University, Professor	Journalism & Communication

Roberto Frietz

Emma Frow
 Teresa Fryberger
 Silvio Funtowicz
 Joan Fujimura
 Wayne Fuqua
 Jason Gallo
 Stefan Gammel
 Veronica Garcia Luis
 Hans Glimell
 Jean Goodwin
 Lieve Goorden

Michael Gorman

Melinda Gormley
 Stuart Graham
 Peter Granda
 Gisela Grant
 David Grimshaw
 Alexei Grinbaum
 Laura Grossenbacher
 Julia Guivant

William Guschwan

Patrick Hamlett
 Shari Hartshorn
 Birgitte G. Hansen
 Anders Hanssen
 Keishiro Hara

Elizabeth Harper**Krista Harper**

Gary Harris
 Jim Harris

Matthew Harsh

Barbara Harthorn
 David Hartmann

Michael Hawksworth

Paul Hickey
 Diana Hicks
 Stephen Hilgartner

Sharon Hill

Linda Hogle

Britt Holbrook

Michael Holland
 Rachelle Hollander
 Maja Horst
 Leigha Horton

Maurizio Iacopetta

Helen Ingram

Jennifer Iriye

Alan Irwin

Deborah Jackson

Participant

Edinburgh, Res. Fellow
 NASA, Associate Director
 European Commission
 Wisconsin, Professor
 Western Michigan, Professor
 Researcher
 Researcher
 Research Associate
 Gothenburg, Professor
 Iowa State Univ., Assoc. Prof.
 Antwerpen, Professor

Virginia, Professor

Notre Dame, Asst. Dir. Res.
 Georgia Tech, Professor
 Univ. of Michigan, Asst. Dir.
 Internship Coordinator
 Head of International Prog.
 CEA-Saclay, Researcher
 Wisconsin, Assoc. Professor
 Fed. Santa Catarina, Prof.

**Columbia College Chicago
 Rutgers, Professor/Chair**

NCSU, Associate Professor
 Program Manager
 Copenhagen Business School
 Executive Officer
 Osaka, Assoc. Professor

Participant**UMass Amherst, Assoc. Prof.**

Howard Univ., Professor
 Vice President Bus. Develop.
Assistant Professor
 California, Santa Barbara
 Western Michigan, Professor

Participant

Systems Administrator
 Georgia Tech, Professor
 Cornell University, Professor

Founder**Wisconsin, Associate Professor****Univ. North Texas, Asst. Prof.**

DOE, Sr. Advis. & Staff Dir.
 Executive Director
 University of Copenhagen
 Presenter

Georgia Tech, Assistant Prof.

California-Irvine, Professor

Guest Exper. Prog. Interpret.

Copenhagen Business School

Program Manager, ERC

ESRC Genomics Forum

Earth Science Division, Applied Science Prog.
 Protection & Security of the Citizen

Sociology

Psychology

Science and Technology Institute

Technical University of Darmstadt

Exploratorium

Sociology

English

Millieu & Technologieman

Science, Technology and Society

Reilly Center

Management

Political & Social Research

Politics & Global Studies

Practical Action

LARSIM Laboratory

Engineering Professional Development

Sociology & Political Science

Adjunct Professor**Human Ecology**

Science, Technology & Society

Science Museum of Minnesota

Management, Politics and Philosophy

Research Council of Norway

Research Inst. For Sustainability Science

Anthropology and Public Policy

Electrical & Computer Engineering

Translational Genomics Research Institute

Concordia University

Director, CNS-UCSB

Sociology

Mesa Community College

Public Policy

Science & Technology Studies

Describe, LLC.

Medical History & Bioethics

Philosophy

Office of the Under Secretary for Science

National Academy of Engineering

Policy & Philosophy

Science Museum of Minnesota

Economics

Planning, Policy, and Design

Arizona Science Center

Research

Prog. National Science Foundation

Sheila Jasanoff	Harvard University, Professor	Science & Technologies Studies
Mitchell Joachim	Co-Founder	Planetary ONE
Mikael Johansson	Gothenburg Univ., Lecturer	Global Studies
Deborah Johnson	Virginia, Professor	Science, Technology & Society
Marilyn Johnson	Oregon Mus. Sci. & Industry	Science Director
Travis Johnson	Scientist	Agilent Technologies
Kevin Jones	Univ. of Alberta, Acting Dir.	Resource Economics/Environ. Sociology
Arlena Jung	Research Fellow	Research Center Berlin
Michele Kadnar	Research Fellow	National Institutes of Health
Dan M. Kahan	Yale, Professor	Law
Seth Kahn	Associate Professor, English	West Chester Pennsylvania
Michael Kalichman	Cal., San Diego, Director	Ethics & Science in Technology
Amy Kaminski	NASA, Senior Policy Advisor	Officer of the Chief Scientist
Chernor Kantora	Participant	
Brad Keelor	Sr. Sci. & Inn. Policy Advisor	British Embassy
Thomas Kelly	New Hampshire, Professor	Office of Sustainability
Denisa Kera	Assistant Professor	National University of Singapore
George Khusf	Univ. South Carolina, Dir.	Center for Bioethics
Matt Kim	Founder and President	QuantTera
Tammy Kinsey	Toledo, Associate Professor	Film
Kamilla Kjolberg	Bergen, Research Fellow	Study of the Sciences and Humanities
Frederick Klaessig	Manager	Pennsylvania Bio Nano Systems LLC.
Richard Klavans	President	SciTech Strategies Inc.
Daniel Kleinman	Wisconsin, Professor	Rural Sociology
Mark Knell	Norwegian Institute	Chemistry
Joan Koerber-Walker	Pres. & Chief Exec. Officer	Arizona Bioindustry Association
Shinichi Kobayashi	Assistant Professor	Nagoya University
Kathy Kolbe	Chairman, Chief Creative Ofc.	Kolbe Corp.
Kornelia Konrad	Univ. of Twente, Asst. Prof.	Science, Technology, & Policy Studies
Margaret Kosal	GA Tech, Asst. Professor	International Strategy, Technology & Policy
Fred Kronz	Prog. Dir., Sci., Tech. & Soc.	National Science Foundation
Kristen Kulinowki	Research Staff Member	Science & Technology Policy Institute
Elizabeth K. Kullman	Sen. Res. & Eval. Associate	Museum of Science, Boston
Ray Kurzweil	Author	
Frank Kusiak	California-Berkeley	Science
Jennifer Kuzma	Minnesota, Assoc. Professor	Public Affairs
Astrid Lagreid	Norwegian Univ. Sci. & Tech.	Cancer Research & Molecular Medicine
Frank Laird	Colorado, Professor	International Studies
Lewis Laska	Tenn. State Univ., Professor	Law
Ruth Lee	Director	Research Councils UK
Christopher Lenhardt	UT-Battelle, DAAC Sci. Lead	Oak Ridge National Laboratory
Sam Lipson	Director of Envir. Health	Cambridge Public Health Department
Laurie Locascio	Chief, Biochemical Sci. Div.	Natl. Inst. of Standards & Technology
Stephanie Long	Mgr., Public Prog. & Science	Science Museum of Minnesota
Michael Loui	Illinois, Urb.-Cham., Prof.	Electrical & Computer Engineering
Brandon Lucas	Mich., NNIN Ed Out. Coord.	Electrical Engineering & Computer Science
Michael Lynch	Cornell, Professor	Science & Technology
Christine MacKay	Dir. of Economic Develop.	Chandler City Government
Phil Macnaghten	Durham University, Professor	Geography
Roop Mahajan	Virginia Tech, Director	Critical Technology & Applied Science
Farzad Mahootian	New York Univ., Professor	Global Liberal Studies

Jim Malone	Physician	Private Practice
Mike Manasco	Project Manager	Heliae
William Mansfield	Penn State, Dir. of Operations	NNIN Materials Research Institute
Paul Martin	Sr. V.P. Science Learning	Science Museum of Minnesota
Christina Matta	Wisconsin, Asst. Fac. Assoc.	Engineering Professional Development
Andrew Maynard	Univ. of Michigan, Director	Risk Science Center
Catherine McCarthy	Project Leader	Science Museum of Minnesota
Heather Mayfield	Deputy Director	London Science Museum
Catherine McCarthy	Project Leader	Science Museum of Minnesota
Katherine McComas	Cornell, Associate Professor	Communication
David McConville	Director, Noospheric Res.	The Elumenati, LLC.
Patrick McCray	UC Santa Barbara, Professor	History
Jamie McEvoy	Montana State, Asst. Prof.	Geography
Robert McGinn	Stanford, Professor	Science, Technology, & Society
Alan McGowan	Eugene Lang, Adjunct. Fac.	New School for Liberal Arts
Sheila McNamee	New Hampshire, Professor	Communication
James McShea	Osher Lifelong Learning	
Celia Merzbacher	Vice President	Semi-Conductor Research Corporation
Robert Melikian	Author	
Celia Merzbacher	Vice President	Semi-Conductor Research Corporation
Pierre Meulien	President and CEO	Genome British Columbia
Evan Michelson	Senior Research Associate	New York University
Colin Milburn	Cal.-Davis., Assoc. Professor	English and Science & Technology Studies
Thaddeus Miller	Portland State Univ, Asst Prof.	Urban Studies & Planning
Robert J. Milligan	Physician	Physician Services Group
Carl Mitcham	CO School of Mines, Prof.	Liberal Arts & International Studies
Cyrus Mody	Rice University, Asst. Prof.	History
Alison Mohr	Senior Research Fellow	University of Nottingham
Julia A. Moore	Deputy Director	Woodrow Wilson Center
Steven Moore	Texas at Austin, Professor	Architecture & Planning
Sharon Montgomery	Osher Lifelong Learning	
Sarah Moratto	Gallery Interpreter	Arizona Science Center
Jeffery Morris	EPA, Natl. Program Director	Nanotechnology Research Program
Nora Moynihan	Comm. Partnerships Coord.	Port Discovery
Maj Munch-Andersen	Technical Univ. of Denmark	Senior Scientist, Dept. of Management
Webb Myers	STIP Associate	Intelligent Info. Services Group
Anne I. Myhr	Genøk, Scientist	Center for Biosafety
Dan Nagle	Participant	
Sari Nagle	Participant	
Kenneth Nealon	Southern California, Prof.	Environmental Studies
Alan Nelson	Director	Biodesign Institute
Richard Nelson	Columbia University, Professor	Economics
Chris Newfield	Cal., Santa Barbara, Prof.	English
Dean Nieuwma	Rensselaer Poly. Inst., Prof.	Science & Technology Studies
Alfred Nordmann	Darmstadt Tech. Univ., Prof.	Philosophy
Rune Nydal	Norwegian Univ., Associate	Science & Technology
Eva Olivas	CEO	Phoenix Revitalization Corporation
Rosemary Ommer	Adjunct Professor	University of Victoria
Rae Ostman	National Collab., Director	Sciencenter
Michael O'Rourke	Michigan State Univ., Prof.	Philosophy
Kelli O'Toole	Vice President of Operations	Children's Museum of Phoenix

Gwen Ottinger	Assistant Professor	Drexel University
Richard Owen	University of Exeter, Prof.	Business
Lynn Palacios	Teacher	Bioscience High School
Krsto Pandza	Leeds Univ., Senior Lecturer	Business
Joey Parks	Participant	
Shobita Parthasarathy	Michigan, Assistant Professor	Public Policy
Tanuja Parulekar	Professor	S.I.W.S. N.R. Swamy College
Scott Patison	Research & Evaluation Assoc.	Oregon Museum of Science & Industry
Eleonore Pauwels	Research Scholar	Woodrow Wilson Center
Alice Pawley	Assistant Professor	Purdue University
Tim Person	Chief Scientist	U.S. Gov. Accountability Office
James Petzel	Osher Lifelong Learning	
Sarah Pfatteicher	Assistant Dean	Wisconsin, Madison
Simon Pfersdorf	Karlsruhe, Researcher	Instit. Tech. Assessment & Sys. Analysis
Roopali Phadke	Macalester College, Assoc Prof	Environmental Studies
Robin Phelps	University of Central Florida	Research and Commercialization
Mark Philbrick	California-Berkeley	Public Policy
Nicholas Pidgeon	Cardiff University, Professor	Psychology
Roger Pielke, Jr.	Colorado, Professor	Environmental Studies
Cynthia Pillote	Partner	Snell & Wilmer Law
Kenneth Pimple	Indiana, Professor	Religious Studies
Kathryn Plaisance	Univ. of Waterloo, Asst. Prof.	Center for Knowledge Integration
Sylvia Planer	Test Engineer	Medtronic
Anne Plant	Grp. Ldr., Biochem. Sci. Div.	Natl. Inst. for Standards & Technology
Alan Porter	Georgia Tech, Professor	ISYE & Public Policy
Channel Powe	Participant	
Scott Powell	Participant	
Nicolette Priaulx	Cardiff University, Reader	Law
Susanna Priest	George Mason Univ., Prof.	Communication
R. Queralto Moreno	Univ. of Seville, Professor	Ethics & Political Philosophy
Paul Rabinow	California, Berkeley, Prof.	Social Cultural Anthropology
Margaret Race	Senior Research Scientist	SETI Institute
Khan Rahi	Loka Institute, Staff	Community Research Network
Rex Raimond	Sr. Mediator & Prog. Mgr.	Meridian Institute
Sally Randles	Manchester, Sr. Res. Fellow	Manchester Business School
Carolyn Raper	Participant	
Ted Raper	Participant	
Jerome Ravetz	Said Bus. Sch., Assoc. Fellow	Science, Innovation & Society
Kelly Rawlings	Univ. of South Calif, Asst Prof	Sol Price School of Public Policy
Steve Rayner	Said Bus. Sch., Dir. & Prof.	Institute for Science, Innovation & Society
Christine Reich	Assistant Director	Museum of Science
David Rejeski	Director, Sci. & Tech. Inn.	Woodrow Wilson Center
Bob Reuss	Independent Consultant	
Tracy Rexroat	State Sup. Engin./Manufact.	AZ Department of Education
Arie Rip	Univ. of Twente, Professor	Science & Technology Studies
Jody Roberts	Chem. Her. Found., Asso. Dir.	Center for Contemporary History & Policy
Melanie Roberts	Director	Emerging Leaders in Science & Society
Mark Robinson	Assistant Professor	DePaul University
Hannot Rodriguez	Assistant Professor	University of Basque Country
David Roessner	Associate Director	SRI International
Juan Rogers	Georgia Tech, Assoc. Prof.	Public Policy

J. Rogers-Brown	Long Island Univ., Asst. Prof.	Sociology & Anthropology
Laura Rogers	Participant	
Louise Roman	Assistant to President	Will Bruder & Partners Ltd.
Kjetil Rommetveit	Univ. of Bergen, Researcher	Centre for Science
Dale Rothman	Denver, Assoc. Prof.	International Futures
Alan Rubel	Greenwall Fellow	Georgetown Univ. Law Ctr.
Daniele Ruggiu	Univ. of Padua, Res. Fellow	CIGA
Chuck Runyan	Head, Patent Prosecution	Gallagher & Kennedy
Terry Ryan	Participant	
Ana Salazar	Participant	
Tina Sanford	Educational Researcher	SRI International
Dietram Scheufele	Wisconsin, Professor	Life Sciences Communication
Erich Schienke	Penn State, Asst. Professor	Science, Technology & Society
Phil Schmidt	Participant	
Jennifer Schneider	CO Schl. of Mines, Asst. Prof.	Liberal Arts & International Studies
Ronald J. Schott	Executive Emeritus	Arizona Technology Council
Gerd Scholl	Economist	Inst. for Ecological Economy Research
Ronald J. Schott	Executive Emeritus	Arizona Technology Council
Daan Schuurbiers	Radboud Univ., Project Mgr.	Center for Society & Genomics
Astrid Schwarz	Univ. of Basel, Assoc. Res.	Science Research
Claudia Schwarz	Univ. of Vienna, Researcher	Social Studies of Science
Dane Scott	Montana, Director	Ethics & Public Affairs
Franz Seifert	Univ. of Vienna, Professor	Anthropology
Stefanie Seitz	Karlsruhe, Research Fellow	Instit. Tech. Assessment & Sys. Analysis
John Selsky	Univ. South Fl., Assoc. Prof.	Management
Meena Selvakumar	Director	Pacific Science Center
Chris Sequeira	FAA, Envir. Program Mgr.	Environment & Energy
Philip Shapira	Georgia Tech, Professor	Public Policy
Mark Shapiro	Ctr for Investigative Journalism	
Gwyneth Shaw	Writer	New Haven Independent
Bret Shaw	UW-Madison, Asst. Prof.	Life Sciences Communication
Joshua Sheehan	Sr. Mgr. Guest Experience	Arizona Science Center
Brian Sherman	Managing Dir./VP Bus. Dev.	Arizona Commerce Authority
Tania Shibata	Product Application Manager	BrasEq
Katherine Shilton	Maryland, Assistant Professor	Information Studies
Sharon Shindel	Participant	
Veekas Shrivastava	Participant	
Elena Simakova	University of Exeter, Lecturer	Innovation
David Sittenfeld	Program Manager, Forum	Museum of Science
Rasmus Slaatelid	Univ. of Bergen, Assoc. Prof.	Sciences and Humanities
Mitchell Small	Carnegie Mellon, Professor	Public Policy
Alex Smith	Tech. Development Specialist	Tempe City Government
Laurel Smith-Doerr	Program Director	National Science Foundation
James Soudriette	Cert. Mgmt. Consul./Partner	The Galaxy Organization
Ahmad Soueid	Principal & Sr. Vice Pres.	HDR Architecture
Kayte Spector-Bagdady	Associate Director	Pres. Comm. Study Bioethical Issues
Joe Spencer	Production Manager	ALD NanoSolutions
James Stack	Senior Switch Tech	Cricket Communications
Tina Stanford	SRI Intl, Educ. Researcher	Center for Learning & Technology
Nicholas Steneck	Michigan, Professor	Research Ethics Program
Karl Stephan	Texas State, Assoc. Professor	Engineering

Jack Stilgoe

Roger Stout
 Roger Strand
 Michael Sullivan
 Arho Suominen
 Steve Suppan
 John Sweeney
 Tsjalling Swiersta

Albert Teich

Frank Theys
 Brian Thibeault

Kamlynn Thomas

Paul Thompson

David Tomblin

Joanna Tornow
 Julia Trosman
 Elizabeth Tran
 Paul Turgeon

Christina Tzavellas

Jeff Ubois
 Simone Van der Burg
 Rinie van Est
 Carl Van Horn
 Harro Van Lente
 Thomas Van Valey

Stephanie Vasko

Rene Von Schomberg
 Catherine Vrentas
 Jonce Walker
 Julie Walker
 Jue Wang

Stephanie Wang

Vivian Weil

Martin Weinell

Peter Weingart
 Jianying Wen
 Kyle Powys Whyte
 Fern Wickson
 Matthias Wienroth
 Terence Wilkins
 James Wilsdon

Robert Wilson

David Winickoff
 Gregor Wolbring
 Amy Wolfe
 Edward Woodhouse
 John Wooding
 Joan Woolfrey

Anthony Wrigley**Michael Xenos**

Charyl Yarbrough

Univ. Exeter, Sr. Res. Fellow

Senior Research Scientist
 Bergen, Professor
 Director
 University Teacher
 Senior Policy Analyst
 Envir. Health & Safety Offc.
 Twente, Professor

George Wash., Res. Prof.

Visual Artist and Filmmaker
 Project Scientist

Manager Guest Experience

Michigan State Univ., Prof.

STS Director

Office of the Director
 Director
 Associate Program Officer
 Georgia Tech, Proj. Coord.

Participant

Archivist
 Radboud Univ. Med., Sr. Res.
 Coordinator
 Rutgers, Professor
 Utrecht Univ., Assoc. Prof.
 Professor Emeritus
Pennsylvania, Sen. Res. Asst.
 Directorate General Research
 Mol. Biologist/Sci. Out. Spec.
 Sustainability Manager
 Project Manager
 Florida Intl., Asst. Prof.
 UT-Battelle, Behavioral Res.
 Illinois Inst. Tech., Prof./Dir.

Cardiff Univ., Research Assoc.

University of Bielefeld, Prof.
 Professor
 Assistant Professor, Philosophy
 GenØk, Associate Professor
 Edinburgh, Acad. Res. Fellow
 University of Leeds, Professor
 Director

Adjunct Instruct. of Law

California, Berkeley, Prof.
 Univ. of Calgary, Asst. Prof.
 UT-Battelle, Group Leader
 Rensselaer Poly. Inst., Prof.
 Massachusetts, Lowell, Prof.
 West Chester, Assoc. Prof.

Keele University, Lecturer

Wisconsin, Assoc. Professor
 Rutgers, Project Director

Business

ON Semiconductor
 Science Theory
 Hispanic Research Center
 University of Turku
 Inst. Agriculture & Trade Policy
 Harvard
 Philosophy

International Science & Technology Policy

Savage Film
 California, Santa Barbara

Arizona Science Center

Philosophy

University of Maryland

National Science Foundation
 Center for Business Models
 National Science Foundation
 Nanotechnology Research Center

The Bassetti Foundation
 Scientific Inst. Quality Healthcare
 Rathenau Institute
 Planning & Public Policy
 Emerging Technologies
 Western Michigan University

Rock Ethics Institute

European Commission
 U.S. Department of Agriculture
 Maricopa County Assoc. of Governments
 Windmill Ranch, LLC.

Religious Studies

Oak Ridge National Laboratory

Ethics / CSEP

Social Sciences

Institute for Science & Technology Studies
 University of Jiangsu, China
 Michigan State University
 Center for Biosafety
 Genomics Forum
 Inst. of Particle Science & Engineering
 The Royal Society

Rio Salado College

Bioethics & Society
 Bioethics, Culture, and Disabilities
 Environmental Sciences
 Science & Technology Studies
 Economic & Social Development
 Philosophy

Centre for Professional Ethics**Communication Arts**

Workforce Development

Go Yoshizawa	Project Lecturer	Tokyo University
Peter Yeadon	Associate Professor/Architect	RISD/Decker Yeadon LLC
Edward You	Supv. Special Agent	FBI Weapons of Mass Destruction
Paul Youngman	UNC-Charlotte, Assoc. Prof.	Humanities, Technology & Science
Jan Youtie	Georgia Tech, Sr. Research.	Enterprise Innovation Institute
G. Zenner Petersen	Wisconsin-Madison, Dir. Ed.	Materials Research Science & Engineering
Basile Zimmermann	Univ. of Geneva, Asst. Prof.	Chinese Studies
Chakanaka Zinyemba	Mapping & Planning Support	Social Geographer
Lee Zwanziger	Designated Federal Official	Food & Drug Administration
Steven Zylstra	Pres. & Chief Exec. Officer	Arizona Technology Council

*ASU**Post-Doctoral Scholars*

Troy Benn	Post-doctoral Fellow	Civil & Environmental Engineering
Doe Daughtrey	Post-doctoral Fellow	Religious Studies
Hsiang-Kai D. Dong	Post-doctoral Fellow	Organizational Research & Design
Michael Fisher	Post-doctoral Fellow	Biodesign Institute
Rider Foley	Post-doctoral Fellow	Sustainability
Megan Halpern	Post-doctoral Scholar	Center for Nanotechnology in Society
Daniel Higgins	Post-doctoral Fellow	Center for Nanotechnology in Society
Punarvasu Joshi	Post-doctoral Fellow	Elect. Comptr. & Energy Engineering
Anastasios Panaretos	Post-doctoral Fellow	Electrical Engineering
Kiera Reifschneider	Post-doctoral Fellow	National Nano. Infrastructure Network
Michael Reinsborough	Post-doctoral Fellow	Center for Nanotechnology in Society
Cathy Slade	Post-doctoral Fellow	Public Policy
Olgica Trenchevska	Post-doctoral Fellow	Biodesign Institute
Walter Valdivia	Post-doctoral Fellow	Public Administration
Kathryn Vignone	Post-doctoral Fellow	Center for Nanotechnology in Society
Berea Williams	Post-doctoral Fellow	Chemistry & Biochemistry

*ASU**Graduate Researchers*

Alexis Abboud	Biology and Society
Dulce Perez Aguilera	Social Justice
Parul Agrawal	Materials Science & Engineering
Rebecca Allen	Biodesign Institute
Carlo Altamirano-Allende	Human and Social Dimen. of Sci. & Tech.
Judd Anderman	Science & Technology Policy
Caroline Appleton	Biology & Society
Deron Ash	Science and Technology Policy
Piyush Awasthi	Computer Science & Engineering
Ebraheem Azhar	Electrical Engineering
Marci Baranski	Biology & Society
Ceyhan Beckham	Electrical Engineering
Michael Bernstein	Sustainability
Monamie Bhadra	Human & Social Dimen. of Sci. & Tech.
Shreya Bhattacharyya	Chemistry & Biochemistry
Bradley Brennan	Chemistry & Biochemistry
Jennifer Brian	Biology & Society
Miles Brundage	Human & Social Dimen. of Sci. & Tech.
Miguel Bueno	Nanoscience

Michael Burnam-Fink
Andrew Candelaria
Melissa Cannon
Joe Carpenter
Angela Cazal-Jahn
Jorly Chatouphonexay
George Che
 Santhosh Chenna
Vinuta Chopra
Shannon Conley
Cherish Connolly
 Jessica Corman
 William Curran
 Michelle Davis
 Robert Davis
 Natalie DeGraaf
 Shannon DiNapoli
 Ajit Dhamdhare
Tess Doezema
 Kyle Doudrick
Daniel Eisenberg
Heather Fischer
 Justin Flory
Lori Fobbs-Guillory
Christina Foster
 Ariana Fox
 Jinglin Fu
Srikanth Gangam
Gretchen Gano
 Manuel Garay Valenzuela
Elizabeth Garbee
 Aixa Garcia-Mont
 Meredith Gartin
Cliff Ghigheri
 Sandeep Kaur Gill
 Cecilia Gonzalez
 Cesar Gonzalez Esquer
Gwyneth Gordon
 Annie Hale
 Kelly Hale
 Dongran Han
Jessica Han
William Heasley
 Nate Hisamura
 Keivon Hobeheidar
Troy Hottle
 Qian Hu
Jenifer Hunt
 Douglas Huron
Sebastian Husein
Energy

Human & Social Dimen. of Sci. & Tech.
Nanoscience
Science and Technology Policy
Material Science and Engineering
Sustainable Solutions
Applied Mathematics for Life Sciences
Exploration Sys. Design & Instrumentation
 Engineering of Matter, Transport & Energy
Civil, Environmental & Sustainable Engr.
Political Science
Science & Technology Policy
 Biology
 Electrical Engineering
 Behavioral Health
 Political Science
 Science & Technology Policy
 Life Sciences
 Nanoscience
Human & Social Dimen. of Sci. & Tech.
 Sustainable Engineering & Built Envir.
Engineering
Geographical Sciences and Urban Planning
 Chemistry & Biochemistry
Science & Technology Policy
Curriculum & Instruction (Engineering)
 Biology
 Chemistry & Biochemistry
Electrical Engineering
Human & Social Dimen. of Sci. & Tech.
 Education Leadership & Policy Studies
Human and Social Dimen. of Sci. & Tech.
 Education
 Global Health
Nanoscience
 Nanoscience
 Life Sciences
 SOLS Graduate Programs
Space and Earth Science
 Science & Technology Policy
 Anthropology
 Chemistry
BioChemistry
Urban & Environmental Planning
 Mathematics
 Biological Sciences
Sustainable Engineering & Built Envir.
 Public Affairs
History
 Global Technology Development
Engineering of Matter, Transport, and

Christoforos Ioannidis
 Daniela Ivan
 Taylor Jackson
Karina Jacobs
Alizee Jenck
Jeffrey Jennings
 Lijing Jiang
 Valerie Johnson
 Craig Jolley
 Tomasz Kalinowski
Michael Katic
Cameron Keys
 Andrew Kao
 Risto Karinen
 Lauren Keeler
Eric Kennedy
 Julia Kerran
 Ashley Kibel
Youngjae Kim
Mindy Kimball
Josh Klein
 Phani K. Kondapani
 Tim Kostyk
Dhara Kothavala
 Christopher Kuzdas
Mun Lahpan
 Jason Lappe
 Jonathan Lappen
Mehdi Leilaoui
 William Lepkowski
Symon Levenberg
Shannon Lidberg
Daniel Livingston
 Jewel Loree
Yi Lai Christine Luk
 Christopher Madden
Bogdana Manole
 Kevin Margeson
Peyton McChesney
 Blakely McConnell
Patrick McGurrin
 John C. McKnight
 Chris Mercer
Jacob Messner
 Emily Molfino
 Chad Monfreda
Tanmay Monga
 Sharlissa Moore
 Vicki Moore
 Romarie Morales
 Jeffrey Moran

Philosophy
 English
 Biology & Society
Science & Technology Policy
BioDesign Institute
Science & Technology Policy
 Chemistry & Biochemistry
 Design
 Biophysics
 Biological Design
Applied Mathematics for Life Sciences
PSM Nanoscience
 School of Public Affairs
 Political Science
 Sustainability
Human & Social Dimen. of Sci. & Tech.
 Urban & Environmental Planning
 Physics
Public Administration
Sustainability
NeuroScience
 Nanoscience
 Human & Social Dimen. of Sci. & Tech.
Sustainability
 Sustainability
Nanoscience
 Chemistry and Biochemistry
 Geography
Electrical Engineering
 Chemistry & Biochemistry
BioDesign Institute
Human & Social Dimen. of Sci. & Tech.
Nanoscience
 Science & Technology Policy
Human & Social Dimen. of Sci. & Tech.
 Chemistry & Biochemistry
Environmental Social Science
 Science & Technology Policy
Nanoscience
 Art
NeuroScience
 Human & Social Dimen. of Sci. & Tech.
 Sustainability
Nanoscience
 Political Science
 Human & Social Dimen. of Sci. & Tech.
Electrical Engineering
 Human & Social Dimen. of Sci. & Tech.
 Chemistry & Biochemistry
 Applied Mathematics
 Mechanical Engineering

Rebecca Murans
 Israel Murguia
Anarina Murillo
 Tanya Musgrave
 Tracy Niday
Jason O’Leary
Dustin Padilla
 Azra Panjwani
 John Parsi
Valentina Prado
 David Proffitt
Alecia Radatz
Tim Reblitz
 Caroline Reid
Stuart Rice
 Alicia Rodgers
 Laura Rodriguez
Heather Ross
John Sadauskas
Jathan Sadowski
 Kehinde Salau
 Cyndy Schwartz
 Jaswinder Scharma
 Lee Seabrooke
Ankur Shah
 Nisha Sherma
Adrienne Smith
 Quinn Spadola
Apoorva Srinivasa
 Lucia Stavig
Abigail Sullivan
 Yuri Sylvester
Trista Taylor
Beth Tellman
Abraham Tidwell
Kevin Todd
 Justin Tosi
Brenda Trinidad
Dwarakanath Triplican
Caitlin Troyer
 Yusuf Tufail
Madeline Tyson
 Oriol Vidal Aparicio
Kaitlin Vortherms
 Jennifer Watkins
Benjamin Wender
Kyle Whitman
Aubrey Wigner
 Muharrem Yildirim
 Jinglei Zhang

Design
 Public Administration
Applied Mathematics for Life & SocSc
 Public Policy
 Chemistry & Biochemistry
Science & Technology Policy
Applied Mathematics for Life Sciences
 Mathematics
 Political Science
Sustainable Engineering & Built Envir.
 Urban & Environmental Planning
Human & Social Dimen. of Sci. & Tech.
Elect. Compr. & Energy Engineering
 Urban & Environmental Planning
Educational Policy & Evaluation
 Science & Technology Policy
 Technology & Innovation
Human & Social Dimen. of Sci. & Tech.
Educational Tech. (Arts, Media & Engin.)
Science, Technology & Ethics
 Mathematics & Statistics
 Human & Social Dimen. of Sci. & Tech.
 Biomedicine
 Human & Social Dimen. of Sci. & Tech.
Biomedical Engineering
 Chemistry
Molecular and Cell Biology
 Physics
Electrical Engineering
 Justice Studies
Environmental Social Science
 Political Science
Public Administration
Geographical Sciences
Human and Social Dimen. of Sci. & Tech.
Science and Technology Policy
 Political Science
Human and Social Dimen. of Sci. & Tech.
Sustainable Engineering & Built Envir.
Biology & Society
 SOLS Graduate Programs
Sustainability
 Political Science
Civil, Environmental & Sustainable Engr.
 Chemistry & Biochemistry
Civil, Envir., & Sust. Engineering
Public Policy
Human & Social Dimen. of Sci. & Tech.
 Media Arts & Sciences
 Chemistry & Biochemistry

*Affiliated**Post-Doctoral Scholars*

Ashley Anderson	George Mason University	Climate Change Communication
Ravtosh Bal	North Carolina State Univ.	Public Policy
Christian Beaudrie	Univ. of British Columbia	Resources, Environment & Sustainability
Laura Cabrera	University of Basel	Biomedical Ethics
Silvia Casini	Universita Ca' Foscari Venezia	Visual Studies & Image Science
Jason Delborne	Wisconsin	Rural Sociology
Pierre Delvenne	University of Liege	Political Science
Matthew Eisler	California, Santa Barbara	Center for Nanotechnology in Society
Arianna Ferrari	Karlsruhe Inst. Technology	Technology Assessment & Systems Analysis
Domingo Ferrer	University of Texas	Microelectronics Research Center
Sonia Gatchair	Georgia Tech	Public Policy
Cecilie Glerup	Copenhagen Business School	Social Responsibility of Science
Sharon Ku	Southern Indiana	Sociology
Padraig Murphy	Dublin City University	Communication
Megan Palmer	Stanford	Synthetic Biology
Laxmi Pant	Guelph	Envir. Design & Rural Develop.
Debasmita Patra	Cornell	Communication
Ramya Rajagopalan	Wisconsin	Sociology
Luis Reyes-Galindo	Cardiff University	Social Science
Sujatha Raman	University of Nottingham	Science & Technology Studies
Christine Shearer	California, Santa Barbara	Social Science
Elena Simakova	Cornell	Science & Technology Studies
Li Tang	Georgia Tech	Public Policy
Jue Wang	Georgia Tech	Public Policy

Affiliated Graduate Researchers

Heather Akin	Wisconsin	Life Science Communication
C. Alvial Palavicino	University of Twente	Science, Technology, and Policy Studies
Ashley Anderson	Wisconsin	Life Sciences Communication
Derrick Anderson	Georgia	Public Administration
Sanjay Arora	Georgia Tech	Public Policy
Andrea Bandelli	Vu University Amsterdam	Communication Sciences
Javiera Barandiaran	California, Berkeley	Environmental Sciences
Amy Barr	New Hampshire	Sociology
Kimberly Beachell	Massachusetts Amherst	Public Policy
Christian Beaudrie	Univ. of British Columbia	Resource Management Envir.Studies
Sean Becker	Univ. of Wisconsin-Madison	Sociology
Noel Benedetti	Wisconsin	Life Sciences Communication
Gaymon Bennett	California, Berkeley	Systematic Theology
Meagan Betke	Massachusetts Amherst	Antropology
Gayle Beyah	Georgia Tech	Public Policy
Ajay Bhaskarabhatla	Georgia Tech	Public Policy
Sonja Billerbeck	ETH Zurich	Synthetic Biology
Anwasha Borthakur	Jawaharlal Nehru University	Science Policy
Colette Bos	Utrecht University, NL	Technology Assess., NanoNextNL Project
Angie Boyce	Cornell	Science & Technology Studies
Rachel Brockhage	Grove City College	Communication Studies
Ben Brucato	Rensselaer Polytechnic	Inst. Science & Technology Studies
Antonio Calleja-Lopez	University of Seville	Ethics & Political Philosophy

Stephen Carley	Georgia Tech	Public Policy
Rafael Castillo	Georgia Tech	Public Policy
Gong Chao	Dalian Univ. of Technology	Humanities
Doo-Hun Choi	Wisconsin-Madison	Life Sciences Communication
Mary Collins	California, Santa Barbara	Environmental Science & Management
Rodrigo Cortes-Lobos	Georgia Tech	Public Policy
Rachel Cranfill	California, Santa Barbara	Linguistics
Yvonne Cuijpers	Utrecht University	Innovation Studies
Chris Cummings	North Carolina	Communication
Sandra Cutts	Alabama A&M University	Applied Physics
Wendy Dagle	Massachusetts Amherst	Public Policy
Mads Dahl Gjefsen	University of Oslo	Technology, Innovation & Culture
Amy Dale	Carnegie Mellon University	Engineering & Public Policy
Kajsa Dalrymple	Wisconsin	Life Sciences Communication
Robert Del Barco	Autonomous Univ. Zacatecas	Development Studies
Ana Delgado	University of Bergen	Sciences and the Humanities
L. Del Toro-Mejias	Massachusetts Amherst	Public Health
Julie Dillemoth	California, Santa Barbara	Geography
Larisa Doroshenko	Wisconsin	Communication Arts
Anthony Dudo	Wisconsin	Journalism & Mass Communication
Roger Eardley-Pryor	California, Santa Barbara	History
Philip Egert	Virginia Tech	Science & Technology Studies
Paul Ellwood	Leeds Univ. Business School	Business
Cassandra Engeman	California, Santa Barbara	Social Science
Gina Eosco	Cornell University	Communication
Zumel Espinoza	Autonomous Univ. Zacatecas	Development Studies
Wei Fan	Beijing Institute of Tech.	Management
Alice Fiddian-Green	Massachusetts Amherst	Public Health
Steven Flipse	Technical University of Delft	Responsible Innovation
Jason Gallo	Northwestern	Media, Technology & Society
Reynold Galope	Georgia Tech	Public Policy
John Garner	Georgia Tech	Computing
Matthew Gebbie	California, Santa Barbara	Science and Engineering
Harmeet Gandhi	Georgia Tech	Quantitative & Computational Finance
Cecilie Glerup	Copenhagen Business School	Public Policy
Kyle Gracey	University of Chicago	Public Policy
Ted Greenhalgh	Nevada, Las Vegas	Environmental Studies
Ying Guo	Beijing Institute of Tech.	Management
Shirley Han	California, Santa Barbara	Science & Engineering
Courtney Hanna	Univ. of British Columbia	Integrated Sciences
Shannon Hanna	California, Santa Barbara	Science & Engineering
M. Hartzog Storment	North Carolina State Univ.	Communication, Rhetoric & Digital Media
Rachel Hauser	Colorado	Environmental Studies
Leela Hebbur	Rutgers	Public Policy
Elizabeth Hennessy	North Carolina, Chapel Hill	Geography
Chris Hesselbein	Cornell University	Science & Technology Studies
Elliott Hillback	Wisconsin	Journalism & Mass Communication
Raffaell Himmelsbach	University of Lausanne	Politics and International Studies
Shirley Ho	Wisconsin	Journalism & Mass Communication
Travis Horsley	Georgia Tech	Public Policy
Zach Horton	California, Santa Barbara	English

Zhengyin Hu	Chinese Academy of Science	Information Science
Can Huang	Georgia Tech	Industrial Management
Jonathan Huang	Georgia Tech	International Affairs, Science & Tech.
Lu Huang	Beijing Institute of Tech.	Management
Jennifer Jensch	Wisconsin	Public Policy
Ronak Kamdar	Georgia Tech	Quantitative Finance & ISYE
Maria Karaulova	University of Manchester	Innovation Research
Megan Kierstead	Massachusetts Amherst	Environmental Conservation
Byoungyoon Kim	Rensselaer Poly. Institute	Science & Technology
Enukyung Kim	Wisconsin	Journalism & Mass Communication
Jiyoun Kim	Wisconsin	Life Sciences Communication
Sojung Kim	Wisconsin	Journalism & Mass Communication
Sheron King	North Carolina State Univ.	Public Administration
Ashley Kirby	Georgia Tech	Public Policy
Lotte Krabbenborg	Groningen	Science & Society
Nick Kushner	Virginia Tech	Urban Planning
Jeanne Marie Kusina	Bowling Green State Univ.	Applied Philosophy
Pete Ladwig	Wisconsin	Life Sciences Communication
Erin Lamos	Georgia Tech	Public Policy
Brice Laurent	Ecole des Mines	Public Policy
Ricky Leung	Wisconsin	Sociology
Anthony Levenda	Portland State University	Urban Studies & Planning
Nan Li	Wisconsin	Life Sciences Communication
Yin Li	Georgia Tech	Public Policy
Xuan Liang	Wisconsin	Life Sciences Communication
Miao Liao	Tsinghua University	Science, Technology & Society
Monica List	Michigan State University	Philosophy
Chien-Chun Liu	Georgia Tech	Management
Yan Liu	Wisconsin	Life Sciences Communication
Maria Sonsire Lopez	Venezuelan Ins. Sci. Research	Studies of Science
Marc Lorec	Massachusetts Amherst	Anthropology and Archeology
Beate-Josefine Luber	University of Bielefeld	Science and Technology Studies
Federica Lucivero	University of Twente	Philosophy
TingTing Ma	Beijing Institute of Tech.	Management
Indrani Mahapatra	Birmingham, U.K.	Geog., Earth and Envir. Sciences
Pratik Mehta	Georgia Tech	Industrial & Systems Engineering
Vanessa Messina	Univ. Federal do Estado do	
	Rio de Janeiro	Education
Patrick E.T. McKeon	Georgia Tech	Public Policy
Yu Meng	Georgia Tech	Public Policy
Brian Milchak	Virginia Tech	Natural Resources Policy
Daniel Miller	Virginia Polytechnic Inst.	Science & Technology Studies
Georgia Miller	Univ. of New South Wales	Humanities
Bastien Miorin	Grenoble Inst. of Technology	Science & Technology Democracy
Mary Moore	Wisconsin	Computer Science
R. John Naranja Jr.	Northeastern	Law
Hari Narayanan	Georgia Tech	Quantitative Finance & ISYE
Christina Ndoh	North Carolina State Univ.	Public Administration
Jayne Neiman	Univ. of Nebraska, Lincoln	Public Policy
Gustavo Oliveira	Univ. of Illinois, Chicago	Public Administration
Tanner Osman	Georgia Tech	Public Policy

Christopher Palmer	Massachusetts Amherst	Public Policy
Krishna Parthasaathi	Georgia Tech	Industrial & Systems Engineering
Jayesh Patil	Georgia Tech	Computing
Ruimin Pei	Chinese Academy of Science	Management
Elizabeth Pitts	North Carolina State Univ.	Communication, Rhetoric & Digital Media
Dena Plemmons	California, San Diego	Research Ethics
Sofia Randhawa	Georgia Tech	Quantitative Finance & ISYE
Jie Ren	Beijing Institute of Tech.	Management Science & Engineering
Gernot Rieder	Vienna	Science, Technology & Society
Kristin Runge	Wisconsin	Life Sciences Communication
Martin Sand	Karlsruhe Institute of Tech.	Humanities & Social Science
Simone Schumann	Vienna	Social Studies
Vanessa Schweizer	Carnegie Mellon	Engineering & Public Policy
Sarah Scripps	South Carolina	History
Jeong Yim Seo	Ehwa Women's Univ., Korea	Nanotechnology
Oliver Shackleton	Manchester	Business, Innovation and Policy
Lea Shanley	Wisconsin	Environment & Resources
Tsung-Jen Shih	Wisconsin	Journalism & Mass Communication
Molly Simis	Wisconsin	Life Sciences Communication
Harmeet Singh	Georgia Tech	Quantitative Finance & ISYE
John Slanina	Georgia Tech	Public Policy
Diran Soumonni	Georgia Tech	Public Policy
James Spartz	Wisconsin	Life Sciences Communication
Anthony Stavrianakis	California, Berkeley	Anthropology
Alexa Stephens	Georgia Tech	Public Policy & City & Regional Planning
Galen Stocking	California, Santa Barbara	Social Science
Maria Stubbings	Wisconsin	Life Sciences Communication
Leona Yi-Fan Su	Wisconsin	Life Sciences Communication
Vrishali Subramanian	Georgia Tech	Public Policy
Meghnaa Tallapragada	Cornell	Communication
Dhanaraj Thakur	Georgia Tech	Public Policy
Francois Thoreau	University of Liege	Political Science
Roberto Toledo	Stony Brook University	Philosophy
Juin-Yi Tsai	Wisconsin	Journalism
Rutger van Merkerk	University of Twente	Innovation & Environmental Sciences
M. Van Oudheusden	Antwerp University	Political & Social Sciences
Stephanie Vasko	Washington	Materials Chemistry & Nanotechnology
Andrew Quitmeyer	Georgia Tech	Digital Media
Charles Walsh	Georgia Tech	Public Policy
Wenping Wang	Beijing Institute of Tech.	Management
Alec Waterworth	Manchester	Emerging Technologies
Rosalyna Wijaya	Wisconsin	Journalism & Mass Communication
John Willingham	North Carolina State	International Studies
Thomas Woodson	Georgia Tech	Public Policy
Xuanting Ye	Beijing Institute of Tech.	Political Science
Sara Yeo	Wisconsin	Life Science Communication
Heming Zhang	Nankai Univ./Georgia Tech	Public Policy
Shuliang Zhang	Beijing Institute of Tech.	Management
Yi Zhang	Beijing Institute of Tech.	Management
Xiao Zou	Beijing Institute of Tech.	Management
Qin Zhu	Purdue University	Engineering Education

*ASU**Undergrad Interns & Researchers***Krizia Alba**

Kalil Abdullah

Eric Beeler

Nidhi Bhalla

Nolan Bidese

Brandon Borsheim

William Bowman

Linda Boyd

Tanner Brants

Robert Bui

Connie Burdis

Geoffrey Byers

David Calderon

Ricky Carmago**Wyatt Chafin**

Rahul Chhabra

Josh Choi

Kelley Conley

Aaron Cornejo

Amie Dabu

Rob Davis

Kendall Denike**Emilie Doering****Daniel Dykas**

David Edwards

Tara Egnatios

Daniel Escolin

Alicia Fremling

Tereza Fritz

Andrew Gaddis

Ian Griffith

Alexandria High

Hannah Hall

Catherine Hoke

Sarah Hoke

Rebecca Hudson

Joleen Jansen**Thomas Kajder****David Kreie****Dania Lopez**

Benjamin Lowenstein

Rachel Lowenstein

Alexander MacLean

Keith Martin

Colin McDonald-Smith

Tobie Milford

Timothy Norris

Sidra Omer

Graphic Design

Molecular Biotechnology

Sustainability

Political Science

Biomedical Engineering

Sustainability

Materials Science & Engineering

Geography

Management

Electrical Engineering

Supply Chain Management

Business Tourism/Management

Molecular Bioscience & Biotechnology

Marketing/Management**Marketing**

Chemistry

Biomedical Engineering & Economics

Psychology

Biomedical Engineering

Sustainability

Biology

Industrial Design**Global Studies****Industrial Design**

English & Creative Writing

Public Policy

Film and Media Production

Management, Political Science, Spanish

Global Studies

Industrial Engineering

Film & Media Studies

Business

Sustainability

Mechanical Engineering

Asian Language

Business

Industrial Design**Computer Science****Graphic Design****Biochemistry**

Sociology

Business

Honors

Film

Computer Science

Biology & Society

Architectural Studies

Journalism & Mass Communication

Girish Pathangey

Mark Petersen
Zachary Pirtle
Jaron Reed
David Renolds

Lucas Rogers

Sarah Rupprecht

Dusana Schnell-Vivas
Jesse Shedd
Suzanne Shlom

Nicole Smith

Rachel Smith
Chad Stearns

Evan Taylor**Jonah Thomas****Duncan Thomason****Clelia Tommi**

Daryl Traylor

Xavier Vargas**Kaitlin Vortherms****Tai Wallace**

Amelia Walsh
Julia Weakley
Brian Young
Ke Wu

Affiliated Undergrad Interns & Researchers

Annie Bidgood	Georgia Tech
Audrey Campbell	Georgia Tech
Brescia Cassellius	Wisconsin
Gordon Cutler	Georgia Tech
Sharyn Finney	Georgia Tech
Brian Lynch	Georgia Tech
John Garner	Georgia Tech
Clay Karwisch	Georgia Tech
Charles Luke McCloud	Georgia Tech
JJ O'Brien	Georgia Tech
Laura Rodriguez	Georgia Tech
Dave Schoeneck	Georgia Tech
Shawn Skolky	Georgia Tech
Charles Walsh	Wisconsin

*CNS-ASU Staff***Deron Ash****Jennifer Banks**

Melissa Cornish
Elizabeth Curran
Corrine Dillon
Daniel Hooker
Michelle Iafrat
Patricia Ryan

Biomedical Engineering

Economics
Mechanical Engineering
Political Science
Chemical Engineering
Engineering

Physics

Marketing
Anthropology
Design Studies

Education Studies

Biology & Society
Economics

Sustainability**Biomedical Engineering****Graphic Design****Earth Space Exploration**

Microbiology

Mechanical Engineering**Civil Engineering (Envir. Engin.)****Sustainability**

Interdisciplinary Studies
Global Studies
Biology & Society
Biology & Society

ISYE

Industrial Systems & Engineering
Journalism & Mass Communication
Computing
Public Policy & Economics
Public Policy
Public Policy
History, Technology & Society
Public Policy
Public Policy
International Affairs
Physics
Public Policy
Business

Program Manager**Program Coordinator**

Biodesign Institute Liaison
Program Coordinator
Program Manager
Program Coordinator
Program Coordinator
Program Coordinator

Regina Sanborn
Nisha Sherma
Anton Spevacek
 Joy Trottier

Assistant Director
Biodesign
Information Technology
 Administrative Associate

Participants affiliated, not receiving CNS-ASU support:

ASU

Kenneth Abbott	Professor	Law
Azadeh Adibi	Graduate Student	Industrial Design
Luis Aguilera	Student	Business
Francisca Augusta	Student	Interior Design
Ismaeel Almarazeeq	Student	Industrial Engineering
Mohamed Alqabandy	Graduate Student	Design
G. Alvarez Sieber	Graduate Student	Engineering
Ariel Anbar	Professor	Earth & Space Exploration
Sandra Andrews	Retired Faculty	Mary Lou Fulton Teachers College
Catherine Arnold	Communications Coordinator	Consort. for Science, Policy & Outcomes
Jose Ashford	Professor	Social Work
Heman Au	Student	Industrial Design
James Audiss	Student	Business
Ricardo Avila	Student	Art
Denise Baker	Graduate Student	Psychology
John Ball	Graduate Student	Design, Environment & Arts
Carl Ballard	Graduate Student	Applied Math for Life & Social Sci.
Sasha Barab	Professor	Educational Leadership & Innovation
Maribel Barba	Wed Designer/Developer	Foundation
Anna Barker	Director	Transformative Healthcare Networks
Michelle Barry	Graduate Research Associate	Sustain. Engr. & Built Envir.
Tain Barzso	Instructional Tech. Analyst	Digital Culture
Jennifer Bekki	Doctoral Student	Industrial Engineering
Leslie Beres	Director College Facility	Design & Arts
Zachariah Berkson	Student	Chemical Engineering
Vineet Bhosle	Graduate Student	Architecture
Jordan Biechler	Student	Explore-Social & Behavioral Sci.
Colleen Bivona	Program Manager	Arts Media & Engineering
James Blasingame	Associate Professor	English
Thomas Bleasdale	Graduate Student	Environmental Social Sciences
Timur Boskailo	Student	Architectural Studies
Rachel Bowditch	Assistant Professor	Theatre & Film
Amanda Breaux	Events Coordinator	Law
Nicholas Broderick	Student	Theatre & Film
Daniel Brune	Faculty Research Associate	Life Sciences
Banel Bucknor	Student	Design
Caren Burgermeister	Project Coordinator	Res. & Innov. Math & Science Educ.
Winslow Burleson	Assistant Professor	Computing & Informatics
Daragh Byrne	Assistant Research Professor	Arts Media & Engineering
David Calverley	Attorney	Law, Science and Technology
Joel Carrasco	Graduate Student	Landscape Architecture
Angela Cazel-Jahn	Artist/Graduate Student	Humanities Research

M. Chavez-Echeagaray	Graduate Student	Computer Science
Jeffrey Chudy	Student	Art Exploratory
Sam Chung	Faculty	Art (Ceramics)
Daniel Cifuentes	Graduate Student	Arch. & Urban Design
Jeffrey Clancy	Graduate Student	Architecture
Robert Clinton	Professor	Law
Grisha Coleman	Assistant Professor	Arts Media & Engineering
Dan Collins	Professor	School of Art
David Corral	Student	Civil Engineering
Jacqueline Cortez	Graduate Student	Architecture
Michael Crow	President	Arizona State University
Roy Curtiss	Professor	Biodesign Institute
Daniel Cutrara	Assistant Professor	English
Williams Dabars	Dir. Special Communications	Office of Public Affairs
Peter de Marneffe	Professor	Historical, Philosophical & Religious Stud.
S. Doddaballapur	Graduate Student	Urban Design & Built. Environ.
Heather Draper	Graduate Student	Design
Michelle Duah	Graduate Student	Design
Mark Dudlik	Management Intern	Office of the President
Margaret Duff	Graduate Student	Bioengineering
Lauren Dykes	Graduate Teaching Assistant	Theatre & Film
Mark Edwards	Professor	Business
Farzaneh Eftekhari	Graduate Student	Design
Mohamed Elkhesky	Graduate Student	Mechanical Engineering
Ron Elliott	Graduate Student	Architecture
John Ernzen	Student	Biomedical Engineering
Greg Esser	Director	Art Museum
Faye Farmer	Associate Director	OKED Research Strategy Group
Michelle Fehler	Lecturer	Design
Susan Felt	Comm. & Mrktg. Coord.	Design & Arts
Camilla Finnie	Student	Art
Joseph Fletcher	Student	Computer Science
Alfinio Flores	Professor	Curriculum & Instruction
Mary Fonow	Director & Professor	Social Transformation
Jason Franz	Special Advisor to Dean	Design & Arts
Jennifer Fuller	Graduate Student	Environmental Social Sciences
Ralph Gabbard	Librarian	Hayden Library
Brian Ganter	Student	Art
Antonio Garcia	Associate Director	Hispanic Research Center
Justin Gauger	Student	History
Alan Gershfeld	Consultant	Mary Lou Fulton External Projects
Lance Gharvi	Associate Professor	Theatre & Film
Joshua Gigantino	Graduate Student	Design
Gina Gillies	Assistant to Director	LightWorks
Maureen Goggin	Chair & Professor	English
Peter Goggin	Associate Professor	English
George Goh	Student	Intl. Student Exchange Partner
Nicola Goldberg	Sr. Healthcare Tech. Manager	Engin. & Phys. Sci. Research Council
J. Gonzalez-Sanchez	Graduate Student	Computer Science
Gisela Grant	Internship Coordinator	Politics and Global Studies
Nancy Gray	Graduate Teaching Assistant	Design

Joel Greene	Professor	Public Policy
Priscilla Greenwood	Research Professor	Ins. for Strengthening Math & Science
Jason Griffiths	Assistant Professor	Arch. & Landscape Arch.
Diane Gruber	Senior Lecturer	Social and Behavioral Sciences
Andrey Gunawan	Graduate Teaching Assistant	Elect. Comptr. & Energy Eng.
Daniil Gunitskiy	United Way Univ. Innov. Fel.	Office of University Initiatives
Jennifer Gunther	Student	Design Studies
Lee Gutkind	Professor	Consort. for Science, Policy & Outcomes
Jodi Guyot	Dir. Res. Advance. & Comm.	Human Evolution & Social Change
Stuart Hadley	Vice President	Public Affairs & Foreign Relations
Joshua Hammer	Student	Biomedical Engineering
Hilary Harp	Assistant Professor	Art
Thomas Hartman	Associate Professor	Design
Lee Hartwell	Professor	EVPP Consultant Group
Elisabeth Hayes	Professor	English
Stephen Hermens	Student	Chemical Engineering
Colin Ho	Student	Mechanical Engineering
Jenna Hoban	Student	Biomedical Engineering
Kim Holsclaw	Graduate Student	Mass Communication
Janet Holston	Dir. of Programs-Solutions	Offc of Knowledge Enterprise Dev.
Christiana Honsberg	Professor	Engineering
Timothy Horn	Graphic Designer Principal	Education Outreach & Student Svcs.
Afzal Hossain	Graduate Teaching Assistant	Arch. & Landscape Arch.
Sarah Hough	Manager Creative Services	Design & Arts
Oscar Huerta	Graduate Student	Design
Amelia Huggins	Mgr, Marketing & Comm.	LightWorks
A Magdalena Hurtado	Professor	Human Evolution & Social Change
Zahra Hussaini	Student	Materials Science & Engineering
Joanna Iacovelli	Prospect Research	Foundation
Jeffrey Ignaszewski	Graphic Design Specialist	Design & Arts
Todd Ingalls	Associate Professor Research	Arts Media & Engineering
Aziza Ismael	Student	Design Studies
Courtney Jackson	Student	Design & Production
Jane Jackson	Retired Faculty	Physics
Jennifer Jaeckals	Communications Cordinator	CSPO
Erin Jeffries	Specialist to Director	Arts Media & Engineering
Adriene Jenik	Professor and Director	Herberger Inst. for Design & Arts
Jeff Jilek	Graduate Student	Architecture
Parker Jones	Student	Art
Joseph Jurado	Student	Film
Korhan Kaftanoglu	Graduate Research Associate	Elect. Comptr. & Energy Engineering
Michael Katic	Student	Applied Computer Science
Josh Katzker	Graduate Teaching Assistant	Theatre & Film
Braden Kay	Project Manager	Global Institute of Sustainability
Anita Keitel	Graduate Student	Architecture
James Keller	Student	Theatre
Aisling Kelliher	Assistant Professor	Design
Amruta Khanolkar	Graduate Teaching Assistant	Arch. & Landscape Arch.
Daniel Kharisma	Graduate Student	Civil, Envir. & Sustain. Engineering
Sheri Klug Boonstra	Associate Research Profess.	Earth and Space Exploration
Dhara Kothavala	Graduate Student	Sustainability

Matthew Krise	Shop Superintendent	Design
Michael Kroelinger	Professor	Design
Nicholas Kunz	Student	Housing & Urban Development
Michael Lande	Assistant Professor	Engineering
Heather Landes	Associate Dean	Design & Arts
Heather Le Fur	Graphic Design Principal	Design & Arts
Neal Lester	Assoc. VP & Professor	Knowledge Enterprise Development
Tyler Libey	Graduate Student	Biomedical Engineering
Min Lin	Student	Computer Systems Engineering
Heather Lineberry	Interim Associate Director	Art Museum
Sydney Lines	Management Intern	LightWorks
Priscilla Long	Student	Art
Lauren Loosveldt	Graduate Student	Architecture
Richard Loveless	Emeritus Professor	
Ryan Luikens	Student	Sustainability
Jane Magruder	Dir. Print Comm. & Med. Rel.	Law
Giada Mannino	Graphic Designer	Sustainability
Jingzian Mao	Graduate Student	Computer Science
Erik Margolis	Associate Professor	Human Communication
Richard Martorano	Director	Engineering Technical Services
Carolyn Mattick	Graduate Student	Sustainable Engrg. & Built Environment
Maritza Maurer	Support Systems Analyst	Design & Arts
Michael McBeath	Professor	Psychology
Scott McClintock	Faculty Associate	Sustainability
Danielle McNamara	Professor	Learning Sciences Institute
Michael Meeder	Graduate Student	English
Deirdre Meldrum	Dean	Fulton School of Engineering
Kostalena Michelaki	Associate Professor	Anthropology
George Moakley	Student	Theatre & Film
Erika Mohaupt	Graduate Student	Design
Adam Monroe	Graduate Teaching Assistant	Chemistry & Biochemistry
Gabriel Montemayor	Assistant Professor	Arch. & Landscape Arch.
Michael Montgomery	Student	Psychology
Scott Murphy	Graduate Student	Technology
Rafiu Mustapha	Graduate Student	Engineering
Michele Mutchek	Graduate Research Assistant	Sustainability
Anumeha Narain	Graduate Student	Industrial Design
Spencer Nelson	Student	Design Studies
Judy Newland	Faculty Associate	Anthropology
Nils Newman	STIP Associate	Intelligent Info. Services Group
Judy Nichols	Dir. Dig. Comm. & Soc. Med.	Law
Cun-Zheng Ning	Professor	Electrical Engineering
Juliana Novic	Graduate Student	Anthropology
Lindsey O'Connell	Student	Bio and Society
Prescott Ogden	Student	Electrical Engineering
Grace O'Sullivan	Staff	Biodesign Institute
Daniel Oliden	Graduate Student	Sustain. & the Built Environment
Paul Oran	Postdoctoral Associate	Biodesign Institute
Victor Orioke	Student	Biomedical Engineering
Larry Orr	Manager	Chemistry & Biochemistry
Suzan Ozcelik	Graduate Student	Urban Design & Architecture

Michael Pang	Graduate Student	Law
Mookesh Patel	Associate Professor	Visual Communication Design
Varun Patel	Student	Biomedical Engineering
Peggy Payne	Assistant Director Bus. Svcs.	Law
Chi-Han Peng	Graduate Student	Computer Science
Jacob Pinholster	School Dir. & Assoc. Prof.	Theatre & Film
Vincent Pizziconi	Professor	Bioengineering
Evan Pomerantz	Student	Art
Carlan Pontious	Student	Industrial Design
Randal Pope	Graduate Student	GRES
Linda Raish	Assistant Director	Development
Adriana Ramos	Student	Urban Design
Patricia Reiter	Director of Development	Sustainability
Wellington Reiter	Special Advisor to President	Arizona State University
Deborah Relph	Program Coordinator	Law
Grant Richardson	Student	Graphic Design
Thanassis Rikakis	Vice Provost of Design	Arts, Media and Engineering
Mindy Robbins	Student	Architectural Studies
Laura Rodriguez	Office Specialist Sr.	College of Technology & Innovation
Susan Rubin	Events Coordinator Sr.	Sustainability
Shaily Rungta	Graduate Student	Built Environment
Richard Rushforth	Graduate Student	Sustainability
Julie Russ	Coordinator Senior	Institute of Human Origin
Michael Russo	Graduate Student	Architecture
Justin Ryan	Graduate Student	Bio. & Health Systems Engin.
Arthur Sabatini	Associate Professor	Humanities Arts & Culture
Michael Saks	Professor	Law
Jamie Sandomire	Student	Theatre & Film
Deepika Sangoi	Graduate Teaching Assistant	Arch. & Landscape Arch.
Lisa Santy	Graduate Student	Landscape Architecture
Blaire Schenck	Student	Interior Design
Sherrie Schmidt	Librarian	Hayden Library
Sara Schwabe	Graduate Teaching Assistant	Theatre & Film
Samantha Sears	Graduate Teaching Assistant	Arch. & Landscape Arch.
Steve Semkin	Associate Professor	School of Earth & Space Exploration
Allison Shannon	Grant Proposal Writer	Sustainability
Ankur R. Sharma	Graduate Student	Electrical Engineering
Nicholas Shekerjian	Student	Architectural Studies
Denis Simon	Vice Provost	China Initiatives and Strategy
Vipul Singh	Graduate Research Assistant	Built Environment
Paul Skiera	Tech. Support Analyst Coord.	Technology Based Learning Res.
Ian Smith	Student	Interdisciplinary Studies
Bryan Smith	Student	Sustainability
Michael E. Smith	Professor	Hum. Evol. & Social Change
Milton Sommerfield	Professor	Life Sciences
Alexandra Spaeth	Student	Bio Science
Andreas Spanias	Professor	Elect. Conptr. & Energy Eng.
Anton Spevacek	Manager Information Tech.	Arts
Joseph Spiro	Graduate Student	Computer Science
Jim St. Leger	Technology Marketing Mgr.	Intel
Ellen Stechel	Deputy Director & Professor	LightWorks

Anne Stone	Professor	Hum. Evol. & Social Change
Jason Sukut	Graduate Student	Applied Ethics
Hari Sundaram	Professor	Arts, Media & Engineering
Douglas Sylvester	Interim Dean	Law
Christine Szuter	Professor of Practice	Hist., Phil. & Religious Studies
Chen Tang	Graduate Student	Industrial Design
Michael Thomet	Graduate Student	English
Michael Thompson	Student	Theatre & Film
Leslie Thornton	Assistant Professor	Journalism & Mass Comm.
Ben Tieni	Student	Graphic Design
Paulette Tohonnie	Student	Interior Design
Lisa Tolentino	Graduate Student	Media Arts & Sciences
Jose Torres	Student	Landscape Architecture
Pavan Turaga	Assistant Professor	Arts Media & Engineering
Steven Turner	Student	Business & Management
Diane Van Hoy	Student	Aerospace Engineering
Arvin Villena	Student	Explore-Health/Life Sciences
David Wahls	Regional Major Gift Officer	Foundation
Sheila Wakelam	Graduate Student	Design
Qiao Wang	Graduate Student	Art Media & Engineering
Matt Watkins	Student	Theatre & Film
Zachary Watson	Student	Landscape Architecture
Eric Wheeler	Student	Theatre & Film
Jorden Whicker	Student	Computer Science
Dave White	Associate Professor	Community Res. & Develop.
Laurie Valenti	Specialist	Theatre & Film
Jennifer Wilken	Budget Analyst Principal	Office of V.P. and Provost
Thomas Williams	Chief Staff/Asst. Dean	Law
Lea Wilson	Graduate Teaching Assistant	Sustainability
Greg Wise	Associate Dean & Professor	New Interdisc. Arts & Sciences
Russell Wisniewski	Student	Architectural Studies
Kuan-Chuen Wu	Graduate Student	Electrical Engineering
Trish Yasolsky	Assistant to Dean	Sustainability
Mark Zeigler	Student	Mathematics

Affiliated

Carl Abbot	Emeritus Professor	Portland State University
Clement Adebamowo	Associate Professor	University of Maryland
Zeeshan Ahmad	Professor	University College London
Maria S M Alencar	Researcher	Federal University of Rio de Janeiro
Ida Andersen	Director	Danish Board of Technology
Iris Andrade	Participant	
Adelaide M. Antunes	Adjunct Professor	State University of Campinas
Timothy Apenzeller	Editor	National Geographic
Peter Ashton	Aquatic Ecologist	Council of Scientific & Indus. Res.
David Attis	Senior Director	Policy Studies
Daniel Barben	Professor	RWTH Aachen University
Kelly Bauer	FIIDA Principal	Richard + Bauer Architecture
Fletcher Beaudoin	Assistant Director	Portland State University

David Beck	Staff	NISEnet
Amy Becker	Assistant Professor	Towson University
David Beltran-del-Rio	Author	
Francois Berger	Head, Brain Nanomedicine	INSERM
Rosalyn Berne	Professor	University of Virginia
Jill Bernstein	Communications Manager	Downtown Phoenix Journal
Roberta M. Berry	Professor	Georgia Institute of Technology
David Berube	Professor	North Carolina State University
Rachel Bess	Artist / Painter	
Gary Bild	Member	Nanotech. Industry Liaison
Jenn Bildersee	Brownsfields Program Mgr.	Portland Bureau of Environmental Svs.
Anne Bilbarrow	Principal	SmithGroup
Craig Boardman	Assistant Professor	Ohio State University
Marianne Boenink	Assistant Professor	University of Twente
Christopher Bosso	Professor	Northeastern University
Kevin Boyack	President	SciTech Strategies, Inc.
Elizabeth Boyd	Participant	
Eileen Brill Wagner	President	Brilliant Concepts LLC.
Dominique Brossard	Wisconsin, Professor	Journalism & Mass Communication
Garrett Brown	Editor	National Geographic
Mark Brown	Cal. State Univ., Assoc. Prof.	Government
Sebastien Brunet	Professor	University of Liege
Holly Buck	Cornell University	Development Sociology
James Buizer	Dir. Climate Adapt. Intl. Dev.	University of Arizona
Regula Burri	Professor	HafenCity University
Hilary Burton	Director	Found. Genomics & Population Health
Dale Buskirk	Transp. Plan. Div. Director	Department of Transportation
Michael Cacciatore	Assistant Professor	University of Georgia
Alexander Calderon	Help Desk Support	Nothing but NET
Heather Campbell	Associate Professor	Claremont Graduate University
Phillip Campbell	Editor	Nature.com
Rick Canady	Staff	Food & Drug Administration
Heather Canary	Assistant Professor	The University of Utah
Amy Carroll	Staff	House Committee
Kenneth Carter	Professor	Massachusetts Amherst
Darlene Cavalier	Founder	Science Cheerleader
Lorenzo Cena	Graduate Student	University of Iowa
Jan Cerveny	Staff	Department of Energy
Joshua Chamot	Staff	Legislative & Public Affairs
Max Chandler	Artist	Max Chandler Robot Art
Diego Chavarro	Student	University of Sussex
Vanessa Chenel	University of Sherbrooke	
	(Quebec)	Clinical Sciences
Soon Cheon Byeon	Senior Researcher	Korea Inst. of Science & Technology
Denise Chiavetta	Program Chair	Search Technology
Stephanie Chism	Prog Mgr, Ctr Creat & Innov.	Boise State University
William Clark	Professor	Harvard University
Maria Coccia	Senior Researcher	Italian National Research Council
Cassie Cohen	Executive Director	Ground Work Portland
Mathilde Colin	Research Assistant	Wisconsin-Madison
James Collins	Head of Biological Sciences	National Science Foundation

Matthew Cooper	Faculty, Phil. & Rel. Studies	South Mountain Community College
Biu Cope	Participant	
David Crowley	Artist	David Crowley Gallery
Stacey Crumbaker	Designer	Richard + Bauer
Scott Cunningham	Professor	Technical University of Delft
William Cyr	Graduate Student	University of Iowa
Collet Dandara	Assoc. Prof., Health Sciences	University of Cape Town
Sarah Davies	Marie Curie Research Fellow	University of Copenhagen
de Saille, Stevienna	University of Sheffield	Sociology
Luke Denmon	Critical Envir., Data Ctr Adv.	CB Richard Ellis
Michael Dennis	Staff	Society & Technology
Richard Diehl	Senior Systems Engineer	General Dynamics
Robert Diehl	Senior Professor	DeVry University
Johnathan Dillon	Senior Applications Engineer	Microchip Technology Inc.
Ira Domsy	Principal	Ira Domsy Environmental
Edward Dove	Res. Assoc., Human Genomics	McGill University
Gary Downey	Alumni Disting. Professor	Virginia Tech
Kate Duckworth	Staff	NISEnet
Megan Dyer	Research Technologist	Mayo Clinic
Douglas Edgelow	Owner	Equus Development Corporation
Daniel Erasmus	Scenario Faciliatator	Digital Thinking Network
Chris Ewald	Staff	Buckeye Express
Vicki Ewald	Staff	Buckeye Express
Iwona Faferek	Graphic Designer/Prod. Ed.	University of Alberta
Dee Dee Falls	Principal	Bioscience High School
Francesca Farioli	Research Fellow	Sapienza University of Rome
Elizabeth Farrell	Staff	University of New Hampshire
Ellen Feigal	Staff	TGen
Martha Feldman	Chair, Civic Gov. & Pub. Mgt.	University of California, Irvine
Todd Fernandez	Participant	
Arianna Ferrari	Post-doctoral Fellow	Karlsruhe Institute of Technology
Aimee Fifarek	Deputy Director, IT	Phoenix Public Library
Leonard Fine	Science Officer / Prog. Officer	Science Foundation Arizona
Jonathan Fink	V.P. Res. & Strategic Part.	Portland State University
Baruch Fischhoff	Professor	Carnegie Mellon University
Hunter Floyd	Intern Architect	Corgan Associates
Joan Foltz	Economic Futurist	Alsek Research
Ed Fox	V.P. & Sustainability Officer	Arizona Public Service
Bon Franklin	EAI Specialist	AZ Dept. of Health Services
Mark Fuji	Assistant Director	Portland State University
Ken Galluppi	Senior Scientist	University of North Carolina
Lidan Gao	Chinese Academy of Sciences	Patent Analysis
Robert Garfinkle	Program Director	Science Museum of Minnesota
Monica Gaughan	Professor	University of Georgia
Michael Gazzaniga	Professor, Univ. California	Psychology
Sjef Gevers	Health Care Law Expert	Rutgers and Posch
Yun-Csang Ghimm	Postdoctoral Fellow	University of Alberta
Richard Gibbs	Professor, Baylor Coll. Med.	Human Genetics
Brian Gleim	Instructor	Glendale Community College
Jerry Gless	Indep. Writer & Editor Prof.	
Stephen Godwin	Director	National Research Council

Abdullah Gok	Senior Researcher	University of Manchester
Mark Goldstein	President	International Research Center
Suresh Golwalkar	Manager	Intel
Richard Gooding	Founder	Strategic Advantage, Inc.
Claire Gordon	Research Scientist	Army Material Command
David Goldston	Professor	Harvard University
Douglas Goodman	Member	Nanotech. Industry Liaison
Herb Goronkin	Member	Nanotech. Industry Liaison
Laura Graham	Graduate Research Assistant	University of Alberta
Michael Granzow	Graduate Research Assistant	University of Alberta
Henry Greely	Director, Stanford Univ.	Law and Biosciences
Dan Gruber	Participant	
Richard Gullickson	Staff	Lawrence Livermore Lab
Yi Guo	Instructor	Chandler Gilbert Comm. College
Pat Hamilton	Program Director	Science Museum of Minnesota
Richard Handy	Professor, Plymouth Univ.	Biomedical & Biological Sciences
Cole Hang	Participant	
Carolyn Hart-Lucien	Director, Information Tech.	Pioneer Valley Transit Authority
Sean Hays	Postdoctoral Fellow	University of Bergen
Aaron Heinzmann	Hardware Engineer	Intel
Aaron Herring	Designer	Gould Evans
Brad Herring	Mus. of Life Science, Director	Nanoscale Informal Science Education
Katie Herzog	Graduate Research Assistant	University of Alberta
Don Hiatt	Participant	
Leda Hiatt	Participant	
Paul Hickey	Systems Administrator	Mesa Community College
Diana Hicks	Public Policy	Georgia Institute of Tech.
Lauren Higgins	Cartographer	Metacurrency Project
Stephen Hilgartner	Science & Technology Studies	Cornell University
George Hoffman	City Manager	City of Apache Junction
Michael Holland	Staff	House Science Committee
Linda Holman Bentley	Manager, Adult Services Dept.	Burton Barr Central Library
Liz Hormann	Program Manager	South of Market EcoDistrict
Prathma Howe	Participant	
Wan-Ling Huang	Assistant Professor	Tamkang University
John Hughes	Member	Nanotech. Industry Liaison
Kent Hughes	Director	Teach America
Noela Invernizzi	Federal University of Parana	Development Studies
Ali Jackson	Director, Natl. Collab. Proj.	Sciencenter
Sol Jaffe	Indep. Mgmt. Consultant	
Anil Jain	Computer Science & Engin.	Michigan State University
Ann Jarmusch	Writer / Editor	
Charles Jeffery	Dean, Institutional Planning	Glendale Community College
Carol Johnson	Planning Department	City of Phoenix
Eric Juarez	Participant	
Nikki Julien	Participant	
Eli Kawam	President and CTO	EKLATEK Engineering
Luciano Kay	Postdoctoral Scholar	California, Santa Barbara
Donna Kent	Global Studies	Televerde
Timothy Kiehl	Artist/Craftsman	Airplayn
Zach Kieter	Participant	

Matt Kim	Member	Nanotech. Industry Liaison
Evgeny Klochikhin	Student	University of Manchester
Mitzi Krockover	Senior Consultant	Sokolov, Sokolov, Burgess Solutions
Ray Kurzweil	Member	Board of Visitors
Daniel LaDuke	Energy Engineer	Western Mass. Electric Company
Nancy LaPlaca	Former Policy Advisor	Arizona Corporation Commission
Claudia Leon	Project Manager	Eureka
Loet Leydesdorff	Professor	University of Amsterdam
Dirk Libaers	Public Policy	Georgia Institute of Tech.
Jiayong Li	Participant	
Leslie Lindon	Founder	Ikologi/Phoenix Rising
Troy Livingston	Staff	NISEnet
Jim Lodge	Vice President	NRG Energy, Inc.
Paul Loomans	Member	Phoenix Spokes People
Juan Lucena	Associate Professor	Colorado School of Mines
Eric Luchian	Research Associate	Lancaster University
Connie Mabelson	Attorney	Mabelson Law Group
Eric Magrane	Graduate Student	University of Arizona
Uttam Malani	Public Policy	Georgia Institute of Technology
Nikhil Malvankar	Postdoctoral Research Assoc.	Massachusetts Amherst
Tony Maniaci	Director Product Develop.	ITel
Benjamin M. Mann	Program Manager	Defense Science Office
Robin Marks	Staff	NISEnet
Florence Matusky	Writer	
Catherine May	Senior Historical Analyst	Salt River Project
Carol Mayer-Reed	Landscape Architect	Mayer-Reed Architects
Kimberlie McCue	Asst. Dir, Research, Conserv.	Desert Botanical Garden
John McGarity	Member	Nanotech. Industry Liaison
Chris McKibben	Estimator	Underwood Bros., Inc.
Guy McLain	Director	Lyman & Merrie Wood Museum
Maxwell J. Mehlman	Professor	Case Western Reserve Univ.
Denise Meridith	CEO/President	Denise Meridith Consultants, Inc.
Celia Merzbacher	Staff	Office of Naval Research
Daniel Metlay	Staff	Nuclear Waste Review Board
Kostalena Michelaki	Jeff Michelsen	Property Attorney TraskBritt Intellectual
Danielle Millam	Director of Development	Las Vegas-Clark Cty Library Dist.
Blaine Miller	President & Prin. Analyst	Modern Insights
Elizabeth Miller	Water Res. Planning Advisor	City of Scottsdale
John Miller	Dir. of Information Tech.	Litchfield Elementary School District
Laurence Miller	Physician	Mayo Clinic – Scottsdale
Michael Moffitt	Associate Professor	University of Michigan
John Moravec	Senior Lecturer	University of Minnesota
Daniel Morrison	Professor	Vanderbilt University
George Muncaster	Professor	Scottsdale Community College
Sean Murdock	Member	Nanotech. Industry Liaison
Mark Muro	Fellow & Policy Director	Brookings Institute
Richard Neal	Congressman	U.S. Congress
Paul Nealey	Professor	University of Chicago
Carolyn Nelson	Technical Delivery Manager	Bank of America
Lee Nelson	Prin., Scott L. Libby Elem.	Litchfield Elementary School District
Richard Nelson	Member	Board of Visitors

Susan Norton	Editor	National Geographic
Christina Nulle	Strategic Mgmt of Afford.	Kaiser Permanente
Thomas Ormston	Product Support Manager	Apriva ISS
James Paul	Staff	House Committee
Jim Paisley	Director, Assess. Services	Leathers Milligan & Associates
Lisa Parks	Member	Phoenix Spokes People
Spencer Pearce	Participant	
Angela G. Pereira	Eur. Comm., Scientific Offc.	Joint Research Centre
Nils Petersen	Adjunct Professor	University of Alberta
Pat Petriai	Participant	
Maggie Pingolt	Writer	The Embryo Project
Zachary Piso	Michigan State University	Philosophy
Diane Planidin	Real Estate Agent	Re/Max Fine Properties
Melissa Pulsifer	Marketing Coordinator	Richard + Bauer Architecture
Allison Pyrch	Geotechnical Engineer	Shannon and Wilson, Inc.
Kristin Raffaele	Executive Director / CEO	PACeHR
Ismael Rafols	Sr. Lecturer, Univ. of Sussex	Science & Technology Policy Research
Jud Ready	Adjunct Professor	Georgia Tech
Priscilla Regan	Professor	Social, Behavioral & Econ.
Roger Reynolds	Composer/Professor	Univ. of California, San Diego
Jack Ring	Systemist	
Estelle Robichaux	Graduate Student	University of Florida
Douglas Robinson	Profess, Cell Biology	Johns Hopkins University
Michael Roco	Senior Advisor	National Science Foundation
Jacob Rosenthal	Maker	Heatsync Labs
Eric Rosewall	Program Director	Depave
Donald Roth	Participant	
Marc Rothenberg	Staff	Legislative & Public Affairs
Sean Rothman	Professional	University of Manchester
Jonathan Rothwell	Senior Research Associate	Brookings Institute
Leslie Rycroft	Vice President	Scottsdale League for the Arts
Dana Sadler	District Human Resources	Home Depot
Tind Shepper Ryen	Staff	House Committee on Science
Nick Sauvie	Executive Director	Rose Community Development Corp.
Michael Savarese	Senior Software Architect	Unicorn Media, Inc.
Laura Schiavo	Curator	National Building Museum
Stuart Scott	Participant	
Evan Selinger	Associate Professor	Rochester Institute of Technology
Karen Shakman	Project Architect	Iconic Architecture
Mark Shapiro	Member	Board of Visitors
Clare Shelley-Egan	Post-doc Researcher	University of Twente
Rob Shields	Chair and Professor	University of Alberta
Ingrid Shults	Educator	Collins College
Gregory Simonson	Professor	Science, Tech. & Military
Mitchell Small	Professor	Carnegie Mellon University
Scott Smith	Founder	Changeist, LLC.
Jacque Sokolov	Chairman / Senior Partner	Sokolov, Sokolov, Burgess Solutions
Alexa Stephens	Public Policy	Georgia Tech
Kerri Stone	Student	Colorado School of Mines
Reva Stone	Artist	Winnipeg Art Gallery
Deborah Strumsky	Assistant Professor	UNC Charlotte

Matthew Sullivan**Lorraine Szarka**

Karen Tanenbaum

Carlos Tarin**Julie Taylor**

Samantha Taylor

Jason Teske

Judith Testani

D.A. Therrien

Gerald Thurman

Raoul Tibes

Mike Trier

Rebecca Toor

Joanne Tornow

Cassandra Valdez

Steve Valev

Ian Vandeventer

Dawn Visser

Simone van der Burg

Anna Waldron

Jacob Warr

Fred Weber

Fan Wei

Sarah Weingarz**Eric Welch**

Marshall Whitmire

Thalia Williams

Kristine Wilcox

Jeff Williamson

James Wilsdon

Carly Wobig

Doug Wolens

Gregory Woodhead

Chen Xu**Anita Yap**

Donghua Zhu

Ranu Zunjarwad

University of Michigan**Participant**

Graduate Student

Graduate Student**Graduate Student**

Participant

Buyer / Planner

Owner/President

Artist

Instructor

Assoc. Dir, Leukemias Prog.

Senior Budget Analyst

Associate Editor

Program Manager

Participant

Associate

Owner

President

UMC St. Radboud, Sr. Res.

Professor

Policy Advisor

Member

Student

Maastricht University**Associate Professor**

Owner & Managing Director

Participant

Principal

CEO/Pres. & Exec. Director

Director

Graduate Student

Filmmaker

Director of Support Services

Graduate Student**Community Advocate**

Professor

Product Designer/Writer

Sociology

Simon Fraser University

University of Utah**University of Utah**

Lasertel, Inc.

Testani Design Troupe, Inc.

Scottsdale Community College

Mayo Clinic

Maricopa Community Colleges

Research Media Ltd.

National Science Foundation

Gould Evans

Ivy Consulting, Inc.

MJS Designs, Inc.

Scientific Inst., Quality of Healthcare

Cornell University

Trimet

Nanotech. Industry Liaison

Beijing Institute of Technology

Philosophy**University of Illinois, Chicago**

RCI Surveys, Inc.

Kristine Wilcox Consulting

Phoenix Zoo

The Royal Society

University of Illinois

Independent

Corinthian Colleges

Georgia Tech

Beijing Institute of Technology

Nanotechnology in Society Network PIs:

Davis Baird

University of South Carolina

Richard Freedman

Harvard University

Barbara Harthorn

UCSB

Lynne Zucker

UCLA

Expert and Oversight Panel for National Citizens' Technology Forum

Roberta M. Berry

Professor

Georgia Tech

Stephen Helms Tillery

Professor

ASU

Maxwell J. Mehlman

Professor

Case Western Reserve

Kristen Kulinowski

Executive Director Rice

Jason S. Robert

Assistant Professor

ASU

Ida Andersen	Staff	Danish Board of Technology
David Rejeski	Director	Woodrow Wilson Center
<i>Workshop on Research Agendas in the Societal Aspects of Synthetic Biology Participants</i>		
Brad Allenby	President's Professor	Arizona State University
Deron Ash	Program Manager	Arizona State University
Scott Ashmore	Graduate Student	Arizona State University
Denise Baker	Graduate Student	Arizona State University
Jennifer Banks	Program Coordinator	Arizona State University
Larry Bell	Sr. VP, Dir. Of NISE Net	Museum of Science
Steve Benner	Founder	Foundation for Applied Molecular Evolution
Gaymon Bennett	Assistant Professor	Arizona State University
Frazier Benya	Program Officer	National Academy of Engineering
Michael Bernstein	Graduate Student	Arizona State University
David Berube	Director, PCOST	North Carolina State University
Colette Bos	Visiting Scholar	University of Utrecht
Patrick Boyle	Organism Designer	Gingko Bioworks
Ty Branch-Smith	Graduate Student	University of Waterloo
Jenny Brian	Honors Faculty Fellow	Arizona State University
Miles Brundage	Graduate Student	Arizona State University
Jane Calvert	Reader, Science Technology & Innovation Studies	University of Edinburgh
Luis Campos	Associate Professor	University of New Mexico
Lynn Carruthers	Graphic Recording Artist	
Jae Cheon	Graduate Student	Duke University
Christopher Coenen	Scientific Staff, Innov. Processes & Impact of Technology	Karlsruhe Institute of Technology
Jim Collins	Professor	Arizona State University
Bob Cook-Deegan	Research Professor	Duke University
Kevin Costa	Managing Director	University of California - Berkeley
Michael Crow	President	Arizona State University
Sarah Davies	Marie Curie Research Fellow	University of Copenhagen
Jason Delborne	Associate Professor	North Carolina State University
Tess Doezema	Graduate Student	Arizona State University
Susan Ehrlich	Retired Judge	
Karin Ellison	Administrative Professional	Arizona State University
Margret Engelhard	Senior Researcher	European Academy GmbH
Daniel Escolin	Graduate Student	Arizona State University
Levi Espinoza	Graduate Student	Arizona State University
Samuel Evans	Research Fellow	Massachusetts Institute of Technology
Erik Fisher	Assistant Professor	Arizona State University
Bob Friedman	VP, Policy & Univ. Relations	J. Craig Venter Institute
Emma Frow	Lecturer	University of Edinburgh
Eriko Fukumoto	Graduate Student	Arizona State University
Silvio Funtowicz	Professor II	University of Bergen
Steve Gamboa	Graduate Student	Arizona State University
Gretchen Gano	Research Fellow	University of Massachusetts - Amherst
David Gillum	Associate Director, Biosafety	Arizona State University
Theresa Good	Acting Dep. Director, Program Director	National Science Foundation
Dave Guston	Co-Director, Professor	Arizona State University

Ed Hackett	Professor	Arizona State University
Megan Halpern	Post-doctoral Scholar	Arizona State University
Jaydee Hanson	Policy Director	Center for Food Safety
Sarah Harper	Graduate Student	Arizona State University
Barbara Harthorn	Director, NSEC	University of California - Santa Barbara
Karmella Haynes	Assistant Professor	Arizona State University
Nathan Hillson	Computational Staff Scientist	Lawrence Berkeley National Labs
Ben Hurlbut	Assistant Professor	Arizona State University
Richard Johnson	Retired Partner	Arnold & Porter, LLP
Pierre-Benoit Joly	Director du LISIS	Institut Francilien Recherche, Innov. et Société
Ellen Jorgensen	Exec. Dir. & Co-founder	Genspace
Greg Kaebnick	Research Scholar	The Hastings Center
Linda Kahl	Director, Legal Program	BioBricks Foundation
George Khushf	Professor, Director Medical Humanitarian Minor	University of South Carolina
Sheron King	Graduate Student	North Carolina State University
Eric Klavens	Assoc. Professor, Elec. Eng.	University of Washington
Harald Koenig	Scientific Staff, Innov. Processes & Impacts of Technology	Karlsruhe Institute of Technology
Frederick Kronz	Program Director	National Science Foundation
Todd Kuiken	Sr. Research Associate	The Woodrow Wilson Center
Jennifer Kuzma	Distinguished Prof., Co-Director Genetic Eng. & Society Prg.	North Carolina State University
Steve Laderman	Director, Molecular Tools Lab.	Agilent Technologies
Jason Leard	Federal Ageng	U.S. Federal Bureau of Investigation
Stephanie Leite	Evaluator	Arizona State University
Rachel Levinson	Industrial/Govt. Res. Liaison	Arizona State University
Cliff Li	Graduate Student	University of Exeter
Xiao Liang	Graduate Student	Manchester Institute of Innovation Research
Jennifer Liu	Assistant Professor	University of Waterloo
Gary Marchant	Exec. Dir., Regent's Professor	Arizona State University
Claire Marris	Sr. Research Fellow, Deputy Leader of SSHM's BPPP Research Group	King's College - London
Debra Mathews	Assist. Dir., Science Programs	Johns Hopkins University
Mary Maxon	Executive Director	Lawrence Berkeley National Lab
Irene Mendoza	Associate Biosafety Officer	Arizona State University
Morgan Meyer	Assistant Professor	Agro ParisTech
Clark Miller	Asst. Director, Assoc. Prof.	Arizona State University
Susan Molyneux- Hodgson	Sr. Lecturer, Director of Science & Technology Rsh. Grp.	University of Sheffield
Jeff Morris	National Program Director for Nanotechnology	U.S. Environmental Protection Agency
Richard Murray	Thomas E & Doris Everhart Professor	California Institute of Technology - Pasedena
Tina Ndoh	Graduate Student	North Carolina State University
Ken Oye	Associate Professor	Massachusetts Institute of Technology
Megan Palmer	William J. Perry Fellow	Stanford University
Eleonore Pauwels	Public Policy Scholar	The Woodrow Wilson Center

Elizabeth Pitts	Graduate Student	North Carolina State University
George Poste	Chief Scientist, Regent's Prof.	Complex Adaptive Systems Institute
Margaret Race	Sr. Research Scientist	University of CA - Santa Cruz, SETI Institute
Sujatha Raman	Deputy Dir., Assist. Prof.	University of Nottingham
Brian Rappert	Professor	University of Exeter
Jody Roberts	Director	Chemical Heritage Foundation
Mark Robinson	Assistant Professor	DePaul University
Patty Ryan	Program Coordinator	Arizona State University
Dan SarewitzC	Center Director, Professor	Arizona State University
Kathryn Scheckel	Asst. dir. Special Projects	Arizona State University
Dietram Scheufele	John E. Ross Professor	University of Wisconsin - Madison
Debby Scott	Graduate Student	Rutgers University
Mark Segal	Sr. Microbiologist	U.S. Environmental Protection Agency
Phil Shapira	Professor, Dir. Science, Tech. & Innovation Policy	Univ. of Manchester Georgia Inst. of Tech.
David Sittenfeld	Program Manager, Forum	Museum of Science, Boston
Dirk Stemerding	Sr. Researcher Tech. Assess.	Rathenau
Jim Thomas	Research Programme Manager and Writer	ETC Group
Ginni Ursin	Technology Prospecting Lead, Research	Monsanto Company
Russell VanHerik	Executive Director	Great lakes Protection Fund
Willem Vermass	Graduate Student	Arizona State University
Kathleen Vogel	Director, Science Technology & Society Program	North Carolina State University
Wendell Wallach	Lecturer, Consultant, Ethicist	Yale Interdisciplinary Center for Bioethics
Xiao Wang	Graduate Student	Arizona State University
Jamey Wetmore	Assoc. Director, Assoc. Prof.	Arizona State University
Lauren Withycombe- Keeler	Post-doctoral Scientist	Leuphana Universität Lüneburg
Gregor Wolbring	Assoc. Prof., Comm. Rehab. & Disability. Studies	University of Calgary
Amy Wolfe	Team Leader	Oak Ridge National Laboratory
Britt Wray	Graduate Student	University of Copenhagen
Matthew Ykema	Graduate Student	Arizona State University
Ed You	Supervisory Special Agent	U.S. Federal Bureau of Investigation
Jan Youtie	Dir, Policy Research Services	Georgia Institute of Technology

4. (b) LIST OF ADVISORY BOARDS

i. Executive Committee

Elizabeth Corley, Associate Professor, ASU Department of Public Affairs
 David H. Guston, Professor, ASU School of Government, Politics, & Global Studies
 Deirdre Meldrum, Dean, ASU Fulton Schools of Engineering
 Clark A. Miller, Associate Professor, ASU School of Government, Politics, & Global Studies
 Dietram Scheufele, Professor, Journalism and Mass Communication, and Life Sciences, University of Wisconsin-Madison
 Jan Youtie, Manager, Policy Services, Georgia Institute of Technology

ii. Board of Visitors

Lawrence Bell, Sr. Vice President, Strategic Initiatives, Museum of Science Boston
 Edward Cupoli, Professor Emeritus, State University of New York at Albany
 Heather Douglas, Associate Professor/Chair, Department of Philosophy, University of Waterloo
 William Hallman, Director, Food Policy Institute, Rutgers University
 Kristen Kulinowski, Policy Researcher, Science & Technology Policy Institute
 Jennifer Kuzma, Associate Professor, Humphrey School of Public Affairs, University of Minnesota
 Andrew Maynard, Director, Risk Science Center, University of Michigan
 Colin Milburn, Associate Professor, English & Science & Tech. Studies, University of California, Davis
 Albert Teich, Research Professor, Center for International Science & Technology Policy, George Washington University

iii. Nanotechnology Industry Liaison Committee

Gary Bild
 Larry Bock, Chairman, Luxe Ventures
 Ellen Feigal, Director of Medical Devices and Imaging, TGen
 Douglas Goodman
 Herb Goronkin
 John Hughes
 Anil Jain, Professor, Department of Computer Science & Engineering, Michigan State University
 Donna Kent, Senior Vice President of Global Studies, Televerde
 Anatoli Korkin, Director, ASU Office of Research and Economic Affairs
 John McGarity
 Michael Moffitt, Professor, Department of Computer Science and Engineering, University of Michigan
 Sean Murdock, Nanotechnology Industry Association
 Fred Weber

iv. Private Sector Engagement Committee

Larry Bell, Senior Vice President, Strategic Initiatives, Museum of Science
 Lynn Bergeson, Owner, Bergeson & Campbell, P.C.
 Susan Brienza, Attorney, Ryley Carlock & Applewhite
 Kurt Creager, Executive Director, Stardust Center for Affordable Homes and the Family.
 Jake Dunagan, Research Director, Technology Horizons Program, Institute for the Future
 Erik Fisher, Assistant Professor, School of Government, Politics and Global Studies, Arizona State University

Jason Gallo, Science and Technology Policy Analyst, Science and Technology Policy Institute
 Stephen Goodnick, Professor, Ira A. Fulton School of Engineering, Arizona State University
 David Guston, Professor, School of Government, Politics and Global Studies, Arizona State University
 Patti D. Hill, Founder, Penman Public Relations
 Frederick Klaessig, Manager, Pennsylvania Bio Nano Systems
 Celia Merzbacher, Vice President, Innovative Partnerships, Semi-Conductor Research Corporation
 Evan Michelson, Associate Director, The Rockefeller Foundation
 Robert Ott, Associate Director, Occupational Health and Safety, Arizona State University
 Rax Raimond, Senior Mediator and Program Manager, Meridian Institute
 David Roessner, Senior Fellow, Center for Science, Technology, and Economic Development, SRI International
 Dietram Scheufele, Professor, Journalism and Mass Communication, and Life Sciences, University of Wisconsin-Madison
 Cynthia Selin, Assistant Professor, Center for Nanotechnology in Society, Arizona State University
 Philip Shapira, Professor, School of Public Policy, Georgia Institute of Technology; Professor of Innovation Management and Policy, Manchester Institute for Innovation Research, University of Manchester
 Ahmad Soueid, Principal and Senior Vice President, HDR Architecture, Inc.
 Arnim Wiek, Assistant Professor, School of Sustainability, Arizona State University
 Peter Yeadon, Co-founder, Decker Yeadon
 Jan Youtie, Manager, Policy Services, Georgia Institute of Technology
 Steven Zylstra, President & CEO, Arizona Technology Council

v. Expert and Oversight Panel for National Citizens' Technology Forum

Stephen Helms Tillery, Assistant Professor, Harrington Department of Bioengineering; Assistant Professor of Kinesiology, Arizona State University
 Kristen Kulinowski, Policy Researcher, Science & Technology Policy Institute
 Maxwell J. Mehlman, Arthur E. Petersilge Professor of Law; Professor of Bioethics, School of Medicine; Director of the Law-Medicine Center, Case Western Reserve University
 Jason S. Robert, Associate Professor, Department of Basic Medical Sciences, The University of Arizona College of Medicine; Associate Professor, School of Life Sciences, Arizona State University
 Ida Andersen, Danish Board of Technology
 David Rejeski, Director, Project on Emerging Nanotechnologies, Woodrow Wilson International Center for Scholars

4. (c) LIST OF PARTICIPATING INSTITUTIONS

i. ASU Academic Participating Institutions

Applied Learning Technologies Institute
Arizona Institute for Nano-Electronics (AINE)
Arizona Technology Enterprises (AzTE)
Axon Technologies
Barrett, the Honors College
Biodesign Institute
Center for Biology & Society
Center for Research on Education in Science, Mathematics, Engineering, & Technology (CRESMET)
Center for the Study of Religion & Conflict
Center for Law, Science and Innovation
Center for Science and the Imagination
Center for Solid State Electronics Research
Center for Study of Institutional Diversity
College of Liberal Arts & Sciences
College of Public Programs
College of Technology & Innovation
Complex Adaptive Systems Initiative
Consortium for Science, Policy & Outcomes
Cyberinfrastructure Services
Decision Theater for a Desert City
Foundation, ASU
Global Institute of Sustainability
Graduate College
Hayden Library
Health Services
Herberger Institute for Design & the Arts
Hispanic Research Center
Institute of Human Origin
Ira A. Fulton Schools of Engineering
Learning Sciences Institute
LightWorks
Mary Lou Fulton College of Education
New Interdisciplinary Arts & Sciences
Office of China Initiatives and Strategy
Office of Knowledge and Enterprise Development (OKED)
Office of Public Affairs
Office of the President
Office of the Vice President and Provost
Office of University Initiatives
Occupational Health and Safety
Phoenix Urban Research Laboratory
Responsible Conduct of Research Program, School of Life Sciences
Sandra Day O'Connor School of Law
School of Earth & Space Exploration
School of Government, Politics, & Global Studies
School of Human Evolution & Social Change
School of International Languages & Cultures

School of Letters & Sciences
School of Life Sciences
School of Mathematical & Statistical Sciences
School of Philosophical, Historical, and Religious Studies
School of Social Transformation
School of Sustainability
Science Policy Assessment & Research on Climate (SPARC)
Stardust Center
Technology Based Learning Research
Transformative Healthcare Networks
University Art Museum
University Public Schools
W.P. Carey School of Business
Walter Cronkite School of Journalism & Mass Communication

ii. Academic Participating Institutions Other than at ASU

Aarhus University, Denmark
Ansal Institute of Technology
Antwerp University
Austrian Academy of Science
Baylor College of Medicine
Beijing Institute of Technology, China
Bioscience High School
Boise State University
Bowling Green State University
Brown University
California State University, Sacramento
Cardiff University
Carnegie Mellon University
Case Western Reserve University
Chandler Gilbert Community College
Chinese Academy of Sciences
Claremont Graduate University
Clark University
Collins College
Colorado School of Mines
Columbia College Chicago
Columbia University
Concordia University
Copenhagen Business School, Denmark
Corinthian Colleges
Cornell University
Dalian University of Technology, China
Delft University of Technology
 DeVry University
Dublin City University
Durham University, United Kingdom
Ecole des Mines, France
ETH Zurich
Eugene Lang College the New School for Liberal Arts

Ewha Women's University
Federal University of Parana, Brazil
Federal University of Santa Catarina, Brazil
Flemish Institute of Science & Technology
Florida International University
George Mason University
George Washington University
Georgetown University
Georgia Institute of Technology
Glendale Community College
Grenoble Institute of Technology
Grove City College
Harvard University
Howard University
Illinois Institute of Technology
Indiana University
Institute of International Sociology of Gorizia
Institut d'Etudes Politiques de Grenoble, France
Iowa State University
James Martin Institute for Science & Civilization, Oxford University, UK
Johns Hopkins University
Karlsruhe Institute of Technology
Keele University
Korea Institute of Science and Technology, Seoul, Korea
Lancaster University, UK
Leeds University Business School, UK
Lehigh University
Litchfield Elementary School District
Long Island University
Macalester College
Manchester Business School
Maricopa Community Colleges
McGill University
Mesa Biotech Academy
Mesa Community College
Mesa High School
Michigan State University
MIT SENSEable City Lab
Montana State University
Nagoya University, Japan
National Academy of Sciences
National University of Singapore & Asia
New York University
North Carolina State University
Northeastern University
Northern Alberta Institute of Technology
Northwestern University
Norwegian University of Science & Technology, Norway
NSEC/CNS-University of California, Santa Barbara (UCSB)
Ohio State University
Osaka University, Japan

Pennsylvania State University
Plymouth University
Portland State University
Purdue University
Queens University
Radboud University
Rensselaer Polytechnic Institute
Rhode Island School of Design
Rice University
Rice University/ICON
Rio Salado College
Rochester Institute of Technology
Roger L. Putnam Vocational Technical Academy
Rutgers, The State University of New Jersey
RWTH Aachen University
Said Business School, Oxford
Sapienza University of Rome
Scottsdale Community College
Simon Fraser University, British Columbia
S.I.W.S. N.R. Swamy College, India
South Mountain Community College
Stanford University
State University of Campinas
Stony Brook University
Tamkang University
Technical University of Delft
Technical University of Denmark
Technical University of Darmstadt
Tennessee State University
Texas State University, San Marcos
The Center for International Development, Harvard University
Tokyo University
Tsinghua University, China
UCLA/Harvard/NBER: Collaborative Research; Personnel Exchanges
UMC St. Radboud
Unicamp University, Brazil
Universidad de Zacatecas, Mexico
Universidad del Pais Vasco, Spain
Universita Ca' Foscari Venezia
University College London
University at Albany
University of Alberta
University of Amsterdam
University of Antwerp, Belgium
University of Arizona
University of Athens
University of Basel
University of Basque Country
University of Bergen, Norway
University of Bielefeld, Germany
University of British Columbia

University of Calgary, Canada
University of California, Berkeley
University of California, Davis
University of California, Irvine
University of California, Los Angeles
University of California, San Diego
University of California, Santa Barbara
University of Cape Town
University of Central Florida
University of Chicago
University of Colorado, Boulder
University of Colorado, Denver
University of Copenhagen
University of Denver
University of Edinburgh
University of Exeter, United Kingdom
University of Florida
University of Geneva
University of Georgia
University of Gothenburg, Sweden
University of Groningen, Netherlands
University of Illinois, Chicago
University of Illinois, Springfield
University of Illinois, Urbana-Champaign
University of Iowa
University of Jiangsu, China
University of Lausanne, Switzerland
University of Leeds
University of Liege, Belgium
University of Manchester, United Kingdom
University of Maryland
University of Massachusetts, Amherst
University of Melbourne, Australia
University of Michigan
University of Minnesota
University of Montana
University of Nebraska, Lincoln
University of Nevada, Las Vegas
University of New Hampshire
University of New South Wales, Australia
University of North Carolina, Chapel Hill
University of North Carolina, Charlotte
University of North Texas
University of Notre Dame
University of Nottingham
University of Oslo
University of Oxford
University of Padua
University of Seville, Spain
University of South Carolina
University of South Florida

University of Southern California
University of Southern Indiana
University of Sussex, United Kingdom
University of Tennessee, Knoxville
University of Texas, Austin
University of Trieste, Italy
University of Twente, the Netherlands
University of Turku
University of Utah
University of Victoria
University of Vienna
University of Virginia
University of Washington
University of Waterloo
University of Wisconsin, Madison
UT-Battelle
Utrecht University
Vanderbilt University
Villanova University
Virginia Polytechnic Institute & State University
Virginia Tech University
VU University of Amsterdam
Washington University, Saint Louis
West Chester University of Pennsylvania
Western Michigan University
Yale University
York University

4. (d) Non-Academic Participating Institutions

Agilent Technologies
Airplayn
Alberta Centre for Advanced Micro Nano Technology Products
Alberta Innovates Technology Futures
ALD Nano Solutions
Alsek Research
American Association for the Advancement of Science (AAAS)
American Bar Foundation
Apriva ISS
Arizona Bioindustry Organization
Arizona Commerce Authority
Arizona Corporation Commission
Arizona Department of Education
Arizona Department of Health Services
Arizona Nanotechnology Cluster
Arizona Public Service (APS)
Arizona Research Institute for Solar Energy
Arizona Science Center
Arizona Technology Council
Army Military Command
Australian Government
Bank of America
Bassetti Foundation
Bioindustry Organization of Southern Arizona
Boudreaux and Associates
BrasEq
Brilliant Concepts LLC.
British Embassy
Brookings Institute
Buckeye Express
Burton Barr Central Library
Cambridge Public Health Department
Carnegie Mellon
CB Richard Ellis
CEA-Saclay
Cell Publishing
Center for Business Models in Health Care
Center for Naval Analysis
Center for Responsible Nanotechnology
Changeist, LLC.
Chemical Heritage Foundation
Children's Museum of Phoenix
City of Apache Junction
City of Edmonton
City of Phoenix
City of Scottsdale
Complex Global Risks
Corgan Associates
Council of Scientific and Industrial Research

Danish Board of Technology
David Crowley Gallery
Decker Yeadon LLC
Denise Meridith Consultants, Inc.
Department of Energy (DOE)
Department of the Treasury
Department of Transportation
Depave
Describe, LLC.
Desert Botanical Garden
Digital Thinking Network
Downtown Phoenix Journal
Ecological Society of America
EKLATEK Engineering
E.L. Smith Water Treatment Plant
Emerging Leaders in Science & Society (ELISS)
Engineering & Physical Sciences Research Council (EPSRC)
Environmental Protection Agency (EPA)
Equus Development Corporation
Eureka
European Commission
Exploratorium, San Francisco
Federal Aviation Administration Office of Environment & Energy
FBI Weapons of Mass Destruction
Food and Drug Administration (FDA)
Foundation for Genomics and Population Health
Gallagher and Kennedy
General Dynamics
Genøk Centre for Biosafety
Genome British Columbia
German Parliament
Global Business Network
Gould Evans
Gordon Research Conferences
Greenwall Foundation
Ground Work Portland
HafenCity University
HDR Architecture
Heatsync Labs
Heliae
Home Depot
Iconic Architecture
Ikologi
INSERM
Institute for Agriculture and Trade Policy
Institute for Ecological Economy Research, Germany
Institute for the Future
Institute of Technical Assessment & Systems Analysis
Intel
Intelligent Information Services Corporation (IISC)
International Nanotechnology in Society Network (INSN)

International Research Center
Ira Domskey Environmental
Italian National Research Council, Turin, Italy
ITel
Ivy Consulting, Inc.
Jennings, Strouss, & Salmon PLC
Kaiser Permanente
Kolbe Corp.
Kristine Wilcox Consulting
Las Vegas-Clark County Library District
Lasertel, Inc.
Lawrence Livermore Lab
Leathers Milligan & Associates
Loka Institute
London Science Museum
Luxe Ventures
Lyman and Merrie Wood Museum of Springfield History
Mabelson Law Group
Mapping & Planning Support (M.A.P.S.) Alberta Capital Region
Max Chandler Robot Art
Mayer-Reed Architects
Mayo Clinic - Scottsdale
Meridian Institute
Metacurrency Project
Microchip
MJS Designs, Inc.
Modern Insights
Museum of Life & Science, North Carolina
Museum of Science, Boston
Nano-Alberta
Nanoscale Informal Science Education Network (NISENet)
National Academy of Engineering
National Advisory Committee on Aeronautics (NASA)
National Building Museum
National Business Museum
National Geographic Society
National Institute of Nanotechnology
National Institute of Standards and Technology (NIST)
National Institutes of Health (NIH)
National Nanomanufacturing Network (NNN)
National Nanotechnology Coordinating Office
National Nanotechnology Infrastructure Network
National Research Council
National Research Council of Canada
National Science Foundation
Nature.com
Nature Publishing Group
New Haven Independent
Norwegian Institute
Nothing but NET
NRG Energy, Inc.

Nuclear Waste Review Board
Office of Naval Research
Oregon Museum of Science & Industry (OMSI)
PACeHR
Penman PR
Pennsylvania Bio Nano Systems, LLC.
Phoenix Public Library
Phoenix Rising
Phoenix Spokes People
Phoenix Zoo
Physician Services Group
PING Inc.
Pioneer Valley Transit Authority
Planetary ONE
Portland Bureau of Environmental Services
Practical Action
Presidential Commission for the Study of Bioethical Issues
Quantiam Technologies Inc.
QuantTera
Rathenau Institute
RCI Surveys, Inc.
Research Center Berlin
Research Council of Norway
Research Councils U.K. (RCUK) in the U.S.
Re/Max Fine Properties
Research Media Ltd.
Richard + Bauer Architecture
Rockefeller Foundation
Rose Community Development Corporation
Rutgers and Posch
Ryley, Carlock & Applewhite Attorneys
Salt River Project
Sandia National Laboratory
Savage Film
Science and Technology Institute
Sciencenter, New York
Science Foundation Arizona
Science Museum of Minnesota
SciStarter
SciTech Strategies, Inc.
Scottsdale League for the Arts
Search Technology
Semi-Conductor Research Corporation
SETI Institute
Shannon and Wilson, Inc.
SmithGroup
Snell and Wilmer Law
Social Sciences and Humanities Research Council of Canada
Sokolov, Sokolov, Burgess Solutions (SSB)
South of Market EcoDistrict
Spirit of the Senses Salon

Springer Publishing
SRI International
Startup Edmonton
Strategic Advantage, Inc.
Sundt Construction, Inc.
Synthetic Biology Engineering Research Ctr. (SynBERC)
SySTEM Schools, Inc.
Targeted Genetics Corporation (TGen)
Teach America
TEC Edmonton
Televerde
Telus World of Science
Tempe Festival of the Arts
Testani Design Troupe, Inc.
The Elumenati, LLC
The Embryo Project
The Energy and Resources Institute
The Foresight Institute
The Galaxy Organization
The Geek Group of Western Massachusetts
The Rockefeller Foundation
The Royal Society
The Washington Post
Town Hall Education Arts Recreation Campus
Translational Genomics Research Institute (TGEN)
TraskBritt Intellectual
TRIMET Transportation
Underwood Bros., Inc.
Unicorn Media, Inc.
U.S. Government Accountability Office (U.S. GAO)
U.S. Green Building Council
U.S. Department of Agriculture
U.S. Department of Homeland Security
U.S. Department of Transportation
U.S. DOE/Center for Integrated Nanotechnology (CINT)
Venezuelan Institute for Scientific Research
Western Massachusetts Electric Company
Will Bruder & Partners Ltd.
Winnipeg Art Gallery
Woodrow Wilson International Center for Scholars

5. Quantifiable Outputs**Table 1: Quantifiable Outputs - NSF Award #0937591**

	Reporting Year -1	Reporting Year-2	Reporting Year-3	Reporting Year-4	Reporting Year 5	Total
Outputs	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	
Publications resulted from NSEC Support						
in Peer Reviewed Journal	19	39	43	38	26	165
in Peer Reviewed Conference Proceedings	0	0	0	0	0	0
in Peer Reviewed Book Chapters	9	18	29	6	4	66
Technical Reports	7	7	3	1	2	20
Working Papers	7	2	2	3	1	15
Books	4	2	2	0	0	8
Theses	9	8	3	2	4	26
in Trade Journals	3	0	1	1	0	5
Other Journal Publications	2	6	5	2	17	32
Internet	17	11	16	10	6	60
with Multiple Authors	36	43	73	47	42	241
co-authored with NSEC faculty	34	43	72	11	42	202
NSEC Technology Transfer						
Inventions Disclosed	0	3	3	3	3	12
Patents Filed	0	0	0	0	0	0
Patents Awarded	0	0	0	0	1	1
Software Licensed	0	0	0	0	0	0
Spin-off Companies Started	0	0	0	0	0	0
Degrees to NSEC Students						
Bachelors Degrees Granted	14	8	12	12	10	56
Masters Degrees Granted	12	11	9	10	6	48
Doctoral Degrees Granted	14	10	5	5	4	38
NSEC Graduates Hired by						
Industry	12	15	3	10	8	48
NSEC participating Firms	0	0	0	0	0	0
Other US Firms	12	15	3	0	0	30
Government	3	2	2	0	2	9
Academic Institutions	15	12	3	4	4	38
Other	0	0	0	0	0	0
Unknown	10	0	18	13	6	47
NSEC Influence on Curriculum						
New Courses Based on NSEC Research	4	7	1	1	2	15
Courses Modified to Include NSEC Research	0	0	0	2	0	2
New Textbooks Based on NSEC Research	0	0	0	0	0	0
Free-standing Course Modules or Instructional CDs	0	0	0	0	0	0
New Full Degree Programs	1	0	0	0	0	1
New Certificate	0	0	2	1	0	3
Information Dissemination/Educational Outreach						
Workshops, Short Courses to Industry	0	3	8	0	4	15
Workshops, Short Courses to Others	5	9	3	5	4	26
Seminars, Colloquia, etc.	112	141	121	96	87	557
World Wide Web courses	1	0	0	1	0	2
Academic Presentations	60	86	74	61	60	341
Industry Presentations	18	27	12	15	4	76
Science Cafes	7	8	6	6	4	31
Visiting Speakers	17	5	6	2	4	34
Community Speaking Engagements	4	3	12	6	7	32
Newsletters	0	0	0	0	0	0

6. Mission, Significant Advances, and Broader Impacts

The Center's mission is to: 1) *research* the societal dimensions of nanoscale science and engineering (NSE); 2) *train* a community of scholars with new insight into these dimensions; 3) *engage* various publics and NSE researchers in dialogues about the goals and implications of NSE; and 4) *partner* with the NSE enterprise to generate greater *reflexiveness* in research, development, education and policy. Using the methods of real-time technology assessment (RTTA; [Guston](#) and Sarewitz 2002), CNS-ASU weaves together these activities to support a broad-based societal capacity for the *anticipatory governance* of emerging technologies.

The Center has made significant strides in accomplishing this mission. In particular, the Center's RTTA methods and its anticipatory governance vision have been recognized in important scholarly venues, e.g., the field-defining *Handbook of Science and Technology Studies*, which includes [Barben](#) et al.'s (2008) chapter, and the series on innovation policy in *Nature*, which published [Guston's](#) (2008) commentary. The Center's work also includes a more detailed genealogy of anticipatory governance ([Karinen and Guston](#) 2010), a synoptic piece placing anticipatory governance in the NNI's approach to responsible development and in the context of some recent scholarly debate ([Guston](#) 2014), and a historical exploration of a critical case in anticipation of the atomic bomb ([Guston](#) 2012). Beyond such publications, a number of programs and scholars have begun to adopt anticipatory governance and scrutinize it for their own purposes, from the incorporation of anticipatory governance into the programmatic agenda of the Nano-scale Informal Science Education Network's (NISE Net) public forums (see **Section 12 Outreach and Knowledge Transfer**), to the work of a cadre of international scholars and practitioners who have visited CNS-ASU to imbibe its perspective (see **Section 13 Shared and Other Experimental Facilities [International Collaborations]**), to sessions at the annual meetings of the AAAS Science and Technology Policy Forum (May 09), the Society for the Study of Nanoscience and Emerging Technologies (annually since 09) and the Society for Social Studies of Science of Science (F 09; F 10) dedicated to anticipatory governance, and elsewhere. In the reporting year alone, [Guston](#) spoke to colleagues at University of California, Berkeley, University College, London, and University of Sussex (UK), about the mission, ambitions, and organization of the Center, as well as with visitors to ASU from the University of Nantes (France) and the Technical University of Ambatao (Ecuador) to discuss interdisciplinary research and training. Emerging dialogue and policy around responsible innovation (RI) also owes much to the emphasis on RI and anticipatory governance as well, as RI frameworks adopted, for example, by the UK Engineering and Physical Sciences Research Council show significant intellectual inheritances from anticipatory governance.

Moreover, anticipatory governance and its component capacities are represented in NNI and other official planning documents, including: endorsement of scenario development as a route to understanding nanotechnological futures, in the NNI 2007 strategic plan; highlighting of integration research as an important element in future NSE collaborations with social science, in the FY 2012 NNI budget summary from NSF; focusing importantly on anticipatory governance in the 2010 NSF/WTEC report on the future of nanotechnology; etc. [Guston](#) (2014) has begun to collect many of these responses in the community and respond to some critics that have emerged, and the funded supplement to CNS-ASU has begun to research the Center's various impacts and outcomes, including the uptake of anticipatory governance.

CNS-ASU research is having a substantial influence on the scholarly literature. The *Yearbook of Nanotechnology in Society* series (Springer; [Guston](#), series editor) has published three volumes ([Fisher, Selin and Wetmore](#) 2008; [Cozzens and Wetmore](#) 2011; and Hays, [Robert Miller](#) and [Bennett](#) 2013). A fourth – edited by de Ridder Vignone, [Miller](#) and [Barben](#) – is in its final stages of

preparation). The two-volume *Encyclopedia of Nanoscience and Society* (Sage; Guston, editor) was published in 2010. Both the *Yearbooks* and the *Encyclopedia* serve community-forging purposes. The *Yearbook* helps create a community of scholars around a narrow topic and then provides them with relatively high visibility. The *Encyclopedia* has brought together a larger community of scholars in its production – roughly 220 authors – and will help introduce a younger scholarly audience – high school and undergraduate students – to nearly 500 topics in nanotechnology in society. In total, Center researchers have 11 books published, under review or under contract around Center-related material, five of which are primary CNS publications.

The Center’s researchers have published, had accepted or submitted for review 243 peer-reviewed journal articles (197 of which are primary CNS-supported publications), covering a range of outlets including:

- broad-based audiences in science and technology studies (e.g., *Science, Technology & Human Values*; *Science as Culture*; *Minerva*; *Social Studies of Science*),
- policy and innovation studies (e.g., *Science and Public Policy*; *Research Policy*; *Journal of Technology Transfer*, *Technological Forecasting & Social Change*, *Review of Policy Research*, *Research Evaluation*; *Scientometrics*; *Journal of Responsible Innovation*),
- law and ethics (*Science and Engineering Ethics*; *Journal of Law, Medicine, and Ethics*, *Jurimetrics*),
- communication (*Science Communication*; *Journal of Mass Communication Quarterly*; *Public Understanding of Science*; *New Media and Society*, *International Journal of Public Opinion Research*),
- urban sustainability issues (*Cities*; *Journal of Urban Technology*, *Sustainability Science*),
- other interdisciplinary specialty journals (*Risk Analysis*; *Leonardo*; *Appetite*; *Long-range Planning*; *China Intellectual Property*),
- broader science and engineering journals (*Proceedings of the National Academy of Sciences* and *Environmental Science and Technology*), and
- specific, NSE-related audiences for
 - scientists (*Journal of Nanoparticle Research*; *Nature Nanotechnology*; *Journal of NanoScience and Nanotechnology*),
 - policy makers and business leaders (*Nanotechnology Law and Business*),
 - social scientists and humanists (*NanoEthics*) and
 - educators (*Journal of Nanotechnology Education*).

The Center’s researchers have produced seven special issues of peer-reviewed journals:

- Fisher, *Science and Engineering Ethics* 17(4), “Public Science and Technology Scholars”
- Bozeman and Sarewitz, *Minerva* 49(1) “Public Value Mapping”
- Shapira and Youtie, *Journal of Technology Transfer* 36(6) “Nanotechnology and Innovation Policy
- Guston, *Review of Policy Research* 30(5) “Nanotechnology and Political Science”
- Invernizzi and Davies, *Journal of Nanotechnology Law and Business* 9(3) “Studying Nanotechnology in the Private Sector”
- Selin and Pereira, *International Journal of Foresight and Innovation Policy* 9(2,3,4) “Conceptual and Methodological Dimensions of Plausibility; and
- Selin, *Futures* in press “Merging Art and Design in Foresight: Making Sense of Emerge.”

Center faculty have assumed major leadership roles in creating and contributing to the new *Journal of Responsible Innovation*. Launched by Taylor & Francis in early 2014, Guston is the founding editor-in-chief and Fisher is one of the associate editors. Jennifer Brian, co-PI on the CNS-ASU

associated award to conduct a “Workshop on Research Agendas in the Societal Aspects of Synthetic Biology,” edited a special section of *JRI*’s “Perspectives” derived from the workshop.

The Center has 54 non-peer-reviewed publications in trade journals and other journals, including commentaries by Brossard and Scheufele (2013) in *Science*, Guston (2008) and Shapira and Wang (2010) in *Nature*, Scheufele and Corley in *The Scientist* (2010), and Wetmore and Posner in *NanoToday*.

Center researchers have further published or have forthcoming 91 book chapters (77 of which are primary CNS-supported publications), including three contributions to the field-defining *Handbook of Science and Technology Studies*, many contributions to the *Yearbooks* and other new nano-in-society anthologies, and major international works on interdisciplinarity, governance, risk, and innovation policy and assessment. The *Encyclopedia of Nanoscience and Society* also drew on the expertise of Center-affiliated researchers for 59 entries, or about 12% of the total number, which are listed under “Other.”

Although they are a somewhat crude measure of scholarly impact, citations to this body of published work are accumulating – more than 7100 citations as documented in Google Scholar (as of Apr 15), up from just more than 4900 citations in Apr 14, roughly 3300 citations in Apr 13, just over 1500 citations in Mar 12, 983 citations in Mar 11, roughly 500 citations in Apr 10, and 188 citations in Apr 09. The Center’s H-index has risen to 47 from 38 last year, 28 the year before, 21 in 2012 and 19 in 2011 (indicating precisely 47 publications with 47 or more citations each). (This total does not include the more than 90% of the 459 Google Scholar citations to the original RTTA article by Guston and Sarewitz [2002] that have occurred since CNS-ASU was founded and which represent the visibility of the Center and its core intellectual ideas as well. It also excludes some publications that do not appear accessible on Google Scholar, as well as citations to *Yearbook* chapters not written by CNS researchers or individual *Encyclopedia* entries whether or not written by CNS researchers.) Particularly pleasing about the H-index publications is their inclusion of work from almost all of the research thrusts and intellectual perspectives of the Center. H-indexed papers account for slightly more than 4500, or 64% of the Center’s citations.¹

CNS-ASU has also attempted to make its research and other products available in other formats, including 35 reports of various types available on the Internet and numerous video and audio clips available through the CNS website, YouTube, and other organized blogs. The occasional speaker series is available at vimeo.com/album/1542414 and the Science Café series at vimeo.com/album/1662457.

As evidence of its impact on education, the Center has primarily contributed to the completion of 47 student theses, including 22 doctoral theses, 3 master’s theses, and 22 undergraduate honors theses, across a variety of disciplines. CNS has contributed to the completion of an additional 24 student theses, including undergraduate honors students, STIR collaborators, CNS-Biodesign fellows and others completing the PhD+. These numbers include only a handful of roughly one dozen doctoral students whose research is formally being guided by the STIR project, as well as

¹ Last year, RTTA 1 colleagues performed a bibliometric analysis of CNS-ASU publications using combined Web of Science and Scopus data and returned similar results, finding 4038 citations in early 2014 compared to 2917 the previous year, and an H-index of 36, accounting for 54% of CNS citations. They also found that citations to CNS-ASU publications accounted for ~40% of all citations to nano social science papers through early 2014. They have further found that mean citation rate for CNS-ASU papers is higher than for non-CNS-ASU papers, and that this difference increased between 2013 (9.86 > 6.10) and 2014 (13.09 > 7.43).

additional students who have become affiliated with that project but are not formally part of it and other students advised by Center faculty outside CNS-ASU on related topics.

Data and instruments produced by CNS-ASU are sought by and shared with an increasing number of researchers across the globe. For example, the searchable definition of nanotechnology produced by RTTA 1 has been adopted by the European Nano Observatory. The public opinion survey instrument developed by RTTA 2 was not only developed in coordination with EuroBarometer but also has been shared with researchers in Singapore, Ireland, France, and Poland. Survey data has also been provided to policy officials, including the National Nanotechnology Communication Office. NCTF data have been used not only by the distributed groups of scholars who hosted local citizens' technology forums, but have also been provided at the request of researchers at NYU and in France. In Feb 12, CNS-ASU collaborated with librarians at UMass Amherst in submitting a \$48K proposal to Institute for Museum and Library Services for a planning activity, "Nanoscience and Emerging Technologies in Society: Sharing Research and Learning Tools," which occurred in June 13. While the Center has not succeeded in getting additional follow-up funding to this meeting, it is in discussion with ASU's new University Librarian about archiving the Center's work.

Center activities have also helped generate additional research projects, including nearly \$6M of associated and spin-off awards at ASU and roughly \$5.4M at the collaborating universities. At ASU, these awards include:

- Boradkar, et al., National Collegiate Inventors and Innovators Alliance, \$30K, Sep 07 – May 08 (this award supported one year of InnovationSpace on CNS agenda);
- Sarewitz and Bozeman, NSF SciSIP, \$203K, Oct 07 – Sep 10, Public Value Mapping: Developing a Non-Economic Model of the Social Value of Science and Innovation Policy (this award included collaborations with TRC 1 and RTTA 4);
- Sarewitz and Fisher, NSF SciSIP, \$35K, Aug 10-Sep 10, How to STIR Public Values for Policy Making: A Supplemental Proposal for Web-based Dissemination of Two SciSIP Projects (a supplement to the PVM award above, this award extended outreach and dissemination via video for both PVM and STIR projects across RTTA 1 and RTTA 4);
- Herkert, Wetmore, et al., NSF Ethics Education in Science and Engineering, \$300K, Jan 08 – Dec 10 (this award tested a number of macro-ethics education interventions, several initially piloted by CNS-ASU);
- Guston, NSF Conference Award for the Gordon Research Conference, \$60K, Aug 08 (this award supported the GRC on "Governing Emerging Technologies");
- Guston, Greenwall Foundation Conference Award for the Gordon Research Conference, \$10K, Aug 08 (this award supported the GRC on "Governing Emerging Technologies");
- Fisher and Guston, NSF Socio-Technical Integration and Research, \$540K, Apr 09-Mar 12 (this award extends the RTTA 4 agenda to create an international team of doctoral students doing interventionist-oriented comparative laboratory ethnographies);
- Fisher, National Nanotechnology Infrastructure Network, 09-10, \$5,300 (this award documents the integration of social and ethical considerations into a number of NSEC and NNIN sites);
- Corley, Marchant and Sylvester, DOE, \$245K, Sep 10-Aug 12, Governing Nanotechnology Risks and Benefits in the Transition to Regulation: Innovative Public and Private Approaches (this award draws on and extends Corley's RTTA 2 work);
- Corley, Lincoln Center for Applied Ethics, ASU, \$20K, May 10 – Dec 11, An Exploration of the Ethical Implications of Human Exposure to Nano-Materials in University Research Laboratories (this award draws on and extends Corley's RTTA 2 work);

- Selin, Science Museum Minnesota, \$9K, Sep 11-Dec 11, Civic Scenarios on Climate Change Adaptation (this award extends Selin's RTTA 3 research and outreach);
- Wiek, Housing and Urban Development, \$2.9M, Reinvent Phoenix: Cultivating Equity, Engagement, Economic Development and Design Excellence with Transit-Oriented Development (continues TRC 2 work to address socio-technical change as a key aspect of sustainability transition research);
- Guston, NSF, Workshop on Anticipatory Governance of Complex, Engineered Nanomaterials, \$34K (to apply anticipatory governance framework to advanced generation nanomaterials);
- Graduate students Foley and Kalinowski, \$2K, ASU Graduates in Integrative Society and Environment Research on "Future Visions at M52: Investigating Social, Ethical, and Legal Constraints;"
- Lobo et al. DOE, \$98K, Sunshot Seed grant for "Forecasting and Influencing Technological Progress in Solar Energy;"
- Wender et al., \$2K, ASU Graduates in Integrative Society and Environment Research on "Burdens and Barriers to Terrawatt-scale Photovoltaic Energy;"
- Seager, Selin et al., NSF NUE, \$200K, Cross-disciplinary Education in the Social and Ethical Aspects of Nanotechnology, Nov 13 – Oct 15;
- Wetmore et al., NSF, \$248K, Capacity Building in Computer Science as a Driver of Innovation, Oct 13 – Sept 15;
- Guston and Fisher, NSF, \$500K, NSF SAVI: Virtual Institute for Responsible Innovation, Oct 13 – Sept 16;
- Finn and Guston, NSF, \$50K, Informal Learning and Scholarship in Science and Society: A Multi-disciplinary Workshop on Scientific Creativity and Social Responsibility, Mar 14 – Feb 15;
- Guston, Farooque, and Bennett, NASA, \$200K, "A Participatory Technology Assessment of NASA's Asteroid Initiative," Apr 14 to June 15.
- Guston, Murray and Brian, NSF, \$150K, Workshop on Research Agendas for the Societal Aspects of Synthetic Biology, June 14 – May 15.

At GA Tech, these awards include:

- Porter, NSF National Partnership for Managing Upstream Innovation, \$45K, Nov 04 – present;
- Shapira, Youtie, Rogers, NSF Measurement and Analysis of Highly Creative Research, \$340K, Jan 08 – Dec 10;
- Porter et al., NSF Measuring and Tracking Research Knowledge Integration \$393K, Sep 08 – Aug 11;
- Porter et al., NSF NER: Representations of Active Nanostructures Across Scientific, Popular, and Policy Realms of Discourse, \$85K, Jan 07 – Aug 09;
- Porter et al., UK Royal Commission, \$20K, Jan 08 – Apr 08;
- Porter, Youtie and Meyers, Euronano, \$21K, Jul 07 – Jan 08;
- Fernandez-Ribas, Kauffman and GA Research Alliance, Small Businesses International Nano Patent Strategies, \$16K, Jun 08 – May 09;
- Randles, Shapira, et al. National Research Council of Canada, UK Nanoclusters, \$40K, Jan 09 – Apr 09;
- Rogers, Youtie, Porter, Shapira, NSF Assessment of Nanoscale Science and Engineering Systems, \$200K, Oct 09 – Sep 10;
- Shapira, Tang, Meng. Chemical Heritage Foundation, Development of Advanced Materials in China: Case Studies of Nanotechnology Materials Innovations, \$10K, Sep 09 – Aug 11;
- Shapira, Youtie. National Nanotechnology Infrastructure Network, Social and Ethical Issues Seed Grant Competition, 2010, Nanotechnology's Transition from Discovery to

Commercialization in Small and Medium-sized Enterprises: An Exploration of Evidence from Novel Unstructured Sources, \$19,712, May 10 – April 11;

- Porter et al., NSF SciSIP, TLS: Revealing Innovation Pathways, April 2011- Jan 2014, \$419k,
- Shapira, et al., UK Economic and Social Research Council, Emerging Technologies, Trajectories and Implications of Next Generation Innovation Systems Development in China and Russia \$350k, Sep 2012-Sep 2014;
- Arora, Georgia Tech Research and Innovation Conference, \$1.5K, Feb 12;
- Shapira, UNIMAN, Nesta, “Mapping innovation and growth in a strategic emerging technology: New data sources and methods for tracking graphene research and innovation,” \$75K, 2013-2014;
- Shapira (with Gok, PI), Novel data analysis, synthetic biology. \$12K, 2014;
- Shapira, Youtie, et al., EU-SPRI, Manchester Summer School on Emerging Technologies, \$20K 2014; and
- Porter and Youtie NSF, “Forecasting Innovation Pathways of Big Data & Analytics” \$50K April 2015 to March 2016.

At Wisconsin, these awards include:

- Scheufele, University of Wisconsin—Madison Graduate School, Science and Social Responsibility: Tapping Values and Perceptions among Researchers in Nanotechnology, \$9,029, Sp 07;
- Scheufele, NSF, Media, Talk, and Trust: The Social Amplification of Risk during Site Selection for a Bio-research Facility, \$400K, Sep 08- Oct 10;
- Scheufele (co-PI with PI Berube at NCSU), NIRT: Intuitive Toxicology and Public Engagement, \$1.4M (\$150K at UW), Sep 08- Oct 10;
- Scheufele (consultant with PI Hallman at Rutgers), USDA CSREES National Research Initiative (NRI) Food Nanotechnology: Understanding the Parameters of Consumer Acceptance, \$200K, Sep 08- Oct 10;
- Scheufele (with PI Wilson), DOE, Developing a User Experience for the Next Generation Nuclear Fuel Cycle Simulator, \$1.2M, Sep 11-Oct 14;
- Scheufele (sub-PI with PI’s Larry Bell, Paul Martin & Robert J. Semper), NSF, Nanoscale Informal Science Education Network Award # DRL-0940143 \$160K (total center grant: \$4.2 million) 2011-2015; and
- Scheufele, Summer Online Course Development Award: Science, Media and Society, \$25,627, 2013-15.

CNS-ASU has been a force for institutional change at ASU and its collaborating universities.

Programs have adopted CNS-ASU tools and approaches as well as the broader theme of anticipatory governance, which has emerged as an important element in the conceptualization of new ASU initiatives. In addition to having created numerous undergraduate and graduate courses and its PhD+, CNS-ASU has:

- collaborated with ASU’s Biodesign Institute to require integrated societal training of the doctoral students in its Biological Design PhD program;
- collaborated with ASU’s Professional Science Master’s program in Nanoscience to offer a societal training course in the new curriculum;
- collaborated with ASU’s Professional Science Master’s program in Solar Energy Engineering and Commercialization to offer integrated societal training in the new curriculum;
- collaborated with ASU’s NNIN node to develop a training program in the societal dimensions of nanotechnology and in informal science education for its users;
- helped instigate the creation of a PhD+ program at GA Tech;

- provided leverage for a proposal by Scheufele at Wisconsin for a “Science and Culture” cluster hire to add personnel to the infrastructure that CNS has supported there;
- collaborated with ASU’s university-wide energy initiative, LightWorks, to integrate research on the social and governance challenges of energy systems transitions ; and
- collaborated with a number of proposals to NSF (STC, ERC, IGERT and NUE), DOE (ARPA-E and Hub) and NIH emerging from ASU containing programs that CNS pioneered. Funded NSE and emerging technology awards at ASU with CNS-ASU partnerships and activities include over \$33M in awards:
 - Lindsay, NSF NIRT for organic photo-voltaics, \$1.1M, Sep 06 – Aug 10;
 - Posner, NSF CBER, Interaction of Engineered Nanomaterials with Artificial Cell Membranes, \$313K, Sep 09 – Aug 12;
 - Posner, NSF CBER, Collaborative Research: Rational Design of Enhanced Catalytic Nanomotors, \$600K, Mar 09 – Feb 12;
 - Phelan, NSF PSM, Professional Science Master’s in Solar Energy Engineering and Commercialization, \$700K, Jul 10 – Jun 13;
 - Honsberg, NSF ERC, Quantum Energy and Sustainable Solar Technologies, \$20M, Aug 11 – Jul 16;
 - Panchanathan, NSF IGERT, Person-Centered Technologies and Practices for Persons with Disabilities, \$3M, Aug 11 – Aug 16;
 - Vermass, NSF IGERT, Solar Utilization Network, \$3M, Jun 12 – May 17; and
 - Westerhoff, NSF/EPA NCCLCs: Material Life Cycle of Nanomaterials, \$5M, Sept 13-Aug 17.

Additionally, CNS-ASU researchers at both ASU and GA Tech have been involved in their university’s respective NNCI proposals: At ASU, Wetmore is co-PI with a societal share of \$400K on a \$7.9M proposal, and at GA Tech, Youtie is senior investigator and SEI coordinator with a societal share of \$419K on a \$9.9M proposal. In addition, CNS-ASU researchers have the following associated or collaborative proposals that incorporate CNS ideas under review or in preparation:

- A \$4M proposal to NSF on infrastructure and hazard mitigation, with Wetmore receiving approximately \$1M as co-PI;
- A \$3M proposal to NSF on citizen-curated virtual museum and responsible innovation, with Guston and Ostman as co-PIs;
- A \$1M proposal to NSF on mobile devices with societal consequences, with Bennett receiving approximately \$100K as senior investigator;
- A \$430K proposal to NSF with Wetmore as PI and Bennett and Ostman as co-PIs to extend collaborations between CNS-ASU and science centers across the country; and
- A \$400K proposal to NSF with Wetmore as PI and Bennett and Ostman as co-PIs to partner with the Oregon Museum of Science and Industry to explore and evaluate a promising method for engaging science and engineering students with the ethical nature of their work.

While **Section 13 Shared and other Experimental Facilities** details the visits and other contributions by more than international scholars and practitioners to the Center from roughly two dozen countries, CNS-ASU scholars have also engaged in substantial international collaborations based on their Center-related work. For example:

- Selin is a senior researcher on a EU 7th Framework funded project led by Strand (Bergen) on “Integrated Assessment of Societal Impacts of Emerging Science and Technology from within Epistemic Networks,” to investigate how different methods of analyzing and

assessing new and emerging fields of technology can be better integrated, \$2.1M, Apr 12-Mar 15.

- Guston is a named international associate on a five-year project funded by the Leverhulme Trust led by Nerlich (Nottingham) on “Making Science Public,” to investigate how changes in public engagement with science affect the theory and practice of democracy, \$2.84M, May 12-Apr 17.
- Shapira and Youtie are principals with the Innovation Co-Lab – a collaboration of researchers at Georgia Institute of Technology, the University of Manchester (UK), and the Beijing Institute of Technology (China) to advance methodologies and analyses to anticipate the trajectories of emerging technologies. The Co-Lab’s focal technologies include graphene, other nanotechnologies and advanced green goods. Co-Lab projects are sponsored by the British Council, the UK Economic and Social Science Research Council, and Chinese Ministry of Science and Technology. Georgia Tech CNS-ASU researchers Porter and Rogers and students Arora, Carley, and Li are among those also engaged in the Innovation Co-Lab.
- Shapira was appointed in 2011 to the advisory board of the Foresight Centre, National Research University - Higher School of Economics (HSE), Moscow, Russia, which focuses on the analysis of emerging technologies including nanotechnology. The Georgia Tech RTTA1 group is a partner with HSE and the Beijing Institute of Technology in a successful University of Manchester proposal to examine nanotechnology emergence in the rising powers of China and Russia.
- Scheufele is member of the External Advisory Committee for the *Wellcome Trust Monitor*, a national tracking survey conducted by the Wellcome Trust in London, UK. He advises on questionnaire construction, data analysis etc.
- Wetmore was a “Bright Ideas” Visiting Research Fellow in Summer 2011 and in Summer 2012 at the ESRC Genomics Policy & Research Forum, University of Edinburgh, Scotland to continue his collaborations on developing new ways to help scientists and engineers better understand the social implications of their work.
- Fisher serves on the Scientific Advisory Boards for the “Applied Metagenomics of the Watershed Microbiome” project (Tang, PI), funded by Genome Canada, and for the “Exploring Possibilities for Patient Involvement in Translational Medicine” project (Boenink, PI), funded by the Netherlands Genomics Institute and Centre for Translational Molecular Medicine.

The following section briefly summarizes the most significant advances of the Center over the last year in terms of fundamental knowledge and technology (here conceived as applied and/or reflexive knowledge, processes, and capacities, often but not exclusively for internal use).

Fundamental knowledge. Each research program, and most individual research projects, contributed significant advances in fundamental knowledge of the societal aspects of nanotechnology in the last year. This section provides some highlights.

- RTTA 1 Research Program Analysis: Analyzing extensive global databases of Science Citation Index records, other publication databases, and patent databases (MicroPatents, PatStat), CNS-ASU researchers have found:
 - RTTA 1/1: Nano patents are not more green than other technology categories (Lobo and Strumsky);
 - RTTA 1/1: China continues to surpass the US in NSE research publications and now surpasses it in citations as well (Lee et al. 2014), although there is evidence of “clubbing” in Chinese citations (Tang, Shapira and Youtie 2015).

- RTTA 1/2: Numbers of firms involved in NSE publishing and patenting is increasing, as is the share of small- and medium-sized enterprises among this group; the US has by far the largest number of firms, but the European share is half again as large as the US share (Shapira, Youtie and Li 2015).
- RTTA 2 Public Opinion and Values: From large scale public opinion surveys, CNS-ASU researchers have found:
 - RTTA 2/1: “Spillover” from previous labeling controversies like genetically modified organisms (GMOs) affects the attitudes that people have toward labeling nanotechnology products. Members of the public who pay more attention to ethical, legal and social implications of nanotechnology in the press are more likely to support labeling (Scheufele et al. under review).
- RTTA 3/4 Futurescape City Tours, RTTA 3 researches have found:
 - That the development and practice of FutureScape City Tours are desirable ends of public engagement and can enable laypersons to contribute productively to the democratization of science and technology (Selin et al. under review).
- RTTA 4/4: Reflexivity and Integration: Through a set of integrative research and educational activities with NSE researchers, CNS-ASU researchers have:
 - With others from the Communities of Integration project and workshops, developed a “comparative integration” framework that accommodates the variety of socio-technical integration projects as either “reformative,” “problematizing,” “facilitating,” or “augmenting” (Fisher et al. 2015).
- TRC 1: Through field work in South Africa, combined with bibliometric and patent analysis and other documentary research, research on Equity, Equality and Responsibility has found:
 - The pro-poor promise of a number of nanotechnologies is not playing out well in actual nanotechnology research agendas (various publications).
- TRC 2: Working in cross-disciplinary and intervention-oriented fashion, TRC 2 researchers have found:
 - That the concept of anticipation may productively be applied to life cycle assessment in order to focus strategic attention and research into more specific and responsible approaches to developing emerging technologies (Wender et al. 2014 and other publications).
 - Through the creation of new evaluation measures, that CNS interventions such as the Science Outside the Laboratory program and the Community Engagement Workshops conducted by TRC 1 are accomplishing their goals of changing the way that their participants think about science, technology, governance, and publics (Bernstein et al. 2015).

Technology (in this case, mostly applied and/or reflexive knowledge, processes, methods and capacities; often these are developed in one part of CNS-ASU and used in another, thus forming the intellectual core of “ensemble-ization”).

- RTTA 1 Research and Innovation System Analysis:
 - RTTA 1 researchers have updated their corporate panel (Li, Youtie and Shapira 2015), refined their methodology for visualizing patent data (Kay et al. 2014), and scaled up their ability to perform “webscraping” (Arora et al. 2015)..
 - They have conducted several targeted bibliometric studies supporting ongoing CNS-ASU work, shared data sets and search strategies with CNS-UCSB, etc.
- RTTA 2 Public Opinion and Values:
 - The RTTA 2/1 researchers are coordinating data collections with related efforts at Wisconsin, Singapore, Rutgers, Universität Hamburg, and elsewhere to build

- comparable data sets that will inform policy making and outreach efforts. Because RTTA 2/1 has played a prominent role in sharing these innovations with other scholars, the leaders of the POV team serve as consultants or co-PIs on other related NSF and USDA grants. This methodological outreach is being formalized by RTTA 2/1 researchers through the formal archiving and sharing of data collection instruments.
- RTTA 3 Anticipation and Deliberation:
 - The development of the Futurescape City Tours (FCT) marks an innovation in public engagement methods that give priority to enabling citizen-set agendas, use multi-media tools to support ‘material deliberation’, and propose capacity-building as a worthwhile outcome. In the reporting year, FCT researchers developed a guidebook and website to help other prospective users design their own tours.
 - RTTA 4 Reflexivity and Integration:
 - The STIR protocol continues to be an important technology in circulation as additional STIR studies are beginning or are planned by international collaborators.
 - TRC 1 Equity, Equality and Responsibility
 - To help engineers and scientists begin to recognize the need to listen and develop the skills necessary to engage in community development, TRC 1 has conducted and (positively) evaluated several workshops with transferable modules.
 - TRC 2 Urban Design, Materials and the Built Environment
 - Continued work to develop the Nanotechnology in City Environments (NICE) database, which has drawn 1200 hits per month. Visits track from 1,000 different cities globally, helping to diffuse information on nanotechnology applications in urban environments.

Education and Training:

- At the post-doctoral and junior researcher level, CNS-ASU continues to train high-quality junior researchers and place them into important positions. Most recently, former graduate student and post-doctoral fellow Rider Foley began a tenure-track position at University of Virginia and post-doc Kiera Reifschneider began a professional position at the Government Accountability Office; post-doc Megan Halpern has been offered a tenure-track position at Michigan State University.
- At the graduate level, CNS-ASU has involved more than two dozen graduate students (funded, unfunded, and visiting) in its YR 10 research activities, not including another approximately 20 STIR students. The Center held its third Winter School in early 2015. We are collaborating to teach students at ASU’s Professional Science Master’s Program in Nanoscience, Professional Science Master’s Program in Solar Energy, and in the Biological Design PhD program, and we continued other courses at the graduate level. The Center continues to play an integral role in the Human and Social Dimensions of Science and Technology doctoral program and the Professional Science Master’s degree program in Science and Technology Policy, both coordinated by Center senior personnel Miller at ASU. CNS-ASU graduate students completing their doctoral dissertations have been placed in a tenure-track positions at SUNY Stony Brook (Thomas Woodson) and NTU-Singapore (Yu Meng), in a research/research administration position at UC-Berkeley (Gretchen Gano), and in a professional position in IISC-Atlanta (Stephen Carley). Achievements by current graduate students include winning the “best student poster – social sciences” at the AAAS annual meeting (Michael Bernstein) and winning the Miss Phoenix competition (Kaitlin Vortherms).
- At the undergraduate level, CNS-ASU continues to teach classes influenced by the Center, including “Introduction to Science and Technology Policy” which was also turned into an online course at ASU. Even though CNS did not sponsor any InnovationSpace teams in the

current year, CNS personnel continued to make contributions in the cross-training of business, design, and engineering students. The associated NUE award, “Nano Ethics at Play,” created a set of workshops and a new undergraduate course that use Lego Serious Play to help teach more abstract concepts in the societal and environmental aspects of nanotechnology.

- In informal science education, CNS-ASU deepened its strategic and highly generative partnership with NISE Net, not only participating in NanoDays in Mar 15 but more importantly publishing with NISE Net a training guide for museum personnel to help them manage discussions about societal issues.
- In training for scientists and engineers, CNS-ASU continues its improved relationship with NNIN through the local node at ASU, providing both required social and ethical implications training and an informal science communication program to NNIN users and extending the model of training to the new NNCI proposal.

Industrial collaborations. The most significant private-sector collaborations that CNS-ASU participated in over the past year are:

- Publication of the first three issues (complete volume 1) of the *Journal of Responsible Innovation*, with Taylor & Francis;
- RTTA 4 continued a dialogue with the Association of Innovation Managers around responsible innovation;
- TRC 2 involved private sector partners in the highly collaborative aLCA article published in *Environmental Science & Technology* (Wender et al. 2014) and discussed the concept with, among other private sector actors, the local research offices of Intel.

The following section briefly describes the current and potential impacts of CNS-ASU on teaching, training, and learning; outreach to pre-college institutions; broadening the participation of underrepresented groups; enhancement of infrastructure of research and education; dissemination to scientific and technological communities; and benefits to society.

Teaching, training and learning. At any given time, CNS-ASU, across its three constituent universities, is training in various capacities approximately one-half dozen junior research faculty and post-doctoral fellows, two dozen graduate students, and one dozen undergraduate students in the societal aspects of nanotechnology. At the constituent universities, most of this training consists of working on CNS-related research projects under the subcontracts to those universities. In each location, but at Wisconsin in particular, the community of trainees is larger than that of funded student researchers because the data developed by the Center are too extensive to be analyzed entirely within the budget. At Wisconsin and ASU, CNS-related research is being incorporated into numerous classroom modules and activities. At ASU, CNS has engaged in extensive training and curriculum development and innovation. In this reporting year, CNS-ASU has continued to influence undergraduate courses in disciplinary areas, expanded its graduate training with new coursework and research opportunities for both social scientists and NSE students, and collaborated with NISE Net to expand the inclusion nano-in-society ideas in informal science education. Last year’s graduate studio co-led by Wiek and Petrucci created a video depicting the future urban form of Phoenix enabled by nanotechnology. The video and related images continue to have life beyond the course, including in publications from the Center, press about the Center, and other ASU courses.

Outreach to pre-college institutions. CNS-ASU has arranged for continuing education credit for in-service teachers for attending its Science Cafes, although with changes in state requirements this method of fulfilling continuing education credits is less attractive than it had been. In

previous years we have reported on the development and teaching of what we believe to be the nation's only graduate-level course for in-service high school teachers in nanotechnology and society, and on our inability to find an appropriate financial model for attracting enrollment to the course. We previously modified the course for inclusion in the PSM in Nanoscience degree program, and we have taught it again the current year. The *Encyclopedia of Nanoscience and Society*, published in YR 6, has high school and college libraries as its target market. We are also orienting our interactions with NISE Net to help develop materials for the in-service teachers with whom science museums work. In conjunction with ECAST, CNS-ASU has developed a model for deliberative engagement with high school students over issues in science and emerging technologies. Three (on geoengineering, synthetic biology, and biodiversity) were conducted in prior years. At ASU, we continue our deepening relationship with Phoenix Bioscience High School. In the reporting year, we involved the school in the Futurescape City Tours and screened and discussed the video developed by the design studio about a nano-enabled Phoenix in 2050.

Broadening participation of under-represented groups. CNS-ASU, including its constituent universities, has developed a strong record of including women in key research and leadership positions and recruiting members of under-represented groups into graduate and undergraduate research positions. In most measurement categories, CNS-ASU equals or exceeds national averages. In previous years, we have focused attention on disability communities as an under-represented population through the activities of TRC 1 Equity and Responsibility and (former) TRC 2 Human Identity, Enhancement, and Biology. In a previous year, we replaced the symposium for under-represented students with a training activity more akin to the DC Summer Session and other training activities that CNS-ASU has made successful, but targeted for under-represented students in partnership with the Hispanic Research Center. Held for the first time in Sp 09 for two dozen graduate students from under-represented communities, the seven-week course was quite successful. We repeated it in Fall 11 and hoped to do more, but HRC lost the relevant funding stream. In the reporting year, the Center received a significant supplement to do even better in including individuals from under-represented groups and expanding their participation in STS and science policy more generally. To implement the supplement, the Center held a workshop with mentors from about ten collaborating institutions in conjunction with our Winter School, and with them we are in the midst of recruiting undergraduate students for the first of two planned DC workshops that we hope will provide these students with a more concrete understanding of STS and science policy and research opportunities in these fields, and thus better establish them on a trajectory toward graduate school.

Enhancement of infrastructure for research and education. CNS-ASU maintains a web site (<http://cns.asu.edu>) that provides information about its research, education and outreach programs to a general audience. It was redesigned last year and we continue to tweak it. CNS-ASU has most of its monthly seminars and occasional speakers' presentations available on the web site in audio, video, and PPT versions – including new video formats on YouTube, and the re-designed site will emphasize access to video and other resources. The website connections to several associated projects in-depth, including:

- The Plausibility Project site (<http://www.cspo.org/projects/plausibility/>), which has detailed information, references, and papers about the project;
- The STIR project website (<http://cns.asu.edu/stir/>) and Facebook site, which provides general information about the project and a password protected site for collaborative work among the far-flung international STIR network;

- The Virtual Institute for Responsible Innovation (<http://cns.asu.edu/viri>), which has a site publishing news and linking to a listserv established to link scholars and others with an interest in responsible innovation;
- The Futurescape City Tours site (<http://futurescapecitytours.org>), which has an electronic version of the FCT guidebook and a short video to provide background instruction for anyone hoping to conduct their own tours;
- The Synthetic Biology workshop site (<http://cns.asu.edu/synbio>), which maintains a record of the Workshop on Research Agendas for Societal Aspects of Synthetic Biology, including images, video and background papers; and
- The Policy, Science, Technology and Society (POSTS) Scholars program site (<https://cns.asu.edu/diversity>), which supports the program to increase diversity in STS and science policy fields.

CNS-ASU has been crucial in the creation and maintenance of the Society for the Study of Nanoscience and Emerging Technologies (S.NET; Guston was a founding member of the board, a member of the first and second program committees, and a co-chair of its third program committee). It co-hosted, with CNS-UCSB, the third annual meeting of S.NET in Nov 11, with more than 200 attendees from more than 20 countries. CNS-ASU co-sponsored, with NNIN, NISE Net and other ASU projects, the first Congress on Teaching the Social and Ethical Implications of Research, with more than 100 participants. CNS-ASU has also created a number of research tools and instruments, e.g., the searchable definition of nanotechnology and the databases derived with it, survey protocols and opinion data, and the NCTF reports, internet transcripts and video data that have been sought by and provided to other scholars. CNS-ASU has also received 110 international visiting students, scholars and practitioners seeking a vibrant intellectual community and training in the Center's methods.

Dissemination to scientific and technological communities. CNS-ASU has engaged in extensive dissemination activities, both to its social science and humanities colleagues, but also to the community of NSE researchers with whom it interacts. Roughly 20% of its published, forthcoming or under review journal articles appear in journals like *Nature Nanotechnology*, *Journal of NanoParticle Research*, *Journal of Nanoscience and Nanotechnology*, *EMBO Reports*, and others that are oriented toward science and engineering researchers. We have also published in trade and professional journals that target scientists, e.g., *Materials Today* and *Nano Today*, and in addition to having published commentaries and letters in both *Science* and *Nature*, we have published research in *Proceedings of the National Academy of Sciences*. CNS-ASU researchers have given nearly 870 presentations, roughly 60% of which were delivered to their social science colleagues and roughly one-third of the remainder to targeted audiences of scientists and engineers. Our dissemination activities have also included supported and unsupported invitations to our All Hands meeting, extended to roughly 10 individuals, including students, each year, and the workshops we conducted in YR 10. Dissemination to colleagues also includes the Winter School.

Benefits to society. In its Jul 07 memorandum, NSF describes a set of questions (sub-criteria) related to its broader impacts criterion. Here we articulate the contributions of CNS-ASU for each of these sub-criteria:

- “How well does the activity advance discovery and understanding while promoting teaching, training, and learning?” The integration of research, education, and outreach is a particular focus and strength of CNS-ASU, and many of its programs are designed toward this goal from the outset.

- CNS-ASU has teaching, training, and learning projects at all levels from the pre-college education to post-doctoral training, as well as informal science education projects and training for scientists and engineers.
- Most of these teaching, training, and learning projects integrate research, education, and outreach, e.g.:
 - Students and trainees participate in the NISE Net-sponsored NanoDays by staffing a booth of nano-demonstrations at a local arts festival;
 - Undergraduate research, e.g., as represented in the third *Yearbook*, is well-integrated with research programs;
 - Graduate course development, e.g., the design studio conducted in Sp 13 is driven by research interests and outreach opportunities;
 - Research frames are brought to bear on high school engagement programs in geoen지니어ing, synthetic biology, and biodiversity;
 - CNS-ASU research activities become case studies for concurrent educational activities, e.g., integrating nanotechnology cases into the units of “Introduction to Science and Technology Policy;” and
 - CNS perspectives are incorporated into interdisciplinary graduate training through the participation of Miller and Guston in IGERT programs.
- CNS-ASU partnerships with NSE researchers have enriched its Science Cafes, which local teachers have used for credit;
- CNS-ASU trains a small number of CNS-Biodesign Fellows, CNS-FSE Fellows, and other PhD+ students to conduct societal implications research or perform outreach projects around their NSE research, and this program is expanding to GA Tech;
- Student authors are included on a large plurality of CNS-ASU manuscripts;
- Students are first or sole-author on roughly one in six CNS-ASU presentations, and they have presented their CNS-related work in a variety of venues;
- CNS-ASU has created and will continue to develop a section of its website to serve as a clearinghouse for nano-in-society curricular activities.
- *“How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?”* CNS-ASU has established a strong record for the participation of women and underrepresented groups. For the Center, however, diversity is not just a matter of inclusion of a diverse research population but making aspects of diversity explicit parts of the research agenda.
 - CNS-ASU fosters research topics that explicitly address issues of underrepresented groups, e.g.:
 - RTTA 1/1 Innovations Systems Assessment has investigated female involvement in nanotechnology patenting;
 - (former) RTTA 1/2 Public Value Mapping included attention to the differential impacts of minority participation in clinical trials for potential nano-therapeutics; and
 - An entire research program area on Equity, Equality and Responsibility (TRC 1), which in part addresses ethnic and geographic issues in the distribution of benefits and risks from nanotechnologies; and
 - CNS-ASU collaborates with the Hispanic Research Center on science policy training for its two dozen graduate-level fellows from underrepresented groups;
 - Through associate director Miller, CNS-ASU is collaborating on an IGERT award to ASU’s Panchanathan on “Person-centered Technologies and Practices for Persons with Disabilities;” and
 - CNS has designed its new POSTS Scholars program to attract and retain undergraduates from under-represented groups into STS and science policy fields.

- *“To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?”* CNS-ASU envisions itself as a national and international leader in promoting research, education, and outreach in nano-in-society topics and in integrating those topics into NSE research and education settings.
 - CNS-ASU exists as the largest node of the NSF-instigated nano-in-society network and has taken leadership in the generation of the following networks and collaborations (outside ASU):
 - CNS-ASU has hosted approximately 110 international visitors, from 26 different countries;
 - CNS-ASU has become a “core partner” in NISE Net, recognizing the extent and depth of collaborations centered on enhancing informal science education with expertise from the societal aspects of NSE;
 - The Center conducted its third Winter School on the Anticipatory Governance of Emerging Technologies, which involved more than one dozen junior scholars;
 - The associated STIR project leads an expanding international network of graduate students and laboratories; and
 - The associated VIRI has expanded its participation to 18 centers of excellence in thirteen countries, including some smaller counties and those closer to the periphery, e.g., Hungary and Israel.
 - Within ASU, CNS-ASU is a hub for transdisciplinary research and teaching, with specific activities including:
 - CNS curricular offerings currently enhance graduate education in the Biodesign Institute, the Ira A. Fulton Schools of Engineering, the Department of Physics and the Department of Chemistry and Biochemistry;
 - CNS supports InnovationSpace, which bridges the schools of design, engineering, and business;
 - CNS graduate coursework helps link the Schools of Politics and Global Studies, Human Evolution and Social Change, Life Sciences, and the Human and Social Dimensions of Science and Technology doctoral program;
 - CNS has led the creation of a new graduate certificate in responsible research and innovation; and
 - CNS collaborative research and teaching activities are included on virtually every large NSF proposal (IGERT, ERC, SRN, STC) submitted by ASU.
 - CNS-ASU partners with community organizations – in previous years the Arizona Science Center and in the recent year the Tempe Center for the Arts – for the production of monthly Science Cafes during the academic year;
- *“Will results be disseminated broadly to enhance scientific and technological understanding?”* CNS-ASU aims to reach a variety of audiences – scholarly, professional, and public – with its research, education, and outreach activities.
 - CNS-ASU’s e-mail distribution list reaches roughly 1400 individuals;
 - CNS-ASU researchers have given nearly 850 talks across all audiences since the inception of the Center;
 - CNS-ASU targets networks and user facilities for the distribution of nano-in-society training material, e.g.: NISE Net has disseminated CNS-ASU products to approximately 300 museums and other participants in NanoDays;
 - CNS-ASU has a contract with Springer to produce the first five volumes of the *Yearbook of Nanotechnology in Society* (Guston, series editor), the first three of which are published, and the fourth of which is significantly in preparation;

- CNS-ASU Director Guston has published the two-volume *Encyclopedia of Nanoscience and Society* (Sage, 2010) that transmits detailed concepts in nano-in-society to high school and college students;
- “What may be the concrete and demonstrable benefits of the proposed activity to society?” The concept of anticipatory governance – comprising foresight, engagement, and integration – provides the intellectual framework for the broader benefits to society that CNS-ASU seeks to generate.
 - Foresight activities create an opportunity for diverse publics to encounter, explore, and evaluate nanotechnologies prior to their actual emergence;
 - Engagement activities, including the small-scale intensive Science Cafes as well as informal science education activities informed by CNS perspectives and the larger-scale piloted Futurescape City Tours, create more informed citizens on important topics in nano-in-society;
 - Interaction with NSE researchers, including courses, training activities, workshops, laboratory collaborations, and interventions results in identifiable changes in knowledge, identity, and practice in the laboratory;
 - CNS-ASU has had important informational and educational exchanges with decision makers, including:
 - Youtie and Shapira’s provision of data to the Office of Science and Technology Policy, for the regular strategic review that the President’s Council of Advisors for Science and Technology prepares on the National Nanotechnology Initiative;
 - The Center’s collaboration with the CSPO office in Washington, DC on the “New Tools for Science Policy” series, which hosted CNS scholar de Ridder Vignone in conversation with 30-40 science policy makers in the reporting year.
 - Scheufele’s ongoing participation in the Sackler Colloquium at the National Academy of Sciences on “the science of science communication.”
 - TRC 2’s interaction with the Institute for Technology Assessment and Systems Analysis (ITAS), the chief technology assessment agency in Germany.



New Tools Reveal Worldwide Nanotechnology Development Trends

Monitoring patents and research citations enables analysts to determine the growth and direction of emerging technologies. However, because these counts, as well as the connections between them, can run in the millions and come from a myriad of sources, compiling comprehensive and digestible data presents challenges.

To help overcome these challenges, **Dr. Jan Youtie, Dr. Philip Shapira**, and their Georgia Tech colleagues have developed research tools to better mine, compile, and present large sets of data and its interconnections to reveal innovation trends and pathways.

This past year, Youtie and colleagues used two of these tools—a two-stage bibliometric search method and a patent-mapping system—to create global datasets of nanotechnology research citations and patent documents covering 1990-2014.


More than 300 citations worldwide refer to the new tools, and the group's analyses of nanotechnology research and innovation have been used by several leading policy organizations, including the President's Council of Advisors on Science and Technology (PCAST) and the Organisation for Economic Co-operation and Development (OECD).

Youtie, Shapira, and colleagues used the new search method to provide an updated analysis of country-level comparisons of nanotechnology publications for 2011-2013 for the PCAST October 2014 report covering the fifth assessment of the National Nanotechnology Initiative. The analysis revealed that China continues to surpass the US in total number of nanotechnology research publications, as well as in citations of their papers. Further analysis revealed, however, that top Chinese scholars' are more likely to cite each other, while top US scholars are not, providing a possible explanation for the increased Chinese citations.



Dr. Jan Youtie co-leads the Real-Time Technology Assessment (RTTA 1) at CNS-ASU that focuses on the scope of the Nanoscale Science and Engineering (NSE) enterprise and its effects on public values and outcomes.

Jan Youtie | Georgia Institute of Technology
Director, Enterprise Innovation Institute
Adjunct, School of Public Policy
Director, Program in Science, Technology, and Innovation Policy



REPORT TO THE PRESIDENT AND CONGRESS ON THE FIFTH ASSESSMENT OF THE NATIONAL NANOTECHNOLOGY INITIATIVE

Executive Office of the President
President's Council of Advisors on
Science and Technology

October 2014





Improving Understanding of Public Attitudes Toward Emerging Technologies

Because public attitudes towards emerging technologies are often influenced by ethical, moral, religious, and political predispositions, providing more scientific information and understanding about a new technology doesn't equate to clarity, support, or agreement among the informed.

Yet scientists often continue to operate from the assumption that more facts and information will result in increased support for emerging science and to approach public engagement efforts from this knowledge deficit model.

To better understand influences on public attitudes toward emerging sciences, in 2014, Scheufele and Corley, along with researchers at the University of Wisconsin, surveyed 808 US adults about their awareness, knowledge, and attitudes related to synthetic biology. Subsequent research is analyzing the interplay of influential factors.

Scheufele and colleagues in the Department of Life Sciences Communication at Wisconsin have partnered with the Morgridge Institute for Research to develop programs to measure the outcomes of different outreach activities and the effectiveness of different messaging techniques with public visitors to the university's Discovery Building. They will also design and test new strategies for engaging the public on controversial emerging technologies.



The Discovery Building attracts 30,000 visitors each year.



In 2014, **Dr. Dietram Scheufele** was admitted to the German Academy of Science and Engineering. He will be formally inducted in fall 2015. Along with **Dr. Elizabeth Corley** at ASU, he leads the Real-Time Technology Assessment (RTTA 2) research thrust at CNS-ASU that explores the understanding of nanotechnology among the general public and the role of the media in reflecting and influencing that understanding.



Dietram A. Scheufele | University of Wisconsin-Madison
John E. Ross Professor of Science Communication, Co-Principal Investigator, CNS-ASU
Elizabeth A. Corley | Arizona State University
Associate Professor in the School of Public Affairs, Co-Principal Investigator, CNS-ASU



Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591



Designing for Reflexive Foresight

RTTA 3 problematizes conventional deliberative approaches to anticipation that naively attempt to predict technological outcomes. RTTA 3 research instead pursues anticipatory governance by honing in on methods that focus on plausibility rather than probability (Selin 2011; Ramirez & Selin 2014) and incorporate a more nuanced understanding of the social dimensions of technical change. The new future-oriented methods invented are geared towards building the capacity of lay people, scientists, and engineers, and civic stakeholders to approach the intersections between science, technology, and society with greater reflexivity, foresight and systemic thinking.

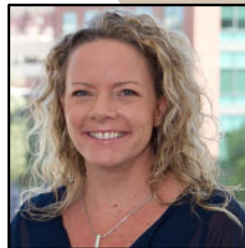
RTTA 3 leader **Cynthia Selin** and colleagues have especially worked to develop alternative experiential and digital methods of engagement that incorporate more affective, visual, imaginative, and sensorial modes of anticipation into deliberation.

In 2013, the Futurescape City Tours, a novel approach to public engagement with emerging technologies, launched in six cities in North America. The process involved a walking tour with behind-the-scenes expeditions, photography, guided deliberation, and dialogue with city planners, researchers, policymakers, and civic leaders. In 2014, the team developed a guide, website, and video for city planners, researchers, and the public.

In 2012, Selin co-founded the ASU *Emerge* event, which brought together artists, scientists, engineers, students, and educators to reimagine the future through design fictions, serious games, artistic monumental-scale sculptures, science fiction stories, and provocative films. The journal *Futures* devoted a special issue to this large-scale experiment of future-oriented deliberation (in press).



www.futurescapecitytours.org



Dr. Selin leads CNS-ASU's Real-Time Technology Assessment (RTTA 3) exploring plausible futures and elucidating public preferences about the future.

Cynthia Selin | Arizona State University
Assistant Professor, ⁷³School of Sustainability
Senior Sustainability Scientist, Global Institute of Sustainability



Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591



To What End? Characterizing Socio-Technical Integration Practices

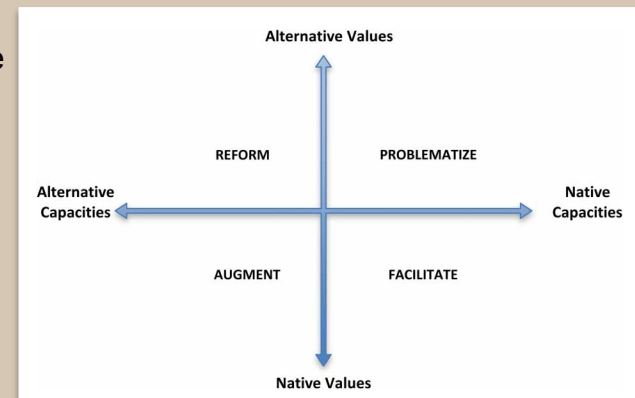
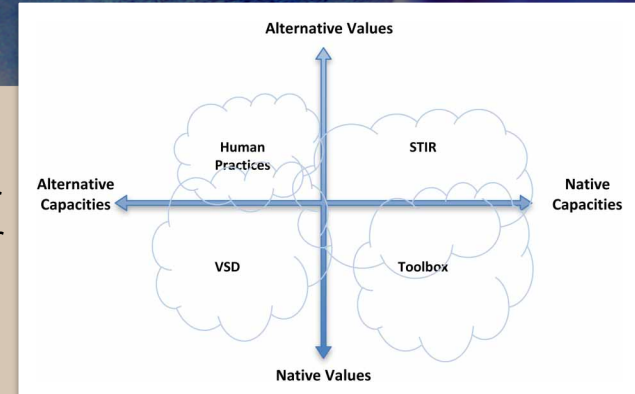
September 2014 - August 31, 2015

For the past five years, RTTA 4 leader Erik Fisher has led the Socio-Technical Integration Research (STIR) Project (NSF #0849101), which, in an effort to encourage technical experts to address the societal implications of their work, has embedded humanists into 28 nanotechnology and other laboratories worldwide.

But how do socio-technical integration methods differ, and why choose one integration approach over another? To help answer these questions, Fisher helped form the Communities of Integration Network (COIN), which held its second workshop at the University of Waterloo in June 2014.

One of the outputs of the workshops is a *JRI* article that establishes a framework to compare integration methods with respect to desired outcomes. While integration generally seeks to address limitations of technical expertise, choosing an integration method depends on the specific nature of that limitation and its potential remedy.

All integration methods seek to alter or disrupt scientific practices, but different methods result in varying levels of either introducing new values and expertise, or reinforcing existing ones. Which integration approach is appropriate for a given situation depends on whether the desired outcome is to problematize, reform, augment, or facilitate existing practices. The new framework can serve as a guide when choosing integration methods or evaluating integration outcomes.



In addition to leading the STIR Project, **Dr. Erik Fisher** leads the CNS-ASU Real-Time Technology Assessment (RTTA 4) thrust, which aims to understand the dynamics of nanoscale science and engineering (NSE) laboratories through ethnographic and other methods.





Improving Community Development Project Outcomes



Engineers and scientists often want to use technology to improve living conditions in poor and developing communities. Unfortunately, while their intentions are good, the outcomes of their efforts often aren't. Solutions frequently fail, sometimes leaving communities worse off than before. The problem, however, often has little to do with technology but rather comes down to a lack of communication, empathy, and cultural understanding.

To address this disconnect, CNS-ASU developed and hosted two-day Community Engagement Workshops in four cities to help scientists and engineers understand the limits of their knowledge and the value of local expertise. Workshop organizers, together with local experts, community organizers, and nonprofits, used hands-on lessons to help participants 1) improve their listening and empathy skills; 2) recognize how to "de-center" technology as a solution; and 3) learn to partner with local people and organizations to increase their chances of having a sustained positive result in the communities they aim to help.

"Nano Around the World," a card game developed by CNS and the Nanoscale Informal Science Education Network (NISE Net), is one of the hands-on activities that help participants understand how to assess the needs, values, goals, and aspirations of a community and anticipate the impact of technologies on it.



Four Community Engagement Workshops were held over the past year in 2014:

- March 20-21: Georgia Tech University
- April 8-11: University of the Western Cape, South Africa
- Oct. 3-4: Concordia University, Montreal
- Nov. 21-22: Arizona State University

Dr. Jameson Wetmore works on understanding how people design technological systems and how those systems reinforce specific values. Along with **Dr. Susan Cozzens** at Georgia Tech, he co-leads Thematic Research Cluster (TRC 1) at CNS-ASU focused on equity and equality of nanotechnologies.



Jameson Wetmore | Arizona State University
Associate Professor, School for Human Evolution and Social Change
Senior Sustainability Scientist, Global Institute of Sustainability



Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591



Anticipating Environmental Impacts of Solar Technologies

September 2014 - August 31, 2015

Traditionally, Life Cycle Assessment (LCA) has been applied to products and technologies after they've been developed and deployed and hard data can be gathered on environmental impacts. By then, however, significant irreversible harm may have already occurred.

To address this problem, CNS-ASU, teamed up with the ASU QESST Engineering Research Center to develop an anticipatory LCA approach and apply it to research on photovoltaic cells, the technology used in solar panels.

The approach embraces conflicting data and uses probability and modeling to analyze multiple uncertain parameters and generate best- and worst-case scenarios to identify an environmentally promising research agenda.

The collaboration and new approach landed CNS Fellow Ben Wender and co-authors top billing in the September 16, 2014, issue of Environmental Science and Technology (ES&T), a peer-reviewed journal published by the American Chemical Society.



Photo by ASU Quantum Energy and Sustainable Solar Technologies Engineering Research Center

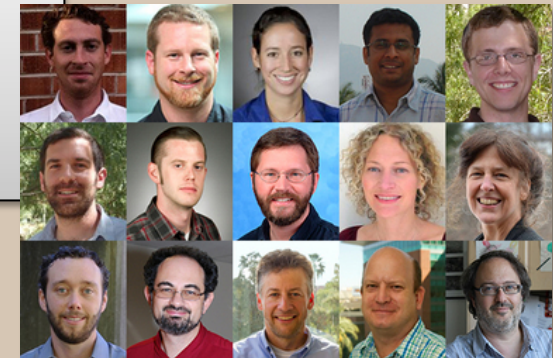
The *ES&T* cover uses an image from the PHX 2050 video, the product of a unique collaboration led by **Dr. Arnim Wiek** (TRC 2) and **Darren Petrucci**, ASU's Design School. The video shares two scenarios of how Phoenix's future might play out. That work was featured in *Issues in Science and Technology*.



Photo by ASU Design School

Fifteen authors representing industry, government, engineering, risk assessment, and social science collaborated to develop and test the new anticipatory LCA approach.

Wender, B., Foley, R., Prado-Lopez, V., Ravikumar, D., Eisenburg, D., Hottle, T., Sadowski, J., Flanagan, W., Fisher, A., Laurin, L., Bates, M., Linkov, I., Seager, T., Fraser, P., & Guston, D. (2014). **Illustrating Anticipatory Life Cycle Assessment for Emerging Photovoltaic Technologies.** *Environmental Science & Technology*, 48(18), 10531-10538.



Dr. Arnim Wiek and his team conduct research in the Thematic Research Cluster (TRC 2) on Urban Design, Materials and the Built Environment. The group addresses the question:

How can nanotechnology be innovated and governed in responsible ways and with sustainable outcomes? They employ system analysis, scenario construction, assessment and intervention research methods to explore theories of anticipatory governance, sustainability and responsible innovation.



Increasing Empathic Capacity in Engineering Students

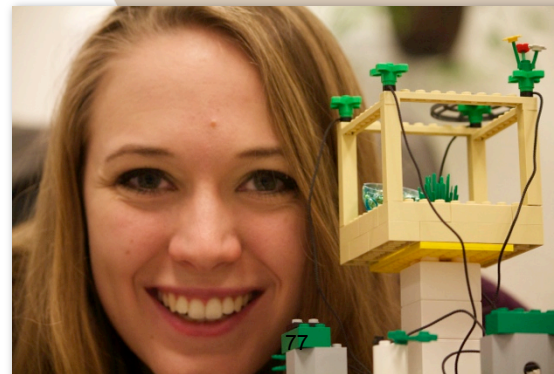
Improving the social and emotional intelligence of scientists and engineers can help them connect with a broader public about their research, as well as anticipate its long-term societal outcomes, two goals of CNS.

To that end, CNS provides financial support to graduate student Kaitlin Vortherms, who is exploring the potential of alternative education interventions, such as Lego Serious Play, improvisation training, and travel, to increase engineering students' capacity for empathy.

Vortherms helped develop and launch a Nano Ethics At Play (NEAP) course, a series of four three-hour classes where students use Legos to facilitate discussion of ethical, environmental, social, and economical implications of emerging nanotechnologies. She will conduct follow-up research to assess whether participants' empathic capacity is improved.

Vortherms, who was crowned Miss Phoenix 2015, feels her pageant experience has helped her learn how to better connect with people and society, skills she believes are necessary for successful engineering, particularly when engineers are working in cultures and communities very different from their own.

She adopted STEM education reform as her pageant platform and continues to engage with a broad audience about STEM through social media and at local events. For example, she hosted an event for parents, educators, and children to explore how the popular Minecraft video game can be used to benefit STEM education and is working with Microsoft to develop a series of related educator workshops.



CNS Fellow **Kaitlin Vortherms** is a graduate student in ASU's School of Sustainable Engineering. She has collaborated with **Dr. Ira Bennett** and **Dr. Jameson Wetmore**, who lead the CNS-ASU education and outreach efforts.





Taking NanoDays to South Africa

Together with the NSF-funded Nanoscale Informal Science Education Network (NISE Net, NSF#0940143), CNS-ASU's Education and Outreach has worked to integrate the societal implications of nanotechnology into science museum content.

Each year CNS and NISE Net members participate in NanoDays, a festival of educational programs about nanotechnology and its potential implications for the future. NanoDays takes place across 250 US science museums, research centers, and universities.

This past year, Jameson Wetmore had the opportunity to expand NanoDays to the Cape Town, South Africa. Wetmore, along with colleague Matthew Harsh of Concordia University, trained eight PhD students studying nanotechnology at the University of the Western Cape on how to demo NanoDays kits, hands-on activities that illustrate various nanotechnology concepts.

Arcelor-Mittal Science Centre staff, who take demonstrations and experiments to Northern and Western Cape village schools that lack robust science materials and curriculum, also participated in the training.



After the training, the PhD students and museum staff spent two days introducing nanotechnology and its potential societal implications to students, teachers, and parents, at the Cape Town Science Centre. The NanoDays kits were donated to the the PhD students following the event.

Dr. Jameson Wetmore is Associate Professor at ASU. **Dr. Ira Bennett** is an Assistant Research Professor and Assistant Director for Education at CNS-ASU and the Consortium for Science, Policy and Outcomes (CSPO). They have been advising and collaborating with science museums and NISE Net on nanotechnology and society issues for several years.



Ira Bennett | Arizona State University
Assistant Research Professor, CNS-ASU and CSPO
Jameson Wetmore | Arizona State University
Associate Professor, School for Human Evolution and Social Change



Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591



The Center for
Nanotechnology in Society
ARIZONA STATE UNIVERSITY

Applying CNS-ASU Lessons Learned to Synthetic Biology

September 2014 - August 31, 2015

Synthetic biology researchers are working to develop renewable biofuels, more efficient crops, environmentally friendly chemical production, and cutting-edge disease diagnostics and therapeutics. Yet along with all the promise of synthetic biology to transform society for the better, there are also societal concerns related to ethics, unintended consequences, governance, and research funding.

Building on CNS's success in developing research, collaboration, and methods to promote responsible innovation, CNS director David Guston, together with Richard Murray of Caltech and ASU colleague Jenny Dyck Brian, hosted an NSF-sponsored workshop to develop research agendas for the societal aspects of synthetic biology. A key conclusion of participants was the desire to co-construct synthetic biology, with power distributed equally between the social sciences/humanists and the natural sciences/engineering.

Held 4 – 6 November 2014 in Tempe, AZ, the workshop brought together more than 100 participants

from the US, Canada, and Europe representing academia, industry, government, and non-profits to generate and articulate a set of research questions. A detailed public website with videos of workshop presenters, interviews with participants, background papers, posters, and short reflections and commentaries on the workshop is available at www.cns.asu/synbio.



In February 2015, the *Journal of Responsible Innovation*, founded by David Guston in 2014, published a special section featuring 17 “Perspectives” pieces on responsible research and innovation in synthetic biology derived from two-page background papers submitted by participants prior to the workshop.

Dr. David Guston, director of the Center for Nanotechnology in Society at ASU, is widely published and cited on research and development policy, technology assessment, public participation in science and technology, and the politics of science policy.

David Guston | Arizona State University
Professor, School of Politics and Global Studies
Director, The Center for Nanotechnology in Society (CNS-ASU)
Co-Director, Consortium for Science, Policy and Outcomes (CSPO)

WORKSHOP ON RESEARCH AGENDAS IN THE SOCIETAL ASPECTS OF SYNTHETIC BIOLOGY



Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591



Increasing Diversity in Fields Where Science and Society Intersect

While many career opportunities exist at the intersection of science and society, undergraduates may not know about them, especially if they are first-generation college students. To help increase participation by underrepresented minorities in science policy and science and technology studies (STS) fields, NSF awarded a supplemental grant to CNS-ASU in 2014 to develop a program to give a select group of undergraduate students a better understanding of the careers available and the educational paths to those careers.

The program will create a cohort of 24 students—the Policy, Science, Technology & Society (POSTS) Scholars—from 12 universities across the US. Targeting sophomores and juniors who have already shown an interest in STS and science policy fields, the program includes mentorship and guidance from an STS or science policy faculty member, a personalized research experience, and two summer workshops in Washington, DC, to introduce students to the complexity of the science policy process.

Program to

INCREASE DIVERSITY in **SCIENCE & TECHNOLOGY STUDIES** and **SCIENCE POLICY** fields

The first round of applications closed on March 30, 2015. More information about the program is available at cns.asu.edu/diversity



Participating faculty from the 12 universities met up in Arizona for a two-day mentoring training in January 2015.

Dr. Ira Bennett, the assistant director of education for CNS-ASU, for 10 years has led the Consortium for Science, Policy and Outcomes (CSPO) Science Outside the Lab program, a DC-based workshop that introduces graduate engineering and science students to the science policy process and players. Together with **Dr. Jameson Wetmore**, he leads CNS-ASU education and outreach.



Ira Bennett | Arizona State University
Assistant Research Professor, CNS-ASU and CSPO
Jameson Wetmore | Arizona State University
Associate Professor, School for Human Evolution and Social Change



Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

8. Strategic Research Plan – CNS-ASU beyond NSF Funding

The long-term research goals of CNS-ASU are to demonstrate and refine the ability to perform RTTA and, in doing so, cultivate reflexivity and build the capacity for anticipatory governance in the NSE enterprise broadly conceived. By “reflexivity” we mean a capacity for social learning – by individuals, groups, institutions, and publics – in the NSE enterprise narrowly and society more broadly that expands the domain of and informs the available choices in decision making about nanotechnologies. By “anticipatory governance” we mean a broad-based capacity that extends through-out society that can collect, analyze, synthesize and interpret a wide range of information to manage emerging knowledge-based technologies while such management is still possible (Barben et al. 2008; Guston 2008; Karinen and Guston 2010; Guston 2010; Sarewitz 2011; Guston 2014).

In the ten years of the Center – as documented elsewhere in this report – we have demonstrated the ability to perform RTTA and to build the capacities of foresight, engagement and integration that represent the vision of anticipatory governance. In looking beyond the expiration of the Center’s funding (in August 2016 after a planned no-cost extension), there are at least three important ways in which we plan to extend the life of CNS-ASU, its personnel, and its core intellectual contributions: 1) continued project funding for Center personnel on associated and spin-off awards; 2) continued project funding for Center personnel on large, collaborative S&E awards; and 3) infrastructural and other support from a new academic organization at ASU.

1. Associated and spin-off awards. To date, ASU members of CNS have been awarded roughly \$6M in associated and spin-off funds, making the share of such awards approximately 45% of the total amount of the 10-year CNS-ASU award and closer to 70% or more of the total CNS award retained at ASU. We expect to be able to continue on at least this same pace, if not increase, as a) some infrastructure will be taken over by the new academic organization at ASU (see #3) and b) we will be adding additional faculty capacity in the societal aspects of emerging technologies, including Andrew Maynard, Diana Bowman, and Michael Bennett, who have all recently accepted offers from ASU. Among the associated awards, the Virtual Institute for Responsible Innovation (VIRI) provides an excellent opportunity to continue international collaborations into the near future, and a center-level proposal to the Future of Life Institute that Maynard is preparing on governance of existential risk from advanced artificial intelligence is also a way to further advance futures and governance work.
2. Large collaborative awards. To date, CNS-ASU has partnered in more than \$33M in large collaborative awards with science and engineering colleagues. These awards often allow CNS-ASU personnel to fund curricular and co-curricular projects (e.g., Science Outside the Laboratory, which began its CNS life under-written by the Center and is now “pay-to-play”), graduate students (e.g., Miles Brundage on the SUN IGERT and the VIRI), or some additional summer salary. ASU as an institution is getting more and more successful in competing for such awards, and its internal procedures are becoming more sophisticated at including social sciences early enough in the research process (e.g., by appointing an assistant vice president for research/social sciences reporting the VPR). In the immediate future, CNS has an important share of ASU’s NNCI bid – one that would continue bringing an increasing number of visiting students and scholars to the Center for 5-10 years and allow the continuity of such programs as the Winter School.
3. New academic organization at ASU. More important still is an effort that PI Guston and senior investigator Sarewitz – as co-directors of the Consortium for Science, Policy and Outcomes – have been pursuing based on a request last year from ASU President Michael Crow. Since opening at ASU in 2004, CSPO has been a research center that has also participated significantly in curricular activities – and CNS has been its largest project and test-bed. Following preliminary discussions with Crow and Provost Rob Page in Sp 14, Sarewitz and Guston commenced

planning for a reorganization of CSPO into a degree-granting and tenure-holding graduate School for the Future of Innovation in Society (SFIS), a university-wide Institute for the Future of Innovation in Society (IF/IS), and a broader array centers in addition to CNS held in consortium as the new “Consortium for Science, Policy and Outcomes.”

IF/IS will chart the responsible role of knowledge-based innovation at ASU and throughout society, asking the question, “How are universities and other knowledge institutions best organized to make the most responsible contributions to society?” The Institute, the School and CSPO place human choice and responsibility at the forefront of considerations of innovation. They are committed to the ideas that:

- Innovation is a complex process in which social and technical elements and their interactions are mutually constitutive in creating desired outcomes;
- Knowledge must also be understood as contextual, contingent, and pluralistic; and thus
- Future-making needs to be a more interdisciplinary, more anticipatory, and more democratic practice.

The mission of IF/IS will be to help embody these ideas across ASU and to develop them broadly throughout society, through an ambitious and integrated agenda for research, engagement, and training. The mission of SFIS will be to instill these ideas in the next generation of (graduate) students, including those (at the PhD level) who will contribute to new knowledge and practice, as well as those (at the Master’s level) who will translate this knowledge for public and private audiences, domestically and internationally.

SFIS, with a dean reporting to the provost, will house the curricular activities in which CNS-ASU has been active, including the PhD in Human and Social Dimensions of Science and Technology, the Master of Science and Technology Policy, and the graduate certificate in responsible research and innovation. (It will also include related graduate degrees such as the Master of Science in Global Technology and Development [GTD] and the Master of Arts in Applied Ethics and the Professions.) The School also plans to create new degree programs related to research areas and specific courses that CNS has pursued, including: a master’s degree in sustainable futures, related to the foresight capacity built by the Center and the studio on the “Future of Phoenix” that Wiek and Selin developed to much acclaim; a master’s degree in science-in-society for formal and informal educators, related to the engagement capacity built by the Center and supported by new part-time, non-track hires Rae Ostman (extending connections with NISE Net) and Darlene Cavalier (institutionalizing the relationship begun in the ECAST spin-off); and a master’s degree in the intersection of STEAM/design and urban issues, related to the “nano and the city” and art-science nexus that CNS has explored. It will also develop a new PhD program to pair with GTD. Although the School will at least initially focus on graduate education, it will also develop a minor targeted at engineering undergraduates and, eventually perhaps, an undergraduate major.

The Institute, with a director reporting to the VPR, will be the public-facing and cross-university aspect of the enterprise – promoting ideas of responsible innovation across the university and to the broader community in the way that ASU’s Global Institute of Sustainability (GIOS) promotes sustainability. IF/IS will house a significant administrative capacity to support both the goals of the School and the numerous research and outreach centers that will be part of CSPO, which will include:

- a) core centers, financially and administratively part of the new Institute, such as:
 - Center for Nanotechnology in Society/Virtual Institute for Responsible Innovation (CNS/VIRI)
 - DC Center for Policy and Engagement
 - Center for Engagement and Training in Science and Society (CENTSS)
 - Center for Energy and Society (CES)
 - Risk Innovation Lab (RIL)
 - Center for Innovation and Development (CID)
 - Center for Science and the Imagination (CSI)

- Center for Engineering, Policy & Society (CEPS)
 - Center for Biopolitics, Bioeconomics, and Biosociety (CB3)
- b) allied centers, other ASU centers with similar missions but not financially related, such as:
- Center for Law, Science and Innovation
 - Center for Biology and Society
 - Center for the Future of Law
 - Center for Biodiversity Outcomes
- c) and affiliated centers, not at ASU, with whom we have collaborative relationships, such as:
- Science Policy Research Unit (SPRU) and STEPS Centre, University of Sussex
 - Science, Technology, Engineering and Public Policy Department, University College, London
 - Other VIRI partners.

The relationship between these new organizations and CNS-ASU is terrifically important, as many people and activities initially associated with the Center will find a more permanent home in the new School and Institute. SFIS will become the tenure home of CNS-related faculty Guston, Sarewitz, Miller, Wetmore, Fisher and Selin, as well as approximately ten other track faculty members (including those new ones mentioned above) in the coming year and as many as an additional twenty to thirty in the following four years. The Institute and the expanded capacity at CSPO will help extend the Center's emphasis on responsible innovation and anticipatory governance to new audiences at ASU and beyond. Planned partnerships with non-US institutions (Sussex, UCL) will revolve in part around themes of innovation, responsibility and sustainability – themes that CNS has made significant efforts to articulate through its current TRCs – and consolidated in the VIRI.

Some of CNS-ASU's capacity will remain within the center bearing its name. Other capacities – particularly the education and outreach activities – will be captured by CENTSS, and its close relations with the Biodesign Institute and the Ira A. Fulton Schools of Engineering will be manifest in CB3 and CEPS, respectively.

The School will launch in Fall 2015 and the Institute shortly thereafter, once a director is hired and a development board empaneled. New degree programs are expected to ramp up quickly thereafter, and there will be transition opportunities for the Center's grant-funded staff to the state-funded lines of the School and/or Institute. ASU plans to provide contiguous space with a single School/Institute identity for Fall 2016.

9. Research Program and Accomplishments

RTTA 1: Research and Innovation Systems Analysis (RISA) (Georgia Tech)

Personnel – faculty and senior participants:

Philip Shapira, (Georgia Tech, professor, Public Policy) (Georgia Tech PI)
 Jan Youtie (Georgia Tech, principal researcher, Enterprise Innovation Institute and adjunct, School of Public Policy) (team co-leader; GT Co-PI; CNS-ASU Co-PI)
 Jose Lobo (ASU, associate research professor, School of Sustainability) (team co-leader)
 Alan Porter (Georgia Tech, professor emeritus, ISYE and Public Policy)
 Juan Rogers (Georgia Tech, professor, Public Policy)

Other Personnel: graduate students (4), undergraduate students (2), visiting scholars (3)

Graduate students: Sanjay Arora (Public Policy), Yin Li (Public Policy), Seokbeom Kwon (Public Policy), Sahra Jabbehdari (Public Policy, June 2014-May 2015)
 Undergraduates: JJ O'Brien (Public Policy, May 2014), Sahra Jabbehdari (Public Policy, May 2014)
 Visiting Scholars: Jing Ma (Beijing Institute of Technology, Management), Ying Wang (Beijing Institute of Technology, Management), Daniele Rotolo (Science Policy Research Unit, University of Sussex)

Goals: The overarching goal of RTTA 1/RISA is to characterize the technical scope and dynamics of the NSE enterprise and the linkages between it and a variety of public values and outcomes. A major research theme – RTTA 1/1: Organization, Structure, and Trajectories of Emerging Nanoscience – characterizes the NSE enterprise and its dynamics through data-mining techniques such as bibliometric and patent analysis, as well as through text-mining, interviews, and other methods. The strategic areas of emphasis are: the organization, structure and trajectories of emerging nanoscience and nanotechnology enterprise and application. A second major activity – RTTA 1/2: Nanotechnology Enterprise and Applications – develops real-time strategic intelligence about nanotechnology commercialization in the US and globally, through methods including those above but also through the creation of a corporate panel data set.

Research Program and Accomplishments, RTTA 1/1

RTTA 1/1 Organization, Structure, and Trajectories of Emerging Nanoscience originally constructed a large-scale set of global datasets of nanotechnology research publication records comprised of roughly 1 million from the Web of Science's Science Citation Index (SCI) covering the period 1990-2014. In addition to the publication dataset, we also have worked with a patent database from PatStat that includes more than 200,000 nanotechnology patent documents.

The database originates out of a two-stage bibliometric search method that was developed and published in Porter, Youtie, Shapira, Schoeneck (2008) and updated in Arora, Porter, Youtie, Shapira (2013). This method has emerged as a public tool that other research groups are using or adapting. The former article describing the database has attracted 268 citations in Google Scholar (as of March 10, 2014) and 125 citations in the Web of Science. Researchers associated with the Euro Nano Observatory compared six search approaches in preparation for its research monitoring activities and found that five of the six, including our approach, converge on a similar definition (Huang et al. 2008). As a result, the Euro Nano Observatory (a Framework Programme 7 project

involving 16 partners from 10 European nations; see <http://www.observatory-nano.eu/project/>) is following our search approach as its benchmark for monitoring nanotechnology R&D.

In this closing period of the center, RTTA 1/RISA has adopted an “**update-explain-transfer-refine**” approach to its work. To this end, four major efforts of RTTA 1/1 in this period were to (1) update the country-level publication analysis for use by policy makers in the National Nanotechnology Initiative assessment, (2) explore explanations for findings about the rise of China in nano-publication counts and citations, (3) apply methods to other emerging technologies, and (4) refine analytic techniques for working with unstructured text with information about emerging technologies.

First, the Office of Science and Technology Policy requested that we provide an updated analysis of country-level comparisons of nanotechnology publications for the 2011-2013 period for the President’s Council of Advisors on Science and Technology (PCAST) review of the National Nanotechnology Initiative. Our analysis showed that China continues to surpass the US in total number of research publications (which first occurred in 2010). More significantly, China surpasses the US in citations to these papers by 2013 (Li, Arora, [Youtie](#), [Shapira](#), 2014 for the PCAST review of the Fifth National Nanotechnology Initiative 2014).

Second, we engaged in research to explore the reasons behind the rise of China-authored research papers. We found evidence of a “clubbing effect” in Chinese nanotechnology citations, in which the Chinese scholars with the highest citations were more likely to cite other top Chinese scholars. In contrast, their US counterparts were much less likely to cite other top US scholars (Tang, [Shapira](#), and [Youtie](#) 2015).

Third, we examined the “transferability” of our methods by applying them to another emerging technology. Specifically, we applied our methods of studying the rise of social science subfields in nanotechnology ([Shapira](#), [Porter](#), [Youtie](#), Tang 2010) to the emerging field of synthetic biology. Our results showed that synthetic biology social science research is growing and exhibits connections to its bioethical roots. However, compared with nanotechnology, social science research in synthetic biology gives less consideration to public engagement, bibliometrics and economics, and visionary perspectives ([Shapira](#), [Youtie](#), and Li 2015).

Fourth, RTTA 1/1 researchers refined analytic techniques for taking text from research articles and analyzing the relevant content to understand innovation pathways. This method, “term clumping,” is an iterative approach that uses a system of thesauruses and macros to remove noise from content. The results can then be analyzed using standard dimensional, forecasting, or network approaches (Zhang, [Porter](#), Hu, Guo and Newman 2014).

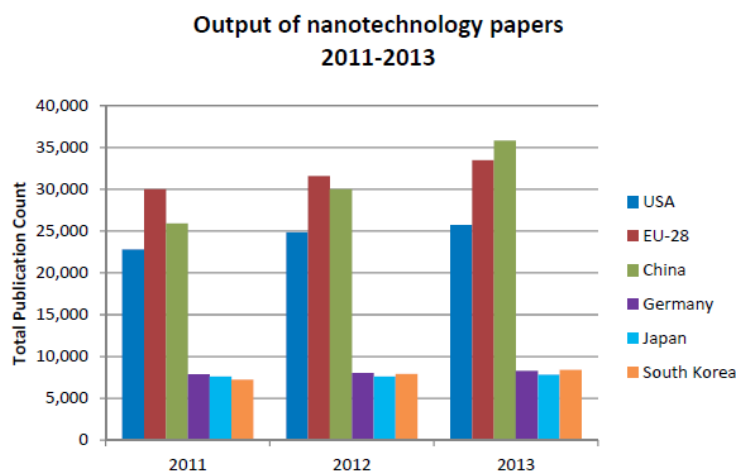


Figure 7. From 2011 to 2013, the United States, European Union, and China produced the largest numbers of nanotechnology papers published each year, with China leading [26] [27].

Over the reporting year, RTTA 1 co-leader Lobo (ASU) continued to work with senior investigator Strumsky (UNC-Charlotte) to explore the extent to which nanotechnology may be fulfilling expectations of becoming a green technology. In particular, they examine the overlap between the US Patent Office's nanotechnology code and its green technology code, as well as the green-ness of other patent areas, to determine how green nano is and different green nano is from other technologies. The sample Lobo and Strumsky use includes more than 10,000 granted patents classified by USPTO in class 977, which was created in 2004 for nanotechnology but which the USPTO uses to reclassify patents granted as far back as 1975. Nano patents comprise 0.19% of all patents granted since 1975 (but they do not include class 850, scanning microscopy etc.).

In 2009, USPTO introduced its green technology pilot program for green technologies including alternative energy production, energy conservation, greenhouse gas reduction, environmental purification, protection, or remediation, and environmentally friendly farming. Lobo and Strumsky augmented the list by including the patent technology class for batteries and fuel cells and for transmission lines and energy distribution networks, as well as by using a keyword search of patent titles, abstracts, claims and descriptions. Under the USPTO definition, more than 318,000 patents, or just more than 6%, of all patents granted since 1975 are defined as "green." The overlap between class 977 and "green" is a similar 6%. Over time, the number of green nano patents tracks well with the overall number of nano patents, but it has lagged slightly, experiencing a local maximum but not a huge spike as nano overall did in 2001, but finally approaching 10% or so of nano patenting around 2006. The leading area of green nano patents is, unsurprisingly, photovoltaics and fuel cells, which greatly outpace every other area, even though nano and green technologies are a small part of PV patents. Overall, green nano patents seem "better" or "hotter" than other patents granted since 1975, as their citations received are much higher than the norm, their originality and generality are slightly but significantly higher than the norm, and the number of technology codes that apply to them are much higher than the norm.

Lobo and Strumsky are extending this work by substituting the set of nanotechnology patents identified by the GA Tech definition for the smaller USPTO class 977. That research is underway.

Additional selected findings from this research in the reporting year include:

- Nano-prefixed terms, which were found in 80% of nanotechnology-related publications in 2010 compared to only 20% in the early 1990s, have become more differentiated and application oriented (Arora, Youtie, Carley, Porter, Shapira 2014).
- Nanotechnology publications from grant-sponsored research exhibit higher impacts as measured by journal ranking and citation counts than research that is not grant sponsored (Wang and Shapira 2015).
- The share of publications in the active nanotechnology and beyond domain has increased modestly, suggesting that a portion of nanotechnology research and patents are engaged in next generation R&D (Suominen, Li, Shapira, Youtie, in process).
- An examination of the development of nanodistricts in the US and Europe demonstrated that most of the leading nanodistricts are found in locations prominent in previous rounds of emerging technologies, but new geographic concentrations of nanotechnology research have also surfaced both in the US and Europe (Shapira, Youtie, Carley 2014).

Research Program and Accomplishments, RTTA 1/2

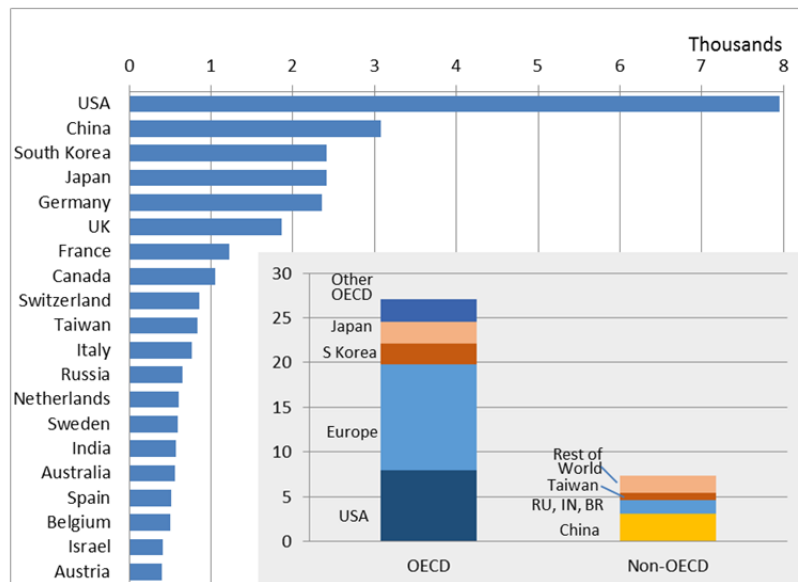
RTTA 1/2 advances knowledge about nanotechnology commercialization in the US and globally, through bibliometric and patent analysis methods, webscraping, but also through the creation of a corporate panel data set. A corporate panel is a set of corporate enterprises which have “entered” nanotechnology as evidenced by a nanotechnology publication authored or co-authored by an individual in a corporate enterprise and/or a nanotechnology patent assigned to a corporate entity. The notion behind the corporate panel is to track changes in panel companies nanotechnology activities over time. We used our publication and patent datasets from RTTA 1/1, extracted articles authored by private companies and patents assigned to private companies, grouped these together, and developed a corporate panel from those companies with four or more publications or patents (to ensure that the nanotechnology activity accounted for a sizable quantity in the corporate organizations).

Using the “**update-explain-transfer-refine**” framework, RTTA 1/2 was engaged in four activities (1) updating the corporate panel for use by NSF in National Nanotechnology Initiative reviews, (2) examining explanations for the growth in small nanotechnology firm activity, (3) applying the framework to other applications (drug delivery, solar cells, building construction), and (4) refining visualization techniques and indicator development.

First, we updated the corporate panel at the request of NSF. The updated panel is comprised of 23,777 corporate organizations from 1990-2014 (Shapira, Youtie, Li 2015), which is 34% higher than the totals for the 1990-2009 period (Youtie and Kay 2014). Of this total number of corporate organizations, the US comprises more than a third (or nearly 8,000 organizations), while China accounts for just over 3,000 of the organizations. Europe (defined as 25 European countries that are OECD members) comprises nearly 12,000 corporate organizations, with Germany, the UK, and France accounting for the largest number of these companies.

Second, we observed a rise in the share of small and medium-sized companies involved in nanotechnology. Small and medium-sized enterprises (SMEs) accounted for more than half of nanotechnology patents by 2009, up from 30% in the early 1990s. There is evidence of two different strategic approaches pursued by SMEs to enter the domain of nanotechnology: an

Corporate entry into nanotechnology Leading countries, 1990-2014*



*Corporate entry in the nanotechnology domain through patent applications (1990-Spring 2014) or publications (1990-2014), by corporate organizations. Corporate organizations aggregated to the enterprise-country level.

Source: P. Shapira, J. Youtie, and Y. Li (Georgia Institute of Technology and Center for Nanotechnology in Society CNS-ASU), analysis of records (January 2015) in the EPO Worldwide Patent Statistical Database (PATSTAT) and Thomson Reuters Web of Science. PATSTAT data was provided by L. Kay (CNS-UCSB).

Notes: Analysis of corporate organizations (N=23,777). Organizations matched where possible to reduce most apparent duplicated variations of corporate names. Universities and non-profits excluded. OECD = 34 member countries as of January 2015. Europe = 25 European countries that are OECD members. Nanotechnology search terms based on S. Arora, A. Porter, J. Youtie & P. Shapira (2013).

early-entry strategy is associated with nanotechnology research and discovery and possibly use of nanotechnologies to enhance properties of products; and a later-entry strategy associated with a strong focus on intensive patenting activity (Kay, [Youtie](#) and [Shapira](#) 2013). One in ten small and medium-sized nanotechnology firms are ultimately involved in a merger or acquisition; these mergers and acquisitions involving nanotechnology firms provide complementary capabilities and serve as an innovation source to larger acquiring companies ([Youtie](#) and Kay 2014). For those SMEs maintaining independent operations, some of these firms publish to selectively manage and disclose publicly-funded work, even though publishing risks limiting the firm's the ability to appropriate value from its R&D (Li, [Youtie](#) and [Shapira](#) 2015).

Third, we have extended our work into diverse application areas. Our work suggests that the path to take-up of nano-enabled commercial applications is not smooth. In graphene, the discovery-to-application cycle is accelerated and rapidly globalized, but growth patterns vary in different application areas ([Shapira](#), [Youtie](#) and Arora 2012). Nano-enabled drug delivery follows a pattern in which nano-enabled delivery platforms are grafted onto current pharmaceuticals rather than seeing co-development or multi-functional approaches (Zhou, [Porter](#), [Robinson](#), Shim, and Guo 2014). Likewise, Dye Sensitized Solar Cells offer unique advantages but compare less favorably with incumbent technologies on conversion efficiency and long-term stability (Guo, Xu, Huang and [Porter](#) 2012; Zhou, Zhang, [Porter](#), Guo and Zhu 2014; Ma, [Porter](#), Guo, Ready, Xu, and Gao 2014). A technology opportunities analysis model: applied to Dye-Sensitized Solar Cells for China, *Technology Analysis and Strategic Management*, 26 (1), 84-107.). The building construction sector could benefit greatly from manufactured nanotechnology products, but although awareness of these products is higher than expected, adoption of these products is limited by issues around the applicability of these products to project-based outcomes (Arora, Foley, [Youtie](#), [Shapira](#), [Wiek](#), 2014).

Fourth, we have refined our methodology for visualizing patent diversity. The central methodological advance is the creation of patent maps from transformed international patent classification (IPC) categories which unpack hierarchical groupings and reassemble them to better reflect the distribution of patents. Our science and patent maps have visually illustrated that graphene is a field with a research orientation that is focused on a cluster of disciplines but has many applications (Kay, [Porter](#), [Youtie](#), Rafols, and Newman 2014; Kay, Newman, [Youtie](#), [Porter](#) and Rafols, 2014). We have extended our approach, which was based on IPC-7 categories to IPC-8. We also developed an indicator to represent the extent of diversity and similarity in a patent portfolio that draws on the work of [Porter](#) and colleagues (2007).

Another methodological advance has been our ability to scale-up analysis of small firm websites or "webscraping." We used manual methods for webscraping of these sites in prior work, but were only able to apply this method to 20-30 firm websites ([Youtie](#), Hicks, [Shapira](#) and Horsley 2012; Arora, [Youtie](#), [Shapira](#), Gao, and Ma 2013). In the current work, we have been able to increase the order of magnitude of firm websites to 300 and use the results from current websites and archived websites in the Wayback Machine (archive.org) to address questions about "Triple Helix" effects and strategic pivots on firm growth (Arora, [Youtie](#), Li and [Shapira](#) 2015).

A further advance has been in the "Forecasting Innovation Pathways" (FIP) methodology that has been used to understand pathways for development for emerging technologies. Originally, this work was highly grounded in analysis of historic publications, patents, and other commercial datasets. This method has been advanced through greater involvement of expert input and consideration of future alternative pathways for commercialization (Robinson, Huang, Guo and [Porter](#) 2013).

Contributions to “ensemble-ization” or other center-wide activities.

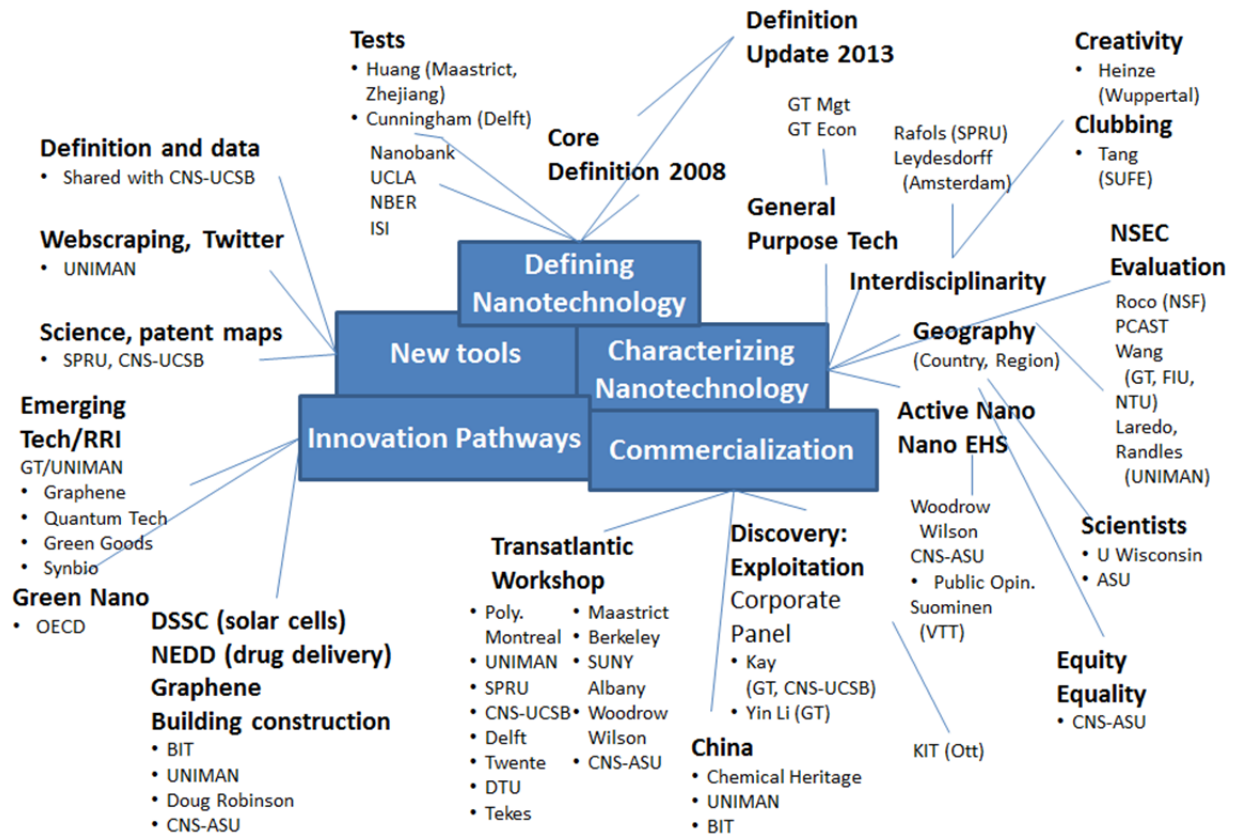
RTTA 1/1’s co-authored publications with TRC 2 on drivers of adoption of manufactured nanotechnology products in the building construction industry began through a collaboration between doctoral students in RTTA 1/1 (Arora) and TRC 2 (Foley) at an CNS-ASU All Hands meeting in 2010. A presentation at the first S.NET Conference workshop led to an article on environmental, health, and safety in nanotechnology published in 2011 which is co-authored with a CNS-ASU PhD+ graduate. This publication would have never been possible without access through CNS-ASU to the ASU graduate student who was a scientist in the nanotechnology environmental, health, and safety area.

In addition, there are several other activities to which RTTA 1/1 has contributed:

- RTTA 1/1’s organization of the EU-US Transatlantic Workshop on Nanotechnology Research and Innovation Policy included two researchers from CNS-ASU, including one from RTTA 3.
- RTTA 1/1’s co-authorship of a paper with RTTA 2, based on merging data from the scientists’ survey with information from the global nanotechnology publication database on the presence of nanotechnology environmental, health, and safety entries in the cited references of articles co-authored by these scientists, which appeared in *Research Evaluation* in 2011.
- RTTA 1/1 collaborated with a then CNS-ASU PhD+ graduate student on a paper examining nanotechnology environmental, health, and safety research and diffusion, which appeared in the *Journal of Nanoscience and Nanotechnology* in 2011
- RTTA 1/1 researchers contributed 3 chapters to TRC 1-led *Yearbook* and provided bibliometric data for TRC 1 case studies;
- RTTA 1/2 is examining the “green” nature of nanotechnology applications in conjunction with TRC 2.

RTTA 1/1 (Shapira, Youtie) have also shared their publication and patent datasets and search strategy with colleagues at CNS-Santa Barbara and attended the All Hands meeting for CNS-Santa Barbara, January 31-February 1, 2014 to share research directions and plans for joint research. RTTA 1/1 also co-developed and submitted a joint proposal to the NSF STS program; although the proposal was not funded, it did represent a productive collaboration. RTTA 1 researchers also co-developed (with Luciano Kay at CNS-UCSB) an entry for the highly-regarded, traveling “Places and Spaces” exhibit (<http://scimaps.org/exhibitions>).

The organizations and individuals with whom RTTA 1 researchers have collaborated (structured based on the intellectual trajectory of the group) reflects an extensive network of domestic and international participants in this research enterprise.



RTTA 2: Public Opinion and Values

Personnel – faculty and senior participants:

Dietram A. Scheufele, RTTA 2 co-leader (Wisconsin, John E. Ross Professor, Life Sciences Communication)

Elizabeth A. Corley, RTTA 2 co-leader (ASU, Associate Professor, School of Public Affairs)

Dominique Brossard (Wisconsin, Professor and Department Chair, Life Sciences Communication)

Michael A. Xenos (Wisconsin, Professor and Department Chair, Communication Arts)

Other Personnel: post-docs (0), graduate students (17; 2 paid, 15 not), undergraduate students (1)

Graduate students: Heather Akin, Doo-Hun Choi, Jenny Chung, Larisa Doroshenko, Emily Howell, Jiyoun Kim, Patrice Kohl, Kaine Korzekwa, Nan Li, Xuan Liang, Tomoko Okada, Kathleen M. Rose, Kristin Runge, Molly J. Simis, Leona Yi-Fan Su, James Spartz, Sara Yeo
Undergraduate student: Christopher Wirz

Goals: The overall goal of RTTA 2 POV is to monitor, among both the public and scientists, the understanding of and values relating to NSE and its potential societal outcomes, track these variables over time, and examine the role of the media in reflecting and influencing them. POV comprises a set of inter-related research themes around the public, NSE researchers, and the media. RTTA 2/1 Public Opinion Polling is the major project, conducting nation-wide public opinion polls to understand, at an aggregate level, the public's knowledge of and values regarding nanotechnologies. RTTA 2/2 Scientists' Opinions and Values is a research theme that conducts polls of NSE researchers to understand their perceptions and values regarding nanotechnologies. RTTA 2/3 Media Influence is a research theme that tracks media stories of nanotechnologies and, using a quasi-experimental design, attempts to understand how various media frames for nanotechnology stories can influence the knowledge and opinions of the public.

Research Accomplishments and Plans, RTTA 2/1

As part of the Public Opinion Polling research, Corley & Scheufele have capitalized on their experiences with some of the earliest public opinion surveys on NSE (e.g., Scheufele & Lewenstein, 2005) and have continued to develop and refine ways of measuring attitudes, information seeking, and policy stances. This methodological work is a necessary condition for doing sophisticated basic research. But it has also allowed the POV team to assist other researchers across the globe (e.g., Université de Caen Basse-Normandie, France; Poznan University of Economics, Poland; and Dublin City University, Ireland) by sharing instruments and expertise. During YR 10 of the CNS-ASU grant, the POV team has also been able to provide real-time feedback to policy makers when they need specific information about policy-relevant public attitudes.

RTTA 2/1 has completed three general, full-scale public opinion data collections: in Jul. 2007, Jan. 2012 and Jul.-Aug. 2014. The 2007 survey was a CATI survey with a combined RDD and listed household sample conducted May – Jul 07 (N=1,015; margin of error, +/- 3%). The 2012 survey was conducted by Knowledge Networks (N=2,806; margin of error, +/- 2%), and embedded experimental manipulations into a nationally representative online survey. The 2014 survey was conducted by GfK (formerly Knowledge Networks) (N=3,145; margin of error +/- 2%) and

embedded experimental manipulations into a nationally representative online survey. This approach has four analytic advantages: First, it allows us to examine different subpopulations – serving goals of TRC 1 by including those that have been traditionally underserved by science communication efforts (defined by gender, age, ethnicity, or other factors). Second, the large sample is divided into four, nationally representative samples, each focused on a separate science or technology issue (nanotechnology, synthetic biology, fracking, and climate change) to help us examine the processes of opinion formation and market dynamics surrounding nanotechnology in comparison to other technologies and issues. Third, we embedded a series of experimental manipulations in each of the issue-specific subsamples. By drawing on the external validity of nationally representative samples and the internal validity of random-assignment experiments, we are able to capitalize on the advantages of both methods and build a deeply granular understanding of the cognitive and affective processes that lay publics use to make sense of nanotechnology and other emerging science issues. Four, by conducting a survey with measures duplicated from the 2012 survey we are able to compare opinion formation about nanotechnology to related technologies and changes in views about these technologies since the 2012 data collection.

We also continue to coordinate our data collections with related efforts at Wisconsin, Singapore, Rutgers, Universität Hamburg, and elsewhere in order to build comparable data sets that can be used for comparative quantitative work down the road. Because RTTA 2/1 has played a prominent role in sharing these innovations with other scholars, the leaders of the POV team serve as consultants or co-PIs on other related NSF and USDA grants. This methodological outreach is being formalized by RTTA 2/1 researchers through the formal archiving and sharing of data collection instruments.

RTTA 2/1 has developed several analytical themes in its research, including religiosity and public acceptance of nanotechnology, widening knowledge gaps about nanotechnology, and risk and benefit perceptions about nanotechnology. While the former two have inspired interactions with TRC 1, the latter has resulted in interactions with RTTA 2/2 and with RTTA 1. In YR 10, publications from the 2007 and 2012 data collections have continued. Analyses from the Jul.-Aug. 2014 data collection are resulting in numerous conference presentations, as well as a number of journal articles that are currently under review or in preparation. The data from the Jul.-Aug. 2014 survey also form the basis of the dissertations of Akin, Liang, and Runge.

Religiosity and Public Acceptance of Nanotechnology

As with many other political and scientific issues, citizens rely on cognitive shortcuts or heuristics to make sense of issues for which they have low levels of knowledge. These heuristics can include predispositional factors, such as ideological beliefs or value systems, and also short-term frames of reference provided by the media or other sources of information. By combining CNS-ASU public opinion survey data from the US with Eurobarometer surveys about public attitudes toward nanotechnology in Europe, [Scheufele](#), [Corley](#) and colleagues (2009) concluded that respondents in the United States are significantly less likely to agree that nanotechnology is morally acceptable than respondents in many European countries. These moral views correlated directly with aggregate levels of religiosity in each country, even after controlling for national research productivity and measures of science performance for high-school students. Building from this work, the Jul.-Aug. 2014 data collection examined how American audiences evaluate the ethical, legal, and social implications (ELSI) of emerging technologies, and how their values and predispositions impact general attitudes and attitudes towards policy and regulation of these technologies. Initial results from this project indicate that values and predispositions, including

political ideology, deference to scientific authority, and religiosity impact attitudes and risk perceptions. A 2015 study by Akin, Rose, Scheufele, Simis, Brossard, Xenos, and Corley (under review at *PLOS ONE*) investigated the role of predispositions, particularly deference to scientific authority, trust in scientists, and religiosity, on attitudes toward synthetic biology and compares perceptions of synthetic biology to perceptions of nanotechnology and other issues.

Widening Nanotechnology Knowledge Gaps

RTTA 2/1 research on the change in nanotechnology knowledge among the public over time has generated some particularly important results for TRC 1 and outreach. In particular, Cacciatore, Scheufele, & Corley (forthcoming) found that there are widening gaps in knowledge about nanotechnology since 2004 between the least educated and most educated members of the US public. Americans with at least a college degree have shown an increase in understanding of the new technology, while knowledge about nanotechnology has declined over time for those with education levels of less than a high school diploma. Closing these informational gaps among public audiences is a necessity, especially in light of a US budget that has reduced spending for “educational and social dimensions” of nanotechnology in recent years. There is a real urgency to find ways of communicating effectively with all groups in society. Unless researchers find ways to close these learning gaps, we may create two classes of citizens – those who are able to make informed consumer and policy choices about these new technologies, and those who simply cannot. Cacciatore, Scheufele, & Corley also concluded that the Internet is one of the most effective methods in closing gaps and informing the less educated about nanotechnology. A recent study by Su, Cacciatore, Scheufele, Brossard, and Xenos published in *Science Communication* also found that findings on knowledge gaps can be divergent depending on how researchers measure knowledge, and that attention to different media channels for scientific information and interpersonal discussion can widen factual knowledge gaps between high- and low-SES groups.

Risk and Benefit Perceptions

RTTA 2/1 research has produced multiple continuous streams of research that have contributed to the literature about how nanotechnology has been covered in media and how audience characteristics interact with these messages to shape attitudes about nanotechnology. For example, Scheufele and colleagues (2007) demonstrated that nanoscientists are more optimistic than the public about the potential benefits of nanotechnology; however, for some issues related to the environmental and long-term health impacts of nanotechnology, nanoscientists were significantly more concerned than the public. Therefore, RTTA 2/1 researchers concluded that nanotechnology may be one of the first emerging technologies where researchers have observed this trend of scientists’ being more concerned about some risks than the public. Building on this research, more fine-grained analyses have shown that when making risk judgments, nanotechnology experts use trust in scientists to make decisions while the public uses religious beliefs as heuristic cues. Although deference to scientific authority, science media use, and trust in scientists shape perceived benefits in both scientists and the public, these heuristic cues influence public perception to a larger extent than experts’ perceptions.

RTTA 2/1 has also examined the changing nature of risk and benefit perceptions to conclude that as the field of nanotechnology matures, public opinion research focused on judgments about abstract risks and benefits, rather than attitudes toward specific applications, is less useful. Recent RTTA 2/1 research shows that individuals who associate nanotechnology with particular areas of application, such as the medical field, take risk perceptions much more into account when forming

attitudes than respondents who do not make these mental connections. Therefore, the RTTA 2/1 research program increasingly focuses on assessing measurement tools for the field of public opinion about emerging technologies more broadly. In this vein, Scheufele and colleagues conducted a study (under review) on public attitudes toward labeling nanotechnology, finding a 'spillover' effect with individuals anchoring their judgments about labeling of nanotechnology to prior attitudes about labeling genetically modified organisms (GMOs) and its risks and benefits. This study also found that white males show reduced risk perceptions of technologies and those who pay more attention to ethical, legal, and social implications of science in the media are more likely to support labeling and that respondents' level of education and deference to scientific authority moderate the effects of GMO risk and benefit perceptions, suggesting that such a spillover effect is stronger for those with less formal education. These findings contribute to TRC 1 research goals by providing insight into public perceptions of nanotechnology among typically underrepresented groups of the U.S. population.

Research Accomplishments and Plans, RTTA 2/2

RTTA 2/2 has also completed two national-level nano-scientist surveys: in Jul 07 and Oct 11. The 2007 survey was a mail survey of leading US nano-scientists (N=363; AAPOR RR-3: 39.5%). The 2011 data collection was conducted as a mail survey of leading US nano-scientists (N=444; AAPOR RR-3: 31.6%). The content of the 2011 survey was slightly different from the 2007 survey by focusing on more granular perceptions about the risks and benefits of nanotechnology, nano-regulation, nanotech worker safety issues, public engagement, and the ethics of nanotechnology laboratory practices. By combining funds from CNS-ASU and the Kellett mid-career award given to Scheufele at UW, we will be able to conduct an additional scientist survey in 2015. Planning for this survey will start during the summer.

Risk, Benefits, and Regulation of Nanotechnology

The RTTA 2 team considers regulation of nanotechnology to be an important area for study because even though there is a high degree of scientific uncertainty about the risks of nanotechnology, policy-making cannot be placed on hold until risk assessments are complete. In the absence of risk assessment data, decision makers often rely on scientists' input about risks and regulation to make policy decisions. RTTA 2/2 research has shown that nanoscientists are more supportive of regulating nanotechnology when they perceive higher levels of risks; yet, their perceived benefits about nanotechnology do not significantly impact their support for nanotech regulation. The research also finds that male nanoscientists are less supportive of nanotech regulation than their female peers and materials scientists are more supportive of nanotechnology regulation than scientists in other fields.

In addition, Corley & Scheufele concluded that the leading U.S. nanoscientists see the areas of surveillance/privacy, human enhancement, medicine, and environment as the nanotech application areas that are most in need of new regulations. Based on the 2007 survey results, Corley, Scheufele and Ho (2009) found that in addition to risk perceptions, nano-scientists use their economic and social values to make decisions about nanotech regulation, and that surveillance/privacy, human enhancement, medicine, and the environment are the application areas in which nano-scientists see the greatest need for new nanotechnology regulations.

Also, Kim, Corley & Scheufele (2012) used the 2007 results to explore the perceptions of nano-scientists regarding the regulation of nanotechnology, with a particular focus on the governmental level (local, national, or international) at which the scientists believe nanotechnology regulation should be implemented. This regulatory discussion is important because international regulations are often difficult to adopt and implement; yet, local or state-level regulations could lead to the nanotechnology equivalent of the Pollution Haven Hypothesis (PHH). The results indicate that some scientists support local-level nano-regulations, but most scientists support the regulation of nanotech at the national or international level.

Kim, Corley & Scheufele (2012) found that there are three distinct categories of nano-scientists that have unique perspectives on regulation: “cautious innovators,” “nano-regulators,” and “technology optimists.” The “cautious innovators” are more supportive of implementing nano-regulations at the local level. Additionally, these scientists think that public opinion is more important than scientists’ opinions for research decision-making and that we depend too much on science and not enough on faith. This group is also more likely than their peers to support the regulations of academic nanotech research. The second group of scientists is the “nano-regulators.” These scientists are more likely to say that the government should protect the public from unknown nanotech risks. Also, these “nano-regulators” are more supportive than their peers of nano-regulations at the national and international level. Lastly, they are more likely to support the regulation of commercial nanotech research. While many scientists acknowledged the importance of nanoregulation, some scientists are less supportive of restricting nanotech advancements using regulations – i.e., the “technology optimists.” These scientists are more likely to think that advancing nanotechnology is more important than protecting society from the potential nano-risks. Also, these scientists tend to think that scientists know best when it comes to making scientific decisions that can impact the public.

Perceptions of Media Coverage

Exploring public perceptions and scientists’ perceptions about media coverage of nanotechnology – as well as the public communication of research – were also key focal areas for the RTTA 2/2 team in the 2007 data. Using the 2007 survey results, Corley, Kim and Scheufele (2011) also explored leading U.S. nano-scientists’ perceptions about media coverage of nanotechnology and the public communication of research findings, concluding that leading U.S. nano-scientists perceive an important connection between the public communication of research findings and public attitudes about science. Additionally, there is a significant relationship between the scientists’ perceptions about media coverage and their views on the timing of public communication; scientists with positive attitudes about the media are more likely to support immediate public communication of research findings, while others believe that communication should take place only after research findings have been published through a peer-review process. In addition, leading U.S. nano-scientists tend to view media coverage of nanotechnology as less credible and less accurate than general science media coverage. These results indicate that leading U.S. nano-scientists do feel a sense of responsibility for communicating their research findings to the public, but attitudes about the timing and the pathway of that communication vary across the group.

An Updated View of Nanotech Regulation Perceptions

The RTTA 2/2 team is currently analyzing and publishing from the 2011 scientist survey. Corley & Scheufele recently published an article in a special issue of *Review of Policy Research* that uses the 2011 data to explore nano-scientist perceptions about existing nanotechnology policies, the

development of new nanotech policies, levels of governmental regulation, current and future risk levels for public exposure to nanomaterials, we well as mandatory policies about the implementation of safe lab practices for federally funded nano-research.

Perceptions about Worker Safety, Gender, and Social Responsibility

In 2013, [Corley](#), Kim & [Scheufele](#) analyzed the 2011 nanoscientist survey data to publish an up-to-date view of leading U.S. nanoscientists' perceptions about the regulation of nanotechnology. In particular, this research explored the leading nano-scientists' perceptions about existing nanotech policies, the development of new nanotech policies, and mandatory policies about the implementation of safe lab practices for federally funded nanoresearch. The conclusions of this research indicated that nanoscientists are more likely to say that commercial nanotech research should be regulated than academic nanotech research ([Corley](#), Kim, & [Scheufele](#), in press). Additionally, the leading U.S. nanoscientists believe that lab directors in both university and industry nanotech settings have a strong ethical obligation to protect their workers from unhealthy exposure to nanomaterials. In addition, many of the scientists believe that federal funding of nanotech research should be linked to formal guidelines that would protect workers from exposure to nanomaterials.

Research Accomplishments and Plans, RTTA 2/3

Finally, RTTA 2/3 continues to analyze media content in three different outlets. First, we continue to use the infrastructure built during the first five years of CNS-ASU funding to analyze in real time content data from small, medium-sized and large newspapers in the US. Papers from this work appeared in disciplinary journals (e.g., *Journalism & Mass Communication Quarterly*) and also in outlets specific to particular scientific fields (e.g., a piece on food nanotechnology in *Appetite*). Second, RTTA 2/3 partnered with the UW NSEC on Templated Synthesis and Assembly at the Nanoscale to purchase access to Crimson Hexagon. This software license allows us to analyze content streams in real time from all online and social media outlets (including Twitter, Facebook, blogs, online newspaper sites etc.). RTTA 2/3 continues to collect and mine data for traditional media, but our collaborations with the UW NSEC have allowed us to provide real-time insights into the ongoing debates around nano that are unique in the field of the social studies of science. An article comparing online and offline media environments was recently published in *New Media & Society*. Finally, students at UW have been using content analytic tools we built as part of CNS-ASU to branch out into other fields of research. Maria Stubbings worked on a content analysis of media coverage of gene patenting in the US; she defended this work in May of 2012. An article examining Twitter discussions surrounding nanotechnology was published in the *Journal of Nanoparticle Research*, and an analysis of social media content is included in Cacciatore's dissertation project.

Contributions to ensemble-ization or other Center-wide activities

RTTA 2/2's study of nanotechnology risk perceptions has led to collaborative work with RTTA 1 (specifically [Youtie & Shapira](#)) to better understand the relationship between societal perspectives held by nano-scientists and their publication actions (Youtie et al. 2011). This collaborative research between RTTA 1 and RTTA 2/2 has explored the relationship between scientists' risk perceptions about nanotechnology and their actions in citing nanotechnology environmental, health, and safety (EHS) publications. RTTA 2 has also collaborated with the Social Implications of Nanotechnology Group, part of the University of Wisconsin Nanoscale Science and Engineering

Center (NSEC). These collaborations can be seen in many of the publications and conference presentations noted below.

Wisconsin has also been working on assessing the impacts of CNS-ASU on broader public and policy discourses. This work takes advantage of research infrastructures we have been building over the last eight years – partly in collaboration with the UW Nanoscale Science and Engineering Center on Templated Synthesis and Assembly at the Nanoscale at UW-Madison (UW-NSEC) – for tracking media content, blog posts and communications on social media platforms (Twitter, Facebook, etc.).

Using these infrastructures, we have begun to track online (Runge et al., forthcoming) and offline (Choi, Dudo, & [Scheufele](#), 2013; Dudo, Choi, & [Scheufele](#), 2011; Dudo, Dunwoody, & [Scheufele](#), 2011) discourses about nanotechnology, especially as they relate to CNS and CNS-related activities. We use three commercial software packages that allow us to track various forms of communications in real time. Using a combination of the Lexis Nexis (licenses through UW-Madison) and Vantage Point (licensed through CNS-ASU) software packages, we are able to extract large amounts of traditional media content into an electronic data base that allows us to content analyze it using computer-based or human coding. We will also use a collaborative agreement (funded partly through CNS-ASU and UW-NSEC) with Crimson Hexagon, a startup headed by Harvard's Gary King, which gives us access to their software at a deeply discounted rate. Crimson Hexagon is a software that extracts linguistic patterns from small samples of online/social media content identified by human coders as being representative of particular types of content. It then develops generalizable algorithms from these patterns, and uses them to track the underlying content in every captured Tweet, Facebook post, or blog. In other words, computer algorithms inductively determine the patterns of underlying content identified by human coders, and then apply the learned patterns for large scale data processing.

The combination of these different tools allows us to track all discourses surrounding nanotechnology in a comprehensive and real time fashion. In particular, we will be able to focus on our analyses on at least three different aspects, which are underway.

First, we will continue to track the amount of coverage in traditional news channels and discussion on various online (social media) platforms. Second, will track the sentiment or types of discourses surrounding nanotechnology. This will focus on sentiments, such as expressions of uncertainty or the risks of benefits of nanotechnology, as they relate to nanotech more generally, but also to discussions or media coverage surrounding CNS more specifically. Do Tweets or blog posts surrounding CNS activities, for instance, reflect particular activities or aspects of CNS? Third, and most importantly, the comprehensive real-time tracking of online and offline content will also allow us to examine how (a) regional differences and (b) CNS activities – especially if coordinated across different sites – are received and multiplied by lay audiences and journalisms in traditional media and through online channels. This particularly relevant since some of our initial research on Twitter suggests that even the presence of NSF-funded Nanoscale Engineering Centers (NSECs) in a specific state can significantly influence the amount of Twitter traffic in a region. Our analyses will expand on this idea and track online traffic surrounding particular sites, but also before and after events, such as Nano Days in collaboration with NISE Net or related coordinated events. We have completed preliminary analyses for Twitter and will soon move into the full analysis stage for all other areas.

Addressing this first aspect, [Scheufele](#) and Su have drafted a report that explores the public impacts of CNS-ASU in online environments, with an initial focus on Twitter. The report tracks the volume

of Tweets and analyzes the types of discourse about CNS-ASU from 2010 to 2014 and explores the amount of Twitter traffic related to CNS-ASU within a geographic region. Results indicate that online conversations about CNS-ASU focus on research-related information while education and outreach dimensions, particularly formal educational issues, are rarely discussed. Additionally, the majority of online discussions are constituted by CNS-ASU based research efforts, which may reflect a “marketing perspective” within the CNS-ASU community when communicating with social media tools. As next steps, Scheufele and Su will track the Twitter footprint of all CNS-ASU affiliated researchers, including (co-)principal investigators, team leaders, affiliated faculty members and researchers. Future research will also explore affiliated researchers’ Twitter presence by studying the number of followers, follower identity, volume of public Tweets, categorical themes in the Tweets, and Tweets related to CNS-ASU and nanotechnology.

RTTA 3: Anticipation and DeliberationPersonnel – faculty and senior participants:

Cynthia Selin, RTTA 3 leader (ASU, assistant professor, CSPO, School of Sustainability)

Kathryn De Ridder-Vignone (ASU, post-doctoral scholar & assistant professor, James Madison University)

Prasad Boradkar (ASU, associate professor, School of Design)

Adelheid Fischer (ASU, Manager, InnovationSpace, School of Design)

Sidnee Peck (ASU, program manager, W.P. Carey School of Business)

Roopali Phadke (associate professor, Macalester College)

Thad Miller (assistant professor, Portland State University)

Gretchen Gano, (lecturer and research fellow, Center for Public Policy and Administration, University of Massachusetts, Amherst)

David Tomblin (Director of Science, Technology and Society Program at University of Maryland)

Kevin Jones (senior research scientist, University of Alberta)

Krista Harper (associate professor, Anthropology and Public Policy, Amherst College)

Other Personnel: post-doctoral fellow (1), graduate students (2)

Post-doctoral fellow: Megan Halpern

Graduate students: Carlo Altamirano-Allende (PhD, Human & Social Dimensions of S&T), Jathan Sadowski (PhD, Human & Social Dimensions of S&T)

Goals: As a whole, RTTA 3 problematizes conventional deliberative approaches to anticipation that unreflexively predict technological outcomes. Instead, this research pursues anticipatory governance by focusing on future-oriented methods informed by plausibility (Selin 2011; Ramirez & Selin 2014) and drawing on STS perspectives path dependency, co-production and responsible innovation.

RTTA 3 consists of four tightly integrated approaches that address research, education, and outreach. RTTA 3/1 Futures of Foresight explores and assesses alternative approaches to imagining plausible nano-enabled futures. RTTA 3/2 InnovationSpace is a collaborative undergraduate design course among ASU's Schools of Design, Engineering, and Business in which transdisciplinary teams of students create product designs, marketing plans, and engineering models of potential products within a framework of responsible innovation. RTTA 3/3 Probing Future-Oriented Deliberation probes in experimental settings the frameworks, inputs, structures and qualities of future-oriented deliberation. RTTA 3/4 Futurescape City Tours (FCT) builds on the foregoing by implementing a large-scale citizen engagement activity that includes independent and joint deliberation of six groups of locally representative lay citizens from across North America on issues related to nanotechnology and the city.

Research Accomplishments and Plans, RTTA 3/1: Futures of Foresight

RTTA 3.1 explores and assesses alternative approaches to imagining plausible nano-enabled futures. In recent years, CNS-ASU researchers have developed the notion of 'material deliberation' to systematically account for practices of anticipation that capture the affective and sensual, moving beyond discursive representations of alternative futures (Davies et al 2013). Material deliberation was featured in the Society for Social Studies of Science annual conference in an invited plenary panel with de Ridder-Vignone who presented work on the importance of the concept to public engagement. CNS's former postdoctoral scholar Davies (now with University of Copenhagen) continues to extend some of the foundational tenants of material deliberation in her upcoming book entitled *All Hackers Now: Hackerspaces and the Rise of the Maker Movement*, which will be published by Polity in 2016.

In light of Selin's sustained interest in the forefront of futures thinking, she continued in YR10 with the Oxford Futures Forum, an international gathering of academics and practitioners focused on scenarios and anticipation, and in 2014 focused on design and materiality. Since 2005, the Oxford Futures Forum (OFF) has enabled generative dialogue, productive collaboration and deep reflection on interdisciplinary concerns between two established communities of thought and practice, one the scenarios community and the second representing a theoretical perspective, which for the 2014 Forum focused on design thinking. The Forum was attended by CNS researchers Boradkar ("Future Configurations of Things"), van der Leeuw ("Learning from the Past, about the Present, for the Future") and Gano ("Confronting the Future Pseudomorph: Materiality and Embodiment in Scenario Planning and Design."). Selin co-curated an exhibition of future-oriented artifacts. Works for the exhibition *Future Things* were selected from responses to an open call to all OFF invited participants. Together they present a range of analogue and digital materials that capture some of the different ways that futures are materialised in scenarios and design practice. Calling them future things emphasizes how their objectness is tied up with the practices of commissioners, creators and users of scenarios and designs. Drawing on design theorists using the term "thing" the title of the exhibition recognizes the irony of de-contextualising objects from their contexts of production and engagement.

Selin is currently co-editing a special issue derived from the scholarly dialogue at the OFF and has submitted (as lead author) an article that scopes the dialogue space between scenarios and design.

Research Accomplishments and Plans, RTTA 3/2: InnovationSpace

InnovationSpace is an entrepreneurial joint venture among the Herberger Institute for Design and the Arts, Ira A. Fulton Schools of Engineering, W.P. Carey School of Business and the School of Sustainability at Arizona State University. The goal of this transdisciplinary education and research lab is to teach students how to develop products that create market value while serving real societal needs and minimizing impacts on the environment. The two-semester InnovationSpace course satisfies the studio, capstone and thesis requirements for senior majors in each unit. In addition, many of the students are Barrett Honors College students and write their honors theses about their InnovationSpace work. In the course, cross-functional teams of students drawn from industrial design, visual communication design, business and engineering use a product-development model known as Integrated Innovation to research, develop, test and refine real-world product concepts for paying sponsors including, in recent years, CNS, Intel, and Herman Miller. Since 2006, CNS-ASU has supported the work of three transdisciplinary teams (a total of 12 students) annually.

CNS-ASU has partnered with InnovationSpace, led by Boradkar to investigate nano-based technologies that ensure the freedom, privacy and security of citizens (AY 06-07), to visualize socially beneficial opportunities for nanotechnology in the areas of human health and enhancement (AY 07-08), to develop product concepts that utilize nano-enhanced solutions for ensuring equitable access to clean energy (AY 08-09), to develop product concepts that utilize nano-enhanced solutions for addressing urban sustainability in relation to waste management, energy efficient transportation and energy awareness (AY 10-11), address public health with special emphasis on clean water, safety of emergency services, and drug abuse prevention, to address the problems of household and office waste, indoor pollution and the urban heat island effect (AY 12-13), child safety in urban environments (AY 13-14), thus rounding out a comprehensive look at urban systems. Outcomes from InnovationSpace include not only invention disclosures made to AZTE (18 from previous years), but also spectacularly detailed documentation of the student-led innovation process known as Innovation Proposals. These include summaries of user research, product renderings and prototypes, engineering specifications, branding and communication strategies, ecological impact assessments and business plans.

Students in the program are also introduced to concepts of biomimicry as a means of developing more environmentally responsible product ideas, engineering solutions, business plans and brand strategies. CNS has supported this activity by sharing examples of biomimetic design occurring at the nanoscale for the students to learn from and incorporate into their projects.

Research Accomplishments and Plans, RTTA 3/3: Probing Future-Oriented Deliberation

Emerge first took place on the ASU campus in spring 2012 and brought together artists, scientists, engineers, students, and educators in an attempt to “redesign the future” by thinking critically about the future of emerging technologies. In YR 10, [Selin](#) edited a special issue for *Futures* which published the following articles:

“Merging art and design in foresight: Making sense of *Emerge*” [[Selin](#)]

This introduction works to make sense of these emerging practices, and of *Emerge* itself, in order to develop appreciation of this rising genre. In doing so, this article sets the context for how the papers in this issue ask critical questions about the nature of these novel forms of foresight practice and investigate the trade-offs and potencies involved in the workings of mediated scenarios.

“Design futures in action: Documenting experiential futures for participatory audiences” [Kelliher, Byrne] This article describes the documentation and public representation of the creative outcomes from nine *Emerge* design futures workshops. These workshops provided a rich opportunity to study how designers and futurists collaboratively engage, implement and communicate alternative futures. The goal of the documentation effort described is to capture the experience of creating experiential futures and extend the capacity for developing social foresight through a participatory exhibit and online social platform.

“Studying *Emerge*: Findings from an event ethnography” [Davies, [Selin](#), Rodegher, Allende, Burnam-Fink, DiVittorio, Glerup, Keys, Kimball, Liao, Monfreda, Trinidad] In this article authors discuss findings from an event ethnography, in which a team of 11 researchers collaboratively developed accounts of the practices at play within *Emerge* and its workshops. They use their data both to describe the techniques used within *Emerge* and to analyse key patterns which occurred around those techniques. As we close we reflect on the implications of these findings for practice, suggesting ways in which our results can help hone the tools and techniques of future studies.

“Narrative futures and the governance of energy transitions” [[Miller](#), O’Leary, [Graffy](#), Stechel, Dirks]

The authors argue that futures approaches based on narrative strategies that encourage individual and collective storytelling and meaning construction offer a valuable tool for enhancing societal capacity to meet this and similar governance challenges. They report on a two-day scenario planning exercise that sought to implement and test these ideas. The exercise involved a diverse group of professionals in both energy and non-energy fields, with a question focused on the narrative construction and deliberation of scenarios about Arizona's energy future in 2050.

“Starting with Universe: Buckminster Fuller's Design Science Now” [Gano] This article reflects on the role of futurists, designers, architects, urban planners, social scientists, and artists in interpreting and utilizing *comprehensiveness* as a design frame. Among nine experimental foresight workshops at the inaugural *Emerge* conference at Arizona State University, many focused on producing physical objects or media, one modeled and expanded upon a method pioneered by architect and polymath R. Buckminster Fuller. At a time when many of the capabilities to realize Fuller's specifications for big data have matured, I investigate whether comprehensive design as framed by Fuller's method shows promise as a

trend enabling ecologically sustainable innovations. A historical look at Fuller's Design Science and the reflection on it in the *Emerge* workshop marks an opportunity to highlight and interpret the resurgence of comprehensive thinking in design while navigating the contradictions this orientation engenders.

“Creating narrative scenarios: Science fiction prototyping at Emerge” [Burnam-Fink] This article explores the relationship between science fiction and scenarios as story genres and investigates a creative story-telling technique, “Science Fiction Prototyping”. While the method is promising, it is an ultimately problematic means to incorporating narrative into scenario planning.

In YR 10, Selin won a EU Marie Curie Fellowship that extends some of this work by looking specifically at how mediated scenarios work in the energy sector.

In YR 10, CNS also hired post-doctoral fellow Halpern, who participated in the planning and execution of *Emerge* 2015 on the future of values and choices. As Selin did earlier with the first *Emerge*, Halpern designed into the process a set of recordings and ethnographies to serve the interests of future research, and we expect publications, etc., to arise from her work.

Research Accomplishments and Plans, RTTA 3/4: Futurescape City Tours

Research and practice around innovative forms of public engagement with science and technology have been a key component of RTTA 3. In YR9, a novel public engagement method-- the Futurescape City Tours-- was implemented in six cities in North America. The FCTs are a distributed, deliberative, public engagement methodology that use digital and analog media and an urban walking tour to build the capacity of lay citizens, scientists and engineers, and civic stakeholders to approach the intersections between science, technology and society with greater reflexivity, anticipation and systemic thinking.

As described in “Experiments in Engagement: Designing PEST for Capacity-Building” (under review *Public Understanding of Science*), we suggest that the development and practice of these capacities are desirable ends of public engagement, which should vie for prominence alongside of the traditional, though nevertheless elusive, outcomes of policy impact or integration in decision-making. These capacities are important enablers for laypeople to contribute productively—in a distributed and diverse fashion—to the democratization of science and technology.

We believe the methods of the Futurescape City Tours, taken together, offer a novel push on the forefront of public deliberation as practiced by STS scholars. Through pilot projects, experimentation and the national scale up of the approach, our goal has been to demonstrate the value of public engagement activities that integrate diverse stakeholders and publics, tend to the politics of place, rigorously trigger imagination, and creatively use multi-media tools. We have found that the methodology serves to cultivate reflexivity (Selin, C. & G. Gano. 2015. “Seeing Differently: Enticing Reflexivity through Mediated Participation in Place in the Futurescape City Tours.” in Gubrium, A. and K. Harper (eds). *Engaging Participatory Visual and Digital Methods*. Left Coast Press [in press]), notice obduracy (Selin, C. & J. Sadowski. 2015. “Against Blank Slate Futuring: Noticing Obduracy in the City through Experiential Methods of Public Engagement.” in Kearnes, M. & J. Chilvers (eds). *Remaking Participation: Science, Environment and Emerging Publics*. Routledge [in press]) and see differently through the use of photography and image-based deliberation Altamirano, C. & C. Selin. “Seeing the City: Photography as a Place of Work” submitted to a special issue on “Public Engagement for Environmental Sustainability in a Technological Age” in *Environmental Studies and Sciences*. [accepted]. Further, as detailed in Gano’s doctoral dissertation (Dec ’14), the methods can be understood in light of Kevin Lynch’s groundbreaking work on wayfinding (under preparation for *Social Studies of Science*).

Other findings derived from the YR 9 national implementation of the FCTs are now being explored analytically through the empirical data collected on the tour in YR 10. Papers under development include:

- Phadke on “Place, Space and Hope in the Interstitial City,” *Cities and the Environment* especially invited for the Special Issue on “Urban Vacant Land and Community Access”.
- De Ridder-Vignone on “Against Reports: Representing results of public engagements through Images and Exhibitions” for *Leonardo* examines the value of media art based mini-exhibits that represent the collaborative work of participants.
- de Ridder-Vignone on “Images as Authoritative Knowledge in Public Engagement with Emerging Technologies” argues that visual forms of communication are powerful means of facilitating critical dialogue and representing citizens’ values, desires, concerns, and curiosities about emerging technologies.
- Gano, G., Krista Harper and Marc Lorenc on “Futurescape City Tour Springfield: Science and Technology Studies in a Deindustrializing City” under preparation for *Cities*.
- Tomblin, David will explore “The Influence of Demographic Diversity on the Outcomes of Futurescape City Tours: A Multi-site Comparison” for *Public Understanding of Science*.
- Tomblin, David and Kathryn Ridder-Vignone will investigate in *Visual Studies* “Empowering the “Quiet” through Material Deliberation of Photos.”
- Miller, T., A. Levenda, M. Matsler, A. Novie, D. Mahmoudi are preparing a site report based on the Portland data with a focus on sustainability research and education.

The FCT research team has also worked to share findings with a number of different audiences. Highlights include:

To academic audiences:

- A panel entitled “New Designs for Engagement: Theories and Practices of Material Deliberation” at the annual conference of the Society for Social Studies of Science (Buenos Aires, Aug ’14) including papers by Phadke, de Ridder-Vignone, Altamirano, Sadowski and Selin.
- Gano presented at the workshop *Social construction of technology coming of age: new challenges and opportunities ahead*” at the Norwegian University of Science and Technology, Trondheim on her work: “The Megamachine: Lewis Mumford’s Vision of Technological Society and Implications for (participatory) Technology Assessment”
- Gano, Harper, and Lorenc presented “Futurescape City Tour Springfield: Science and Technology Studies in a Deindustrializing City” at the Association of Collegiate Schools of Planning, Philadelphia, PA (Nov ’14).

To policy audiences:

- de Ridder-Vignone and Tomblin on “Deliberating Differently: The Futurescape City Tours” for the CSPO New Tools for Science Policy Breakfast Seminar (October 23)
- Gano presented the FCTs at the Science and Technology Policy Gordon Research Conference in her talk “Public and Policy Feedback: S&T Communication and Engagement. Imag(in)ing Futures: Engaging Urban Publics.”
- The FCTs are featured in PE2020 (Public Engagement Innovations for Horizon 2020, 2014-2017) catalogue of 50 innovative and cutting edge public engagement initiatives sponsored by the European Union FP7 Framework Programme.

To public audiences:

- Phadke presented the photographs from the FCTs at the “City Art Collaboratory Social” at the Amsterdam Bar in Saint Paul (April ’14).

- Gano presented “Futurescape Springfield, at the Museums à La Carte Lecture. Springfield Museums.

It is worth noting that the FCT research team has also been experimenting with the FCTs in their educational offerings. For example, Tomlin (University of Maryland) has used elements of the FCT model in the UMD STS program (which focuses on exposing Engineer and Science majors to STS concepts) in the following ways: 1) Use material deliberation to open up perspectives about science and technology that young aspiring science and engineers may not acknowledge or understand. He uses this especially at the beginning of STS courses as a way for students to talk about their values in relation to S&T, to encourage systems thinking, and emphasize reimagining the future through the possibility of multiple innovation pathways that diverge from the status quo. 2) Tomblin extensively uses photography in the Infrastructure and Society course to get students to appreciate taken-for-granted aspects of infrastructure and to encourage systems thinking. 3) In our Sustainability and Design course, he uses material deliberation as an innovation tool to gain alternative perspectives and think about possible design pathways for sustainable technologies. These activities impact approximately 150 undergraduates per year. At Virginia Tech, Tomblin teaches a summer graduate course on Emerging Technologies to an audience of S&T and S&T policy professionals, where they explore FCT as a model for public engagement with emerging technologies and a tool for envisioning alternative innovation pathways. Gano has also organized a workshop at the Vassar College Science Technology & Society and Urban Studies Programs on “Technological Wayfinding in the City: A Workshop on Experimental Public Engagement in *Futurescape City Tours*.”

The FCT research team has also extended the work developed through the FCTs in a number of spin-off activities. Highlights include:

- Two members of the FCT research team are now involved in Expert and Citizens Assessment of Technology (ECAST) where they continue to work on developing ways to creatively engage citizens with science and technology. Most recently, Gano and Tomblin worked with NASA on “Informing NASA’s Asteroid Initiative: A Citizens Forum,” and plan to stage the World Wide Views on Climate Change and Energy (June ’15). Elements of the FCT project, especially how material deliberation influences dialogue, remain an important influence for me as work on these projects.
- Phadke has secured a grant from NOAA-GLISA “Making it Personal: Diversity and Deliberation in Climate Planning” that funds a series of consensus conferences in urban neighborhoods to prioritize funding for climate adaptation in the Saint Paul that uses elements of the Futurescape City tours, including the notion of capacity building. This is a partnership among Macalester College, the Science Museum of Saint Paul and the Mayor’s Office.
- Gano was invited to California Polytechnic State University to present a workshop on “Making and Doing in Science and Technology Studies: Participatory Technology Assessment as Technological Wayfinding.”
- De Ridder-Vignone secured a Faculty Development Grant from the Department of Integrated Science & Technology, James Madison University to better understand the role of images in understanding our past and shaping the future of technology in our communities (\$3K).
- De Ridder- Vignone has secured a 4-VA Research Grant, “Towards Assessing the Breadth of Expertise in Science and Engineering,” with prior CNS graduate student Conley and Foley, along with Gorman (UVA). A part of the grant explores how expertise shows up in visual form. (\$11,592 from JMU and UVA)

Finally, in YR 10 significant effort was devoted to outreach and the dissemination of the methodology. Key works include a short video introducing the method, a digital archive and website (<http://www.futurescapacitytours.org/>) and a guidebook for practitioners. The guidebook, led by Selin

and CNS communications coordinator Banks, is designed to share the FCT approach with broader audiences, including city planners, non-profit leaders and others involved in soliciting public opinion.

RTTA 4: Reflexivity and Integration

Personnel – faculty and senior participants

Erik Fisher RTTA 4 leader (ASU, assistant professor, Political Science and CSPO)

Elizabeth Corley RTTA 4 co-leader (ASU, associate professor, Public Affairs)

Ira Bennett (ASU, assistant research professor, CSPO)

Shannon Conley (James Madison University, assistant professor)

David H. Guston (ASU, professor, School of Politics and Global Studies, CSPO)

Other Personnel: graduate students (22), post-doc (1)

Goals: RTTA 4/1 documents the influence of CNS-ASU research and engagement activities on the knowledge, values, and choices of NSE researchers and others. RTTA 4/2 theorizes and informs the integrative agenda of anticipatory governance through field research, methodological refinement and collaborative inquiry with NSE researchers. RTTA 4/3 implements the integrative agenda of anticipatory governance through interactions and collaborations with NSE and co-curricular activities. RTTA 4/4 studies the meaning and implementation of integration and reflexivity in the international sphere of science policy.

Projects under the RTTA 4 rubric include: interviews with and surveys of Center participants including collaborating NSE researchers, including the supplement awarded in YR 8 to study the impacts and outcomes of CNS-ASU activities; 30 laboratory engagement studies coordinated by the associated STIR project; the DC Summer Session; and various projects that characterize, map and assess the integration of societal dimensions into NSE research and policy.

Research Program, Accomplishments and Plans, RTTA 4/1: Center Assessment

Annual Interviews

In years 1-6, we documented and assessed the influence of Center activities on the NSE researchers with whom we collaborate by annually implementing an interview protocol focused on the knowledge, identity, and practices of these NSE researchers, particularly around their understanding of the societal aspects of their work. Fisher, Guston and ASU doctoral student Brenda Trinidad revisit sample interview responses taken across this timeframe in light of the distinct qualities of responsible innovation that are evident in recent formulations of and frameworks for that concept (see below). They find that, over time, as its activities became more embedded within nanotechnology research culture and infrastructure, the Center was increasingly in a position to contribute to capacity-building for responsible innovation. Reflecting on the conditions necessary for institutionalizing effective training in responsible innovation, they point to a general difficulty by which established institutional structures—such as the interdisciplinary make-up of the membership and physical layout of research labs—may sometimes fail to achieve their intended effects. Comparing such an example against reports that CNS engagements associated with the Socio-Technical Integration Research (STIR) project were able to achieve their interdisciplinary goals, Fisher et al. conclude that it was precisely because such engagements were *of temporary duration* (albeit both intensive and sustained) that they were able to productively disruptive *status quo* laboratory research practices. By

implication, efforts aimed at responsible innovation capacity building may well have to exist on their own institutional footing, as liminal agents that are *embedded in but not accountable* to the projects and organizations in which they seek to operate.

Center Assessment

As reported earlier, in Fa 12, we shifted away from annual interviews with participating NSE researchers to implementing a broad survey that included all Center participants. Under supplementary NSF grant #0937591, RTTA 4 researchers set out to measure impacts and outcomes of the Center as a whole. This self-assessment study investigated CNS-ASU's ability to serve its mission and how CNS-ASU uses its place as an interdisciplinary center to accomplish its conceptual goals. CNS-ASU differentiates itself from other research centers by its ability to engage a variety of stakeholders, disseminate knowledge, and build capacity to understand and anticipate the futures of emerging technologies, namely nanotechnology. The assessment also sought to explore possible experimental metrics suitable for assessing impact on the numerous and diverse communities which CNS-ASU interacts. An experimental survey design sought to assess how CNS-ASU facilitates and translates discussions about the societal aspects of emerging technologies. It sought to do so by taking into account learning and behavior (Guston, 1999) as opposed to more traditional university research metrics in order to understand the impact of the Center beyond that of the immediate research community.

Postdoc Michael Reinsborough was initially hired to assist Guston, Corley and Fisher in performing an impact assessment that surveyed all Center (N=798) participants to that time and included approximately 80 follow-up interviews. As reported last year, the survey garnered a 51.3% response rate. After Reinsborough's departure, ASU doctoral student Alecia Radatz reformatted and reanalyzed the data. Last year, we summarized the data collection methods used for the Center self-assessment and reported on preliminary findings. This year, we update these findings based on a reformatting of the results and a reanalysis using the statistical analysis software SPSS 21. The reanalysis included parsing out the different kinds of missing responses for each question as well as contextualizing survey responses across question sets and in light of free response data.

CNS-ASU divides its mission into four components: *research, training, engagement, and partnerships*. The Center seeks to research the societal implications of nanotechnology and emerging technologies. Additionally, by training an interdisciplinary community of scholars with new insights into the societal dimensions of emerging technologies, CNS-ASU not only expands the community interested in this vital issue, it seeks to build and strengthen capacity to grapple with issues related to the coproduction of science and society. Furthermore, through initiatives that engage publics, policy-makers, business leaders and researchers in dialogues about the goals and implications of emerging technologies, CNS-ASU seeks to help involve stakeholders and include issues and perspective that have traditionally been left out until after emerging technologies are already developed. Finally, by partnering with cutting-edge laboratories and other institutions, CNS-ASU seeks to cultivate greater reflexiveness in research, development, education and policy.

Results from the survey contextualize the impact of CNS-ASU activities and help reveal whether CNS-ASU is serving its mission. Survey results demonstrated that CNS-ASU not only serves its mission, but that it also plays an active role in creating and disseminating

knowledge, capacity building, and that it serves as a catalyst in thinking about emerging technologies. Survey results indicate that all four components of the mission were served:

- *Research:* Survey responses imply that past participants in CNS-ASU felt that the CNS-ASU role of researching the societal implications of emerging technologies influenced their learning. More than forty-five percent of respondents noted that they had learned a lot, and an additional 37.3% learned some, about the societal aspect of NSE from CNS-ASU. Similarly, nearly one quarter learned a lot and 38.7% learned some about the technical aspects of NSE from the center.
- *Training:* Survey respondents and responses demonstrate that CNS-ASU trains an interdisciplinary community of scholars, in the process bringing new insights into the societal dimensions of emerging technologies. With CNS-ASU engaging faculty, staff and students through undergraduate and graduate courses across three universities, many survey respondents demonstrated that they interacted with CNS-ASU at some point during their academic career. Respondents to the survey include scholars from various levels of training, including graduate students (31.1%), post-doctoral scholars (10.0%), faculty members (29.1%), and visiting scholars (10.9%). One survey respondent remarked, "Working with CNS-ASU has taught me some new techniques for exploring and explaining societal impacts of emergent technologies with the public." Evidence of such training includes survey respondents reporting that they learned something about anticipatory governance (56%), real-time technology assessment (48%), public engagement (63.7%), cross-sector collaboration (60.4%), and interdisciplinary collaboration (58.8%) from CNS-ASU. Participants reported applying these concepts in their professional life, research, and public communication work.
- *Engagement:* CNS-ASU seeks to engage publics, policy-makers, business leaders and researchers in dialogues about the goals and implications of emerging technologies. Some survey respondents indicated their role as a business/industry professional (7%), government or policy work professional (5.8%), informal science education (6.1%), or a K-12 educator (1.6%). Additionally, about two-thirds of all respondents reported learning at least some about the process public engagement from interacting with CNS-ASU. The vocabularies (64.2%) and ways of talking about emerging technologies (69.2%) of survey respondents both changed as a result of their engagement with CNS-ASU. A respondent notes the role of CNS-ASU in influencing the discourse around emerging technology by stating, "Volunteering at public outreach at the AZ Science Center, I was able to see changes in the perception and ideology of parents who were interested in learning more about nanotechnology in their life." In this way, CNS-ASU is influencing the way people in society know about, interact with, and talk about emerging technologies.
- *Partnership:* CNS-ASU has partnered with cutting-edge laboratories to cultivate greater reflexiveness in research, development, education and policy, through coordinated laboratory engagements like those evident in the Socio-Technical Integration Research (STIR) project. Although no survey question explicitly asked whether or not CNS-ASU engaged in such collaborations, survey respondents noted that they learned some of the critical concepts related to these partnering efforts and suggested that they found value in this engagement. Survey respondents reported learning about interdisciplinary collaboration (61.4%), socio-technical integration (78.1%) and responsible innovation (73.8%) at least partially from CNS-ASU.
- *Open-ended question responses* elaborated on what types of impacts CNS-ASU had on survey respondents. More than forty percent of respondents indicated that they underwent individual behavior changes. One respondent remarked, "The work of CNS-

ASU has changed my personal behavior, as well as several graduate engineering colleagues, in our approach to research and problem framing.” Nine percent indicated that the work of CNS-ASU led to an authoritative change. As an example, a respondent noted that within one organization focused on public science education, “an authoritative decision was made to include Societal and Ethical Implications as a core message in our programming and all materials we provide to partner institutions.” Institutional changes were also noted by nearly thirty percent of participants. These changes span local and national institutions. In the institutional setting where CNS-ASU is located, a respondent contends that a university chemical hygiene plan “now has an appendix with guidance specific to various types of nanomaterials.” At the local level, a participant recalled that CNS-ASU contributed to changes in “Planning and decision-making culture in [a government] administration.” Institutional changes were also documented as occurring in both Europe and Japan, as a result of relationships with CNS-ASU.

By upholding its mission, the Center has been able to engage different stakeholders within science and science policy. This surveys attempts to understand the reach of the Center and the learning that its participants experience as a result of its activities. The results indicate the CNS-ASU is a site of both knowledge creation and dissemination. It teaches concepts and processes so that participants can apply knowledge in their own lives. The Center is a capacity building enterprise, where participants not only learn to use key concepts and skills in their professional life and work, but also to participate in and deepen public engagement activities. These impacts represent efforts that have had rippling effects. CNS-ASU activities and initiatives result in changes in daily behavioral, institutional, and some authoritative changes, indicating that the impacts from center activities are not confined to within the walls of academic work. Instead, these activities appear to change the way people think, speak and act regarding nanotechnology and other emerging technologies.

Research Program, Accomplishments and Plans, RTTA 4/2: Socio-Technical Integration Research (STIR)

CNS-ASU supports a unique set of laboratory studies and engagements. These studies are not traditional laboratory ethnographies with a focus on observation and explication, but rather are efforts to integrate social science and humanities with NSE research and to understand the conditions and effectiveness of such integration. Early Center reports detail initial individual integrative research and the **Education** section of this report discusses integrative curricular and educational activities. Since Sp 09, the separately funded NSF Socio-Technical Integration Research project (STIR; # 0849101; [Fisher](#), PI; [Guston](#), Co-PI) has constituted the Center’s principle research activities focused on documenting and understanding NSE capacities to participate in responsible innovation through collaborative social scientific engagement. STIR has trained and coordinated the “laboratory engagement studies” (Fisher, 2007) of over two-dozen doctoral students, who implement a “decision protocol” (ibid.) that is designed to both facilitate collaborative “midstream modulation” (Fisher and Schuurbiens, 2013) and improve understanding of the conditions and capacities for “socio-technical integration” (Fisher & Miracle, 2014; Fisher et al., 2014). (See **Education** section for a list of the 22 participating STIR students and 4 post-docs by institution.)

STIRers are trained to implement various tools and techniques developed by [Fisher](#) over the course of each 12-week study in the attempt to conduct socio-technical

collaborations, study the social and cultural conditions that enable and constrain them, and assess the policy dimensions of their outcomes. STIR laboratory engagement studies have been completed in over half a dozen ASU laboratories and in 22 additional laboratories around the world, bringing the number of labs in the STIR network to 28. Last year, we reported on several individual STIR studies, preliminary findings from an aggregated assessment of 30 coordinated STIR studies, and Fisher's testimony before the President's Bioethics Commission. Major activities in YR 10 include developing a comparative framework for socio-technical integration, planning additional individual laboratory engagement studies, revising the aggregated STIR assessment, developing a reflexive account of conducting STIR engagements, organizing and participating in international workshops including the second Communities of Integration meeting.

Individual STIR studies

Last year we reported on STIR studies conducted by assistant professor Steven Flipse (TU Delft), PhD student Cecilie Glerup (Copenhagen Business School), and Presidential Management Fellow and Synthetic Biology Leadership Excellence Accelerator Program fellow Cameron Keys. This year, we report on Shannon Conley's paired studies of genetics laboratories in Vancouver, British Columbia and Oxford, UK.

Like several other STIR graduate student investigators, Conley devoted a chapter in her dissertation, *Negotiating Socio-technical Contracts*, to her paired STIR studies. In a chapter entitled "Assessing Responsive Capacity: Negotiating Socio-technical Contracts at the Midstream," Conley argues that integration exercises can serve a vital role in rendering socio-technical contracts more visible to participants and in opening them up to reflection midstream. A key theme throughout Conley's dissertation focuses on articulating existing capacities for engaging in anticipatory governance. In her final chapter, Conley explores capacities for negotiating socio-technical contracts on the level of the laboratory, in the "midstream" of technological development activity, when research mandates, funding, and policies have already been established, but before research products enter the market or results are published (Fisher et al., 2006). While the rest of her dissertation explores *existing and historical capacities* for engaging in anticipatory governance, this chapter takes a different angle on the idea of capacity building, and drawing from the integration sphere of anticipatory governance, delving into the ways in which *capacities for anticipatory governance are currently being built* within the R&D sphere.

Conley finds through her STIR work that socio-technical contracts were renegotiated within the laboratories during the duration of the studies. First, in order to provide a broader context of the external policy mandates on the laboratories, Conley offers an overview of policy dialogues around "responsible innovation" in Canada and the United Kingdom. Conley then reviews three key areas that enabled her participation in the renegotiation of socio-technical contracts and assessment of responsive capacity within the laboratory setting. These areas include: *the price of integration*, *participating in material practices*, and *responsible innovation*. Conley utilizes these three areas to structure discussion of her case studies. Over the span of these two studies in the spring/summer and fall/winter of 2009, Conley participated in structured and unstructured interactions with her geneticist collaborators on topics ranging from research decision-making to responsible innovation. Throughout the course of regular interactions that eventually evolved into collaborations, Conley transitioned from a laboratory outsider to a valued team member, assisting with and performing her own experiments, transferring laboratory techniques,

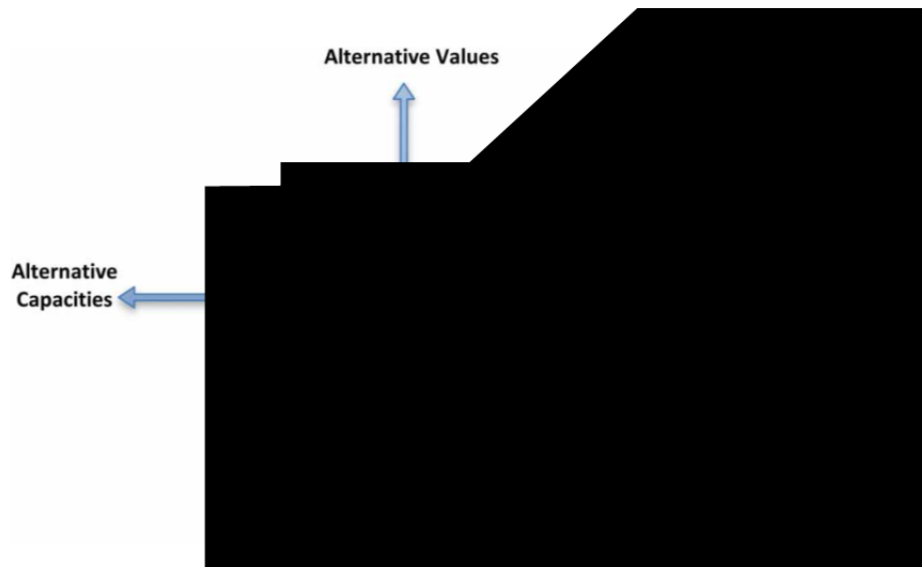
and stimulating changes in laboratory patient engagement practices. Conley argues that the laboratory is a key arena for the negotiation and renegotiation of socio-technical contracts. This chapter presents STIR engagements as an illustration that *capacities for anticipatory governance can be actively and intentionally built*.

STIR and Communities of Integration Workshops

In YR 9 we described the inaugural “Communities of Integration” workshop co-sponsored by CNS-ASU and held in conjunction with the 5th STIR project workshop. This brought together an international network of research communities studying various aspects of socio-technical integration and led to follow-up research and presentation activities. In YR 10, a second annual meeting hosted by the University of Waterloo in Kitchener, Ontario, brought together many of the same research groups as well as an expanded array of integration scholars and practitioners and sought to “focus new attention on projects that seek to facilitate and understand productive collaborations between technical experts and societal researchers.” Following the model used at ASU in YR 9, the workshop facilitated both parallel workshops by individual communities of integration as well as several joint sessions in which general purposes, goals and tangible outcomes were considered. Also during the meeting, an international group of STIR investigators and other integration researchers took part in the 6th STIR project workshop, which focused on developing the results of the aggregate STIR study and reflexive ethnography both begun during the previous year’s workshop.

Comparative Integration Framework

One of the outputs from the two “Communities of Integration” workshop was the YR 10 publication of a paper that takes stock of “collaborative approaches to socio-technical integration that seek to broaden the societal contexts technical experts take into account during their routine activities” (Fisher et al. 2015). The paper builds upon the definition of socio-technical integration reported upon last year, namely, any process by which technical experts account for the societal dimensions of their research *as an integral part of that research* (Fisher and Maricle 2014). It develops a comparative framework that identifies four idealized modes of socio-technical integration. These modes depend upon the unique relationship of a given integration approach to the knowledge and values of the technical experts with which it seeks to collaborate. More specifically, the framework takes into account the relative degree of *alternative* knowledge/values that an integration approach seeks to introduce into the expert environment as compared to the *native* knowledge/values of the experts in question. This framework is represented in the figure below, which uses the term “capacities” to denote not only knowledge and skills but also cognitive and emotive dispositions.



In the paper, each of the four idealized modes, described below, is exemplified by a particular approach to socio-technical integration:

- *Reform* is a mode of integration that seeks to introduce values thought to be otherwise absent or missing from the expert practices in question and that emphasizes its own knowledge, skills and expertise. Exemplar: Human Practices.
- *Problematize* refers to a mode of integration that seeks to broaden the values taken into account by the expert practices in question; in contrast to *reform*, this mode seeks to enhance the capacity of the collaborating experts themselves to broaden the values they take into account. Exemplar: STIR.
- *Facilitate* similarly targets the native capacities of the experts with which it interacts; unlike *reform* and *problematize*, however, it seeks less to broaden values and more to reinforce and support the existing or “native” values of the collaborating experts in question. Exemplar: Toolbox project
- *Augment* modes of integration, similar to *facilitate*, seek to reinforce or support the values of the experts with which it interacts; but it seeks to do so by focusing on its own expertise, which supplements or augments that of the technical experts in question. Exemplar: bioethics consultancy.

Integration and Imaginaries Project

RTTA 4 researchers have begun to conceptualize the relationship between changes in knowledge and values at the level of expert micro-practices and the broader sociotechnical imaginaries that are taken to structure and inform these practices at national, regional and local levels. Combining recent theoretical work on sociotechnical imaginaries with methodological advancements in socio-technical integration, ASU visiting professor Jen Richter, ASU alum and Portland State assistant professor Thad Miller, ASU doctoral student Abe Tidwell and Fisher seek to explore how science and technology discourses, practices and designs are conceptualized and articulated and how these relate to elements of broader sociotechnical imaginaries, such as linear notions of economic growth and the relationship between technology and progress. In so doing, their project seeks to modify the STIR approach so as to enhance practices of reflexivity and deliberation across diverse expert practices, for instance in the urban environment. Finally, the project seeks to assess the extent to which these broader and more diverse socio-technical engagements may inform, if

not reshape technological discourses and design choices. Using the case of “smart energy” and “smart grid” endeavors, project objectives and corresponding research questions are as follows:

- *Observation*: Identify and characterize national sociotechnical imaginaries, e.g., for smart energy technologies; Identify, characterize and compare the sociotechnical imaginaries for smart energy technologies in comparable cities (e.g., Portland and Phoenix); Understand how organizational and expert practices across diverse settings perform these imaginaries and possibly articulate alternative ones.
- *Engagement*: Adapt the STIR approach to open up sustained collaborative spaces for deliberation on social values with technical experts across diverse organizational forms to explore effects of social science engagements on informing and shaping technological discourses, practices and designs, e.g., in urban settings.
- *Assessment*: Critically assess the potential for social science engagements to problematize expert performances of sociotechnical imaginaries and enhance the responsiveness of expert practices to social values, ultimately to facilitate alignment of ongoing technological innovation with broader deliberation over time.

This project not only seeks to understand and assess the intervention work and outcomes of socio-technical integration approaches such as that of STIR, but also to open up comparative study of sociotechnical imaginaries at multiple levels. Finally, it seeks to understand the extent to which knowledge and value changes in expert practices can be understood in relation to potential *alternative* sociotechnical imaginaries.

From Ethnography to Engagement

Norwegian Board of Technology researcher and CNS-ASU Winter School alum Mads Gjefsen coauthored a paper with [Fisher](#) for the “Embedded Social Sciences?” forum of *Science as Culture*. The paper takes up the question of lab-based social science collaborations from the standpoint of recent policy discourses, such as that found in the European *Vilnius Declaration* and Horizon 2020, which seek to integrate the social sciences and humanities (SSH) into research and innovation. Gjefsen and Fisher suggest that practical questions such as how such integration ought to be structured should lead to more fundamental questions that push scholars and policy makers alike to let go of “idealized and abstract notions about the virtues of SSH as a whole, and to reflect critically on what can be achieved within concrete settings.” They argue that “attempts to institutionalize SSH as legitimate participants in the social shaping of research and innovation will, ideally, require interventions that are both effective at informing local practices within specific sites of engagement and at the same time attuned to the multiplicity of sites, stages and levels which structure innovation processes and outcomes.” Accordingly, the authors justify laboratory engagements on the basis that the lab is a key site of production not only for knowledge and technology but also for expertise.

STIR Reflexive Ethnography Project

Previous years reported on [Fisher](#) and Trinidad’s efforts to survey and perform follow-up interviews with STIR project investigators as part of a mediated reflexive ethnography of STIR investigators’ experiences conducting laboratory engagement studies as embedded scholars working side by side with natural scientists and engineers in pursuit of collaborative inquiry. In YR 9, Trinidad summarized the results at the STIR project’s 5th workshop and led a series of reflection and recollection exercises, such as guided imagery, photo elicitation, and free writing exercises. In YR 10, Conley and Trinidad developed a

draft reflective ethnography paper that Conley presented at the STIR project's 6th workshop held Jun 14 at Waterloo University in Canada.

The paper is meant to turn the collective ethnographic eye inwards, to elucidate the experiences of the socio-technical integration researcher (STIRer) as he or she is changed and challenged by his or her interlocutors and the experience itself. This paper focuses on shifting roles and identities within the integrative process, with a specific eye towards STIRer experiences within the laboratory context as they navigated their own role as embedded humanists, as well as laboratory members' perceptions of their roles. In so doing, the paper introduces and elaborates upon several themes of the STIR integration experience, illustrating each theme with a case study recounted by a STIRer.

For instance, a major theme of the paper focuses on the notion of disorientation, and personal and the intellectual vulnerability of the ethnographic researcher. This theme details the "obligatory passage points" that STIR researchers had to pass through in order to gain legitimacy within the laboratory context. A second theme explores the ways in which STIR researchers immersed themselves in the technical language and practices of the laboratory. While other scholars have also learned science as part of laboratory observation studies, the STIR approach seeks to draw on the science less as a linguistic medium and more as a topical *entry point* for discussing broader ethical and social considerations in the midstream of laboratory decision-making. Additional themes describe mutual learning between STIR researchers and their natural science and engineering counterparts; the process of becoming embedded; intellectual and personal risks that STIR researchers and their scientific collaborators underwent during the integration process; and the confluence of methodology, skill and politics that went into individual choices of how to use—and whether to use—the STIR decision protocol within various contexts. Finally, the paper grapples with multiple cases "in-between-ness" that STIR researchers experienced given the STIR directive to "go all but native" in the laboratory, including the space between observation and advocacy that STIR researchers often felt they had to navigate.

STIR was co-funded for 5 years at \$540,000 through several NSF programs: Science, Technology and Society; Biology and Society; Mathematical and Physical Sciences and Society; Science of Science and Innovation Policy; and Office of International Science and Engineering. Additionally, through an international network that PI [Fisher](#) has cultivated since joining CNS-ASU in Aug 06, STIR project collaborators have expended over \$500,000 to support and continue the non-NSF funded aspects of the project, bringing the total project funding to over \$1M (not including administrative and financial support from CNS-ASU).

Research Program, Accomplishments and Plans, RTTA 4/3: Integrative Co-curricular Activities

(See **Education** section for an account of the DC Summer Session and the Certificate in Responsible Innovation.)

Research Program, Accomplishments and Plans, RTTA 4/4: Integration Policy and Responsible Innovation Studies

RTTA 4/4 conducts a number of policy studies that characterize, map and assess socio-technical integration into nanotechnology R&D prioritization, allocation and delivery processes in the US and around the world.

Integration Policy Studies

In previous years, we reported on the increasing role that socio-technical integration has played in European R&D system, both at the “high policy” level and at the more routine level of resource allocation and solicitations; on the lack of efforts devoted to socio-technical integration at the research prioritization in the US and UK nanotechnology programs in the wake of novel policy initiatives for responsible innovation; and of international efforts aimed at responsible innovation in terms of multi-level dynamics.

Responsible Innovation: ASU Initiatives

As reported in past years, Fisher and Guston have been closely involved with activities and scholarly efforts organized around the nascent concept of Responsible Innovation in the US, UK, Europe, Japan and South America, including through the Virtual Institute for Responsible Innovation (VIRI; # 1257246; Guston, PI; Fisher, Co-PI), a session organized by Guston at the 2013 Annual AAAS meeting on “Responsible Innovation in a Global Context,” and the creation of the *Journal of Responsible Innovation* (Guston, editor in chief; Fisher and four European colleagues, associate editors). *JRI* has now released four issues and has continued to provide a forum for discussions of the normative assessment and governance of knowledge-based innovation. VIRI graduate research assistant Miles Brundage has made extensive progress on both his personal research agenda of RI applied to artificial intelligence and robotics as well as the VIRI agenda of attempting to understand RI as a scientific-intellectual movement. VIRI helped support the attendance of a small number of early career scholars to the NSF-funded, associated Workshop on Research Agendas for Societal Aspects of Synthetic Biology, and it supported travel for CNS grad students to Europe in Summer 2014. This summer, VIRI will collaborate with member institution Science Policy Research Unit (SPRU) at the University of Sussex, UK, to host a meeting of VIRI’s now eighteen members.

Responsible Innovation: Distinguishing Features

After examining the variation of definitions, frameworks and practices associated with Responsible Innovation, RTTA 4 researchers Fisher, Guston and Trinidad discern three relatively unique features of responsible innovation in comparison to comparable internationally-adopted science policy programs. Comparable programs “policy for science” programs include Ethical, Legal and Societal Implications (ELSI), Responsible Conduct of Research (RCR), Institutional Review Boards (IRBs), the National Science Foundation’s Broader Impacts Criterion (BIC), among others. By comparison, responsible innovation is unique in the combination of (1) its broad stance towards science and innovation, (2) the societal context within which it takes science and innovation to be embedded, and (3) the active role of scientific research and technological design within this context.

Responsible Innovation: Pedagogical Objectives

From this basic rubric, the researchers derive three general and idealized objectives for responsible innovation training and education. Regardless of the specific content, methods

and goals that a given pedagogical program may associate with responsible innovation, the technical experts and practitioners that such programs aim to produce will, ideally, recognize that (1) science and innovation entail societal dimensions as a matter of course; (2) these dimensions are co-produced by science and innovation and their societal contexts; and (3) these dimensions can and should be attended to even at the bench-level of research, design and other mundane innovation practices.

Informing Policy Discourse: Presidential Bioethics Commission Report

In YR 9 we noted that Fisher testified before the Presidential Commission for the Study of Bioethical Issues in Washington DC. In May 2014, the Commission released the report *Gray Matters* (PCSBI 2014), which—as Guston notes in his editorial introduction to the second issue of the *Journal of Responsible Innovation*—discusses in detail the options for pursuing responsible neuroscience in the context of President Barack Obama's BRAIN Initiative. The focus of the report is “integrative approaches for neuroscience, ethics and society,” and it borrows heavily from Fisher's testimony and work in Socio-Technical Integration Research (PCSBI 2014, 15). Indeed, three of the Commission's four recommendations focus on integrating ethical and societal perspectives with neuroscience – “early and explicitly throughout the research” as well as in education and in advisory bodies – and the fourth focuses on evaluating integration techniques.

RTTA 4 Continuing Integrative Outcomes

In addition to conducting ongoing integrative studies and engagements, RTTA 4 involves various socio-technical collaborations. In previous years, we reported on collaborations between Fisher and Woodbury regarding scenarios based on the nanodiagnostics for theranostics medicine work done in the Woodbury lab, among other collaborations. This year, we note that Tom Seager of ASU's School of Sustainable Engineering and the Built Environment was a co-author on the article, *Mapping the Integrative Field: Taking Stock of Socio-Technical Collaborations*, which was based on collaborative work with RTTA 4 during the previous year and also included Fisher and ASU doctoral student Eric Kennedy as co-authors. Additionally in Y10, Fisher participated for the second time in the meeting of the Association for Managers of Innovation, which led to several invitations to collaborate with scholars and practitioners of innovation.

Contribution to “ensemble-ization” or other center-wide activities

RTTA 4 continues to work with RTTA 2 and 3 in several projects. Center-wide activities reported last year included a public engagement event organized in the Netherlands based on STIR work in Japan and on efforts to tailor STIR more closely to the sustainability agenda, combining elements of RTTA 4 and 3. Five attendees at the Y10 CNS Winter School have continued working with Fisher on a new project. Guston, Corley and Fisher continued working with Reinsborough and began working with Radatz on the Center impact assessment that combines efforts of RTTA 2 and 4. In Jul 14, Fisher partnered with Seager and several other Center participants to conduct sessions in the Sonoran SciComm workshop in Arizona that explored the interplay of empathy and creativity in collaborative teamwork, which led to planned collaborative activities with members of Seager's engineering group involving various pedagogical strategies and grant applications involving responsible innovation. Finally, RTTA 4 researchers are in discussion with the Smithsonian Institute's Lemelson Center for the Study of Invention and Innovation about a future

collaborative event that would also involve additional research and engagement programs within the CNS-ASU.



Photo: STIR project workshop 6 participants in Kitchener, Ontario. Photo credit: Heather Douglas.

TRC 1: Equity, Equality and Responsibility

Personnel – faculty and senior participants

Susan Cozzens, TRC 1 co-leader (GA Tech, professor, Public Policy, Vice-Provost for Graduate Education & Faculty Development, TPAC)

Jameson Wetmore, TRC 1 co-leader (ASU, Associate Professor, School of Human Evolution & Social Change, CSPO)

Matthew Harsh, Assistant Professor, Concordia University

Ogundiran Soumonni, Assistant Professor, University of Witwatersrand, South Africa

Thomas Woodson, Assistant Professor, Technology and Society, Stony Brook University

Other Personnel: graduate students (2)

Rafael Castillo (GA Tech)

Michael 'Bernstein (ASU)

Goals: over the past several years the TRC 1 team has been focused on determining whether and how nanotechnology can be used to help the disadvantaged. Much of this work has been centered on South African and US initiatives to develop “pro-poor” nanotechnology. More recently the team has been developing and disseminating best practices for building technologies that can best meet the needs of disadvantaged communities.

Research Accomplishments and Plans, TRC 1

Community Engagement Workshops

During its research, the TRC 1 team found several examples of attempts to create pro-poor technologies that struggled greatly or failed completely because the scholars involved did not understand the context of the depressed regions they were trying to improve. In a modest effort to help remedy that problem, for the last two years TRC 1 has been creating and hosting a series of short workshops that introduce scientists and engineers who want to engage with the developing world to basic steps they can take early on to increase the possibilities for success.

To date the team has tested components of the workshops twice – at the 2014 and 2015 CNS Winter Schools – and run four full workshops in three countries. The first was held at Georgia Tech on March 20th and 21st, 2014. This first workshop was the final shakedown of the program. The second was held at the University of the Western Cape, South Africa on April 8-11, 2014. The program was run for 25 students from across Africa who were participating in the South Africa’s National Nanoscience Postgraduate Teaching and Training Partnership, a collaborative between the University of the Western Cape, University of Johannesburg, University of the Free State, and the Nelson Mandela Metropolitan University. On October 3-4, 2014 the workshop was held in Concordia University, Montreal for more than 20 graduate students from several different science and

engineering programs. And on November 21-22 the program was run at ASU for 15 students from different disciplines.

The major focus of the workshop is to help participants recognize the limits of their knowledge when it comes for designing technologies for communities they do not yet understand. The workshop stresses partnering with local people and organizations who can not only help define solutions, but even more importantly help to determine what the problems are to begin with. To this end each workshop has sought local experts and community organizers who can help students see the ways in which partnerships are crucial to success. At Georgia Tech the workshop partnered with the Sickle Cell Foundation of Georgia. In Cape Town the local partner was the ArcelorMittal Science Center. In Montreal the students met with scholars working with Inuit communities. And in Tempe representatives from ASU's Global Resolve explained their work. Much of the program in the workshop is designed to help students develop listening skills to increase the number of voices that have a say in the project.

The project team was joined over the summer by Michael Bernstein, a CNS graduate student doing work with TRC2. Bernstein brings an interesting set of analytical tools to help explain what students are learning and what impact programs can have on the professional development of scientists and engineers. Bernstein collected data at the Concordia and ASU workshops and will be writing a chapter of his dissertation on the topic.

The research team is currently seeking additional opportunities to present the workshop. There is currently interest at the University of Virginia and Stony Brook University. Subsequent versions may be held over the fall. The next major step, however, is to develop a handbook that can provide other scholars who want to run a similar workshop, with the basic tools necessary to put one together. This volume will likely end up in CSPO's *The Rightful Place of Science* book series, a list of six current short book publications available at very low cost in print-on-demand or e-book format.

Graduate Student Updates

Rafael Castillo was instrumental in organizing several of the workshops and has continued working on his dissertation on the impact of nanotechnology on employment. Michael Bernstein helped to organize the ASU workshop and is finishing up other aspects of his dissertation as he processes the data collected at the final two workshops. And longtime TRC1 member, Thomas Woodson, successfully defended his dissertation on the role of public-private partnerships in nanomedicine in the spring of 2014. In the fall of 2014 he began a tenure track position in Technology and Society at Stony Brook University.

Nano Around the World Card Game Update

The Nano Around the World Card Game continues to be played around the world. It is used by museum professionals not only in their outreach, but in their training as well. A recent NSF funded research project to develop museum materials on the topic of Synthetic Biology

is sponsoring the development of at least two card games that were at least partially inspired by the nano game.

Technology in Developing Countries Spinoff Project

The TRC 1 work on technology in developing countries, especially South Africa, has also helped to form the foundation for a 2-year NSF grant that was awarded in September 2013 to Wetmore (PI), Harsh (Co-PI, and CSPO professor of practice Gregg Zachary (Co-PI). This grant, "Capacity Building in Computer Science as a Driver of Innovation," seeks to understand how African computer scientists in Kenya and Uganda are developing uniquely African solutions to African problems. Some of the connections Harsh made in the CNS project helped him to ultimately get invited to conferences in South Africa on computing in Africa. The Capacity Building project completed its first field trip to Kenya and Uganda in the summer of 2014, has produced a short film on the topic, and is returning for follow up research in May and June of this year.

New publications:

Woodson, Thomas, Duy Dot. (2015). "Nanotechnology Companies in the United States: A Web-based Content Analysis of Companies and Products for Poverty Alleviation". *Journal of Business Chemistry* 12 (1).

Book review:

Woodson, Thomas. (2014). "Book Review: Nanotechnology and Development-What's in it for Emerging Countries". *The Journal of Development Studies*.50 (11).

TRC 2: Urban Design, Materials, and the Built Environment (“Nano and the City”)

Personnel – faculty and senior participants:

Arnim Wiek, TRC 2 leader (ASU, associate professor, School of Sustainability)
 Sander van der Leeuw, TRC 2 co-leader (ASU, professor, School of Sustainability)
 Rider W. Foley, TRC 2 co-leader (UVA, assistant professor, Center for Engineering and Society)
 David H. Guston (ASU, professor of politics and global studies; director, CNS-ASU)
 Darren Petrucci, senior participant (ASU, professor of design)

Other personnel – post-doctoral scholars (1), graduate students (1), undergraduate students (3)

Graduate students: Michael Bernstein (School of Sustainability)

Undergraduates: Abigail Howell, Brooke LaBranche, Evan Taylor

Goals: The TRC2 group at the Center for Nanotechnology in Society (CNS-ASU) is addressing the question: How can nanotechnology be innovated and governed in responsible ways and with sustainable outcomes? Our studies employ system analysis, scenario construction, assessment, and intervention research methods to refine theories of anticipatory governance, sustainability, and responsible innovation. We focus on metropolitan Phoenix, a top-thirty nano-district and a top-twenty innovation hub in the U.S and in the final two years of the center, TRC2 expanded our research activities to include other national (Washington DC) and international (Montreal, Canada) sites through partnerships with other research themes on the CNS grant.

Key Findings

Against a backdrop of systems analysis, assessments and scenario construction research conducted in years 2011 – 2014, graduate student Bernstein launched into a series of intervention research studies. The first study in 2014-2015 systematically assessed outcomes that result from Science Outside The Lab (SOTL), an intervention into science and engineering education. Preliminary results suggest that, after participating in SOTL, science and engineering graduate students in nanoscience and other fields increasingly appreciate the plurality of voices and values involved in shaping science policy priorities. A second study in 2014-2015 focused on the Community Engagement Workshop (CEW), first piloted by TRC-1 co-leaders Wetmore and Cozzens in South Africa in March 2014. For this project, graduate student Bernstein helped incorporate an intervention research approach into the design, implementation, and evaluation of two additional CEWs, one in Montreal, Canada, and one in Phoenix, Arizona. Preliminary findings indicate that the workshop increases participants’ capacity to look beyond technology when conceiving of engineering projects for community development. The intervention research approach honed throughout this process by TRC-2 is being prepared for a series of manuscripts and presentations detailing theoretical and methodological advances.



TRC 2 co-leader [Wiek](#) welcomes the participants and introduces the walking audits in front of the Gateway Community College to a ‘Collaborative On-site Technology Exploration’ that brought together a diversity of stakeholders to explore what could be done differently.

In past years, TRC-2 addressed questions of: *How is nanotechnology currently innovated and governed in the urban environment? How well does the current governance and innovation regime perform against principles of risk, sustainable, and anticipatory governance (responsible innovation)? What could be future implications if the current innovation and governance regime continues, in contrast to alternative models? and What are necessary changes to innovate and govern nanotechnology in responsible ways?*

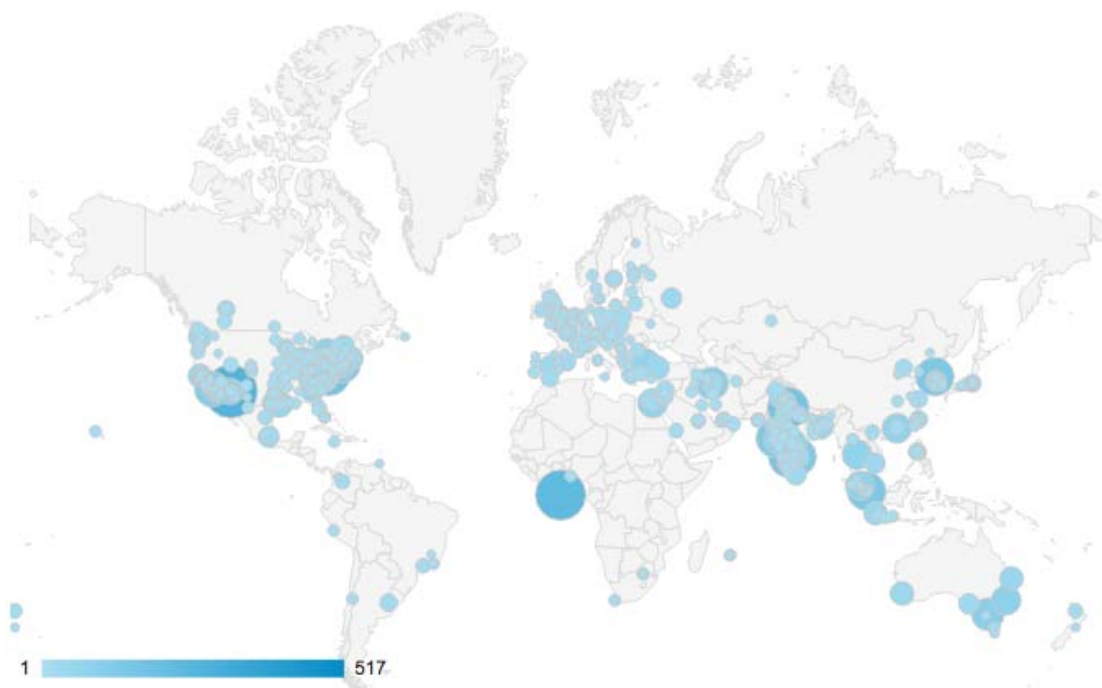
Our case study research in Phoenix finds the dominant actors are academic, industrial, and government funding agencies (i.e. triple helix) with the shared objective to deploy profitable commercial or military products. This actor network is divided along product-sectors with few cross-sector linkages. Lack of cross-sector linkages limits opportunities for collaboration, coordination, and joint learning. The actor network in Phoenix pays little attention to risk mitigating organizations (e.g., insurers, government regulators, NGOs). The nano-enhanced city may offer benefits to a privileged few yet, city officials, civil engineers, NGOs, and citizens, who participate in urban development, are unlikely to have the opportunity to deliberate on the effects of nanotechnologies before they are deployed.

There is novelty in the products’ functionality, ranging from solar technology to personalized medicine; but there is little evidence in Phoenix of novelty in its innovation and governance processes. Actors, activities, as well as constraining and enabling factors, follow market-oriented or closed-collaboration (military) models of innovation and governance with little attention paid to adverse effects or broader public values. These characteristics stand in stark contrast to state-of-the-art governance in technology development.

Our participatory scenario study suggests that two dominant models of nanotechnology innovation and governance (market-oriented, and closed-collaboration military model) might amplify the lack of social cohesion, livelihood opportunities, as well as resource depletion and large-scale contamination. Society might get further divided along people’s socio-economic status and means. Social tensions and outburst of violence might get mitigated with even greater dominance, surveillance, and other control mechanisms (employing suitable nanotechnologies). In contrast, we explore governance models with high levels of public participation or open-source activities that could expand beyond the ‘triple helix’ of innovation, linking public agencies, risk mitigating actors, and civic society. Society might develop a unique practice of collectively addressing urban sustainability problems. This could lead to transformational solutions, including particular types of nanotechnologies that alleviate stresses on people, economy, and environment. The scenarios support an earlier study that highlighted the critical need to complement nanotechnology innovation with non-technical interventions. Nanotechnologies in the current governance regime have limited potential to positively affect urban sustainability challenges, such as water contamination, energy use, or childhood obesity. Embedded in more comprehensive transition strategies, however, they could play a critical role in making progress towards urban sustainability.

Nanotechnology in City Environments (NICE) Database

Continuing work begun in previous years, three undergraduate students and one graduate student continued efforts to support and expand the Nanotechnology in City Environments (NICE) database. The NICE database catalogues academic research, public reports, advertising materials, technical specification, and theorized implementation of nanotechnology captured in an urban context. The NICE database has been used as a resource for CNS-ASU in multiple projects, including the FutureScape City Tours as a reference tool for partners and participants, for TRC2 scenario study and for an assessment of the current state of nanotechnology. The website reaching out to interested scholars, professionals, and the general public. In the most recent reporting year 14,470 unique visitors accessed the website from March 16, 2014 to March 6, 2014 up from 12,476 in the previous year. Visitors log on over 1,000 cities around the world. The database has been continuously updated and built out during this time period. (Also see **Section 12 Outreach and Knowledge Transfer**).



Map of cities that shows the number of unique visitors (expressed by the circle size) that visited www.nice.asu.edu. Note: Blue dot off the east coast of Africa is 'unset' locations.

Anticipatory life cycle assessment

Anticipatory LCA builds off real-time technology assessment to explore environmental uncertainties through structured interdisciplinary collaboration, specifically identifying the synergistic contributions of social, physical, environmental, and decision sciences that can inform LCA modeling decisions. The results of such aLCA models may inform research and development decision-makers of broader environmental and stakeholder value-derived criteria for technology assessment. CNS researchers partnered with the NSF-funded Quantum Energy and Sustainable Solar Technology (QESST) Engineering Research Center at ASU, as well as industry collaborators at General Electric and the non-profit organization EarthShift LLC to publish this novel approach as the cover story in the 16 September 2014 issue of *Environmental Science*

and Technology. The cover featured an image from the short film “Phoenix 2050,” created as part of a graduate studio course taught by co-leader Wiek and senior personnel Petrucci. This article, along with its artwork, demonstrates the unique ability of the Center to foster interdisciplinary research spanning three sectors and five different schools within ASU.

To move the aLCA agenda forward with international collaborators, CNS researchers hosted an workshop entitled “Advancing Life Cycle Assessment for Responsible Research and Innovation” concurrent with the 6th annual meeting of the Society for the Study of Nanoscience and Emerging Technologies (S.NET) in Karlsruhe, Germany. The workshop connected European and US researchers (n~30) involved in LCA and other technology assessment methods, featured plenary presentations on anticipatory and prospective LCA methods, and engaged participants in a series of small group activities. Following the workshop, a smaller cohort of researchers gathered at the 2015 CNS Winter School to reflect and summarize findings in a forthcoming workshop report and book chapter for the S.NET proceedings.

Ongoing projects and outcomes

Co-leader Wiek guided a design studio that explored the scenarios constructed by TRC2 in partnership with director Guston and senior participant Petrucci and ASU’s Design School. Graduate students developed urban design proposals and other imaginative concepts of the nano-enhanced city based on the scenarios and their components, including societal drivers, innovation models, nanotechnology applications, and urban sustainability challenges. The students reimagined the urban design impacts of various types of nanotechnology. Place-specific renderings were overlaid with audio to create a ‘movie’ that visually depicts the mutual interactions between nanotechnology and society. Based on this work, Petrucci and Foley presented the scenario movie in Washington, DC at the Consortium for Science, Policy and Outcomes offices for science policy advisors and interested guests. This research project yielded publications in *Issues in Science and Technology* and *Futures* in this reporting year, which included numerous images from the studio. One image generated in the studio was featured on the cover of *Environmental Science and Technology*. Another was featured on the cover of the March 2015 edition of *ASU Magazine* with a portrait of Petrucci as part of a feature story on the role of the arts and design in science, technology, engineering and mathematics (STEM).



Design students discuss first set of urban design proposals with CNS-ASU director Guston and instructors Darren Petrucci, Renata Hejduk, and Wiek in the Decision Theater.

Ongoing project goals and avenues for further investigation

We are currently conducting research studies to test alternative interventions in innovation processes guided by normative concepts such as anticipatory governance and responsible innovation. We have cataloged 50 potential interventions, from which we are selecting a small sample of case studies. This research contributes to social learning, product re-design, and shifts in practices across the innovation cycle.

**TABLE 2: NSEC Program Support
(NSF Grant #093791)**

Projects	(1) Current Year 9/1/14 - 9/1/15 Budget (NSF)	(2) Current Year 9/1/14 - 9/1/15 Budget (Cost-share)	(3) Current Year 9/1/14 - 9/1/15 Budget (Other Support)	(4) Summary 1-3 Current Year Total Budget (Combined)	(5) Next Year 9/1/15 - 9/1/16 Budget (NSF)
RTTA 1	\$219,481	\$10,343	\$495,788	\$725,612	\$25,358
RTTA 2	\$111,472	\$10,343	\$218,454	\$340,269	\$25,358
RTTA 3	\$42,581	\$51,543	\$50,653	\$144,777	\$112,708
RTTA 4	\$27,481	\$46,777	\$58,416	\$132,674	\$63,359
TRC 1	\$30,808	\$10,343	\$265,584	\$306,735	\$25,358
TRC 2	\$95,723	\$15,600	\$18,925	\$130,248	\$44,529
Seed Projects	\$0	\$0	\$0	\$0	\$0
TOTAL Projects	\$527,546	\$144,949	\$1,107,820	\$1,780,315	\$296,670
Education	\$148,602	\$10,343	\$68,385	\$227,330	\$80,197
Administration	\$45,611	\$119,443	\$158,000	\$323,054	\$206,932
Equipment	\$0	\$0	\$0	\$0	\$0
Knowledge Transfer	\$0	\$0	\$11,220	\$11,220	\$0
Indirect Costs	\$176,761	\$0	\$706,348	\$883,109	\$282,894
Subtotals	\$898,520	\$274,735	\$2,051,772	\$3,225,027	\$866,693
Total Budget	\$898,520	\$274,735	\$2,051,772	\$3,225,027	\$866,693
Uncommitted	\$0	\$0	\$0	\$0	\$0

* Please note: Seed Projects have been included in the individual research program to which they are relevant.



David H. Guston, Director, CNS-ASU

April 15, 2015

10. NSEC Diversity Progress and Plans

Progress Toward Enhancing Diversity

Since its founding, the Center has worked to enhance the diversity of its leadership, faculty, postdoctoral, graduate, and undergraduate researchers. The Center has put significant effort into recruiting women and individuals from underrepresented groups. These efforts have included working with the ASU Hispanic Research Center to conduct workshops and courses oriented toward graduate and undergraduate students from underrepresented groups, as well as efforts to ensure appropriate advancement of faculty and postdoctoral researchers through promotion and increasing involvement in Center leadership. While the Center's diversity has improved significantly since its inception, in the recent year there has been only a modest improvement in racial and ethnic diversity and a modest decrease in gender diversity overall (while gender diversity remains strong in leadership positions).

Center efforts have worked especially well in recruiting women into Center activities at all levels. NSECs are expected to be model programs and to meet or exceed national percentages for the inclusion of women and underrepresented groups in science and engineering. At all levels, the current percentage of women in the Center exceeds the relevant national equivalent percentage in science and engineering fields. The Center has also made progress with regard to Hispanic participation, especially in recent years. In terms of Center leadership, postdoctoral, and graduate student participation, the Center exceeds (and in some cases significantly exceeds) the national percentage for Hispanic teachers in colleges and universities. The percentage of graduate students from underrepresented groups also exceeds the percentage of doctoral degrees awarded nationally to students from under-represented groups. See Tables 4A and 4B for an overview of Center personnel. We report results for Table 3B and 4B, but percentages of US minorities tend to rise if Table 3A and 4A are used, as many reported Asian participants are not US citizens.

As directed by the NSEC diversity reporting requirements, we compare our data below with data from national science and engineering statistics, as provided by the National Science Foundation. For comparison, we have used data from NSF's *Women, Minorities, and Persons with Disabilities in Science and Engineering* (<http://www.nsf.gov/statistics/women/>) updated January 2013 (with most data from 2010). The data available from this report is not symmetrical with respect to women and minorities nor the social sciences and science and engineering more broadly. We have therefore used the statistics available. Thus, our comparison categories vary somewhat.

Leadership: Center leadership has transitioned from its first phase (YRs 1-5) to its renewal phase (YRs 6-10). The Center's leadership initially included two women of six principal investigators (Carlson, Schneider) and three women of eleven leaders of the six RTTA and TRC research programs (Corley, Hogle, Schneider), for a total of five of seventeen (29%). At the time of the YR 10 review, two women serve among the five renewal PIs (Corley, Youtie) and five women serve among twelve RTTA and TRC research program leaders (Corley, Cozzens, de Ridder-Vignone, Selin, Youtie), for a total of five of fifteen Center leaders (33%). Of these individuals: Corley began as an assistant professor and faculty researcher and is now a tenured associate professor, research program leader, and co-PI; Cozzens began as a faculty researcher and is now a research leader; Selin began as a postdoctoral researcher and is now a tenure-track assistant professor, research program leader, and associate director for anticipation; Youtie began as a faculty researcher and is now a research program leader and co-PI; de Ridder-Vignone joined the Center as a doctoral student, advanced to a post-doc position, and is now a faculty member at James Madison University in the Integrated Science and Technology program.

Research program leaders currently also include one Hispanic (Lobo), for a total of one of fifteen (7%) – an improvement over the lack of any members of underrepresented racial or ethnic groups among the original leadership team, but a drop from YR 8 with the departure of Lim from the Center's leadership team.

The percentage of women in Center leadership roles is equivalent to the percentage of doctoral level women in US universities with very high research activity (33%, NSF Table 9-21). The Center's Hispanic leadership for the renewal period slightly exceeds the percentage of doctoral level Hispanics in US universities with high research activity (4%, NSF Table 9-21). For the social sciences specifically, these numbers across all US colleges and universities are 38% for women and 5% for Hispanics.

Faculty and Professional Participants: From YR 1 to YR 7, the Center increased the number (and percentage) of women faculty involved in Center research and activities (non-leadership) from an initial seven (7 of 31, 23%) to 194 (194 of 507, 38%) active faculty and professional collaborators. YR 8 and YR 9 participation rates were lower, as we did not co-sponsor three major conferences, as we had in YR 7. In YR 10, participation of faculty and professional participants was 207 total individuals, with 84 women (41%)

The Center has also increased the ethnic diversity of faculty and professionals involved in Center research (non-leadership). The Center faculty initially included 5 Asian Americans (of 31, 16%) and zero from underrepresented groups (of 31, 0%). The Center faculty and participants at the end of YR 7 included 2 Native Americans, 3 African Americans, 39 Asians, 9 Hispanic, and 1 disabled, for a total of 54 individuals (out of 507, 11%). In YR 10, participants included 1 Pacific Islander, 1 African American, 22 Asians, and 8 Hispanic totaling 32 (of 214, 15%) faculty and professionals.

Overall, the diversity of the Center faculty and professional participants stayed roughly the same in the past year. The percentage of women faculty in the Center slightly exceeds the percentage of women holding science, engineering, or health doctorates in US faculty positions in very high research activity universities (33%, see notes under Center leadership). The percentage of Hispanic faculty in the Center is slightly less than the percentage of Hispanic faculty according to the same metric (4%, see notes under Center leadership).

Postdoctoral Researchers: Since its inception, the Center has increased the diversity of women in postdoctoral research positions. Initially, the Center had one woman postdoctoral researcher (Selin) out of four (25%), who has subsequently been promoted to tenure-track assistant professor and has become a research program leader. By the reporting period of YR 10, the Center had 10 women (of 16, 63%). Center progress in enhancing the racial and ethnic diversity of its postdoctoral researchers has been somewhat but not fully satisfactory. The Center has increased the number of Asian and Asian American postdoctoral researchers involved in the Center, from one in its initial year (1 of 4, 25%) to 4 (of 16, 25%) in YR 9; the Center had 1 Hispanic postdocs (of 16, 6%). Unfortunately, the Center has not increased the number of African-American, Native American, or Pacific Islander postdoctoral researchers from its initial zero. The percentage of women postdoctoral researchers in the Center exceeds the percentage of women in postdoctoral positions in the social sciences (47%, NSF Table 8-1).

Graduate Students: The Center has seen significant progress since its inception in improving the gender, racial, and ethnic diversity of its graduate students. At its inception, among its active graduate researchers, the Center had eight women graduate students (8 of 28, 29%) and eight

Asian or Asian American graduate students (8 of 28, 29%). As of the YR 10 report (**Table 4A**), the Center has had 80 women (of 170, 47%), 51 Asian or Asian American (of 170, 30%), two African American (of 170, 1%), and 18 Hispanic (of 170, 11%) graduate students among its researchers. In addition, in YR10, Center degree programs and certificate / training programs (**Table 3A**) involved 38 women (of 68, 56%), 5 African American (of 68, 7%), 18 Asians (68, 26%), and 1 Hispanic (of 68, 1%) students. These levels indicate increased participation from women, African Americans and Asians from previous years and decreased participation from Hispanics.

The percentage of women graduate students involved in Center research is marginally lower than the percentage of women graduate students in the social sciences nation-wide (54%, NSF Table 3-5). The percentage of under-represented minorities (24/68, 35%, **Table 3A**; 53/170, **Table 4A**), collectively, is above the share of under-represented minorities among social science graduate students nationally (22%, NSF Table 3-1).

Undergraduates: The Center no longer funds undergraduate students through the Innovation Space program but is implementing a Broadening Participation program for underserved minority undergraduates as explained below.

Plans Going Forward

While the Center has performed strongly on diversity during its first nine years, meeting and, in many cases, exceeding relevant national percentages, there are still opportunities in the remaining time of the Center to improve. We have therefore established a strategic plan for the renewal period on diversity that aims to further improve the Center's diversity profile.

Overall Objectives: The Center's overall objective with respect to diversity is to be a model for incorporating diversity among Center participants. To achieve this, we propose to pursue the following specific goals:

1. To maintain and continue to advance high levels of Center diversity in those areas documented above where Center diversity currently exceeds appropriate national levels;
2. To seek opportunities to recruit new Center participants, where appropriate, who will enhance the diversity of the Center in those areas where the Center is currently lower than appropriate national levels; and
3. To enhance graduate and undergraduate participation among students from underrepresented racial and ethnic groups.

Strategic Opportunities: Looking forward to the final year of the Center's NSF-supported activities, we propose to focus on a small number of concentrated activities that we think will make a concrete difference in the short term to enhancing the Center's diversity while laying important infrastructural foundations for improving long-term diversity in the field.

1. Identify other areas of engagement beyond the Hispanic Research Center. The Center has had a relationship with the Hispanic Research Center (HRC) at ASU, through which the Center has built a growing number of contacts with students from African American and Hispanic backgrounds. In YR 7, CNS taught a 7-week course on nanotechnology in society (described in the **Outreach** section) to 12 ASU graduate students in the sciences and engineering from underrepresented backgrounds. The course was very successful, with several of the students following up and participating in

Science Outside the Laboratory, Chemistry 501, led by Bennett and Wetmore, and other Center activities. In the reporting year, the major HRC STEM funding mechanism (the MGE@MSA program) sunsets, leaving CNS-ASU without a major source of under-represented students for our programs.

2. In YR10 we specifically targeted PhD students and post-docs at from under represented minority groups, offering 3 full Winter School packages (including fees and transportation). This recruitment was successful, so successful in fact that we ended up awarding 4 packages.

3. In YR 10 we began to develop and implement targeted recruiting efforts for the new Graduate Certificate in Responsible Research and Innovation. Two of the three students in that cohort are from under represented minority groups

4. In YR 9, we successfully recruited in collaboration with the School of Social Transformation for a visiting assistant professor in science, technology, and social transformation. This person is teaching relevant courses in this area focusing on race and social justice around emerging energy technologies, which are strengthening recruiting into Center educational programs. In the coming year, she will be serving in Guston's stead as the social scientist working with the SUN IGERT program.

Program to Broaden Participation in Science Studies Fields; While many career opportunities exist at the intersection of science and society, undergraduates may not know about them, especially if they are first-generation college students. To help increase participation by underrepresented minorities in science policy and science and technology studies (STS) fields, NSF awarded a supplemental grant to CNS-ASU in 2014 (NSF#1451205) to develop a program to give a select group of undergraduate students a better understanding of the careers available and the educational paths to those careers.

The program will create a cohort of 24 students—the Policy, Science, Technology & Society (POSTS) Scholars—from 12 universities across the US. Targeting sophomores and juniors who have already shown an interest in STS and science policy fields, the program includes mentorship and guidance from an STS or science policy faculty member, a personalized research experience, and two summer workshops in Washington, DC, to introduce students to the complexity of the science policy process. This program received 55 applications to participate with cohort selection to be completed in late April.

In the first summer participants will spend a week in Washington DC learning about various types of career paths that one can have with a degree in science studies. Through out the next academic year students will take two courses, picked with guidance from their on campus mentor, in the science studies area. The following summer the participants will return to Washington DC to spend two-weeks in a more intensive policy immersion and research methods focused experience. Finally the mentors will work with students to help prepare applications for graduate school if that is the path the student chooses to take.

11. Education

CNS-ASU is involved in extensive formal and informal educational activities, from undergraduate curriculum to graduate student and post-doctoral training and mentoring, and from science and engineering practitioner training to collaborations with science museums. Many of these activities are tightly integrated with research and outreach activities, and most maintain as their central focus the building of broader societal capacity for anticipatory governance. Thanks to its many innovative programs, CNS-ASU is recognized as a national leader in two particular areas of education. First, building on activities like co-sponsoring the “Congress on Teaching the Social and Ethical Implications of Research” in Nov 2011, CNS-ASU is developing and promoting education programs that introduce science and engineering graduate students to the social implications of their work, as well as developing a community for the scholars that do this work. Second, through collaborations with the Nanoscale Informal Science Education Network (NISE Net), especially a new training program for museum, CNS-ASU is developing and promoting new ways to make the societal aspects of science and technology accessible to science museum audiences.

Disseminating the CNS Education Models

CNS is increasingly seen as a leader in educating scientists and engineers in the societal aspects of their work. In recent years, CNS scholars and educators have hosted visits and extended conversations about such interdisciplinary teaching and training with colleagues including Christine S. Jones (Colorado State University), Janet Kourany and Kathleen Eggleston (University of Notre Dame), Megan Palmer (SynBERC/Stanford), Mary Sunderland (Berkeley), and Erik Aarden (Aachen University/Harvard). Some of this work has been international, including a Sp 12, collaboration among TRC 2 co-leaders van der Leeuw and Wiek with six universities from Canada, Mexico, South Africa, Germany, Sweden, and Japan to disseminate the teaching and research of sustainability scientists across the globe and a Fa 10 UK ESRC funded trip by Edinburgh researchers Jane Calvert and Emma Frow to investigate the Center’s variety of training programs (followed up by subsequent visits by Guston in Fa 10 and Wetmore and Harsh in Su 11. Wetmore and Bennett also spent time at Edinburgh in 2012 disseminating CNS education programming and holding a workshop about science and society content in museums. Wetmore and Bennett were also involved in panels (at AAAS and 4S) that culminated, in collaboration with an NSF EESE grant (Herkert, PI), the National Nanotechnology Infrastructure Network (NNIN), and NISE Net, in a Congress on Teaching the Social and Ethical Implications of Research. The response by the participants – more than 100 of them – was overwhelmingly positive, and the Center continues to contemplate how to bring the community together again, including through a proposal project to NSF to bring together STS, science policy and ethics scholars with science museum professionals to find new ways of talking about science with public audiences.

Post-doctoral training and junior research scholars

CNS-ASU has put significant effort into building a cohort of talented junior scholars who are developing not only research skills but collaborative and leadership skills as well, including post-doctoral scholar in the reporting year Megan Halpern (PhD Cornell). Researchers Barben (Free University-Berlin, Political Science & Sociology), Bennett (ASU, Chemistry), Conz (ASU, Sociology), Davies (Durham, Science Communication), de Ridder-Vignone

(Cornell, STS), Fisher (Colorado, Environmental Studies), Foley (ASU, Sustainability), Harsh (Edinburgh, STS), Reinsborough (Belfast, Sociology), Selin (Copenhagen Business School, Knowledge & Management), and Wetmore (Cornell, STS) were all initially hired at the post-doctoral level at ASU. Another postdoctoral researcher, Hannot Rodriguez-Zabaleta (Philosophy & Risk Assessment), joined ASU through an award from the Basque Government and has collaborated in Center research with Fisher. The Center has also provided training to post-doctoral fellows at the University of Georgia (Catherine Slade [Georgia State], under the direction of Bozeman on RTTA 1/2), Georgia Tech (Jue Wang [GA Tech], under the direction of Shapira on RTTA 1/1 and Sonia Gatchair [GA Tech], under the direction of Cozzens on TRC 1), and Wisconsin (Jason Delborne [Berkeley], under the direction of Kleinman on RTTA 3/4 and Ramya Rajagopalan [MIT], under the direction of Fujimura on former TRC 2).

Many of these scholars have made significant advances professionally and many have taken core leadership roles in CNS initiatives:

- Halpern has been offered a tenure-track position at Michigan State University in the Department of Communication.
- Bennett and Wetmore started a new research center as part of CSPO in Nov 14. The Center for Engagement & Training in Science & Society builds on much of their work from CNS.
- de Ridder-Vignone began a tenure-track position at James Madison University in the Department of Integrated Science and Technology.
- Foley began a tenure-track position at University of Virginia in the Department of Science, Technology and Society.
- Eight are now in tenured or track positions: Barben at Alpen-Adria-Universität Klagenfurt (Austria) in a tenured position; Wetmore, now tenured, at ASU in the School of Human Evolution and Social Change; Fisher in a track position at ASU in the School of Politics and Global Affairs; Delborne in a track position at North Carolina State University; Wang in a track position at Florida International University in Public Administration; Slade in a track position at the Hull College of Business at Augusta State University with an affiliation with the Medical College of Georgia; Selin in a track position shared between ASU's School of Sustainability and the Consortium for Science, Policy and Outcomes; and Harsh in a track position at the Center for Engineering and Society at Concordia University.
- Bennett has been promoted into a research faculty position at ASU in CSPO.
- Conz was promoted into a research faculty position at ASU in CSPO, and also as a lecturer in ASU's Bachelor of Interdisciplinary Studies program. He is now deceased.
- Gatchair is a lecturer at the University of the West Indies, Mona; Rajagopalan is a post-doctoral scholar at Wisconsin; Reinsborough is a post-doctoral research at King's College, London (UK); Sarah Davies is a post-doctoral researcher at the University of Copenhagen (Denmark).
- Four have taken on formal leadership roles in the Center: Wetmore is currently a co-leader of TRC 1 and associate director for outreach, Fisher is currently a co-leader of RTTA 4 and associate director for integration, and Selin is a co-leader of RTTA 3 and associate director for anticipation. Bennett is assistant director for education and leads the DC Science Outside the Lab Policy Workshop.
- Three have obtained additional external support for CNS-associated activities:

- Fisher is PI on the \$540K socio-technical integration research (STIR) award, which extends the Center's integration agenda that Fisher pioneered as a CNS-funded doctoral student at Colorado. Fisher was also PI on a National Nanotechnology Infrastructure Network (NNIN) award that seeks to "Document Integration" at several NSEC and NNIN sites.
- Wetmore has been co-PI on three grants: a \$300K NSF award from the Ethics Education in Science and Engineering (EASE) program that develops, teaches, and assesses several models of micro- and macro-ethics instructional activities for graduate students; a second \$300K NSF award from the EASE program to develop CITI modules that address macroethics; and a \$700K NSF award to create and support a Professional Science Master's Program in Solar Energy Engineering and Commercialization that has a substantial ethics and policy curriculum, work that is now led by Bennett. Wetmore is also PI on a recent \$280K NSF award (with Harsh and Zachary), derived in part from TRC 1 fieldwork in Africa, on the emergence of computer science in Africa. He was also the social science lead for the NG-NNIN proposal led out of Stanford.
- Selin is co-PI on a recently awarded NUE with Seager and others (\$200K) to investigate the societal aspects of nanotechnology through Lego serious play.

Many of the activities encompassed by these grants have roots in the Center's program. Others are active in initiating and collaborating on new research proposals as well.

- Fisher and Selin are both collaborators on an \$820,000 award from the Research Council of Norway to Norwegian researcher Roger Strand that incorporates intellectual approaches in integration and foresight that they, respectively, have pioneered.
- Several have been involved in editing the Center's *Yearbook of Nanotechnology in Society*: Fisher, Selin and Wetmore (2008) edited the first volume. Wetmore edited the second volume (2011) with Cozzens, and Bennett edited the third volume with Hays, Robert and Miller (2012). Barben and de Ridder-Vignone are editing the fourth volume with Miller.

Graduate Education and Training

CNS-ASU organizes a variety of graduate education and training activities, aimed at several audiences. The first audience is the graduate students involved in the Center's core research activities. While only some of these students have been directly supported in graduate assistantships by CNS, many others have drawn on CNS research to develop their theses, received CNS travel funds, and been involved in the Center's events. In the reporting year, the Center has been training:

- At ASU, seven doctoral students:
 - Bernstein (funded, SOS), who has been working with TRC 2 and designing tools to evaluate societal interventions in science and engineering;
 - Trinidad (funded; HSD), who has been assisting both Fisher on RTTA 4 interviews and Wetmore and Bennett on the Informal Science Communication Program and assisted post-doc Halpern with *Emerge* and will be leading one of its publications;
 - Kim (funded; Public Affairs), who is completing his comprehensive exams and performing research for RTTA 2;

- Sadowski (HSD), who has been working with Guston on the associated award, “Anticipatory Governance of Complex Engineered Nanomaterials” and on the associated Frankenstein Bicentennial Project;
- Brundage (HSD), who is funded by the Virtual Institute for Responsible Innovation and serves as an editorial assistant for the *Journal for Responsible Innovation*, and who is also affiliated with the Solar Utilization Network IGERT;
- Altamirano-Allende (HSD), who worked closely with FCT in its implementation and its follow-on research and who assisted Halpern with *Emerge* and will be leading one of its publications;
- Fuller (Environmental Social Science), who assisted Halpern with *Emerge* and is part of its writing team.
- Current updates on earlier ASU students include:
 - Gano completed her dissertation in December 2014 and has accepted a research/research administration position at University of California-Berkeley; and
 - Conley, who defended her STIR-informed dissertation in April 2014, began her tenure-track position at James Madison University.

At Wisconsin, 20 doctoral students (Binder, Dudo, Ho, Dalrymple, Shih, Hu, Hillback, Akin, Cacciatore, Choi, Doroshenko, Kim, Li, Liang, Liu, Runge, Simis, Su, Spartz, and Yeo) in Life Sciences Communication and Communication Arts have been working with RTTA 2 data. Several of these students have received Center Support through graduate research assistantships. Six of this group have secured faculty positions, including:

- Ho, who graduated in 2008 with a PhD in Journalism and Mass Communication and is now a tenure-track assistant professor at Nanyang Technological University in Singapore;
- Binder, who graduated in 2010 with a PhD in Mass Communications and is now a tenure-track assistant professor at NC State University;
- Dudo, who graduated in 2011 and now holds a tenure-track position at the University of Texas at Austin;
- Dalrymple, who also finished in 2011 and is an assistant professor at the University of Iowa;
- Cacciatore, who finished his dissertation in 2013, is an assistant professor at the University of Georgia;
- Yeo, who finished in 2014 is a tenure-track assistant professor at the University of Utah; and
- Spartz, who finished in 2014 is a tenure-track assistant professor at Unity College

Other doctoral students trained at Wisconsin include: Li and Akin will begin postdoctoral fellowship positions at the Annenberg Public Policy Center at the University of Pennsylvania in July 2015. Leung, who completed his PhD in Sociology (2008) using CNS data and is now an assistant professor at SUNY Albany; and Jason Gallo, graduated with a PhD from Northwestern and is now employed at the Science and Technology Policy Institute, a privately-operated FFRDC, in Washington, DC. Noel Benedetti defended her M.S. degree using RTTA 2 data in 2010 and works as a technology consultant. Researchers and graduate students at Wisconsin also regularly participate in informal science outreach efforts, including Wednesday Nite at the Lab and the Wisconsin Literacy speaker series. Several students contributed entries to the *Encyclopedia of Nanoscience and Society*. Almost all peer-

reviewed publications by RTTA 2 include graduate student authors, and many include graduate students as lead-authors. Faculty members and graduate students at Wisconsin have formed a research group – named “Science, Media and the Public” or “scimep” – that meets weekly to discuss research progress. This group includes members of not only RTTA 2, but members of the NSEC at Wisconsin. The meetings have helped foster collaborative work between the two NSF-funded grants (e.g., the recent publication by Runge and co-authors in the *Journal of Nanoparticle Research*).

In Su 10, RTTA 2 researchers also spearheaded the first online course in Science, Media & Society at UW-Madison, offered exclusively through iTunesU with select lectures being publicly available to all audiences. The Holtz Center for Science and Technology Studies at WU also just accepted a proposal from Scheufele to teach a course in “Science and Society,” which is jointly offered for students in Life Sciences Communication and Science and technology Studies. Scheufele continues to teach the course currently enrolls from five different colleges at UW and serves more than 100 students annually.

At Georgia Tech, three doctoral students (Arora, Li), two visiting doctoral students (Yi Zhang and Xiao Zhou of Beijing Institute of Technology of the Chinese Academy of Science), one master’s student (Horsley), and two undergraduates (O’Brien, Skolky) worked with RTTA 1, with a focus on CNS-ASU themes, data and analyses, many toward their theses. RTTA 1 senior faculty and students meet on a regular basis (complete group meeting every Friday morning) for progress reviews, discussion of projects, publications, methods, and new ideas, mentoring, and (occasionally) hosting visiting speakers. All RTTA 1 doctoral students have participated in the initial meetings of the new Innovation Co-Laboratory (Georgia Tech, University of Manchester, and Beijing Institute of Technology), which has a focus on developing joint projects (in the nanotechnology and society domain) and doctoral training. Public Policy PhD student Yu Meng also worked with the RTTA 1 group.

Doctoral student Carley graduated in Sp13. Recent graduate Tang (Public Policy) is an assistant professorship position in public administration and policy at the Shanghai University of Finance and Economics, and Kay (Public Policy) has a post-doctoral fellowship with CNS-UCSB. Tang and Meng completed research on a Robert W. Gore award (\$10,000) from the Chemical Heritage Foundation to undertake case studies of nanomaterials innovation in China. Based on RTTA 1 research, Arora, Carley, Kay, Tang, Meng, and Horsley authored or co-authored one or more journal submissions, journal papers or book chapters this year. Benn (a recent CNS-ASU PhD+ at ASU) was also a co-author with members of the Georgia Tech group.

The Manchester International Summer on Emerging Technologies, June 8-13, 2014 was organized by Shapira (and colleagues at the Manchester Institute of Innovation Research); Youtie was one of the faculty. The Summer School provided advanced training, researcher development, and networking opportunities for early career researchers interested in real-time research and innovation systems assessment, new methods, frameworks of responsible research and innovation, and policy development for transformative emerging technologies. Among the emerging technologies considered: graphene and synthetic biology. The Summer School was attended by 29 doctoral and early career researchers (selected from more than 80 applicants) from 20 different universities and 11 countries, including developed and emerging countries. Funding came from the ESRC (Project on Emerging Technologies, Trajectories and Implications of Next Generation Innovation Systems Development), in collaboration with the Manchester-Atlanta-Beijing Innovation

Co-Lab. Additional sponsorship for the Summer School was provided by the European Forum for Studies of Policies for Research and Innovation (Eu-SPRI) and by the Manchester Institute of Innovation Research (MIOIR).

TRC 1 at Georgia Tech has supported four graduate students. Graduate students Rodrigo Cortes and Ogundiran Soumonni both finished their dissertations last year. Cortes is co-directing a Masters Program in Technology Management from his position at the Universidad de Chile and Soumonni is at the University of Witwatersrand in Johannesburg, South Africa. Previous CNS graduate student Thomas Woodson is now an assistant professorship at Department of Technology and Society at SUNY Stony Brook.

The Center supported graduate students at other institutions in the organization, conduct and analysis of the National Citizens' Technology Forum, including: Amy Barr (Sociology, University of New Hampshire), now a Visiting Assistant Professor at St. Lawrence University, Christina Ndoh (Public Administration, North Carolina State University), John Willingham (Political Science, North Carolina State University), Mark Philbrick (Environmental Science, Policy, and Management, University of California, Berkeley), and Javiera Barandiaran (Environmental Science, Policy, and Management, University of California, Berkeley). Philbrick and Barandiaran (2009) have published on their activities and have contributed multiple entries to the *Encyclopedia of Nanoscience and Society*. Philbrick is currently a Science and Technology Fellow with the Department of Energy and Barandarian is a tenure-track assistant professor in Global and International Studies at the University of California, Santa Barbara.

The associated STIR project, through a variety of workshops, group meetings, regular correspondence and one-on-one sessions, as well as site visits by PI Fisher, has trained and mentored the following twenty two (22) doctoral students (12 of whom have received their degrees so far) and two master's students (who have received their degrees): Carlo Altamirano, ASU; Miles Brundage, ASU; Antonio Calleja-Lopez, University of Seville; Shannon Conley, ASU; Paul Ellwood, University of Leeds; Steven Filpse, Delft Technical University; Cecilie Glerup, Copenhagen Business School; Birgitte Hansen, Copenhagen Business School; Cameron Keys, ASU; Byoungyoon Kim, Rensselaer Polytechnic Institute; Miao Liao, Tsinghua University; Federica Lucivero, University of Twente; Christine Luk, ASU; Bastien Miorin, Grenoble; Robin Phelps, University of Colorado; Daan Schuurbeers, Delft Technical University; Anthony Stavrianakis, UC Berkeley; Frank Theys, Katholieke Universiteit Leuven; François Thoreau, University of Liège; Brenda Trinidad, ASU; Michiel Van Oudheusden, University of Antwerp; Qin Zhu, Dalian University of Technology. In addition, STIR has also involved the participation of four post-docs (one of whom has since joined the private sector): Dorothy Dankel, Ana Delgado, Hannot Rodriguez, and (former participating PhD student) Daan Schuurbiere. In connection with their STIR-related work, Fisher also served/serves on graduate committees of Altamirano, Brundage, Calleja-Lopez, Conley, Keys, Phelps, Theys, Van Oudheusden and has provided formal feedback to the graduate advisors of Glerup, Kim, Liao, Lucivero, and Miorin.

At ASU, the second graduate student audience has been NSE researchers themselves. For these students, CNS-ASU created the CNS-Biodesign Fellows program, in which CNS pays one-third of their support. These students then participate in CNS-related curricular and co-curricular activities and perform what we call the PhD+, adding societal implications material to their doctoral research. The Center has graduated four PhD+ students: Troy Benn (Environmental Engineering; Westerhoff lab); Jason Lappe (Chemistry and

Biochemistry; Woodbury lab); Quinn Spadola (Physics; Lindsay lab) and Tomasz Kalinowski (Biodesign; Halden lab). Spadola is now an AAAS fellow at the National Nanotechnology Coordination Office.

In its renewal period, CNS-ASU expanded the Fellows program to attract students from ASU's Ira A. Fulton Schools of Engineering. The Center's CNS-FSE Fellow, Ben Wender (Civil and Environmental Engineering, Seager Lab) started in Fall 11. In addition to integrating anticipatory approaches into his life cycle assessment, Wender has also been an active collaborator between CNS-ASU and the new QESST ERC, leading multiple publications on "anticipatory Life Cycle Assessment." Wender along with Foley developed and delivered a session at the 2013 Winter School on interdisciplinary collaboration, and they also organized a meeting in parallel with the 2014 Winter School on anticipatory LCA. New CNS-Biodesign and CNS-FSE Fellows for this year include Kaitlin Vortherms (Civil and Environmental Engineering Seager lab) Symon Levenberg (Biodesign Woodbury lab) and Alizee Jenck (Biodesign; Halden lab). Vortherms won the 2014 Miss Phoenix crown with a platform of social and emotional intelligence in STEM education and a talent in reading a monologue from the STEM-related play, "Proof."

The success of the PhD+ has generated a great deal of interest beyond CNS-ASU. CNS researchers Guston, Miller, Bennett, and Wetmore, have been invited to participate on a number of technical grant proposals over the past year and support for future PhD+ students was written into several of these proposals. In addition, the CNS researchers at Georgia Tech have begun to implement their own program. CNS-ASU has turned the existing PhD+ program into a certificate open to graduate students in engineering and the natural sciences in "Responsible Research and Innovation in Science, Engineering and Society." The Certificate, begun in Fall 13, graduates its first student, Caitlin Troyer, with a master of science in biology and society. Troyer matriculated at Berkeley Law School for Fall 2014. The current Certificate cohort is three students, one non-degree seeking graduate student and two engineering PhD students.

A number of the education activities originally developed by CNS to help graduate student scientist and engineers understand the social and ethical implications of their work were rolled into the Ethics in Engineering and Science Education (EESE) grant, on which Wetmore has been a co-PI. In one activity, Bennett participated in the Biological Design Graduate Program's core course, "Fundamentals of Biological Design II." Bennett attended every class and uses the presenter's remarks as entry points into discussions of social, ethical or political aspects of research with the class and presenter. The response by the presenters has ranged from hesitant to fully embracing the conversation. From these interactions, several potential collaborations with presenting faculty have developed. The interactions with the students in the course resulted in recruiting Kalinowski as a CNS-Biodesign Fellow.

A second CNS/EESE collaboration involves laboratory engagement. During Fall 09 and Spring 10, Wetmore and McGregor worked with Steven Helms-Tillery's neuroscience lab. They worked with the lab participants to reflect on the social and ethical implications of their research including the potential military uses and issues surrounding primate research. During Fall 10 Wetmore and McGregor worked with Patrick Phelan's solar engineering lab where they discussed how different social and political changes would promote and inhibit the spread of solar power. In Fall 09 Wetmore was asked to consult on the development of a similar program at the University of Rothenburg in Germany. In

Summer 10 he presented the model at the Annual Symposium of the International Research Training Group, ran the first laboratory session, and served as consultant to the program through its successful completion. This success of this activity has led to continued working relationships with PIs and students and it has been written into a handful of grants.

A third CNS/EESE collaboration is the series of one-credit courses entitled “Science Policy for Scientists and Engineers” that has been taught by Bennett, Posner or Wetmore nearly every semester for the past six years. It is a 1-credit seminar for NSE graduate students to explore questions and issues of science and technology policy in society that are relevant to their own research. Again this year the course was filled to capacity. The interactions with the students in the course yielded the first CNS-FSE Fellow, Moran, and it has drawn a number of other students into the Informal Science Communication Project. Because Posner left ASU and because of ever-increasing demands on their time, Bennett and Wetmore developed a new model for this year’s course. In 11 and 12, a biochemistry graduate student, Kiera Reifschneider was so interested in ensuring that the course was taught that she served as a co-instructor, helping to determine the year’s theme and facilitating much of the logistics required to keep the class running. Reifschneider successfully defended her dissertation in Oct 13 took a post-doc position with in CSPO funded by the NNIN and now is at the Government Accountability Office (GAO) as an analyst in the Office of the Chief Scientist.

The evaluation data generated under the EESE is impressive. Four models were evaluated – the embedded course (Bennett in Biodesign), a stand-alone course (Posner, Wetmore and Bennett 1-credit), laboratory engagement (Wetmore and McGregor in labs of Helms-Tillery and Phelan), and a hybrid course (Ellison and Herkert). Pre- and post- tests were given to all students involved. All four models were found to have a statistically significant and positive effect in helping students be more ethically sensitive, have more knowledge of relevant standards, and have better ethical judgment. These results are not typical for traditional responsible conduct of research courses and demonstrate the valuable contributions of these education approaches. The success of this EESE grant led to a second NSF EESE grant to develop macroethics modules for the online CITI program.

In Summer 14, CNS-ASU conducted three separate sessions of “Science Outside the Lab: A Policy Dis-Orientation” for graduate students, reflecting a rapidly growing interest among NSE students and faculty. Developed and taught by Wetmore and Bennett and held in Washington, DC, the course offers graduate NSE students a chance to leave the lab for two weeks to explore the relationships among science, policy and societal outcomes. Students meet government officials, lobbyists, staffers, regulators, journalists, academics, museum curators, and others who fund, regulate, shape, critique and study science, and they engage in hands-on policy learning through tours and exercises like a mock congressional hearing where students present their ideas for new policies to congressional staffers in the House Science Committee’s hearing room.

The previous success of the DC program has inspired a number of faculty to include funding for students to participate in it in their ERC, IGERT and education grant proposals. ASU currently has two masters degree programs – one a Masters in Science & Technology Policy and one a Professional Masters in Solar Energy Engineering and Commercialization – that require all of their students to participate in the DC program.

Bennett now leads the summer session programs, but brings in additional help to facilitate them. In Summer 15, CNS-ASU will conduct six sessions of Science Outside the Lab. Because of the success of the two PSM degree programs that require participation in the program, this year there will be one session dedicated to each of them. The first session will focus on solar energy policy. The second session will be tailored to the needs of the PSM in Science and Technology Policy and will include natural scientists and engineers. The third session will be occupied by science and engineering students. The fourth and fifth sessions will be populated by the undergraduate-serving Program to Increase Diversity in Science and Technology Studies and Science Policy Fields, funded as a supplement to CNS-ASU. The sixth program this summer is targeting Latin American science and engineering graduate students and focuses on Science and Diplomacy.

In Fall 09, CNS researchers Wetmore, Bennett, and doctoral student Trinidad began to collaborate with Trevor Thornton and the ASU node of the National Nanotechnology Infrastructure Network (NNIN). The collaboration has resulted in two major programs: First, CNS-ASU now contributes the Social and Ethical Implications training required of all researchers who seek to use the ASU NNIN facilities. The training is part of the standard NNIN lab safety training that occurs at least once a month. Bennett, Wetmore, and doctoral student Trinidad have all served as instructors in the course (discussed further below).

Second, the ASU NNIN Node cosponsors with CNS-ASU the ASU Informal Science Communication Program for graduate students. The program offers training sessions every two weeks for students in how to communicate with the general public about science and engineering and then gives them the opportunity to gain important practical experience by presenting their work on the floor of the Arizona Science Center. The basic idea behind the program is to help young scientists develop valuable communication skills. The added bonuses are that the public gets to know about the cutting edge research being done at ASU and the students are asked difficult questions about the social and ethical implications of their work that they must develop good answers to. The program began in Mar 10 and students present at the museum monthly.

CNS scholars at Georgia Tech have also been helping to facilitate education in the social sciences for grants that are primarily technical in nature. Shapira, Youtie, and Porter have been collaborating with Elsa Reichmanis, Professor, Chemical and Biomolecular Engineering, Georgia Institute of Technology on a new IGERT Program entitled Nanostructured Materials for Energy Storage and Conversion and have participated in the Program's inaugural seminar series by introducing students to "Trajectories of Global Nanotechnology Commercialization." One related outcome of this collaboration is that Youtie has been invited to organize a societal research presence on GA Tech's proposal to the NNCI.

In 2007, CNS-ASU developed a partnership with a new degree program the Professional Science Masters in Nanoscience, led by the Department of Physics and the Department of Chemistry and Biochemistry, to offer a 2-credit graduate course in the societal aspects of nanotechnology. Bennett has taught this course for the program since 2008.

In 2011, Wetmore collaborated with Patrick Phelan to develop and run a new Professional Science Masters in Solar Power Engineering and Commercialization. The curriculum of the PSM, sponsored in part by a \$700K NSF PSM grant, has a significant focus on the ethical and political issues inherent in solar power. Wetmore has taught a 2-credit graduate level class

on Solar Energy Policy with Mike Pasqualetti for the first two years after program was created. This class in the past has evaluated and offer suggestions to the Arizona Science Center's "Solarville" exhibit. All students enrolled in the program will be participating in the DC summer session, which will continue to be a required component of the curriculum.

The third graduate student audience at CNS-ASU consists of those students in traditional departments and schools, as well as those in interdisciplinary programs, who are interested in CNS-related coursework. CNS-ASU faculty have established thirteen graduate courses at ASU:

- In Spring 15, Arizona 2050: Sustainability and the Past, Present, and Possible Future of Arizona was taught by faculty closely tied to CNS-ASU using CNS research as the basis. As a rapidly growing state in one of the world's hottest and driest regions, Arizona faces incredible sustainability challenges over the coming decades. In the course, students learned about past and present attempts to understand the future of Arizona, then worked both individually and in teams to conduct research and use that knowledge to shape a variety of narrative visions for our shared future. The course started in its first week with a discussion of design research conducted by CNS-ASU researchers Foley, Petrucci and Wiek on scenario development, sustainability, nanotechnology, storytelling, and the future of Phoenix – specifically, their article "Imagining the Future City" in *Issues in Science & Technology*.
- In Spring 13, TRC 2 co-leader Wiek and Darren Petrucci, former director of the Design School, offered "Design Thinking, Sustainability, and the Future of Nanotechnology in the City" in a cross-listed course between the School of Sustainability and the School of Design. The course brought together fourteen graduate students to redesign the architecture and urban form of Phoenix to reflect four scenarios generated by TRC 2 researchers. The course takes a complex systems approach to design and draws upon societal context, innovation models, nanotechnology applications and urban sustainability problems to inform the urban design proposals in preparation by the studio. The resulting product from the studio – a short film – has been shown in many diverse venues, including Phoenix Biosciences High School and CSPO's "New Tools" seminar in Washington, DC.
- In Spring 12, Selin developed and taught a research studio class through the School of Arts, Media and Engineering that explored the observation, documentation, analysis and summarization of large-scale collaborative events. Students in the class were trained either in ethnographic methods or observational media documentation and applied their skills in the field at the *Emerge* event (see **Section 9 Research Program, Accomplishments, and Plans**, RTTA 3). Subsequent to the event, and using the collected data, the students spent the remainder of the semester designing and developing a physical gallery exhibition, participating in the creation of a dynamic online media archive, and/or contributing to analysis of the *Emerge* event as a novel form of future-oriented deliberation."
- In AY 11-12, Guston developed and taught with CSPO Professor of Practice Gregg Zachary the two-semester sequence, "Science and Technology Policy" and "Advanced Science and Technology Policy," the core sequence for the STP PSM. The course achieved a novel synthesis of analytic and communication approaches and explored key tools like real-time technology assessment and anticipatory governance, as well as substantive topics like DIY biology and manufacturing, derived from the CNS agenda. Guston taught the sequence solo in AY 12-13, AY13-14, and AY 14-15.

- In Spring 11, Fisher developed a new course entitled “Analysis of Scientific and Technological Innovation Systems,” primarily for graduate students in the PSM in Science and Technology Policy Program. A number of HSD students have taken the course as well. The course draws on a number of Fisher’s research projects within CNS.
- “Future Scenarios, Anticipatory Governance, and Sustainability – Urban Development in Phoenix” was offered by TRC 2 co-leader Wiek and RTTA 3 co-leader Selin in Sp 10. The course engaged 22 graduate students from five ASU graduate programs in systematically crafting visions of sustainability for Phoenix and developing governance strategies for transformative change. The course also integrated the theme of urban socio-technical systems and emerging technologies. As the course was embedded in a collaborative research project with the City of Phoenix to inform the adaptation of the General Plan, the course facilitated research in teams and involved faculty across ASU as well as stakeholder groups across the city. The course built capacity in anticipatory governance and attracted students to engage in subsequent research. Moreover, it created a network among stakeholders, professionals, and decision makers in Phoenix interested in “Nano and the City.” In Spring 11, ASU awarded the course its President’s Award for Sustainability. In Spring 12 Wiek reworked the course into “Sustainable Solutions: Options for Phoenix,” to continue to engage graduate students in TRC 2 research. Three walking audits that brought together researchers, Kay and Wiek, with graduate students and community members has strengthened the novel methodology of walking audits to co-train community and academic actors on the complex, place-based urban sustainability syndromes, while seeking solutions (including nanotechnology).
- Wetmore created a new course in Spring 10 entitled: “Introduction to Analyzing Sociotechnical Systems,” offered in the School of Human Evolution and Social Change. Not only were a number of nanotechnology topics covered, but students were also assigned a research project to develop a demonstration for NanoDays 2010. This class also fulfills a core requirement of the Professional Science Master’s Degree program in Science and Technology Policy offered by CSPO. Wetmore taught this course again in Fall 10 and Spring 12 and 13 and attracted a number of HSD students as well.
- In AY 09-10, Boradkar developed a training program akin to InnovationSpace but for graduate students. Two students under his direction have performed additional research, design and development on nanotechnologies previously conceived by the undergraduate InnovationSpace students.
- “Nanotechnology: Law and Regulation,” was taught by Marchant in the Sandra Day O’Connor School of Law in Spring 10. Several other CNS-ASU faculty participated in the course, including Guston, Robert, and Selin. As a major project the students explored potential regulatory and liability issues in the scenes developed by NanoFutures.
- “Governing Emerging Technologies,” taught in Fall 08 and Fall 09 through the School of Politics and Global Studies by Guston and in Fall 10 and Spring 12 by Fisher, explores the Center’s core concept of anticipatory governance and synthesizes many of the Center’s findings. Students in the course were tightly integrated into the Center’s activities, e.g., participating in the Oct 08 Visioning Workshop and the Nov 09 Equity Workshop. Several other CNS-ASU faculty have participated in the course including Conz, Corley, and Selin. This class also fulfills a

core requirement of the Professional Science Master's Degree program in Science and Technology Policy offered by CSPO.

- “Energy and Energy Policy,” taught by Bennett in Spring 09, is a 1-credit seminar for PhD students in chemistry that explores the dynamic interplay between scientific research, technological innovation, policy development, and cultural change surrounding large-scale energy system change in the 21st century.
- “Science, Technology and Developing Areas,” a one-credit course offered through the Department of Chemistry and Biochemistry and the School of Human Evolution and Social Change, was developed in F 09 by Harsh and Wetmore to work through TRC 1 topics with graduate students. The course attracted graduate students from the social sciences, natural sciences, and engineering and explored the myriad issues that must be addressed for technical assistance to truly benefit the disenfranchised.
- “Nanotechnology, the Brain, and the Future,” taught in the School of Life Sciences and the School of Politics and Global Studies, is a variable-credit course offered by Miller and Robert (Fall 07, Spring 08, Fall 08) as part of the E2E project. Students and faculty used it to prepare research projects for E2E and the CNS All-Hands meeting.
- “Science, Technology & Societal Outcomes,” taught in the School of Life Sciences and the School of Human Evolution and Social Change by Wetmore and Bennett was offered in Spring 06 and Spring 07.

The Center has also been an integral part of the development of a new doctoral program at ASU, the Human and Social Dimensions of Science and Technology (HSD), which was approved by the Arizona Board of Regents in Dec 07 and matriculated its first class in Aug 08. CNS Associate Director Miller directs the HSD PhD program, and Guston, Robert, Sarewitz, Corley, and Wetmore serve on its Executive Committee. Other CNS faculty, including Fisher and Selin serve as members of its Graduate Faculty. In addition to the summaries of HSD students who are working specifically with CNS-ASU provided above, numerous other HSD students have participated in CNS-related activities over the life of the Center, including the scenario-based solar-to-fuels workshop, the anticipatory governance visioning workshop, CNS-ASU All-Hands meetings, and *Emerge*.

While the vast majority of classroom-oriented activities at CNS-ASU have occurred at ASU, in Summer 10 co-PI and RTTA 2 co-leader Scheufele and his Wisconsin team created an on-line class, Science 2.0: Media, Politics, and Emerging Technologies, for both graduate and undergraduate students, offered over iTunesU. This course is the third that CNS-ASU affiliates have offered completely on-line, with Harsh's undergraduate Science and Democracy in Winter 10 and Hays' Human Enhancement and Democracy class in Summer 10.

Undergraduate Education and Training

New this year is the CNS-ASU Program to Increase Diversity in Science and Technology Studies and Science Policy of Emerging Technologies, is designed to attract sophomore level undergraduates from under represented minorities into science studies fields. For more on the program, see **Section 10 Diversity**.

CNS-ASU organizes a variety of undergraduate education and research training experiences. Although there are none in the current year, in previous years, numerous undergraduates

have written honors theses with CNS faculty, and undergraduates – mostly from the W.P. Carey School of Business – also complete honors theses in conjunction with their InnovationSpace coursework.

CNS has supported undergraduate student interns in conjunction with the TRC 2 Nano in City Environments database project: Sarah Hoke, and Evan Taylor. It has also supported Daniel Escolin in videography support, including the videotaping and editing of all presentations and special projects.

Nano Ethics at Play (NEAP) is a CNS-associated NSF NUE project 026913-001 for \$200,000 which started on November 1st 2013 and will continue through October 31st 2015, that employs a method called “LEGO Serious Play”® to help interdisciplinary cohorts of students explore the social, ethical and environmental dimensions of nanotechnology. Students are presented with nano-related content from different disciplines and researchers across ASU campus. Students then build metaphorical models using LEGO® bricks to illustrate their thoughts and create a hands on dialogue about the nano-based content. In addition to the development and execution of the workshops, the course has provided students with an interactive and unconventional learning experience. Some students discovered that some ideas must be developed through hands on building and that their ideas literally emerged before their eyes during the building process. One student mentioned that, “... having the opportunity to experience new technology and discuss its potential use was a great experience”. The course seeks to improve literacy in the impact of emerging technologies on social and environmental systems while simultaneously improving the way students communicate across disciplinary boundaries.

NEAP is directed by CNS-affiliate Camilla Jensen, currently pursuing a PhD in the Herberger Design School, and supported by a cadre of CNS-ASU faculty, students and fellows, including Cynthia Selin, Jameson Wetmore, Michael Bernstein, Ben Wender and Kaitlin Vortherms. The NEAP curriculum leverages products previously developed by researchers at CNS-ASU, including components of the “Community Engagement Workshop” and the “Nano Around the World” card game. The course supports the mission of CNS-ASU by helping students and researchers create and engage in broad-reading dialogue regarding the promise, perils, and societal dimensions of emerging technologies while using LEGO Serious Play® to improve retention and communication of such abstract and complex concepts.

In addition to the numerous undergraduate courses developed in the first five years of CNS – including “Perspectives on Nanotechnology,” “Justice and the Future,” “Learning Community: Nanotechnology in Society,” “Human Enhancement and Democracy,” “Global Environmental Politics,” “Technology and Society,” and “Science and Democracy” – nanotechnology and society issues were newly integrated into two other undergraduate courses. Harsh revised the “Science and Democracy” course for Winter 10 as a 3-credit online course with interactive and video-enhanced oral exam modules, and Hays will taught an online version of Human Enhancement and Democracy in Summer 12. In Spring 11, Miller, Bennett, Harsh, and Wetmore developed a new, 125-student undergraduate course entitled “Introduction to Science & Technology Policy,” which integrated discussions about nanotechnology into each of the course’s five focal topics: health, food, military, economy, and environment. The course has been offered each Spring by other CSPO faculty. In Spring 14 CNS Post-doc de Ridder-Vignone developed this course into an online course and taught it.

CNS-ASU has had a long-standing relationship with InnovationSpace. InnovationSpace is a two-semester long, transdisciplinary course collaborative among the ASU Schools of Design, Engineering, and Business. It satisfies the design or project requirements for senior majors in each school by creating cross-functional teams who use an Integrated Innovation model to research, develop and refine real-world product concepts for paying sponsors. In AY 13-14, the students developed nano-enabled products for autistic children. While the Center did not formally support any InnovationSpace teams in the current year, several members of the Center continued to interact with the students (See **Section 9 Research Program, Accomplishments and Plans** RTTA 3/2).

During summer 2012, the Georgia Tech contingent of TRC 1 served as mentor to one of the NNIN's two REU students focused on the societal and ethical implications of nanotechnology. Duy Do, an electrical engineering major at San Antonio College, spent the summer in Atlanta studying the websites of about 60 companies doing research on water, agri-food, and energy nanotechnology. He researched the ways in which these companies were using nanotechnology and whether their products would affect equity issues. He presented his work in a report – “Nanotechnology Companies in the U.S.A: A Web-Based Analysis of Companies and Poverty Alleviation” – at the NNIN's August REU convocation in Atlanta.

Scheufele teaches a course in “Science, Media, and Society,” which has been offered jointly to undergraduates by the Department of Life Sciences Communication and Science and Technology Studies. This new curriculum offering was informed heavily by the last 8 years of CNS-related work at UW, and has become a required course for all Life Sciences Communication majors at UW, one of the fastest-growing majors in the College of Agricultural Sciences. The course currently enrolls students from five different colleges at UW.

K-12 Education

TRC 2 has been actively engaging with science educators and students at the Bioscience High School through various partnerships and exchanges. Bioscience High School is a public high school in Phoenix that is a magnet for college-bound students interested in science, technology, engineering and math (STEM) education opportunities. TRC 2 built upon existing relationships held by co-leader Wiek and faculty at the school. In previous years, the Bioscience High School welcomed the entire student body of the CNS Winter School on Anticipatory Governance for an exchange between graduate students and high school students. Faculty from Bioscience have also served as speakers at the monthly Science Café Series (see **Outreach** section). Additionally, CNS personnel offered presentations to the entire sophomore class on the M52 Superfund Site. Bioscience High School then committed to taking on the M52 Superfund Site as its annual project for students to investigate the technical, scientific and social uncertainty that generate misunderstandings and perpetuate a lack of trust between regulatory agencies and citizens. That initial visit was followed by a presentation by Foley and the Maricopa County's Sustainability Manager, Jonce Walker, on the impact of the built environment on urban sustainability challenges. The Phoenix metropolitan area is located almost entirely within Maricopa County, making the co-presentation between neighborhood and metropolitan scales apparent and meaningful for students. This co-presentation strengthened the ties between TRC 2, Maricopa County and Bioscience High School.

In a previous reporting year, CNS-ASU described the development of a graduate course that provided in-service K-12 teachers with research experiences and also helps them develop curricular materials for their own K-12 classrooms on societal aspects of nanotechnologies. CNS has not offered the course in several years, although Bennett continues to be involved in some more ad hoc high school outreach derived from contacts at that time. Bennett was also a principal in the Citizens Engagement Program with High School Students in conjunction with CSPO and ECAST (see **Section 12 Outreach and Knowledge Transfer**).

CNS-ASU had also arranged for its Science Cafés, held monthly during the academic year in conjunction with the Arizona Science Center (see below) to provide in-service teachers with continuing education credit. This mechanism for attracting the attendance of teachers became less important over time, however, as the state of Arizona changed the requirements for continuing education, allowing teachers to gain credit through simple online activities. In other work oriented toward pre-college audiences, Miller served as a primary consultant to two chapters (4 and 13) in *The Big Ideas of Nanoscale Science and Engineering* (Stevens et al. 2009) published by NSTA Press for K-12 science teachers. These chapters are based, in part, on a guide to nanotechnology in society education produced by CNS (Miller et al. 2007). Much of the work done with NISE Net and the Arizona Science Center (see sections above and below) also reaches K-12 audiences, and one of the target audiences for the *Encyclopedia for Nanoscience and Society* (Guston 2010) is high school students and teachers.

Informal Science Education

CNS-ASU has had a significant impact on informal science education nationally through its partnership with the Nanotechnology Informal Science Education Network (NISE Net) to incorporate research on the ethical and societal implications of nanotechnology into museum programs and exhibits around the country. Early in its operation, CNS produced a guide to this topic (Miller et al. 2007) that NISE Net distributes as part of its Forums Guide and NanoDays Kit. This guide has also been distributed widely to science museums at NISE Net meetings and is available on the CNS-ASU website for download. In addition, NISE Net Director Larry Bell, who has attended nearly all of the CNS All-Hands Meetings and serves on the CNS Board of Visitors, has identified anticipatory governance as a central theme for future NISE Net programming and, more broadly, as the basis for a new model for the role of science museums in informal science education (Bell 2008). Most significantly are the series of workshops that occurred in conjunction with NISE Net to train museum staff in how to facilitate conversations about nanotechnology and society. In fall of 2014, CNS-ASU hired Rae Ostman, who previously worked for NISE Net and was instrumental in helping develop the collaboration between the two institutions, into a part-time professor of practice position that has since moved into state funding with the new Center for Engagement and Training in Science and Society. Further details of this strong collaboration can be found in **Section 12 Outreach and Knowledge Transfer**.

Practitioner Training

The Center has developed and piloted training modules in the ethical and societal implications of nanotechnology for scientists and engineers working in user facilities at the DOE Center for Integrated Nanotechnologies (CINT) and the National Nanotechnology Infrastructure Network (NNIN).

For the first few years, NNIN user facilities were strongly encouraged to use the video (created by Guston and others) and a survey was conducted to evaluate their experience. Respondents at 9 of the 11 user facility sites in the NNIN indicated that they were already using the video, and an additional site indicated that it would be doing so from this point forward. Four sites indicated that the video had been presented at a total of 117 training sessions, with the other sites indicating that users watched the video individually, with no formal records being kept. The sites indicated that approximately 1000 NSE researchers in total had watched the video. The actual use of the video varied. Some sites merely made the video URL link available. Other sites asked users to verify via a signature that they had viewed the video. Others required users to watch the video in groups. One group indicated that questions and comments sometimes follow, and one group indicated that they always follow the video with group discussion. Post-doc Reifschneider is currently attempting to follow up with the various NNIN sites to see explore the possibility of conducting an evaluation of this program.

While the video remains on the NNIN website for use at some sites, after much deliberation NNIN decided that face-to-face discussions of SEI issues would better engage the researchers at its user facilities. Wetmore attended a workshop in Jan 10 at Cornell University and Bennett attended a workshop in Oct 10 at Washington University in St. Louis to help inject CNS-ASU experience and knowledge into NNIN training across the country. Wetmore, Bennett and Trinidad have developed a thirty-minute module that is presented in conjunction with the health and safety training that all users of the ASU NNIN facility must successfully pass. The module introduces researchers to the practical implications and applications of CNS research and findings, while also making them aware of the support CNS can offer to young scholars in the form of PhD+ opportunities and coursework.

Wetmore and Sarewitz also participated as Faculty in the *IHEST European Summer School: Which Place for Science in the Public Debate?* at the Saline Royale d'Arc et Senans, France in Summer 10. This summer school was established in large part to help local and national French officials reflect on the protests during the government's effort to solicit input into its nanotechnology decisionmaking process. The summer school resulted in a publication that included Wetmore and Sarewitz's lectures translated into French.

Winter School

In the Winter 15 CNS-ASU hosted its third Anticipatory Governance of Emerging Technologies Winter School at the Saguaro Lake Ranch in Mesa Ariz. It was attended by 15 junior scholars (graduate students or PhDs fewer than three years out) and by faculty from the RTTAs and TRCs as well as the assistant and associate directors. The student participants represented 13 institutions from 7 countries. In the spirit of the Gordon Research Conference, intense topical sessions were interspersed with activities designed to build the group into a cohort and take advantage of the natural resources at the Ranch. The post-school evaluative session indicated that general format and topics were appropriate and facilitated a cohort model of learning that was deemed successful by participants. This year, CNS charged participants a modest fee to begin moving the Winter School to a revenue neutral model like the Science Outside the Lab program. Based on feed back from this session and other comments CNS will conduct another Winter School in Jan 16. Highlights for the participants included their interactions with All-Hands and Board of Visitors attendees, as well as participants of an international anticipatory Life Cycle Assessment research group led by CNS-ASU researcher Foley.

Table 3A: Education Program Participants, Irrespective of Citizenship

Student Type	Gender		Race				Mixed-incl. Mixed		Not Provided		Other *Ethnicity			
	Total	M	F	NA	PI	AA	C	A	NA,PI,AA	C,A	Non-US	Hispanic	Disabled	
Enrolled in full degree programs														
Undergraduate														
Masters	21	14	7				17	4						
Doctoral	47	16	31			5	28	14				1		
Enrolled in NSEC Degree Minors														
Undergraduate														
Masters														
Doctoral														
Enrolled in NSEC Certificate Programs														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
Enrolled in NSEC Programs														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
K-12 (Pre-college) Education														
Teachers														
Students														
Total	68	30	38	0	0	5	45	18	0	0	0	0	1	0

Table 3B: Education Program Participants, U.S. Citizens or Permanent Residents

Student Type	Gender		Race				Mixed-incl. Mixed		*Ethnicity					
	Total	M	F	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	Hispanic	Disabled
Enrolled in full degree programs														
Undergraduate														
Masters	20	13	7				17	3						
Doctoral	24	6	18			3	17	4						
Enrolled in NSEC Degree Minors														
Undergraduate														
Masters														
Doctoral														
Enrolled in NSEC Certificate Programs														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
Enrolled in NSEC Programs														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
K-12 (Pre-college) Education														
Teachers														
Students														
Total	44	19	25	0	0	3	34	7	0	0	0	0	0	0

12. Outreach and Knowledge Transfer

The outreach activities at CNS-ASU are, on one hand, tightly integrated with research and education and, on the other, governed by a strategy that aims at developing broad-based capacities among both NSE researchers and various publics. As described in the strategic research plan, CNS-ASU pursues an agenda of foresight, engagement and integration in order to advance its strategic goal of building capacities for reflexivity and anticipatory governance in the NSE enterprise in particular and in society more broadly. CNS-ASU thus has a dual-tracked outreach strategy that includes, in one track, outreach to various lay-publics (**engagement**) and, in the other track, outreach to scientists and engineers (**integration**). In addition, CNS has more traditional outreach and knowledge transfer to professional colleagues via workshops and presentations, as well as a modest technology transfer program associated with InnovationSpace.

In YR 10, we have begun the transition to post-CNS with the hiring on state funds informal science education and citizen science personnel and the creation of a new Center for Engagement and Training in Science and Society that will sustain much of the outreach activities that CNS-ASU started. Because many of the engagement and outreach programs have achieved a high level of success in part because they were nurtured and developed within a cohesive center, we decided that they should be spun off into their own center. The goal is to continue to develop the synergies between these programs and further their increasingly national and international reputation. Assistant Director for Education Bennett and Associate Director for Engagement Wetmore pioneered a number of these programs, and they have been named co-directors of the new center. CNS served not only as a way to incubate these new programs, but also as a way for the scholars involved in them to develop new communication and leadership skills.

The new center brings together 10 ASU faculty members to focus on 9 project areas: Community Engagement, Participatory Technology Assessment, the Future of Storytelling, Training, Ethics, Informal Science Education, Formal Science Education, Creative Nonfiction, and Citizen Science. We have even hired additional faculty to strengthen core areas. Rae Ostman, formerly in the leadership of NISE Net is now working half time as an associate research professor with a focus on developing new programming in the informal science education field. Darlene Cavalier is now serving half time as a professor of practice to expand our activities into the citizen science domain.

Collaborations with the Nanoscale Informal Science Education Network (NISE Net)

“Nanotechnology is relevant to everyone’s lives, and has important societal and ethical implications” is one of the original learning goals established by the Nanoscale Informal Science Education Network (NISE Net). This goal was somewhat of a departure from traditional science museum content; soon after its creation, NISE Net recognized that CNS-ASU could be a valuable partner in developing programs in this area. For the past several years, CNS-ASU has developed demonstrations, presentations, posters, and film scripts for NISE Net to help introduce nano-and-society ideas to museum guests and have helped build up significant trust and a good working relationship.

Mini Nano Exhibit

Bennett and Wetmore served as consultants on one of the most ambitious projects that NISE Net has performed – the Mini Nano Exhibit project. CNS scholars provided valuable feedback and helped to evaluate the 200 square foot exhibit that NISE Net developed to focus on nanotechnology

in everyday life. The original plan to produce 50 copies of the exhibit increased to 70, and they were distributed to museums across the country. By 2015 the exhibit was on permanent display at 93 sites. Because of the collaborations NISE Net designated one of the first five exhibits produced to be sent to the Arizona Science Center to give CNS-ASU scholars easy access to the display as we develop further activities around it, e.g., a discussion space for the Winter School. NISE Net estimates that Mini Nano reaches more than 7 million visitors each year.

NISE Net evaluators estimate that between the *Nano* Exhibit and the NanoDays modules NISE Net products created with CNS input have reached approximately 10 million members of the public in 2015. These successes have only further strengthened the relationship between the two organizations. CNS faculty and NISE Net staff now collaborate on a number of projects designed to bring science closer to the public.

For instance, the Science Museum, Boston, has recently been awarded an NSF grant to develop learning programs in the field of synthetic biology. The project capitalizes on the expertise and networks that were developed under NISE Net. The program – Multi-Site Public Engagement with Science (MSEPS) – has pulled in eight science museums from across the country to develop tabletop demonstrations to introduce the public to some of the work being done in engineering biology. Because of previous partnerships with CNS faculty, the project has hired [Bennett](#) and [Wetmore](#) to work with program developers to ensure that they address and facilitate reflection on some of the social, ethical, and political aspects of synthetic biology. [Guston](#) also serves in an advisory capacity for the MSPES.

In April 15 CNS and NISE Net will also be collaborating on two workshops in Tempe. The first will be an attempt to expand the number of social science scholars at ASU that partner with museum professionals to give their research a wider audience. This workshop seeks to take the lessons learned by CNS researchers to see if the CNS/NISE Net partnership can serve as a model for other scholars who have important findings that should be presented to the public. Currently there are 10 museum professionals from 6 museums and 7 scholars signed up to spend a day brainstorming ways for their research to be packaged into informal science education programming. [Wetmore](#) and [Bennett](#) have recently applied for additional NSF funding from the STS directorate to create a nation-wide community of practice around this idea. The second workshop is being led by NISE Net to find new models for reaching audiences that typically do not go to science museums or centers.

Collaborations with the Arizona Science Center

Over the past several years, the already strong collaborations CNS-ASU has had with the Arizona Science Center have strengthened considerably. The Informal Science Education Program that CNS coordinates with the ASU node of the NNIN sends a group of graduate students to present on the museum floor at least once a month throughout the academic year, including the annual Nanodays event. The Science Center has also opened its doors as a place for CNS scholars to develop and test new projects and to work collaboratively on sponsored research. In the current year, [Bennett](#) is part of the ASC team that carries out an NIH Pathways grant. The Science Center is also helping CNS researchers [Wetmore](#) and [Bennett](#) to develop a small museum exhibit in conjunction with the Life Cycle Nanotechnology grant the EPA recently awarded ASU. CNS also provides an expert resource to the Science Center.

The Arizona Science Center also served as host to a joint project between CNS, the new Center for Engagement and Training in Science & Society, the Science Cheerleaders, and VICIS, a Seattle-based

company developing concussion reducing helmets. With the Super Bowl being played in Arizona and significant media attention focused on Phoenix, CNS helped to create an event that showcased cutting edge safety technologies and motivate girls to think about pursuing STEM careers. About 100 Pop Warner cheerleaders learned new cheers from the Science Cheerleaders, and then spent the rest of the day at the Arizona Science Center. The event garnered national attention, including being the final lengthy story that evening on the nationally televised NBC Nightly News with Brian Williams.

The strength of this relationship has led ASU to designate CNS assistant director of education Bennett as the faculty member in charge of the partnership between the university and the Arizona Science Center. The ASU administration viewed the relationship and projects that were created by CNS with the Arizona Science Center as exemplary and has entrusted CNS researchers to propagate that model across the university. As co-director of the Center for Engagement and Training in Science & Society (CENTSS; see below), Bennett is organizing a series of collaborative activities to bring the two organizations together. He will serve as a mentor to other academics who wish to take their message to a larger audience through museum engagement and programming.

Science Cafés

The CNS-ASU Science Café series continued this year. We made one major move with the series. Instead of being held at the Arizona Science Center, we have transitioned to the Tempe Center for the Arts to test out a new venue and attempt to reach a new audience. This change launched in the fall of 2014 with the goal of achieving a higher impact. CNS partnered with University of Advancing Technology in Tempe to host a series of talks on a particular substance that is very important to Arizona's history – copper. CNS-ASU coordinated three of the lectures, dealing with the impact of copper technology on native-American society, on the environment, and on the future of computing technology respectively.

NanoDays 2015

As in previous years, CNS-ASU is participating in NanoDays by adding the societal “so what?” twist on the information and materials provided by NISE Net. In coordination with the NanoDays national program, CNS-ASU sponsored three days of demonstrations about phenomena at the nano-scale. Two-dozen students from graduate classes taught by Bennett as well as students newly active in the Informal Science Communication Program participated in public displays at the Tempe Festival of the Arts, a street art fair that attracts upwards of 250,000.

Other Museum Collaborations

Frankenstein Bicentennial Project

Guston and assistant professor Ed Finn, who directs ASU's Center for Science and the Imagination (CSI), launched the Frankenstein Bicentennial Project in 2014, to recognize and celebrate the theme of creativity and responsibility in Mary Shelley's gothic novel, *Frankenstein, or The Modern Prometheus*, first conceived in 1816 and published in 1818. This project develops and extends CNS attention to anticipatory governance and responsible innovation and helps the Center to transition to other emerging technologies, historical (electricity) and contemporary (synthetic biology, robotics and AI, tissue engineering). Together with co-PI Helms-Tillery, Finn (PI) and Guston (co-PI) received a small award from NSF to host an interdisciplinary, cross-sectoral workshop to explore new ways of collaborating and set new project agendas around the project themes. The

workshop took place 28-30 April 2014. Outputs and outcomes of the workshop include: the integration of the Frankenstein theme into the campus-wide *Emerge* event in 2017, the announcement of a monster-themed fellowship program at ASU's Institute for Humanities Research (IHR); the planned development of a monster-themed exhibition in ASU's library space derived in part from work produced by the IHR fellows; the planned development by the ASU's Lincoln Center for Applied Ethics – in conjunction with CSI and CSPO – of a new edition of *Frankenstein* targeted at science and engineering students; public presentations on Frankenstein, synthetic biology and responsible innovation by Guston at the Seattle International Film Festival and at the Philadelphia's Mutter Museum, sponsored by Drexel University; a journal manuscript entitled "Stitching Together Creativity and Responsibility" submitted to an open call special issue of the *Bulletin of Science, Technology and Society* on "Science & Science Fiction;" and a planned volume on Frankenstein for CSPO's Rightful Place of Science print-on-demand book series. These latter two activities were led by CNS-ASU post-doctoral fellow Megan Halpern.

Beyond the \$50K NSF workshop award, the project has expended or had pledged or committed approximately \$450K from various ASU sources; Finn and Guston have also led a \$3M follow-on proposal to NSF's Advances in Informal Science Learning program to develop and evaluate the impact of a citizen-curated virtual museum of Frankenstein and other transmedia elements. The underlying hypothesis for the learning research in the proposal is derived from results from CNS-ASU's National Citizens' Technology Forum (NCTF), especially the finding that participants were likely to increase their feelings of internal efficacy but decrease their feelings of external efficacy through their participation in NCTF. The proposal hypothesizes that less dialogic and more hands-on activities – the kind of material deliberation pioneered by RTTA 3 and already embraced in science museums through table-top demonstrations, the NanoDays kit, etc. – will improve feelings of external efficacy as well. Museum and other informal education partners in this proposal include the Bakken Museum, the Rosenbach of the Free Library of Philadelphia, the Chemical Heritage Foundation, and others. CNS post-doc Halpern was also intimately involved in the production of this proposal.

Broader Engagement Programs and Activities

New Tools for Science Policy

CNS-ASU is leveraging the CSPO DC office to reach out to policy audiences. In YR 10 several CNS researchers presented at CSPO's New Tools for Science Policy series, which asks: How do we know what science is "the right science" to do? How can we effectively orient the vast research enterprise to make real progress toward societal goals? Since its inception, CSPO and its network of researchers have been developing models, tools, and methods to help address fundamental questions in science policy. CNS researchers met DC policy audiences to catalyze discussions and collaborations between science policy researchers and decision makers about new ideas and approaches for improving the social value of science and technology. YR10 CNS presenters included former post-doc de Ridder-Vignone on "Deliberating Differently" in Oct 14; Guston is scheduled to speak on the societal aspects of synthetic biology in Apr 15.

Informal Science Communication Program

During YR 10, CNS-ASU and ASU's node of the National Nanotechnology Infrastructure Network (NNIN) continued a program in informal science communication in cooperation with the Arizona Science Center. Graduate students interested in working with the public to promote a broader

understanding of science and technology receive training in methods and techniques to engage with diverse audiences. These “Science Liaisons” then have the opportunity to work on the floor of the Arizona Science Center once or twice a month during the semester. Students of all disciplines are invited to apply. Faculty leads Thornton, Wetmore, Bennett, and student leader Trinidad provide ongoing support and mentorship through informal monthly group meetings and an online organizational space in the university’s courseware system, Blackboard. A set of informal and formal science educational resources, training materials, and a collaboratively-edited Google calendar schedule are accessible through the community site. Thirty-five students are now members of the online group and receive regular announcements about program activities; ten students have completed the training and are active volunteers. On average, during each visit to the Science Center the students engage with 60-70 museum guests. The program has significantly strengthened the relationship between CNS-ASU and the Arizona Science Center.

In April 14 Wetmore used the skills developed in this program to run a training program in South Africa. He took several of the kits that had been developed as part of the Nanodays program to PhD students pursuing degrees in nanoscience and technology at the University of the Western Cape. Over the course of three days he trained students in that program as well as staff from the ArcelorMittal Science Center. For two days the students presented the demonstrations to visitors at the Cape Town Science Center. He left the kits behind so that the students and staff from ArcelorMittal could continue to use them in their outreach activities.

In Jan 15 Trinidad expanded upon the traditional ISC model by running a two-day workshop on how to turn your academic research into a museum demonstration. The program trained 12 students from natural science, engineering, and the social sciences in a combination of communication and engagement skills.

In a parallel effort, Bennett and Wetmore taught a Chemistry 501 course in the spring of 2015 to train PhD level chemists in how to turn research into public outreach. Over the course of the semester, five student groups developed tabletop demonstrations. One group was able to illustrate the effects of photosynthesis by putting small circles of spinach leaves in water under strong light and watching them rise as they produced oxygen. Another illustrated the ways in which cold germs can be transferred through contact with objects, and another used a powder that fluoresces under a black light. Another group used heat lamps, portable thermometers, and a timer to have guests record how long different materials held their heat in an effort to illustrate the urban heat island effect – a phenomenon that has significant implications for Phoenix weather. All five demonstrations were presented at the Arizona Science Center as a final project. ASC staff were very impressed and asked to keep some of the kits that the students developed.

ECAST

In Apr 2010, the Woodrow Wilson International Center for Scholars (WWIC) released the report *Reinventing Technology Assessment: A 21st Century Model* by Richard Sclove, founder and senior member of the Loka Institute, a non-profit research and advocacy organization concerned with the social, political, and environmental repercussions of research, science and technology. The report gives an overview of participatory technology assessment, reviews its applications in Europe and some prototypes in the US, and it forwards a proposal to create the ECAST network – Experts and Citizen Assessment of Science and Technology (www.ecastnetwork.org) – a consortium of NGOs, non-profits and universities that administer public engagement events on scientific and technological topics relevant to policy makers. Guston and a network of partners at WWIC, Loka, Museum of Science Boston, Pomona College, CSPO and others discuss projects, funding mechanisms

and network governance in regular conference calls. Since the report, ECAST partners have conducted several small-scale demonstration citizen engagement projects at several home institutions about emerging technologies including geoengineering, nanotechnology, and synthetic biology. ECAST has been instrumental in coordinating the participation of US sites in the Danish Board of Technology's World Wide Views (WWV) on Global Warming (which overlapped substantially with NCTF sites) and the WWV on Biodiversity held in September 2012 (which also had some overlap). In the current reporting year, ASU and other sites are preparing to participate in WWV on Climate and Energy, which will take place in June 2015.

In the current reporting year, ECAST, via ASU, was awarded a \$200K cooperative agreement from the National Aeronautics and Space Administration (NASA) to perform a prospective, participatory technology assessment of the proposed Asteroid Initiative in which NASA would plan on capturing a small asteroid for purposes potentially including planetary defense, commercial development, and preparation and planning for other human deep space missions including Mars. The award funded face-to-face deliberation projects at ASU and in Boston, coordinated by the Museum of Science, and virtual deliberations, coordinated by SciStarter. The program was very well received by NASA officials, and the outputs generated by the deliberation were requested earlier than originally agreed to in order that NASA Administrators could use the data in their deliberations about which asteroid initiative to proceed with.

Emerge 2015: Artists and Scientists Design the Future

For the fourth consecutive year, CNS helped support the annual *Emerge* festival at ASU, one of the university's major town-gown initiatives. CNS post-doc Halpern served as the director for collaboration and research for the festival and deployed a cadre of five graduate students (Trinidad, Altimirano-Allende, Fuller, Burnam-Fink, and Connelly) to perform ethnographies of the activities. Highlights from the CNS perspective included several of the participatory "visitations" derived from CNS activities such as Future Fairy Tales with Legos (after the Lego Serious Play NUE project) and the Participatory Design Studio (in the mode of material deliberation), as well as the performance-based follow-on to the design studio, Future Design Studio Improv Hour, in which one of the objects designed in the studio was chosen for performance by a troupe of trained improvisation actors. Major collaborators on *Emerge* at ASU included the Ira A. Fulton Schools of Engineering, the Herberger Institute for Design and the Arts, the Julie Ann Wrigley Global Institute of Sustainability, the Center for Science and the Imagination, and others, as well as the ASU Art Museum, Scottsdale Public Art, KJZZ, and the Arizona Sci-Tech Festival, for which *Emerge* was a signature event. The role of Halpern and the students means that in addition to the high point of a public festival, research in the form of three manuscripts intended for *Futures*, *Public Understanding of Science*, and *Computer-Human Interactions* will be derived from it.

Presentations to Public Audiences

Beyond those mentioned above, highlights in YR 10 include:

I. Bennett. 2014, May. "An Unbelievable Roadmap." Unbelievable Biomed, Arizona Science Center, Phoenix, AZ.

G. Gano and K. Harper. 2014, April. "Futurescape Springfield." Museums a la Carte Lecture, Springfield Museums, Springfield, MA.

D.H. Guston. 2014, September. "From Frankenstein to Synthetic Biology: Responsible Innovation and the Insufficiency of 'Cool'." Drexel University Alumni Association, Mutter Museum, Philadelphia, PA.

Presentations to Policy and Professional Audiences

Beyond those mentioned above, highlights in YR 10 include:

E. Fisher. 2014, May. "How to Talk to Scientists about Ethics." Workshop on Ethics and Society, French National Research Agency, Paris.

D.H. Guston. 2014, November. "Understanding Anticipatory Governance." Presentation before the National Academy of Sciences Board on Life Sciences, Tempe, AZ.

B.A. Wender. 2014, September. "Advancing Life Cycle Assessment for Emerging Technologies." Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe, Germany.

Integration Programs and Activities

Integration with technical colleagues in the sciences and engineering continues to be a key component of CNS-ASU's work – stretching from research to education, engagement, and outreach. It continues to be a key aspect.

National Nanotechnology Infrastructure Network

In addition to the Informal Science Communication program for graduate students mentioned previously, the CNS-ASU continues broader discussions about integrating SEI issues in the NNIN. Currently Wetmore is head of SEI for the NNIN but there was no funding for significant research in the NNIN extension. In Aug 14, Wetmore, did run an ethics engagement exercise with the 75+ NNIN REU students at their annual convocation at Georgia Tech. Student feedback on the exercise was extremely positive. One student who applied to the NNIN REU program the previous year said that the one-hour ethics program caused her to completely rethink her career trajectory and compelled her to focus on doing work with an eye towards developing countries.

With the end of the NNIN, CNS researchers are involved in assisting with the SEI efforts in the developing National Nanotechnology Coordinated Infrastructure (NNCI). Youtie and Shapira have been asked to develop an SEI effort for the Georgia Tech proposal. And Wetmore, Guston, and Bennett are working closely with ASU's Trevor Thornton to develop an SEI component for both ASU and the possible national network. Within the "Southwest NNCI node" entry we have proposed an "SEI user facility." This proposal is based on the extensive visits that scholars from around the made to visit with and learn from CNS researchers at ASU. The proposed SEI user facility will modularize many of the tools developed at CNS and offer small stipends to scholars who want to travel to Tempe to learn how to integrate them into their own work. We will also propose that the Southwest NNCI node serve in a coordinating position for the entire network as it develops.

Research Integration Presentations

Beyond those mentioned above, highlights in YR 10 include:

I. Bennett. 2014, November. "Science Outside the Lab: Teaching scientists how the government works and then to believe it might not be so bad." American Chemical Society Midwest Regional Meeting, University of Missouri, Columbia, MO.

R.W. Foley and R. Rushforth. 2014, November. "Can nZVI Decontaminate Water in a Socially Contested Context? Evaluating EPA community involvement processes for technology adoption." 3rd Sustainable Nanotechnology Organization Conference, Boston, MA.

D.H. Guston. 2014, September. "The Case for Responsible Innovation," Schlinger Symposium Plenary Address, Innovation Day, Chemical Heritage Foundation, Philadelphia.

Collaborations with Academic Colleagues

Society for the Study of Nanoscience and Emerging Technologies (S.NET)

After CNS-ASU served as co-organizer (with CNS-UCSB) and host of S.NET's third annual meeting in Nov 11, S.NET continues to thrive in a way now largely independent from the original investments made by NSF. CNS-ASU participation in the 2014 meeting in Karlsruhe included: CNS-ASU board of visitors member Colin Milburn serving on the S.NET board; Foley's chairing a panel on "Indicators for Responsible Research and Innovation" with presentations by CNS graduate student Bernstein, recent ASU Sustainability PhD (and incoming post-doc) Keeler, and visiting doctoral student Bos; a presentation by Youtie and Shapira; and Foley, Wender and German colleague Weil chairing a panel on "Advancing Life Cycle Analysis for RRI," featuring a presentation by CNS senior investigator Seager.

Governance of Emerging Technologies: Law, Policy, and Ethics (GET)

CNS-ASU has been a major sponsor of the annual "Governance of Emerging Technologies: Law, Policy, and Ethics" meeting, organized by Marchant at ASU's Sandra Day O'Connor College of Law. Guston has served on the program committee, along with board of visitors member Jennifer Kuzma, and organized and chaired a plenary panel in each year. In the reporting year, CNS-ASU involvement in the second annual meeting included: Guston's chairing a plenary screening of Regan Brashear's *Fixed*, and various roles for board of visitors members Andrew Maynard and Jennifer Kuzma. For the coming year (May 2015), Guston has organized a plenary panel on intergenerational justice and emerging technologies, and CNS/VIRI visitor Sujatha Raman and RTTA 3 graduate student Jathan Sadowski are presenting on concurrent panels. The meeting draws 80-100 attendees, mostly academics but some government officials and private sector participants.

CNS-ASU, Anticipatory Governance and the Structure of Large-scale Societal Research

In the reporting year, Guston participated in five activities that highlight how CNS is seen as a model for articulating a strong central vision and pursuing it in an interdisciplinary way. In summer 2014, he gave talks at both the nascent Science, Technology, Engineering and Public Policy (STeAPP) Department at University College, London and the well-established Science Policy Research Unit (SPRU) at the University of Sussex that focused on the connection between the organizational design and intellectual pursuits of the Center. In fall 2014 at ASU, he anchored a panel sponsored by the Office of Knowledge Enterprise and Development on organizing and conducting interdisciplinary research. In February 2015, he spoke at the University of California, Berkeley, to the Center for Science, Technology, Medicine and Society, in part to advise about CNS-

ASU experience that might be relevant to CSTMS's intention to create a new Center for Regulatory Science. That presentation led to a follow-up invitation from the new Berkeley Institute for Data Science to discuss similar issues.

Presentations to academic and professional audiences

Beyond those mentioned above, highlights in YR 10 include:

K. Reifschneider and M.J. Bernstein. 2014, August. "Science Outside the Lab: Reporting on a Science Policy Education Intervention." Poster presented at the Gordon Research Conference on Science and Technology Policy: Systems Approaches to Research and Practice, Waterville Valley, NH.

D. Tomblin. 2014, December. "The Influence of Demographic Diversity on the Outcomes of Futurescape City Tours: A Multi-site Comparison." Dupont Science Policy Summit, Washington, DC.

J. Wetmore. 2014, August. "Social and Ethical Implications of Nanotechnology." NNIN Research Experience for Undergraduates Convocation. Atlanta, GA.

Collaborations/Interactions with Industry and Other Sectors

Governance Scenarios for Cities (Phoenix)

Throughout the renewal period of the Center, TRC 2 has repeatedly conducted engagement activities with expert and stakeholder groups, including industry. In this reporting year, the focus of engagement continued to be sharing the "Nano and the City: Future Scenarios of Nanotechnology Innovation." The scenarios were constructed with participation from representatives from the Arizona Corporation Commission (ACC), Arizona Nanotechnology Cluster (ANC), Arizona Biotechnology Association (ABA), Arizona Technology Council (AzTC), Arizona Technology Investors Forum (ATIF), Maricopa Association of Governments (MAG), various city officials, Greater Phoenix Economic Council (GPEC), Intel, SDC Materials, Phoenix Revitalization Corporation, and Bioscience High School. We visualized the scenarios in collaboration with the ASU School of Design through the production of a 15-minute film. The film is being shared via both online and in-person presentations. Last year, many of these groups were re-engaged with a screening of the film with the ANC, ABA, AzTC, ATIF, MAG, GPEC and local industry at a monthly meeting of the ANC. In the current year we shared the film with 40 members of the Arizona Chapter of the United States Green Building Council, 75 students at Biosciences High School, as well as with 35 science policy experts in Washington DC at the CSPO breakfast seminar. Another effort entailed a community engagement workshop that brought together 22 engineering graduate students at Concordia University in Montreal and 14 engineering graduate students at ASU in Tempe to explore questions of incorporating social and cultural context into engineering for community development work. That latest effort builds on the experimental approaches taken by TRC 1 in South Africa and at Georgia Institute for Technology.

InnovationSpace

CNS-ASU has a modest technology transfer program through its support of InnovationSpace (ISpace). One important output of ISpace is an invention disclosure by each of the cross-functional undergraduate teams. ISpace teams working with CNS have disclosed 12 inventions to ASU's technology transfer arm, Arizona Technology Enterprises (AZTE). These disclosures have generally been the endpoint of technology development from ISpace, as neither it nor CNS-ASU has had the resources to perform follow-up research and development – although ISpace faculty leader

Boradkar and Guston are attempting to cultivate potential sources of support. Wetmore, Bernstein, and Vortherms worked closely with ISpace this year, including running a short workshop for the class.

Journal of Responsible Innovation

In Aug 13, Guston signed a contract with Taylor & Francis to publish the *Journal of Responsible Innovation (JRI)* under their Routledge imprint – the world’s largest publisher of social science journals. The effort had started several years earlier, when Fisher and several European colleagues began to draft a proposal. They eventually brought Guston on board, and together they revised the proposal and offered it to several presses (MIT, Sage, Oxford) and finally found a partner in T&F. *JRI* has an internationally esteemed set of associate editors and members of its editorial board. Volume 1, issue 1 appeared online and in print in Feb 14 (<http://www.tandfonline.com/toc/tjri20/current#.U01D915tiCU>); it will remain open access in perpetuity, and select and timely articles in future issues will be open access as well. The journal will also abide by the open access policy of the United Kingdom. As the reporting year closes, *JRI* has published volume 1, issue 3, and volume 2 issue 1 is compiled and available online. T&F have also submitted the journal’s application for listing in ISI.

Presentations to private sector/industrial audiences

Beyond those mentioned above, highlights in YR 10 include:

E. Fisher. 2014, April. “Responsible Innovation: Integrating Care and Creativity.” Association for Managers of Innovation, Spring Conference, San Diego, CA.

R. Rushforth and R.W. Foley. 2014, May 19-22. “Nanotechnology versus the Dragon: CVOC contaminated groundwater and the socially contested M52 Superfund site.” Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA.

B.A. Wender. 2014, May. “Life Cycle Assessment: Beyond Compliance.” Intel Corporation, Chandler, AZ.

Documentary and Video/Television Projects

In 2013, CNS-ASU revamped its website (cns.asu.edu) with the goal to demonstrate CNS-ASU’s recognition that interdisciplinary and integrated communications about the societal dimensions of nanotechnology require a diverse outreach strategy. CNS-ASU thus continues to develop its new media project to infrastructure, workflows, and capacities. The goal of the project is to expand the reach of the Center’s regular research and engagements through a variety of media.

Our goal has been to video as much as possible and make it accessible to a broader audience through the website. To this end we have been producing videos of CNS’s Occasional Speaker series; they are available at: <http://vimeo.com/album/1542414>. We have been recording the CNS Science Café Series for several years as well, posting those videos at: <http://vimeo.com/album/1662457>. We have also tried to highlight specific faculty and projects by compiling short videos of them discussing their work. We have also disseminated the short films that Wetmore and Bennett developed for the Nano and Society workshop program.

Fixed

Regan Brashear, former CSPO filmmaker in residence, completed her film “Fixed: The Science/Fiction of Human Enhancement,” which generously credits CNS-ASU as assisting with the film. Over the course of making the film, she interviewed Center faculty including Guston and Miller, and the completed version includes significant footage of CNS collaborator Wolbring. Guston moderated a screening of the film at the S.NET annual meeting in Boston and it was scheduled to be shown at the upcoming EuroScience Open Forum in Copenhagen but appropriate arrangements could not be made. Guston moderated a CNS-sponsored screening at the 2nd Annual Conference on the Governance of Emerging Technologies meeting in May 2014. *Fixed* has also been screened and won awards at numerous film festivals – including best (full-length) documentary at the Picture This Film Festival 2014 – and it has been licensed by the United Nations for its work on the Convention for the Rights of People with Disabilities. The film is scheduled to air in Fall 2015 on public television in the United States through KRCB and the American Public Television Exchange.

Lab-Life

Filmmaker Frank Theys continues his work on a documentary film that involves the work of RTTA 4/STIR embedded humanists. The film – produced by Savage Films (Belgium) and Cobos Films (The Netherlands) in a coproduction with the public broadcaster ZDF/ARTE (Germany/France), supported by the Flemish and the Dutch Film Funds, the European MEDIA Program and the CERA Art Foundation – has suffered some recent creative and collaborative setbacks, but director Theys is committed to its completion.

STEM Journal

In spring 2014, Bennett and Wetmore were featured actors in the “Nanotechnology” episode of the AZ Cox Channel 7 television show “The STEM Journal.” The locally produced show has won multiple Telly Awards for “TV program – education.” The show stars Geoff Notkin and was directed by David Routt. Bennett and Wetmore introduce Notkin to the basics of nanotechnology and then help him on his journey to understand more about applications and implications. The show is available for free download at: <http://www.cox7.com/stem-journals/nanotechnology> and is used in K-12 classrooms across Arizona to supplement existing curriculum.



13. Shared and other Experimental Facilities

While CNS-ASU has no physical science or engineering experimental facilities as such, it has created a nexus of exciting, cutting-edge inquiry that has drawn large numbers of scholars, many of them international, to visit and collaborate with us in a variety of capacities. The Center has a physically coherent space – integral with its parent center, the Consortium for Science, Policy and Outcomes (CSPO) – and sufficient capacity and flexibility to host visitors. To date, since beginning operation in Oct 05, and according to rigorous selection criteria, CNS-ASU has hosted numerous visitors including one hundred and twelve (113) international scholars, students, and policy practitioners from twenty-six (26) countries. These numbers do not include dozens more international visitors to the Georgia Tech and University of Wisconsin-Madison sites, nor do they include some sixty-five (65) international visitors to the ASU Tempe campus who attended the 2011 S.NET conference and the 2013 Communities of Integration workshops. This section reports on the interactions that CNS-ASU has generated, which in turn point to the Center's value as a destination for visiting international scholars and its role as the central node in a widening international network.

To provide meaningful structure for our reporting on these visits, we limit our account here to include only a subset of these interactions based on three rigorous selection criteria. First, we only report on visitors who come from outside the US to CNS-ASU in Tempe. Thus, in past years, we have not counted Bowman (Northern Ireland) or twelve other international visitors who attended the fourth STIR project workshop or three UK visitors who attended the US-UK dialogue on responsible innovation, since these meetings were both held in Washington DC. Second, we only report on visitors who have no formal positions within US institutions, whether at ASU or elsewhere. Thus, as in past years, we do not count international visitors such as Gjefsen, who currently have appointments at another US institution. Third, we only count one member of each group of two or more visitors from the same institution or country (except in cases where members engaged in separate Center interactions that did not involve the group as such). We thus have counted Naranjo (Ecuador) and Hosono (Japan), but not the other five scholar-practitioners who comprised the same South American and Japanese delegations, respectively.

In YRs 1-9, CNS-ASU was visited by one hundred and two (102) international visitors who fit these criteria. Visits from these people varied in length of stay, ranging from a few days to several months, but in nearly every case the visitor provided a lecture or seminar on his or her work related to nanotechnology in society and met intensively with CNS-ASU researchers. These visitors included faculty, students, and policy practitioners.

In YR 10, the following eleven CNS-ASU visitors fit the three criteria specified above:

1. Anweshia Borthakur – Jawaharlal Nehru University, India
2. Colette Bos – University of Utrecht, Netherlands
3. Vanessa Chenel, University of Sherbrooke, Canada
4. Stevienna de Saille – University of Sheffield, U.K.
5. Sarah Hartley – University of Nottingham, U.K.
6. Miklos Lukovics – University of Szeged, Hungary
7. Vanessa Messina – Univ. Federal do Estado do Rio de Janeiro, Brazil
8. Sujatha Raman – University of Nottingham, U.K.

The Center for Nanotechnology in Society
ARIZONA STATE UNIVERSITY

Occasional Speaker

Sujatha Raman

Making Antimicrobial Resistance Public

For over 25 years, public health experts have called for concerted action to raise awareness about the emergence of antibiotic agents leading to antimicrobial resistance (AMR) and the resulting increased difficulty managing life-threatening infections. AMR is now framed as a challenge to climate change, with human activity around resource use, technological solutions, global cooperation and generally apocalyptic fictions in the face of inaction. Raman will explore how social sciences and humanities might contribute to ways in which AMR is published through frameworks of apprehension, stewardship, and innovation, each of which opens up well-trodden frontiers for knowledge and action. AMR provides opportunities to consider development challenges, the social determinants of health, and ways to engage with a dispiriting and systems-wide technology that might stimulate new conversations around responsible innovation, the politics of life and the governance of global environmental change.

Wednesday, Jan. 21, 2015
11:30am - 1:00pm
Memorial Union, 224 Gila

Lunch provided for registered attendees.
Register at cns.asu.edu/events

The Center for Nanotechnology in Society at Arizona State University is affiliated with the University of Notre Dame, Ford and Hoeslin (CNS) in the College of Liberal Arts and Sciences. NSERC research, education, and service activities are supported by the National Science Foundation and the Department of Energy.

9. Martin Sand – Karlsruhe Institute of Technology, Germany
10. Bart Walhout – University of Twente, Netherlands
11. Sarah Weingartz – Maastricht University, Netherlands

YR 10 CNS-ASU visitors consist of eleven students/researchers who come from seven countries. Several YR 10 visitors are developing research plans that grow out of their interactions with the Center. Six were participants in the Winter School. In general, all visiting graduate students receive mentorship from CNS-ASU researchers and most have opportunities to present and to publish.

Sample publications or publishing activity in YR 10 by previous international visitors to the Center that stemmed from or were shaped by their interactions with CNS-ASU include the following articles:

1. Gjefsen, Mads Dahl, and Erik Fisher. "From Ethnography to Engagement: The Lab as a Site of Intervention." *Science as Culture* 23.3 (2014): 419-431.
2. Fisher, Erik, et al. "Mapping the integrative field: taking stock of socio-technical collaborations." *Journal of Responsible Innovation* (2015): 1-23.
3. de Saille, Stevienna. "Fixed: the science/fiction of human enhancement." *Journal of Responsible Innovation* 1.1 (2014): 142-145.

During YR 10, several instances of knowledge transfer, dissemination, and application occurred, including those mentioned in conjunction with the Center Assessment Study (RTTA4).

These activities and capacities have enabled CNS-ASU to become increasingly involved in arranging and participating in international events that take place outside of our physical space proper and that extend the reach and vibrancy of our network of partners and collaborators. They have also provided the template for activities anticipated under the proposal to NSF's "Science Across Virtual Institutes" program for a "Virtual Institute for Responsible Innovation."

14. Personnel

The Center is managed by a Director (Guston), three Associate Directors (Fisher, integration; Selin, anticipation; and Wetmore, engagement), and an Assistant Director (Bennett, education). An Executive Committee composed of the Center's team leaders and institutional PIs meets monthly by phone. In addition to Guston (ASU), Center co-PIs are Elizabeth Corley (ASU), to recognize her work across RTTAs, Dietram Scheufele (Wisconsin) and Jan Youtie (GA Tech) – to recognize the deep partnership with those subcontracting institutions.

CNS-ASU staffing has turned over completely since the beginning of grant year 4. Staffing is currently comprised of Deron Ash, Program Manager starting in September, 2013; Patty Ryan, coordinator of administrative and event functions as of July, 2014, replaced Michelle Iafra, who took on a new position at ASU; and Jennifer Banks at 75% who coordinates communication for both CNS-ASU and VIRI, started in January, 2014.

CNS-ASU has a set of team leaders for each of its major RTTA and TRC research programs. These leaders are spread across the Center's participating institutions and in some instances overlap with institutional leaders (see below). The team leaders currently are:

RTTA 1: Jan Youtie, GA Tech; Jose Lobo, ASU

RTTA 2: Elizabeth Corley, ASU; Dietram Scheufele, Wisconsin

RTTA 3: Cynthia Selin, ASU; Kathryn de Ridder-Vignone, James Madison University

RTTA 4: Erik Fisher, ASU; Elizabeth Corley, ASU

TRC 1: Jameson Wetmore, ASU; Susan Cozzens, GA Tech

TRC 2: Arnim Wiek, ASU; Rider Foley, UVA

This group convenes monthly in a telephone call as the Executive Committee. CNS-ASU also communicates internally through a regular lab meeting, held every other week, for personnel at ASU, and regular lab meetings held at similar intervals among the Wisconsin and GA Tech groups, as well as between GA Tech and ASU for TRC 1 and UVA and ASU for TRC2. A listserv dedicated to CNS-ASU affiliated personnel at all its institutions also facilitates communication.

Much of the interface among CNS personnel is driven by both the preparation for and the interactions that occur at the annual Winter School for the Anticipatory Governance of Emerging Technologies, as well as a series of other meetings which take place concurrently, at Saguaro Lake Ranch in Mesa, AZ. For 2015, these meetings included our annual Board of Visitors meeting, our faculty and graduate researcher All-Hands Meeting, and an organizational workshop to develop the Broadening Participation supplemental program.

These overlapping meetings create a dynamic atmosphere during the Winter School and participants report that the opportunity to interact and collaborate with a variety of faculty/researchers during the week is one of the most positive aspects of the program.

We also expect to organize a final meeting for the Center to which we would invite CNS-ASU "alumni/ae" back for a larger intellectual gathering.

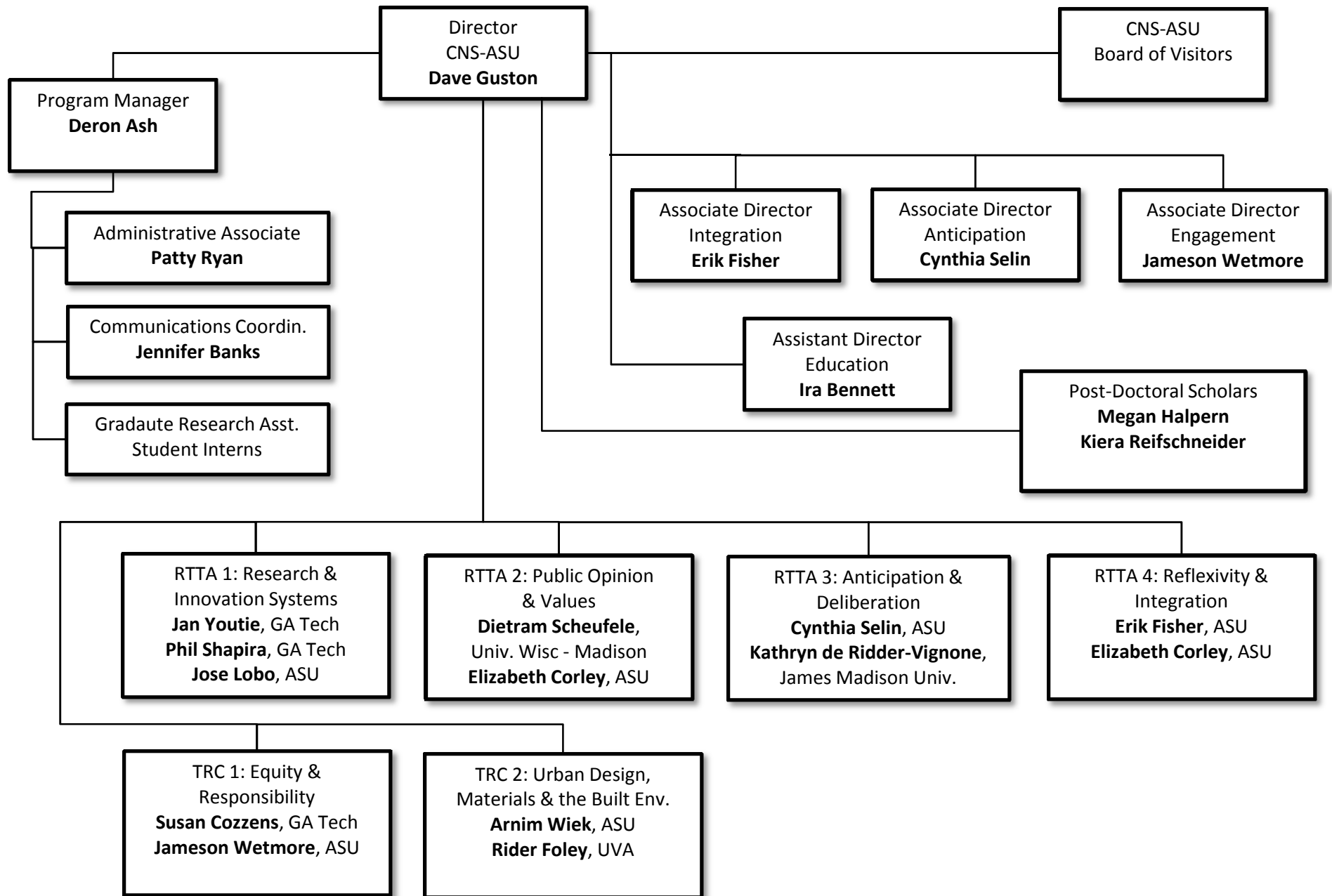


Table 4A: NSEC Personnel, Irrespective of Citizenship

				Citizenship Status														
				U.S. Citizen or Permanent Resident														
				Gender		Race					Mixed-incl.	Mixed						
Personnel Type			Total	Male	Female	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	*Ethnicity Hispanic	Disabled	% NSEC Dollars	
Director			1	1					1								0%	
Team Leaders			11	7	4	0	0	0	11						1		50%	
Staff			5	2	3				4	1							75%	
Collaborators			214	127	87	0	1	1	186	22					7	0	0%	
Research																		
	Post Docs		16	6	10	0	0	0	12	4					1	0	50%	
	Doc/Mas. Students		170	90	80	0	0	2	117	51					18	0	50%	
	Undergraduate Students																	
Curriculum Development and Outreach																		
	Senior Faculty																	
	Junior Faculty																	
	Research Staff																	
	Visiting Faculty																	
	Industry Researchers																	
	Post Docs																	
	Doctoral Students																	
	Masters Students																	
	Undergraduate Students																	
REU Student, if applicable																		
	NSF REU Program																	
	NSF/NSEC Program REU																	
	NSEC's Own REU																	
Other Visiting College Students																		
Pre-college (K-12)																		
	Students																	
	Teachers - RET																	
	Teachers - non-RET																	
TOTALS			417	233	184	0	1	3	331	78				0	27	0		

Table 4B: NSEC Personnel, U.S. Citizenship

				Citizenship Status														
				U.S. Citizen or Permanent Resident														
				Gender		Race					Mixed-incl.	Mixed						
Personnel Type			Total	Male	Female	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	*Ethnicity Hispanic	Disabled	% NSEC Dollars	
Director			1	1					1								0%	
Team Leaders			11	7	4	0	0	0	11						1		50%	
Staff			5	2	3				4	1							75%	
Collaborators			160	85	74				154	6					2	0	0%	
Research																		
	Post Docs		16	6	10	0	0	0	12	4					1	0	50%	
	Doc/Mas. Students		119	63	56	0	0	2	112	5					14	0	50%	
	Undergraduate Students																	
Curriculum Development and Outreach																		
	Senior Faculty																	
	Junior Faculty																	
	Research Staff																	
	Visiting Faculty																	
	Industry Researchers																	
	Post Docs																	
	Doctoral Students																	
	Masters Students																	
	Undergraduate Students																	
REU Student, if applicable																		
	NSF REU Program																	
	NSF/NSEC Program REU																	
	NSEC's Own REU																	
Other Visiting College Students																		
Pre-college (K-12)																		
	Students																	
	Teachers - RET																	
	Teachers - non-RET																	
TOTALS			312	164	147	0	0	2	294	16				0	18	0		

14. Publications, Patents and Press

Primary NSEC support indicated by (‡) symbol. Partial NSEC support for all others.

Faculty level participants indicated in boldface.

Books

1. **Allenby, Braden** and **Daniel Sarewitz**. 2011. *The Techno-Human Condition*. Cambridge, MA: MIT Press.
2. **Campbell, Heather E.** and **Elizabeth A. Corley**. 2012. *Urban Environmental Policy Analysis: Toward Sustainability*. Armonk, NY: M. E. Sharpe, Inc.
3. ‡**Cozzens, Susan** and **Jameson Wetmore** (eds.). 2011. *Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality, and Development*. New York: Springer.
4. ‡de Ridder-Vignone, Kathryn, **Clark A. Miller** and **Daniel Barben**, ed(s). In review. 2014. *Yearbook of Nanotechnology in Society, Volume IV: Nanotechnology and Democracy*. New York: Springer.
5. **Fiedeler, Ulrich**, Christopher Coenen, Sarah R. Davies and **Arianna Ferrari**. 2010. *Understanding Nanotechnology: Philosophy, Policy and Publics*. Amsterdam: IOS Press.
6. ‡**Fisher, Erik, Cynthia Selin** and **Jameson Wetmore** (eds.). 2008. *Yearbook of Nanotechnology in Society, Volume I: Presenting Futures*. New York: Springer.
7. **Gorman, Michael E.** (ed.). 2010. *Trading Zones and Interactional Expertise: Creating New Kinds of Collaboration*. Cambridge, MA: MIT Press.
8. ‡**Guston, David H.** (ed.). 2010. *Encyclopedia of Nanoscience and Society*. Thousand Oaks, CA: Sage Publications.
9. ‡**Hays, Sean A., Jason S. Robert, Clark A. Miller** and **Ira Bennett** (ed.). 2013. *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*. New York: Springer.
10. **Smits, Ruud, Stefan Kuhlmann** and **Philip Shapira** (eds.). 2010. *The Theory and Practice of Innovation Policy: An International Research Handbook*. Cheltenham, UK: Edward Elgar.
11. **Wetmore, Jameson** and **Deborah G. Johnson** (eds.). 2009. *Technology and Society: Building our Sociotechnical Future*. Cambridge, MA: MIT Press.

Book Chapters

1. ‡Anderson, Derrick. 2013. "The Cochlear Implant Controversy: Lessons Learned for Using Anticipatory Governance to Address Societal Concerns of Nano-scale Neural interface Technologies." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and*

- the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 147-158. New York: Springer.
2. ‡Anderson, Ashley A., **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. 2012. "Online Talk: How Exposure to Disagreement in Online Comments Affects Beliefs in the Promise of Controversial Science." *Citizen Voices: Performing Pubic Participation in Science and Environments Communication*, ed(s). Louise Phillips, Anabela Carvalho and Julie Doyle, p. 119-135. Chicago, IL: Intellect.
 3. ‡Bal, Ravtosh. 2011. "Public Perceptions of Fairness in NBIC Technologies." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Jameson Wetmore and Susan Cozzens, p. 231-250. New York: Springer.
 4. ‡**Barben, Daniel, Erik Fisher, Cynthia Selin** and **David H. Guston**. 2008. "Anticipatory Governance of Nanotechnology: Foresight, Engagement, and Integration." *The Handbook of Science and Technology Studies, Third Edition*, ed(s). Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman, p. 979-1000. Cambridge, MA: MIT Press.
 5. ‡Bennett, Ira. 2008. "Developing Plausible Nano-Enabled Products." *Yearbook of Nanotechnology in Society, Volume I: Presenting Futures*, ed(s). Erik Fisher, Cynthia Selin and Jameson Wetmore, p. 149-156. New York: Springer.
 6. **Boardman, Craig, Catherine Slade** and **Barry Bozeman**. 2012. "A Retrospective of the U.S. National Nanotechnology Initiative (NNI): Lessons Learned for Coordination of Federal Scientific and Technical Work at the Nanoscale." *Making it to the Forefront: Nanotechnology-A Developing Country Perspective*, ed(s). N. A. Duda, p. 139-160. New York: Springer.
 7. ‡Choi, Doo-Hun, Anthony D. Dudo and **Dietram A. Scheufele**. 2013. "U.S. News Coverage of Neuroscience Nanotechnology: How U.S. Newspapers Have Covered Neuroscience Nanotechnology During the Last Decade." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 67-78. New York: Springer.
 8. ‡**Cobb, Michael D.** 2012. "Deliberative Fears: Citizen Deliberation about Science in a National Technology Forum." *Public Engagement and Emerging Technologies*, ed(s). Kieran O'Doherty and Edna Einsiedel, p. 115-132. Vancouver, Canada: University of British Columbia Press.
 9. ‡**Cobb, Michael D.** 2012. "Lessons Learned from the First National Citizens' Technology Conference." *Nanotechnology and the Public: Risk Perception and Risk Communication*, ed(s). Susanna Hornig Priest, p. 93-103. Boca Raton, FL: CRC Press.
 10. Cortes Lobos, Rodrigo. 2012. "Nanotecnologia en Chile, Qu tan preparado se encuentra el pas para desarrollar esta disciplina." *Perspectivas sobre el desarrollo de las nanotecnologas en America Latina*, ed(s). Guillermo Foladori, Edgar Zayago Lau and Noela Invernizzi, p. 85-101. Mexico City, Mexico: Miguel Angel Porrua.

11. ‡**Cozzens, Susan**. 2012. "The Distinctive Dynamics of Nanotechnology in Developing Nations." *Making it to the Forefront: Nanotechnology-A Developing Country Perspective*, ed(s). N. A. Duda, p. 125-138. New York: Springer.
12. ‡**Cozzens, Susan**. 2011. "Building Equity and Equality into Nanotechnology." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 433-457. New York: Springer.
13. ‡**Cozzens, Susan** and **Jameson Wetmore**. 2011. "Introduction." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. vii-ix. New York: Springer.
14. ‡Davies, Sarah R. 2011. "Of insects and armies." *Lemistry: A Celebration of the Work of Stanislaw Lem*, ed(s). Ra Page and Magda Raczynska, p. 271-276. Manchester, UK: Comma Press, Co-commissioned by the Polish Cultural Institute in London with support from the Polish Book Institute.
15. ‡Davies, Sarah R. 2010. "The Exhibition and Beyond: New and Controversial Science in the Museum." *Science Exhibitions: Curation and Design*, ed(s). A. Filippopoliti and G. Farnell, MuseumsEtc.
16. Ellwood, Paul, **Erik Fisher** and Kristo Panzda. 2013. "Organizational Life Cycles for Responsible Innovation." *Emerging Technologies: Socio-Behavioral Life Cycle Approaches*, ed(s). Michael Gorman, Nora Savage and Anita Street, p. 117-138. Singapore: Pan Stanford.
17. ‡**Fisher, Erik**. 2009. "Legislative and Regulatory Framework." *Nanotechnology and FDA-Regulated Products: The Essential Guide*, Washington, DC: Food and Drug Law Library.
18. ‡**Fisher, Erik**. 2007. "The Convergence of Nanotechnology, Policy, and Ethics." *Advances in Computers 71: Nanotechnology*, ed(s). M. Zelkowitz, p. 274-296. London: Academic Press.
19. ‡**Fisher, Erik** and **Arie Rip**. 2013. "Responsible Innovation: Multi-Level Dynamics and Soft Interventions." *Responsible Innovation*, ed(s). R. Owen, M. Heintz and J. Bessant, p. 165-183. Chichester, UK: Wiley.
20. ‡**Fisher, Erik**, **Carl Mitcham** and **Roop Mahajan**. 2010-2011. "Jì shù de zhōng yóu tiǎo jiè: cóng nèi bù jìn xíng zhì lǐ." *Research Yearbook on Philosophy of Technology in China*, ed(s). Zhu Qin and Li Yili, 7:182-196.
21. ‡**Fisher, Erik** and **Clark A. Miller**. 2009. "Contextualizing the Engineering Laboratory." *Engineering in Context*, ed(s). S.H. Christensen, M. Meganck and B. Delahousse, p. 369-381. Palo Alto, CA: Academica Press.
22. ‡**Fisher, Erik** and **Daan Schuurbiens**. 2013. "Socio-technical Integration Research: Collaborative Inquiry at the Midstream of Research and Development." *Opening up the Laboratory: Approaches for Early Engagement with New Technology*, ed(s). I. van de Poel, M.E. Gorman, N. Doorn and D. Schuurbiens, 16:97-110. Wiley-Blackwell.

23. **Fisher, Erik** and David Beltran-del-Rio. 2012. "Mathematics and Root Interdisciplinarity." *Oxford Handbook of Interdisciplinarity*, ed(s). Robert Frodeman, Julie Thompson Klein and Carl Mitcham, p. 88. New York: Oxford University Press.
24. ‡**Fisher, Erik** and **Roop L. Mahajan**. 2010. "Embedding the Humanities in Engineering: Art, Dialogue, and a Laboratory." *Creating New Kinds of Collaboration: Trading Zones and Interactional Expertise*, ed(s). M.E. Gorman and R. Evans, p. 209-230. Cambridge, MA: MIT Press.
25. ‡**Foley, Rider W., David H. Guston** and **Daniel Sarewitz**. Accepted, 2015. "Toward the Anticipatory Governance of Geoengineering." In Blackstock, Jason, **Clark Miller** and Steven Rayner (eds.) *Engineering our Climate? Ethics, Politics and Governance of Climate Engineering*. Earthscan-Routledge.
26. ‡**Foley, Rider W.** Marcel Weil, Bennedikt Zimmerman, Manual Baumann, Benjamin A. Wender. In review, 2015. "Interdisciplinary explorations of life cycle assessment for responsible research and innovation – A synopsis of recent workshop activities." In D. Bowman, A. Dijkstra, C. Fautz, J. Guivant, K. Konrad, H. van Lente, & S. Woll. (eds.) *Studies of New and Emerging Technologies, 6th Edition*. IOS Press.
27. ‡**Foley, Rider W., Arnim Wiek**, and Braden Kay. In review. "Nanotechnology Development as if People and Places Matter." *Yearbook of Nanotechnology in Society, Volume IV: Nanotechnology and Democracy*, ed(s). Kathryn De Ridder-Vignone, Clark A. Miller and Daniel Barben, New York: Springer.
28. ‡**Fujimura, Joan H.** 2010. "Technobiological Imaginaries: How Do We Know Nature?" *The Politics of Divergent (Interdisciplinary) Framings of Nature and Evolving Ecologies*, ed(s). Mara Goldman, Matthew Turner and Paul Nadasdy, Durham, NC: Duke University Press.
29. ‡Gallo, Jason. 2009. "Doing Archival Research: How to Find a Needle in a Haystack." *Research Confidential: Solutions to Problems Most Social Scientists Pretend They Never Have*, ed(s). E. Hargittai, p. 262-286. Ann Arbor, MI: University of Michigan Press.
30. ‡Gatchair, Sonia. 2011. "Potential Implications for Equity in the Nanotechnology Workforce in the U.S." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, New York: Springer.
31. ‡**Gorman, Michael**, Antonio Calleja-Lopez, Shanon Conley and **Farzad Mahootian**. 2013. "Integrating Ethicists and Social Scientists into Cutting Edge Research and Technological Development." *Early Engagement and New Technologies: Opening up the Laboratory*, ed(s). I. van de Poel, N. Doorn, D. Schuurbijs and M. E. Gorman, 16:157-173. Wiley-Blackwell.
32. Guo, Ying, Tingting Ma and **Alan L. Porter**. 2012. "Innovation Risk Path Assessing for a Newly Emerging Science and Technology: Illustrated for Dye-Sensitized Solar Cells." *Disruptive Technologies, Innovation and Global Redesign: Emerging Implications*, ed(s). Ndubuisi Ekekwe and Nazrul Islam, p. 12-26. Hershey, PA: IGI Global.

33. ‡**Guston, David H.** 2013. "Daddy, Can I Have a Puddle Gator?: Creativity, Anticipation, and Responsible Innovation." *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*, ed(s). Richard Owen, John Bessant and Maggy Heintz, p. 109-118. Chichester, UK: John Wiley & Sons, Ltd.
34. ‡**Guston, David H.** 2007. "The Center for Nanotechnology in Society at Arizona State University and the Prospects for Anticipatory Governance." *Nanoscale: Issues and Perspectives for the Nano Century*, ed(s). N. Cameron and M.E. Mitchell, p. 377-392. New York: John Wiley and Sons.
35. **Guston, David H.** 2007. "Toward Centres for Responsible Innovation in the Commercialized University." *Public Science in Liberal Democracy: The Challenge to Science and Democracy*, ed(s). P.W.B. Phillips and J. Porter, p. 295-312. Toronto, Canada: University of Toronto Press.
36. ‡**Guston, David H.**, John Parsi and Justin Tosi. 2007. "Anticipating the Political and Ethical Challenges of Human Nanotechnologies." *Nanoethics: The Ethical and Social Implications of Nanotechnology*, ed(s). Fritz Allhoff, Patrick Lin, James Moor and John Weckert, p. 185-197. New York: John Wiley and Sons.
37. ‡**Hamlett, Patrick, Michael D. Cobb and David H. Guston.** 2013. "National Citizens Technology Forum: Nanotechnologies and Human Enhancement." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 265-283. New York: Springer.
38. ‡**Harsh, Matthew.** 2012. "Informal Governance of Emerging Technologies: Non-Governmental Organizations and Nanotechnology in Africa." *International Handbook on Informal Governance*, ed(s). Thomas Christiansen and Christine Neuhold, p. 481-500. Cheltenham, UK: Edward Elgar.
39. ‡**Harsh, Matthew.** 2011. "Equity and Participation in Decisions: What can Nanotechnology Learn from Biotechnology in Kenya." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 251-269. New York: Springer.
40. ‡**Hays, Sean A.** 2013. "Narratives of Intelligence: The Sociotechnical Context of Cognitive Enhancement in American Political Culture." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 219-234. New York: Springer.
41. ‡**Hays, Sean A., Clark A. Miller and Michael D. Cobb.** 2013. "Public Attitudes towards Nanotechnology-Enabled Cognitive Enhancement in the United States." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 43-65. New York: Springer.
42. **Hogle, Linda F.** 2008. "Emerging Medical Technologies." *The Handbook of Science and Technology Studies, Third Edition*, ed(s). Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman, p. 841-874. Cambridge, MA: MIT Press.

43. **Johnson, Deborah G.** and **Jameson Wetmore.** 2008. "STS and Ethics: Implications for Engineering Ethics." *The Handbook of Science and Technology Studies, Third Edition*, ed(s). Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman, p. 567-582. Cambridge, MA: MIT Press.
44. ‡Karinen, Risto and **David H. Guston.** 2010. "Toward Anticipatory Governance: The Experience with Nanotechnology." *Governing Future Technologies: Nanotechnology and the Rise of an Assessment Regime*, ed(s). M. Kaiser, M. Kurath, S. Maasen and C. Rehmann-Sutter, p. 217-232. Dordrecht, The Netherlands: Springer.
45. ‡Kay, Luciano and **Jan Youtie.** 2013. "Corporate Strategies in Emerging Technologies: The Case of Chinese Firms and Energy Storage-Related Nanotechnology Applications." *Shaping Emerging Technologies: Governance, Innovation, Discourse*, p. 167-184. Berlin, Germany: IOS Press / AKA.
46. ‡Kay, Luciano and **Philip Shapira.** 2011. "The Potential of Nanotechnology for Equitable Economic Development: The Case of Brazil." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, New York: Springer.
47. ‡Keiper, Adam. 2013. "The Age of Neuroelectronics." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 115-146. New York: Springer.
48. ‡**Loosemore, Richard P.W.** 2013. "The Complex Cognitive Systems Manifesto." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 195-217. New York: Springer.
49. ‡Macnaghten, Phil, **Sarah Davies** and Matthew Kearnes. 2010. "Narrative and Public Engagement: Some Findings from the DEEPEN Project." *Understanding Public Debate on Nanotechnologies: Options for Framing Public Policies*, ed(s). Rene von Schomberg and Sarah R. Davies, p. 13-30. Brussels: European Commission.
50. **Marchant, Gary E.** and **Douglas J. Sylvester.** 2007. "Nanotechnology Regulation: The United States Approach." *New Global Frontiers in Regulation: The Age of Nanotechnology*, ed(s). Graeme A. Hodge, Diana M. Bowman and Karinne Ludlow, p. 189-211. Cheltenham, UK: Edward Elgar.
51. ‡Meng, Yu and **Philip Shapira.** 2011. "Women and Patenting in Nanotechnology: Scale, Scope and Equity." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, New York: Springer.
52. ‡Milford, Richard and **Jameson Wetmore.** 2013. "A New Model for Public Engagement: The Dialogue on Nanotechnology and Religion." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 97-111. New York: Springer.
53. ‡**Miller, Clark A.** 2009. "NSE and Society." *The Big Ideas of Nanoscale Science and Engineering: A Guidebook for Secondary Teachers*, ed(s). Shawn Y. Stevens, LeeAnn Sutherland and Joseph S. Krajcik, p. 65-72. Arlington, VA: National Science Teachers Association Press.

54. ‡**Miller, Clark A.** 2009. "Science, Technology, and Society." *The Big Ideas of Nanoscale Science and Engineering: A Guidebook for Secondary Teachers*, ed(s). Shawn Y. Stevens, LeeAnn Sutherland and Joseph S. Krajcik, p. 160-170. National Science Teachers Association Press.
55. ‡**Miller, Clark A.** and **Sarah K. Pfatteicher.** 2007. "Nanotechnology in Society Education: Cultivating the Mental Habits of Social Engineers and Critical Citizens." *Nanoscale Science and Engineering Education*, ed(s). Aldrin E. Sweeney and Sudipta Seal, p. 567-576. Stevenson Ranch, CA: American Scientific Publishers.
56. ‡Milleson, Valerye. 2013. "Nanotechnology, the Brain, and the Futures: Ethical Considerations." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 79-96. New York: Springer.
57. ‡Naufel, Stephanie. 2013. "Nanotechnology, the Brain, and Personal Identity." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 167-178. New York: Springer.
58. ‡Nulle, Christina, **Clark A. Miller, Alan L. Porter** and Harmeet Singh Gandhi. 2013. "Applications of Nanotechnology to the Brain and Central Nervous System." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 21-41. New York: Springer.
59. **Nydal, Rune, Stacey Efstathiou and Astrid Laegreid.** 2012. "Crossover Research: Exploring a Collaborative Mode of Integration." *Little By Little: Expansions of Nanoscience and Emerging Technologies*, ed(s). H. van Lente, C. Coenen, T. Fleischer, K. Konrad, L. Krabbenborg, C. Milburn, et al, p. 181-194, part 14. Amsterdam, The Netherlands: IOS Press.
60. **Owen, Richard, Phil Macnaghten, Jack Stilgoe, Michael Gorman, Erik Fisher and David H. Guston.** 2013. "A Framework for Responsible Innovation." *Responsible Innovation: Concepts and Practice*, ed(s). R. Owen, J. Bessant and M. Heintz, p. 27-50. Chichester, UK: Wiley.
61. ‡Phelps, Robin and **Erik Fisher.** 2011. "Legislating the Laboratory? Promotion and Precaution in a Nanomaterials Company." *Biomedical Nanotechnology*, ed(s). Sarah J. J. Hurst, 726(2):339-358. Zurich, Switzerland: Humana Press.
62. **Randles, Sally, Jan Youtie, David H. Guston, Barbara Harthorn, Chris Newfield, Philip Shapira,** et al. 2012. "A Trans-Atlantic Conversation on Responsible Innovation and Responsible Governance." *Little by Little: Expansions of Nanoscience and Emerging Technologies*, ed(s). H. Van Lente, C. Coenen, T. Fleischer and K. Konrad, p. 169-180. Heidelberg: Akademische Verlagsgesellschaft.
63. ‡**Robert, Jason S.** 2009. "Nanoscience, Nanoscientists, and Controversy." *Nanotechnology and Society: Current and Emerging Ethical Issues*, ed(s). F. Allhoff and P. Lin, p. 225-239. New York: Springer.
64. ‡**Robert, Jason S., Clark A. Miller** and Valerye Milleson. 2013. "Introduction: Ethics and Anticipatory Governance of Nano-Neurotechnological Convergence." *Yearbook of Nanotechnology*

- in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 1-17. New York: Springer.
65. ‡**Roco, Mihail, Barbara Harthorn, David H. Guston and Philip Shapira**. 2011. "Innovative and Responsible Governance of Nanotechnology for Societal Development." *WTEC Panel Report on Nanotechnology Research Directions to 2020: Retrospective and Outlook*, ed(s). Mihail C. Roco, Chad A. Mirkin and Mark C. Hersam, p. 441-488. New York: Springer.
 66. ‡Rodriguez, Hannot, Hu Mingyan and **Erik Fisher**. 2012. "Socio-Technical Integration in International Research Policy: The situation in the European Union, the United States, and China." *Engineering and Development in American, Chinese and European Contexts*, ed(s). S. Christensen, C. Mitcham, B. Li and Y. An, p. 291-304. Dordrecht, Germany: Springer.
 67. ‡**Sarewitz, Daniel**. 2011. "Anticipatory Governance of Emerging Technologies." *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem*, ed(s). Gary Marchant, Braden Allenby and Joseph Herkert, p. 95-106. Dordrecht, Germany: Springer.
 68. ‡**Sarewitz, Daniel and David H. Guston**. 2008. "Commentary: Public Engagement as Scientific Responsibility." *Nanotechnology: Ethics and Society*, ed(s). Deb Bennett-Woods, p. 32-35. New York: CRC Press.
 69. ‡**Scheufele, Dietram A.** 2011. "Perspective: Public Attitudes toward Nanotechnology." *Nanotechnology: Public Perception and Risk Communication*, ed(s). Susanna Hornig Priest, p. 71-78. New York: CRC Press.
 70. ‡**Scheufele, Dietram A.** 2006. "Messages and Heuristics: How Audiences Form Attitudes About Emerging Technologies." *Engaging Science: Thoughts, Deeds, Analysis and Action*, ed(s). J. Turney, p. 20-25. London, UK: The Wellcome Trust.
 71. ‡**Scheufele, Dietram A.** and Anthony D. Dudo. 2010. "Emerging Agendas at the Intersection of Political and Science Communication: Communication About Nanotechnology." *Communication Yearbook 34*, ed(s). C. Salmon, p. 143-166. Newbury Park, CA: Sage.
 72. Schuurbiens, Daan. 2010. "Social Responsibility in Research Practice - Engaging applied scientists with the socio-ethical context of their work." *Simon Stevin Series in Ethics of Technology*, 6. Technical University of Delft.
 73. ‡**Selin, Cynthia** and Jathan Sadowski. 2015. "Against Blank Slate Futuring: Noticing Obduracy in the City through Experiential Methods of Public Engagement." *Remaking Participation: Science, Environment and Emerging Publics*, ed(s). Kearnes, M. and J. Chilvers, Routledge. (in press).
 74. ‡**Selin, Cynthia** and Gretchen Gano. 2015. "Seeing Differently: Enticing Reflexivity through Mediated Participation in Place in the Futurescape City Tours." *Engaging Participatory Visual and Digital Methods*, ed(s) Gubrium, A. and K. Harper, Left Coast Press. (in press).
 75. ‡**Selin, Cynthia**. In press. 2014. "Finding Futures: Experiments with Experiential Future-Oriented Dialogue." *Communicating For Social Change: A Handbook for Researchers*, ed(s). Pereira, A. and Wakeford, T.

76. ‡**Selin, Cynthia**. 2011. "Travails, Travels, and Trials: Report from the SNET Roundtable on Plausibility." *Quantum Engagements: Social Reflections of Nanoscience and Emerging Technologies*, ed(s). Torben B. Zulsdorf, Christopher Coenen, Ulrich Fiedeler and et al, p. 235-240. Heidelberg, Germany: IOS Press.
77. ‡**Selin, Cynthia**. 2007. "Professional Dreamers: The Past in the Future of Scenario Planning." *Scenarios for Success: Turning Insight into Action*, ed(s). Bill Sharpe and Kees van der Heijden, p. 27-52. London, UK: John Wiley and Sons.
78. ‡**Sharan, Raghubir, Yashowanta N. Mohapatra and Jameson Wetmore**. 2011. "Technical Education and Indian Society: The Role of Values." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 393-406. New York: Springer.
79. ‡Silverman, Arielle. 2013. "Healing the blind: Perspectives of Blind Persons on Methods to Restore Sight." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 159-166. New York: Springer.
80. ‡**Slade, Catherine**. 2011. "Exploring Societal Impact of Nanomedicine using Pulic Value Mapping." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 69-88. New York: Springer.
81. ‡**Smits, Ruud**, Rutger van Merkerk, **David H. Guston** and **Daniel Sarewitz**. 2010. "The Role of Technology Assessment in Systemic Innovation Policy." *The Theory and Practice of Innovation Policy*, ed(s). Ruud E. Smits, Stefan Kuhlmann and Philip Shapira, p. 387-416. Cheltenham, UK: Edward Elgar Publishing Ltd.
82. ‡Subramanian, Vrishali, Thomas Woodson and **Susan Cozzens**. 2012. "Nanotechnology in India: Inferring Links between Emerging Technologies and Development." *Making it to the Forefront: Nanotechnology-A Developing Country Perspective*, ed(s). N. A. Duda, p. 109-124. New York: Springer.
83. ‡Valdivia, Walter. 2011. "Innovation, Growth, and Inequality: Plausible Scenarios of Wage Disparities in a World with Nanotechnologies." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 145-164. New York: Springer.
84. **van der Leeuw, Sander**. 2010. "The Archaeology of Innovation: Lessons for our Times." *Innovation: Perspectives for the 21st Century*, ed(s). Frank Moss and Todd and et al Machover, p. 33-56. Madrid, Spain: BBVA.
85. ‡Wender, Benjamin A. and **Thomas P. Seager**. In press. "Anticipatory Life Cycle Assessment of SWCNT-enabled Lithium Ion Batteries." *Nanotechnology for Sustainable Manufacturing*, ed(s). David Rickerby, Springer.

86. ‡**Wetmore, Jameson**. 2012. "Aider les Scientifiques et le Public a Reflechir aux Implications d'Ensemble des Nanotechnologies (Etats-Unis)." *La Science et le Debat Public*, ed(s). Institute des Hautes Etudes pour la Science et la Technologie, p. 279-293. Paris, France: Actes Sud.
87. ‡**Wicksen, Fern, Michael D. Cobb and Patrick Hamlett**. In review. "Review of deliberative processes: National Citizens Technology Forum - USA." *Democratisation of Science and Technology Development: Deliberative Processes in the Development of Nanotechnologies*, ed(s). S. Pal, G. Scholl and S. Eivind, Singapore: Pan Stanford Publishing.
88. ‡**Wolbring, Gregor**. 2011. "Ableism and Favoritism for Abilities Governance, Ethics and Studies: New Tools for Nanoscale and Nanoscale Enabled Science and Technology Governance." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 89-104. New York: Springer.
89. **Wolbring, Gregor**. 2008. "The Unenhanced Underclass." *Building Everyday Democracy*, ed(s). P. Miller and J. Wilsdon, p. 122-128. London: Demos.
90. ‡**Youtie, Jan, Alan L. Porter, Kevin Boyack, Jose Lobo, Richard Klavans, Ismael Rafols**, et al. 2012. "Using Large-scale Databases to Understand the Trajectories of Emerging Technologies." *Little by Little: Expansions of Nanoscience and Emerging Technologies*, ed(s). H. Van Lente, C. Coenen, T. Fleischer, K. Konrad, et al, p. 55-58. Heidelberg: Akademische Verlagsgesellschaft
91. ‡**Youtie, Jan and Philip Shapira**. 2011. "Metropolitan Development of Nanotechnology: Concentration or Dispersion." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 165-180. New York: Springer.

Peer Review Journal Article

1. **Abbott, Kenneth W., Elizabeth A. Corley and Gary E. Marchant**. 2012. "Soft Law Oversight Mechanisms for Nanotechnology." *Jurimetrics: The Journal of Law, Science and Technology*. 52(3):279-312.
2. **Abbott, Kenneth W., Gary E. Marchant and Douglas J. Sylvester**. 2006. "A Framework Convention for Nanotechnology." *Environmental Law Reporter*. 36:10931-10942.
3. Alencar, Maria Simone de M., **Alan L. Porter** and Adelaide Maria de Souza Antunes. 2007. "Nanopatenting Patterns in Relation to Product Life Cycle." *Technological Forecasting & Social Change*. 74(9):1661-1680.
4. Alencar, Maria Simone de M., Adelaide Maria de Souza Antunes and **Alan L. Porter**. 2007. "Patents on Nano and the Life Cycle & Value Chain Analysis of Related Products." *China Intellectual Property*. p. 865-866.
5. ‡Altamirano, Carlos and **Cynthia Selin**. Accepted pending revisions. "Seeing the City: Photography as a Place of Work." Submitted to a special issue on "Public Engagement for Environmental Sustainability in a Technological Age." *Environmental Studies and Sciences*.

6. ‡Anderson, Ashley A., Amy B. Becker, **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. In review. "The Role of Cognition and Anticipated Opinion Climate in Discussion of Nanotechnology." *Science Communication*.
7. ‡Anderson, Ashley A., **Dietram A. Scheufele**, **Dominique E. Brossard** and **Elizabeth A. Corley**. 2012. "The Role of Media and Deference to Scientific Authority in Cultivating Trust in Sources of Information about Nanotechnology." *International Journal of Public Opinion Research*, 24(2): 225-237.
8. ‡Anderson, Ashley A., **Dominique E. Brossard** and **Dietram A. Scheufele**. 2013. "Nanoparticle-related Deaths: Science News and the Issue Intention Cycle in Print and Online Media." *Politics and the Life Sciences*. 31(1-2):87-96.
9. ‡Anderson, Ashley A., **Dominique E. Brossard** and **Dietram A. Scheufele**. 2012. "News Coverage of Controversial Emerging Technologies." *Politics and the Life Science*. 31(1-2):87-96. doi: 10.2990/31_1-2_87
10. ‡Anderson, Ashley A., **Dominique E. Brossard** and **Dietram A. Scheufele**. 2010. "The Changing Information Environment for Nanotechnology: Online Audiences and Content." *Journal of Nanoparticle Research*. 12(4):1083-1094. doi: 10.1007/s11051-010-9860-2
11. ‡Anderson, Ashley A., **Dominique E. Brossard**, **Dietram A. Scheufele**, **Michael A. Xenos** and Peter Ladwig. 2013. "The "Nasty Effect": Online Incivility and Risk Perceptions of Emerging Technologies." *Journal of Computer-Mediated Communication*. doi: 10.1111/jcc4.12009
12. ‡Anderson, Ashley A., **Dominique E. Brossard**, **Dietram A. Scheufele**, **Michael A. Xenos** and Sara K. Yeo. In review. "Toxic Talk? How Online Incivility can Undermine Perceptions of Media." *Mass Communication and Society*.
13. ‡Anderson, Ashley A., **Jason Delborne** and Daniel L. Kleinman. 2013. "Information Beyond the Forum: Motivations, Strategies, and Impacts of Citizen Participants Seeking Information during a Consensus Conference." *Public Understanding of Science*. doi: 10.1177/0963662512447173
14. ‡Anderson, Ashley A., Jiyoung Kim, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. 2013. "What's in a name? How we define nanotech shapes public reactions." *Journal of Nanoparticle Research*. 15(2):1-5. doi: 10.1007/s11051-013-1421-z
15. ‡**Anderson, Derrick** and **Catherine P. Slade**. 2013. "Agenda Setting in Emergent R&D Policy Subsystems: Examining Discourse Effects of the 21st Century Nanotechnology Research and Development Act." *Review of Policy Research*. 30(5):447-463. doi: <http://dx.doi.org/10.1111/ropr.12033>
16. ‡Arora, Sanjay, **Alan L. Porter**, **Jan Youtie** and **Philip Shapira**. 2013. "Capturing Developments in an Emerging Technology: an Updated Search Strategy for Identifying Nanotechnology Research Outputs." *Scientometrics*. 95(1):351-370. doi: 10.1007/s11192-012-0903-6

17. ‡Arora, Sanjay, **Jan Youtie**, **Philip Shapira**, Lidan Gao and Tingting Ma. 2013. "Entry Strategies in an Emerging Technology: a Pilot Web-based Study of Graphene Firms." *Scientometrics*. 95(3):1189-1207.
18. ‡Arora, Sanjay K., **Jan Youtie**, Stephen Carley, **Alan L. Porter** and **Philip Shapira**. 2014. "Measuring the development of a common scientific lexicon in nanotechnology." *Journal of Nanoparticle Research*. 16(1):1-11. doi: 10.1007/s11051-013-2194-0.
19. ‡Arora, Sanjay, Rider W. Foley, **Jan Youtie**, **Philip Shapira** and **Arnim Wiek**. 2014. "Drivers of technology adoption – the case of nanomaterials in building construction." *Technological Forecasting and Social Change*. 87(7). doi: <http://dx.doi.org/10.1016/j.techfore.2013.12.017>
20. ‡**Barben, Daniel**. 2010. "Analyzing Acceptance Politics: Towards an Epistemological Shift in the Public Understanding of Science and Technology." *Public Understanding of Science*. 19(3):274-292.
21. **Barben, Daniel**. 2007. "Changing Regimes of Science and Politics: Comparative and Transnational Perspectives for a World in Transition." *Science and Public Policy*. 33(11):55-69.
22. ‡Bennett, Ira and **Daniel Sarewitz**. 2006. "Too Little, Too Late? Research Policies on the Societal Implications of Nanotechnology in the United States." *Science as Culture*. 15(4):309-325.
23. ‡Bernstein, Michael J., Rider W. Foley and **Ira Bennett**. 2014. "An Operationalized Post-normal Science Framework for assisting in the Development of Complex Science-policy Solutions: The Case of Nanotechnology Governance." *Journal of Nanoparticle Research*. 16(7):2492. doi: 10.1007/s11051-014-2492-1
24. ‡Berube, D. M., C. C. Cummings, Michael A. Cacciatore, **Dietram A. Scheufele** and J. Kalin. 2011. "Characteristics and Classification of Nanoparticles: Expert Delphi Survey." *Nanotoxicology*. 5(2):236-243.
25. Bhatti, Yasser, Lucy Kimbell, Rafael Ramirez and ‡**Selin, Cynthia**. Under review. "Scenarios and Design: Scoping the dialogue space." *Futures*.
26. ‡Binder, Andrew R., Michael A. Cacciatore, **Dietram A. Scheufele**, Bret R. Shaw and **Elizabeth A. Corley**. 2012. "Measuring Risk/Benefit Perceptions of Emerging Technologies and their Potential Impact on Communication of Public Opinion toward Science." *Public Understanding of Science*, 21(7): 830-847.
27. **Bozeman, Barry** and **Daniel Sarewitz**. 2011. "Public Value Mapping and Science Policy Evaluation." *Minerva*. 49(1):1-23.
28. ‡**Brossard, Dominique E.** and **Dietram A. Scheufele**. 2013. "Science, New Media, and the Public." *Science*. 339(40):40-41. doi: 10.1126/science.1232329
29. ‡**Brossard, Dominique E.**, **Dietram A. Scheufele**, Eunkyung Kim and **Bruce V. Lewenstein**. 2008. "Religiosity as a Perceptual Filter: Examining Processes of Opinion Formation about Nanotechnology." *Public Understanding of Science*. 18(5):546-558. doi: 10.1177/0963662507087304

30. **Brown, Mark.** and **David H. Guston.** 2009. "Science, Democracy, and the Right to Research." *Science and Engineering Ethics*. 15(3):351-366.
31. ‡Cacciatore, Michael A., Ashley A. Anderson, Doo-Hun Choi, **Dominique E. Brossard, Dietram A. Scheufele**, Xuan Liang, et al. 2012. "Coverage of Emerging Technologies: A Comparison Between Print and Online Media." *New Media and Society*. 14(6):1039-1059. doi: 10.1177/1461444812439061
32. ‡Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley.** 2014. "Another (Methodological) Look at Knowledge Gaps and the Internet's Potential for Closing Them." *Public Understanding of Science*. 23(4): 377-395. doi: 10.1177/0963662512447606
33. ‡Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley.** 2009. "From Enabling Technology to Applications: The Evolution of Risk Perceptions about Nanotechnology." *Public Understanding of Science*. 20(3):385-404. doi: 10.1177/0963662509347815
34. ‡Cacciatore, Michael A., Sara K. Yeo, **Dietram A. Scheufele, Michael A. Xenos**, Doo-Hun Choi, **Dominique E. Brossard** and **Elizabeth A. Corley.** In review. 2014. "Misperceptions in Polarized Politics: The Role of Knowledge, Religiosity and Media." *PS: Political Science and Politics*.
35. ‡Calleja Lopez, Antonio. December December 2009. "Ciencia, tecnología e integración social: el proyecto STIR (Socio-Technical Integration Research)." *Argumentos de Razón Técnica*. 12:157-165.
36. ‡**Calvert, Jane** and **Joan H. Fujimura.** 2009. "Calculating Life? A Sociological Perspective on Systems Biology." *European Molecular Biology Organization EMBO Reports*. 10:S46-S49.
37. **Canary, Heather E.**, Julie L. Taylor, **Joseph R. Herkert, Karin Ellison, Jameson M. Wetmore** and Carlos A. Tarin. 2014. "Engaging Students in Integrated Ethics Education: A Communication in the Disciplines Study of Pedagogy and Students Roles in Society." *Communication Education*. 63, 2014, pp. 83-104.
38. ‡Carley, Stephen and **Alan L. Porter.** 2012. "A Forward Diversity Index." *Scientometrics*. 90(2):407-427. doi: 10.1007/s11192-011-0528-1
39. ‡Carley, Stephen and **Alan L. Porter.** 2011. "Measuring the Influence of Nanotechnology Environmental Health & Safety Research." *Research Evaluation*. 20(5):389-395.
40. ‡**Cobb, Michael.** 2011. "Creating Informed Public Opinion: Citizen Deliberation about Nanotechnologies for Human Enhancements." *Journal of Nanoparticle Research*. 13(4):1533-1548. doi: 10.1007/s11051-011-0227-0
41. ‡**Cobb, Michael D.** and Gretchen Gano. In review. "Empowerment and Social Learning: Long Term Benefits of Citizen Deliberation about Nanotechnologies for Human Enhancement." *Public Understanding of Science*.
42. ‡**Cobb, Michael D.** and Gretchen Gano. 2012. "Evaluating Structured Deliberations about Emerging Technologies: What About Participant Evaluation." *International Journal of Emerging Technologies and Society*. 10:96-110.

43. ‡Conley, Shannon. 2011. "Engagement Agents in the Making: On the Front Lines of Socio-Technical Integration [Commentary]." *Science and Engineering Ethics*. 17(4):715-721. doi: 10.1007/s11948-011-9323-x
44. ‡**Corley, Elizabeth A.**, Youngjae Kim, and **Dietram A. Scheufele**. 2015 (forthcoming). "Scientists' Ethical Obligations and Social Responsibility for Nanotechnology Research. *Science and Engineering Ethics*.
45. Bates, Matthew E., Cate Fox-Lent, Linda Seymour, Benjamin.A. Wender, and Igor Linkov. 2015. "Life cycle assessment for dredged sediment placement strategies. *Science of The Total Environment*. 511: 309-318.
46. ‡**Corley, Elizabeth A.**, **Dietram A. Scheufele** and Qian Hu. 2009. "Of Risks and Regulations: How Leading U.S. Nano-Scientists Form Policy Stances about Nanotechnology." *Journal of Nanoparticle Research*. 11(7):1573-1585.
47. ‡**Corley, Elizabeth A.**, Younjae Kim and **Dietram A. Scheufele**. 2013. "The Current Status and Future Direction of Nanotechnology Regulations: A View from Nano-Scientists." *Review of Policy Research*. 30(5):487-509. doi: <http://dx.doi.org/10.1111/ropr.12036>
48. ‡**Corley, Elizabeth A.**, Youngjae Kim and **Dietram A. Scheufele**. 2012. "Public Challenges of Nanotechnology Regulation." *Jurimetrics: The Journal of Law, Science and Technology*. 52(3):371-381.
49. ‡**Corley, Elizabeth A.**, Youngjae Kim and **Dietram A. Scheufele**. 2011. "Leading U.S. Nano-Scientists' Perceptions about Nano Media Coverage and the Public Communication of Scientific Research Findings." *Journal of Nanoparticle Research*. 13(12):7041-7055. doi: 10.1007/s11051-011-0617-3
50. ‡Cortes Lobos, Rodrigo. 2012. "Georgia Manufacturing Industry: Key Factors of Exchange of Knowledge with External Sources." *International Journal of Learning and Intellectual Capital*. 9(4):380-391. doi: 10.1504/IJLIC.2012.049615
51. ‡**Cozzens, Susan**, Rodrigo Cortes Lobos, Ogundiran Soumonni and Thomas Woodson. 2013. "Nanotechnology and the Millennium Development Goals: Water, Energy, and Agri-food." *Journal of Nanoparticle Research*. 15(2013):1-14.
52. **Dandara, Collet, Clement Adebamowo**, Jantina de Vries, Edward S. Dove, **Erik Fisher**, **Richard A. Gibbs**, et al. 2012. "An Idea whose Time Has Come? An African Foresight Observatory on Genomics Medicine and Data-Intensive Global Science." *Current Pharmacogenomics and Personalized Medicine*. 10(1):7-15.
53. ‡Davies, Sarah R. 2010. "How We Talk when We Talk about Nano: The Future in Laypeoples Talk." *Futures*. 43(3):317-326. doi: 10.1016/j.futures.2010.07.003
54. ‡Davies, Sarah R. and **Cynthia Selin**. 2012. "Energy Futures: Five Dilemmas of the Practice of Anticipatory Governance." *Environmental Communication*. 6(1):119-136. doi: 10.1080/17524032.2011.644632

55. ‡Davies, Sarah R., **Cynthia Selin**, Carlo Altamirano Allende, Michael Burnam-Fink, Corinne DiVittorio, Cecilie Glerup and et al. In press. "Studying Emerge: Findings from an Event Ethnography." *Futures*.
56. ‡Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira**. 2013. "Finding Futures: A Spatio-Visual Experiment in Participatory Engagement." *Leonardo: The International Society for the Arts, Sciences and Technology*. 46(1):76-77. doi: 10.1162/LEON_a_00489
57. ‡Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira**. 2012. "Citizen Engagement and Urban Change: Three Case Studies of Material Deliberation." *Cities*. 29(6):351-357. doi: 10.1016/j.cities.2011.11.012
58. ‡Davies, Sarah R. and **Phil Magnaghten**. 2010. "Narratives of Mastery and Resistance: Lay Ethics of Nanotechnology." *NanoEthics*. 4(2):141-151. doi: 10.1007/s11569-010-0096-5
59. **Davis, Robert W.** 2012. "A Computer-aided Affective Content Analysis of Nanotechnology Newspaper Articles." *NanoEthics*. 5:319-334. doi: 10.1007/s11569-011-0129-8
60. ‡**Delborne, Jason A.**, Ashley A. Anderson, **Daniel L. Kleinman**, **Mathilde Colin** and **Maria Powell**. 2011. "Virtual Deliberation? Prospects and Challenges for Integrating the Internet in Consensus Conferences." *Public Understanding of Science*. 20(3):367-384. doi: 10.1177/0963662509347138
61. ‡de Ridder-Vignone, Kathryn 2012. "Images and Imaginations: An Exploration of Nanotechnology Image Galleries." *Leonardo*. 45(5):447-454. doi: 10.1162/LEON_a_00442
62. ‡de Ridder-Vignone, Kathryn. 2012. "Public Engagement and the Art of Nanotechnology." *Leonardo*. 45(5):433-438. doi: 10.1162/LEON_a_00440
63. ‡de Ridder-Vignone, Kathryn. 2012. "The Images and Art of Nanotechnologies." *Leonardo*. 45(5):431-432. doi: 10.1162/LEON_a_00439
64. ‡Dudo, Anthony D., Doo-Hun Choi and **Dietram A. Scheufele**. 2011. "Food Nanotechnology in the News. Coverage Patterns and Thematic Emphases during the Last Decade." *Appetite*. 56(1):78-89.
65. ‡Dudo, Anthony D., **Sharon Dunwoody** and **Dietram A. Scheufele**. 2011. "The Emergence of Nano News: Tracking Thematic Trends and Changes in U.S. Newspaper Coverage of Nanotechnology." *Journalism & Mass Communication Quarterly*. 88(1):55-75.
66. **Feldman, Martha S.**, **Anne M. Khademian**, **Helen Ingram** and **Anne S. Schneider**. 2006. "Ways of Knowing and Inclusive Management Practices." *Public Administration Review*. 66:89-99.
67. ‡**Fernandez-Ribas, Andrea**. 2010. "International Patent Strategies of Small and Large Firms: An Empirical Study of Nanotechnology." *Review of Policy Research*. 27(4):457-473.
68. ‡**Fernandez-Ribas, Andrea** and **Philip Shapira**. 2009. "Technological Diversity, Scientific Excellence and the Location of Inventive Activities Abroad: The Case of Nanotechnology." *Journal of Technology Transfer*. 34(3):286-303.

69. ‡**Fischhoff, Baruch** and **Dietram A. Scheufele**. 2013. "The Science of Science Communication." *Proceedings of the National Academy of Sciences*. 110:14031-14032.
70. ‡**Fisher, Erik**. 2007. "Ethnographic Invention: Probing the Capacity of Laboratory Decisions." *NanoEthics*. 1(2):155-165.
71. ‡**Fisher, Erik**, Michael O'Rourke, Eric B. Kennedy, Rob Evans, Mike Gorman, and **Tom Seager**. 2015. "Mapping the Integrative Field: Taking Stock of Socio-Technical Collaborations." *Journal of Responsible Innovation*. 2(1):39-61. doi: 10.1080/23299460.2014.1001671.
72. ‡**Fisher, Erik, Catherine Slade**, Derrick Anderson and **Barry Bozeman**. 2011. "The Public Value of Nanotechnology." *Scientometrics*. 85(1):29-39.
73. ‡**Fisher, Erik, Marianne Boenink, Simone van der Burg** and **Neal Woodbury**. 2012. "Responsible Healthcare Innovation: Anticipatory Governance of Nanodiagnosics for Theranostics Medicine." *Expert Review of Molecular Diagnostics*. 12(8):857-870.
74. ‡**Fisher, Erik** and **Michael Lightner**. 2009. "Entering the Social Experiment: A Case for the Informed Consent of Graduate Engineering Students." *Social Epistemology*. 23(4-Mar):283-300.
75. ‡Fisher, Erik and **Roop L. Mahajan**. 2006. "Nanotechnology Legislation: Contradictory Intent? U.S. Federal Legislation on Integrating Societal Concerns into Nanotechnology Research and Development." *Science and Public Policy*. 33(1):5-16.
76. ‡Fisher, Erik, **Roop L. Mahajan** and **Carl Mitcham**. 2006. "Midstream Modulation of Technology: Governance from Within." *Bulletin of Science, Technology and Society*. 26(6):485-496. doi: 10.1177/0270467606295402
77. ‡**Flipse, Steven M., Maarten C.A. van der Sanden** and **Patricia Osseweijer**. 2013. "Improving Industrial R&D Practices with Social and Ethical Aspects: Aligning Key Performance Indicators with Social and Ethical Aspects in Food Technology R&D." *Technological Forecasting and Social Change*. doi: <http://dx.doi.org/10.1016/j.techfore.2013.08.009>
78. **Flipse, Steven M., Maarten C.A. van der Sanden** and **Patricia Osseweijer**. 2012. "Midstream Modulation in Biotechnology Industry: Redefining what is 'Part of the Job' of Researchers in Industry." *Science and Engineering Ethics*. doi: 10.1007/s11948-012-9411-6
79. ‡**Foley, Rider W., Arnim Wiek**, Braden Kay and Richard Rushforth. In review. "Ideal and Reality of Multi-Stakeholder Collaboration on Sustainability Problems – A Case Study on a Large-scale Industrial Contamination in Phoenix, Arizona." *Sustainability Science*
80. ‡**Foley, Rider W.** and **Arnim Wiek**. 2014. "Scenarios of Nanotechnology Innovation vis-à-vis Sustainability Challenges" *Futures* 64, DOI.10.1016/j.futures.2014.09.005
81. ‡**Foley, Rider W.** and **Arnim Wiek**. 2013. "Patterns of Nanotechnology Innovation and Governance within a Metropolitan Area." *Technology in Science*. 35(4):233-247.

82. ‡**Foley, Rider W.** and Hsiang-Kai Dennis Dong. In review. "Greener Grass and Path Dependent Careers: Perceptions of the Business Sector by Public and Non-Profit Employees." *The American Review of Public Administration*.
83. ‡**Foley, Rider W.**, **Ira Bennett** and **Jameson Wetmore**. 2012. "Practitioners Views on Responsibility: Applying Nanoethics." *NanoEthics*. 6(3):231-241. doi: 10.1007/s11569-012-0154-2
84. ‡**Fujimura, Joan H.** and Ramya Rajagopalan. February 2011. "Different Differences: The Use of 'Genetic Ancestry' Versus Race in Biomedical Human Genetic Research." *Social Studies of Science*. 41(1):5-30. doi: 10.1177/0306312710379170
85. ‡Gallo, Jason. 2009. "The Discursive and Operational Foundations of the National Nanotechnology Initiative in the History of the National Science Foundation." *Perspectives on Science*. 17(2):174-211.
86. Gao, L., **Alan L. Porter**, Jue Wang, S. Fang, X. Zhang, Tingting Ma, et al. 2013. "Technology Life Cycle Analysis Modeling Based on Patent Documents." *Technological Forecasting and Social Change*. 80(3):398-407. doi: 10.1016/j.techfore.2012.10.003
87. **Gaughan, Monica** and **Elizabeth A. Corley**. 2010. "Science Faculty at U.S. Research Universities: The Impacts of University Research Center Affiliation and Gender on Industrial Activities." *Technovation*. 30(3):215-222.
88. ‡**Graham, Stuart** and **Maurizio Iacopetta**. 2009. "Nanotechnology and the Emergence of a General Purpose Technology." *Les Annales d'Economie et de Statistique*.
89. Guo, Ying, Chen Xu, Lu Huang and **Alan L. Porter**. 2012. "Empirically Informing a Technology Delivery System Model for an Emerging Technology: Illustrated for Dye-Sensitized Solar Cells." *R & D Management*. 42(2):133-149. doi: 10.1111/j.1467-9310.2012.00674.x
90. ‡Guo, Ying, Lu Huang and **Alan L. Porter**. 2010. "Research Profiling: Nano-enhanced, Thin-film Solar Cells." *R and D Management*. 40(2):195-208.
91. ‡**Guston, David H.** 2014. "Understanding 'Anticipatory Governance'." *Social Studies of Science*. 44(2):219-243.
92. ‡**Guston, David H.** 2014. "Building the Capacity for Public Engagement with Science in the United States." *Public Understanding of Science*. 23:53-59.
93. ‡**Guston, David H.** 2012. "The Pumpkin or the Tiger? Michael Polanyi, Frederick Soddy, and Anticipating Emerging Technologies." *Minerva*. 50(3):363-379. doi: 10.1007/s11024-012-9204-8
94. ‡**Guston, David H.** 2010. "The Anticipatory Governance of Emerging Technologies." *Journal of the Korean Vacuum Society*. 19(6):432-441.
95. ‡Halpern, Meagan, Jathan Sadowski, Joseph Eschrich, Edward Finn and **David H. Guston**. Under review. "Stitching Together Creativity and Responsibility: Interpreting Frankenstein Across Disciplines." *Bulletin of Science, Technology and Society*.

96. ‡**Harsh, Matthew** and Thomas Woodson. 2013. "Pro-Poor Nanotechnology Applications for Water: Characterizing Private Sector Research." *Nanotechnology, Law & Business*. 9(3):232-252.
97. Heinze, Thomas, **Philip Shapira, Juan D. Rogers** and **Jacqueline M. Senker**. 2009. "Organizational and Institutional Influences on Creativity in Scientific Research." *Research Policy*. 38(4):610-623.
98. ‡**Ho, Shirley S., Dietram A. Scheufele** and **Elizabeth A. Corley**. 2013. "Factors Influencing Public Risk-Benefit Perceptions of Nanotechnology: Assessing the Effects of Mass Media, Interpersonal Communication, and Elaborative Processing." *Public Understanding of Science*. 22(5):606-623. doi: 10.1177/0963662511417936
99. ‡**Ho, Shirley S., Dietram A. Scheufele** and **Elizabeth A. Corley**. 2011. "Value Predispositions, Mass Media, and Attitudes Toward Nanotechnology: The Interplay of Public and Experts." *Science Communication*. 33(2):167-200. doi: 10.1177/1075547010380386
100. ‡**Ho, Shirley S., Dietram A. Scheufele** and **Elizabeth A. Corley**. 2010. "Making Sense of Policy Choices: Understanding the Roles of Value Predispositions, Mass Media, and Cognitive Processing in Public Attitudes Toward Nanotechnology." *Journal of Nanoparticle Research*. 12(8):2703-2715. doi: 10.1007/s11051-010-0038-8
101. ‡**Hogle, Linda F.** 2009. "Science, Ethics, and the "Problems" of Governing Nanotechnologies." *The Journal of Law, Medicine & Ethics*. 37(4):749-758. doi: <http://dx.doi.org/10.1111/j.1748-720X.2009.00445.x>
102. ‡**Hogle, Linda F.** 2005. "Enhancement Technologies and the Body." *Annual Reviews of Anthropology and Neuroscience*. 34:695-716.
103. **Horst, Maja**. 2011. "Taking Our Own Medicine: On an Experiment in Science Communication." *Science and Engineering Ethics*. 17(4):801-815. doi: 10.1007/s11948-011-9306-y
104. ‡**Hu, Guangyuan, Stephen Carley** and **Li Tang**. 2012. "Visualizing Nanotechnology Research in Canada: Evidence from Publication Activities, 1990-2009." *Journal of Technology Transfer*. 37(4):550-562. doi: 10.1007/s10961-011-9238-3
105. ‡**Huang, Lu, Ying Guo, Alan L. Porter, Jan Youtie** and **Douglas K. R. Robinson**. 2012. "Visualizing Potential Innovation Pathways in a Workshop Setting: The Case of Nano-Enabled Biosensors." *Technology Analysis and Strategic Management*. 24(5):527-542.
106. ‡**Huang, Lu, Zhengchun Peng, Ying Guo** and **Alan L. Porter**. 2011. "Characterizing a Technology Development at the Stage of Early Emerging Applications: Nanomaterial-enhanced Biosensors." *Technology Analysis and Strategic Management*. 23(5):527-544.
107. ‡**Huang, Lu, Zhengchun Peng, Ying Guo** and **Alan L. Porter**. 2010. "Identifying the Emerging Roles of Nanoparticles in Biosensors." *Journal of Business Chemistry*. 7(1):15-30.
108. **Huang, Wan-Ling, Eric Welch** and **Elizabeth A. Corley**. 2014. "Public Sector Voluntary Initiatives: The Adoption of the Environmental Management System by Public Waste Water Treatment Facilities in the United States." *Journal of Environmental Planning and Management*. 57(10): 1531-1551.

109. **Jenkins, Lekelia D., Sara M. Maxwell and Erik Fisher.** 2012. "Increasing Conservation Impact and Policy Relevance of Research through Embedded Experiences." *Conservation Biology*. 26(4):740-742. doi: 10.1111/j.1523-1739.2012.01878.x
110. ‡Kay, Luciano, Alan L. Parter, **Jan Youtie**, Ismael Rafols, and Nils Newman. 2014. "Mapping graphene science and development: Focused research with multiple application areas. Special issue on "The Future of Science Mapping." *Bulletin of the Association for Information Science and Technology*. 41(2): 22-25.
111. ‡Kay, Luciano, **Jan Youtie** and **Philip Shapira**. 2014. "Signs of things to come? What patent submissions by small and medium-sized enterprises say about corporate strategies in emerging technologies." *Technological Forecasting and Social Change*. 85: 17-25. doi: <http://dx.doi.org/10.1016/j.techfore.2013.09.006>
112. ‡Kay, Luciano, **Nils Newman, Jan Youtie, Alan L. Porter and Ismael Rafols** 2014. "Patent Overlay Mapping: Visualizing Technological Distance." *Journal of the Association for Information Science and Technology*. 65(12), 2432-2443.
113. ‡Kay, Luciano and **Philip Shapira**. 2009. "Developing Nanotechnology in Latin America." *Journal of Nanoparticle Research*. 11(2):259-278.
114. ‡Kim, Eun-Sung. 2008. "Directed Evolution: A Historical Exploration into an Evolutionary Experimental System of Nanobiotechnology, 1965-2006." *Minerva*. 46(4):463-484.
115. ‡Kim, Jiyoung, Sara K. Yeo, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. In review. "Disentangling the Influence of Value Predispositions and Risk/Benefit Perceptions on Support for Nanotechnology among the American Public." *Risk Analysis*. doi: <http://dx.doi.org/10.1111/risa.12141>
116. ‡Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. 2012. "Classifying U.S. Nano Scientists Of Cautious Innovators, Regulators, and Technology Optimists." *Science and Public Policy*. 39(1):30-38. doi: 10.3152/030234212X13113405157822
117. **Klaine, Stephen J., Albert A. Koelsmans**, Nina Horne, Stephen Carley, **Richard D. Handy**, Larry Kapustka, et al. 2012. "Paradigms to Assess the Environmental Impact of Manufactured Nanomaterials." *Environmental Toxicology and Chemistry*. 31(1):3-14. doi: 10.1002/etc.733
118. ‡**Kleinman, Daniel L., Jason A. Delborne** and Ashley A. Anderson. 2009. "Engaging Citizens: The High Cost of Citizen Participation in High Technology." *Public Understanding of Science*. 1:1-20.
119. ‡**Klochikhin, Evgeny A.** and **Philip Shapira**. 2012. "Engineering Small Worlds in a Big Society: Assessing the Early Impacts of Nanotechnology in China." *Review of Policy Research*. 29(6):752-775. doi: 10.1111/j.1541-1338.2012.00596.x
120. Ladwig, Peter, **Kajsa E. Dalrymple, Dominique E. Brossard, Dietram A. Scheufele** and **Elizabeth A. Corley**. 2012. "Perceived Familiarity or Factual Knowledge? Comparing Operationalizations of Scientific Understanding." *Science and Public Policy*. 39(6):761-774. doi: 10.1093/scipol/scs048

121. Laurent, Brice. December 2011. "Technologies of Democracy: Experiments and Demonstrations." *Science and Engineering Ethics*. 17(4):649-666. doi: 10.1007/s11948-011-9303-1
122. ‡Laurent, Brice. 2007. "Diverging Convergences." *Innovation: The European Journal of Social Science Research*. 20(4):343-357. doi: 10.1080/13511610701760804
123. Lee, Chul-joo and **Dietram A. Scheufele**. 2006. "The Influence of Knowledge and Deference toward Scientific Authority: A Media Effects Model for Public Attitudes toward Nanotechnology." *Journalism & Mass Communication Quarterly*. 83(4):819-834.
124. ‡**Leech, Beth**. 2011. "Nano-solutions or Macro-problems? A Public Values Analysis of the Application of Nanotechnology to Water Purification." *American Society of Mechanical Engineering (ASME) 2011 Congress Proceedings*.
125. ‡**Leung, Ricky C.** February 2013. "Networks as sponges: International collaboration for developing nanomedicine in China." *Research Policy*. 42(1):211-219. doi: 10.1016/j.respol.2012.05.001
126. ‡Leung, Ricky. 2007. "Network Position, Research Funding and Interdisciplinary Collaboration among Nanotechnology Scientists: An Application of Social Network Analysis." *Solid State Phenomena*. 121-123:1347-1350. doi: 10.4028/www.scientific.net/SSP.121-123.1347
127. Leydesdorff, Loet, Stephen Carley and Ismael Rafols. 2013. "Global Maps of Science based on the new Web-of-Science Categories." *Scientometrics*. 94(2):589-593. doi: 10.1007/s11192-012-0784-8
128. ‡Li, Nan, **Ashley A. Anderson, Dominique E. Brossard** and **Dietram A. Scheufele**. In review. "Channeling Science Information Seekers' attention? A Content Analysis of Top-Ranked vs. Lower-Ranked Sites in Google." *Journal of Computer-Mediated Communication*.
129. ‡Liang, Xuan, Leona Yi-Fan Su, Sara K. Yeo, **Dietram A. Scheufele, Dominique E. Brossard, Michael A. Xenos** and **Elizabeth A. Corley**. 2014. "Building Buzz: (Scientists) Communicating Science in New Media Environments." *Journalism & Mass Communication Quarterly*. 91(4): 772-791.
130. ‡Liang, Xuan, Shirley S. Ho, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**, X. Hao, et al. In review. "Value Predispositions as Perceptual Filters: a Cross-Cultural Comparison of Public Attitudes toward Nanotechnology in the United States and Singapore." *Public Understanding of Science*.
131. ‡Ma, Tingting, **Alan L. Porter**, Ying Guo, Jud Ready, Chen Xu and Lidan Gao. 2014. "A technology opportunities analysis model: applied to Dye-Sensitized Solar Cells for China." *Technology Analysis and Strategic Management*. 26(1):87-104. doi: <http://www.tandfonline.com/doi/full/10.1080/09537325.2013.850155>
132. **Marchant, Gary E.** and **Douglas J. Sylvester**. 2006. "Transnational Models for Regulation of Nanotechnology." *Journal of Law, Medicine, and Ethics*. 34(4):714-725.

133. Mattick, Carolyn S., **Jameson M. Wetmore**, and Braden R. Allenby. 2015. "An Anticipatory Social Assessment of Factory-Grown Meat." *IEEE Technology and Society Magazine*. 34(1), Spring 2015. doi: 10.1109/MTS.2015.2395967
134. ‡**McGregor, Joan** and **Jameson Wetmore**. 2009. "Researching and Teaching the Ethics of Social Implications of Emerging Technologies in the Laboratory." *NanoEthics*. 3(1):17-30.
135. ‡Meng, Yu, **Philip Shapira** and Li Tang. 2013. "The Emergence of Science-Driven Entrepreneurship in China: A Case Study of Technological Innovation in Nano-Pigment Inks." *International Journal of Entrepreneurship and Innovation Management*. 17(1/2/3):162-176.
136. ‡**Miller, Clark A.** 2015. "Modeling Risk in Complex Bioeconomics." *Journal of Responsible Innovation*. 2(1):124-27.
137. ‡**Miller, Clark A.** and Ira Bennett. 2008. "Thinking Longer Term about Technology: Is there Value in Science Fiction-inspired Approaches to Constructing Future." *Science and Public Policy*. 35(8):597-606.
138. **Mohr, Alison**. December 2011. "Publics in the Making: Mediating Different Methods of Engagement and the Publics These Construct Commentary on: Technologies of Democracy: Experiments and Demonstrations." *Science and Engineering Ethics*. 17(4):667-672. doi: 10.1007/s11948-011-9305-z
139. Molin, Mans J. and **Cynthia Selin**. In review. "Institutionalizing Innovation: Instances of Changes in the Danish System of Innovation." *Research Policy*.
140. ‡**Monahan, Torin** and Tyler Wall. 2007. "Somatic Surveillance: Corporeal Control through Information Networks." *Surveillance and Society*. 4(4-Mar).
141. Neff, Mark and **Elizabeth A. Corley**. 2009. "35 Years and 160,000 Articles: A Bibliometric Exploration of the Evolution of Ecology." *Scientometrics*. 80(3):657-682.
142. ‡Ostman, Rae, Brad Herring, Ali Jackson, **Ira Bennett** and **Jameson Wetmore**. 2013. "Making Meaning Through Conversations about Science and Society." *Exhibitionist*. p. 42-47.
143. **Ozdemir, Vural, Erik Fisher, Edward S. Dove**, Hilary Burton, Galen E.B. Wright, **Mario Massellis**, et al. 2012. "End of the Beginning and Public Health Pharmacogenomics: Knowledge in Mode 2 and P5 Medicine." *Current Pharmacogenomics and Personalized Medicine*. 10(1):1-6.
144. ‡Pandza, Krsto and Paul Ellwood. 2013. "Strategic and Ethical Foundations for Responsible Innovation." *Research Policy*. 42(5):1112-1125. doi: 10.1016/j.respol.2013.02.007
145. Patel, Anil and **Cynthia Selin**. Review and resubmit. "Scenario Planning at the U.S. Army Corp of Engineers: a Public Sector Case Study." *Long Range Planning*.
146. ‡Pei, R. and **Alan L. Porter**. 2011. "Profiling Leading Scientists in Nano-Biomedical Science: Interdisciplinarity and Potential Leading Indicators of Research Directions." *R&D Management*. 41(3):288-306.

147. ‡Pei, R., **Jan Youtie** and **Alan L. Porter**. 2012. "Nano-Biomedical Science in China: Growth and Challenges." *Technology Analysis and Strategic Management*. 24(3):69-88.
148. ‡Philbrick, Mark and Javiera Barandiaran. 2009. "The National Citizens Technology Forum: Lessons for the Future." *Science and Public Policy*. 36(5):335-347.
149. **Porter, Alan L.** and **Ismael Rafols**. 2009. "Is Science Becoming more Interdisciplinary? Measuring and Mapping Six Research Fields over Time." *Scientometrics*. 81(3):719-745.
150. ‡**Porter, Alan L.** and **Jan Youtie**. 2009. "How Interdisciplinary is Nanotechnology." *Journal of Nanoparticle Research*. 11(5):1023-1041.
151. ‡**Porter, Alan L.** and **Jan Youtie**. 2009. "Where does Nanotechnology belong in the Map of Science?" *Nature Nanotechnology*. 4:534-536.
152. ‡**Porter, Alan L., Jan Youtie, Philip Shapira** and David J. Schoeneck. 2008. "Refining Search Terms for Nanotechnology." *Journal of Nanoparticle Research*. 10:715-728. doi: 10.1007/s11051-007-9266-y
153. ‡**Porter, Alan L., Ying Guo** and Denise Chiavetta. 2011. "Tech Mining: Text Mining and Visualization Tools, as Applied to Nano-enhanced Solar Cells." *Wiley Interdisciplinary Reviews: Data Mining and Knowledge*. 1(2):172-181. doi: 10.1002/widm.7
154. ‡**Powell, Maria, Jason A. Delborne** and Mathilde Colin. 2011. "Beyond Engagement Exercises: Exploring the US National Citizens Technology Forum from the Bottom-Up." *Journal of Public Deliberation*. 7(1):article 4.
155. ‡**Powell, Maria, Mathilde Colin, Daniel L. Kleinman, Jason A. Delborne** and Ashley A. Anderson. 2011. "Imagining Ordinary Citizens? Conceptualized and Actual Participants for Deliberations on Emerging Technologies." *Science as a Culture*. 30(1):37-70.
156. **Rafols, Ismael, Alan L. Porter** and **Loet Leydesdorff**. 2010. "Science Overlay Maps: A New Tool for Research Policy and Library Management." *Journal of the American Society for Information Science and Technology*. 61(9):1871-1887. doi: 10.1002/asi.21368
157. Raman, Sujatha. 2015. "Responsive Novelty: Taking Innovation Seriously in Societal Research Agendas for Synthetic Biology." *Journal of Responsible Innovation*. 2(1): 117-120. doi: 10.1080/23299460.2014.1002066.
158. ‡Ramirez, R. and **Cynthia Selin**. 2014. "Plausibility and Probability in Scenario Planning." *Foresight*. 16(1):54-74.
159. **Robinson, Douglas K. R., Lu Huang, Ying Guo** and **Alan L. Porter**. 2013. "Forecasting Innovation Pathways for New Emerging Science and Technologies." *Technological Forecasting and Social Change*. 80(2):267-285. doi: 10.1016/j.techfore.2011.06.004

160. ‡ Rodríguez, Hannot, **Erik Fisher** and Daan Schuurbijs. 2013. "Integrating Science and Society in European Framework Programmes: Trends in Project-level Solicitations." *Research Policy*. 42(5):1126-1137. doi: 10.1016/j.respol.2013.02.006
161. ‡ **Rogers, Juan D.** 2010. "Citation Analysis of Nanotechnology at the Field Level: Implications of R and D Evaluation." *Research Evaluation*. 19(4):281-290.
162. ‡ **Rogers, Juan D., Jan Youtie** and **Luciano Kay**. 2012. "Program-level Assessment of Research Centers: Contribution of Nanoscale Science and Engineering Centers to US Nanotechnology National Initiative Goals." *Research Evaluation*. 21(5):368-380. doi: 10.1093/reseval/rvs028
163. ‡ Runge, Kristin K., Sarah K. Yeo, Michael A. Cacciatore, **Dietram A. Scheufele, Dominique E. Brossard**, Michael A. Xenos, et al. 2013. "Tweeting Nano: How Public Discourses about Nanotechnology Develop in Social Media Environments." *Journal of Nanoparticle Research*. 15:1381. doi: 10.1007/s11051-012-1381-8
164. **Sabharwal, Meghna** and **Elizabeth A. Corley**. 2009. "Faculty Job Satisfaction across Gender and Discipline." *Social Science Journal*. 46:539-556.
165. ‡ **Scheufele, Dietram A.** 2013. "Communicating Science in Social Settings." *Proceedings of the National Academy of Sciences*. 110:14040-14047. doi: <http://dx.doi.org/10.1073/pnas.1213275110>
166. ‡ **Scheufele, Dietram A., Elizabeth A. Corley, Sharon Dunwoody**, Tsung-Jen Shih, Elliott D. Hillback and **David H. Guston**. 2007. "Nanotechnology Scientists Worry about Some Risks More than the General Public." *Nature Nanotechnology*. 2(12):732-734.
167. ‡ **Scheufele, Dietram A., Elizabeth A. Corley**, Tsung-Jen Shih, Kajsa E. Dalrymple and Shirley S. Ho. 2009. "Religious Beliefs and Public Attitudes toward Nanotechnology in Europe and the United States." *Nature Nanotechnology*. 4(2):91-94.
168. Schuurbijs, Daan. 2011. "What Happens in the Lab: Applying Midstream Modulation to Enhance Critical Reflection in the Laboratory?" *Science and Engineering Ethics*. 17(4):769-788. doi: 10.1007/s11948-011-9317-8
169. ‡ Schuurbijs, Daan and **Erik Fisher**. 2009. "Lab-scale intervention." *EMBO Reports. Science & Society Series on Convergence Research*. 10(5):424-427.
170. Schuurbijs, Daan, **Patricia Osseweijer** and **Julian Kinderlerer**. 2009. "Implementing The Netherlands Code of Conduct for Scientific Practice A Case Study." *Science and Engineering Ethics*. 15(2):213-231.
171. ‡ **Seager, Thomas, Evan Selinger** and **Arnim Wiek**. 2012. "Sustainable Engineering Science for Resolving Wicked Problems." *Journal of Agricultural and Environmental Ethics*. 25(4):467-484. doi: <http://dx.doi.org/10.1007/s10806-011-9342-2>
172. ‡ **Selin, Cynthia** et al. Under review. "Experiments in Engagement: Designing PEST for Capacity Building." *Public Understanding of Science*.

173. ‡**Selin, Cynthia**. In review. "Diagnosing Futures: Producing Scenarios to Support Reflexive Governance of Technology." *Social Studies of Science, special issue*.
174. ‡**Selin, Cynthia**. 2011. "Negotiating Plausibility: Intervening in the Future of Nanotechnology." *Science and Engineering Ethics*. 17(4):723-737. doi: 10.1007/s11948-011-9315-x
175. ‡**Selin, Cynthia**. 2008. "The Sociology of the Future: Tracing Stories of Technology and Time." *Sociology Compass*. 2(60):1875-1895.
176. ‡**Selin, Cynthia**. 2007. "Expectations and the Emergence of Nanotechnology." *Science, Technology and Human Values*. 32(2):196-220. doi: 10.1177/0162243906296918
177. ‡**Selin, Cynthia**. 2006. "Time Matters: Temporal Harmony and Dissonance in Nanotechnology Networks." *Time and Society*. 15(1):121-139.
178. ‡**Selin, Cynthia**. 2006. "Trust and the Illusive Force of Scenarios." *Futures*. 38(1):1-14.
179. ‡**Selin, Cynthia** and **Prasad Boradkar**. 2010. "Prototyping Nanotechnology: A Pedagogic Approach to Responsible Innovation." *Journal of Nanotechnology Education*. 2(1-2):1-12. doi: 10.1166/jne.2010.1002
180. ‡**Selin, Cynthia** and Rebecca Hudson. 2010. "Envisioning nanotechnology: New media and future-oriented stakeholder dialogue." *Technology in Society*. 32(3):173-182.
181. ‡**Shapira, Philip, Jan Youtie** and Yin Li. 2015. "Social Science contributions compared in synthetic biology and nanotechnology." *Journal of Responsible Innovation*.
182. ‡**Shapira, Philip, Jan Youtie** and S. Carley. 2014. "Prototypes of emerging metropolitan nanodistricts in the United States and Europe." *Annals of Economics and Statistics*, Number 115/116, December 2014, 81-104.
183. ‡**Shapira, Philip** and **Jan Youtie**. 2008. "Emergence of Nanodistricts in the United States: Path Dependence or New Opportunities." *Economic Development Quarterly*. 22(3):187-199.
184. ‡**Shapira, Philip** and **Jan Youtie**. 2011. "Introduction to the Symposium Issue: Nanotechnology Innovation and Policy Current Strategies and Future Trajectories." *Journal of Technology Transfer*. 36(6):581-586. doi: 10.1007/s10961-011-9224-9
185. ‡**Shapira, Philip, Jan Youtie** and **Alan L. Porter**. 2010. "The Emergence of Social Science Research in Nanotechnology." *Scientometrics*. 85(2):595-611.
186. ‡**Shapira, Philip, Jan Youtie** and Sanjay Arora. 2012. "Early Patterns of Commercial Activity in Graphene." *Journal of Nanoparticle Research*. 4(4):811-826. doi: 10.1007/s11051-012-0811-y
187. ‡**Shapira, Philip, Jan Youtie** and Stephen Carley. 2014. "Prototypes of Emerging Metropolitan Nanodistricts in the United States and Europe." *Les Annales d'Economie et de Statistique*.

188. ‡**Shapira, Philip** and Ju Wang. June 1, 2009. "From Lab to Market? Strategies and Issues in the Commercialization of Nanotechnology in China." *Journal of Asian Business Management*. 8(4):461-489.
189. ‡Shelley-Egan, Clare and Sarah R. Davies. 2013. "Nano-Industry Operationalizations of "Responsibility": Charting Diversity in the Enactment of Responsibility." *Review of Policy Research*. 30(5):588-604. doi: <http://dx.doi.org/10.1111/ropr.12032>
190. ‡Shih, Tsung-Jen, **Dietram A. Scheufele** and **Dominique E. Brossard**. 2013. "Disagreement and Value Predispositions: Understanding Public Opinion about Stem Cell Research." *International Journal of Public Opinion Research*. doi: <http://dx.doi.org/10.1093/ijpor/eds029>
191. ‡**Slade, Catherine**. 2011. "Public Value Mapping of Equity in Emerging Nanomedicine." *Minerva*. 49(1):71-86. doi: 10.1007/s11024-011-9163-5
192. **Strumsky, Deborah, Jose Lobo** and **Sander van der Leeuw**. 2012. "Using Patent Technology Codes to Study Technological Change." *Economics of Innovation and New Technology*. 21(3):267-286. doi: 10.1080/10438599.2011.578709
193. ‡Su, Leona Yi-Fan, **Heather E. Akin, Dominique E. Brossard**, Ashley A. Anderson and **Dietram A. Scheufele**. In review. "Science Audience Tectonics: News Consumption Pattern and its Implication for Public Understanding of Science." *Journalism and Mass Communication Quarterly*.
194. ‡Su, Leona Yi-Fan, **Michael A. Cacciatore, Dietram A. Scheufele, Dominique E. Brossard** and **Michael A. Xenos**. In review. "Inequalities in Scientific Understanding: Connecting Traditional Media, Science Blog Attention and Interpersonal Discussion with Factual and Perceived Knowledge Gaps." *Mass Communication and Society*.
195. ‡Su, Leona Yi-Fan, **Michael A. Cacciatore, Dietram A. Scheufele, Dominique A. Brossard** and **Michael A. Xenos**. In review. "Inequalities in Scientific Understanding: Differentiating between Factual and Perceived Knowledge Gaps." *Science Communication*.
196. ‡Subramanian, Vrishali, **Jan Youtie, Alan L. Porter** and **Philip Shapira**. 2010. "Is There a Shift to Active Nanostructures." *Journal of Nanoparticle Research*. 12(1):1-10.
197. ‡**Tahan, Charles**, Ricky Leung, Greta M. Zenner, **K. D. Ellison, Wendy C. Crone** and **Clark A. Miller**. 2006. "Nanotechnology and Society: A Discussion-Based Undergraduate Course." *American Journal of Physics*. 74(5):443-448.
198. ‡Tang, Li, **Philip Shapira** and **Jan Youtie**. 2014. "Is there a clubbing effect underlying Chinese research citation increases?" *Journal of Association for Information Science and Technology*. doi: <http://onlinelibrary.wiley.com/doi/10.1002/asi.23302/full>.
199. ‡Tang, Li and **Alan L. Porter**. 2011. "Charting Nano Environmental Health and Safety Research Trajectories: Is China Convergent with the United States." *Journal of Science Policy & Governance*. 1(1):1-16.

200. ‡Tang, Li and **John P. Walsh**. 2010. "Bibliometric Fingerprints: Name Disambiguation Based on Approximate Structure Equivalence of Cognitive Maps." *Scientometrics*. 84(3):763-784. doi: 10.1007/s11192-010-0196-6
201. ‡Tang, Li and **Philip Shapira**. 2012. "Effects of International Collaboration and Knowledge Moderation on Chinas Nanotechnology Research Impacts." *Journal of Technology Management in China*. 7(1):94-110.
202. ‡Tang, Li and **Philip Shapira**. 2011. "Regional Development and Interregional Collaboration in the Growth of Nanotechnology Research in China." *Scientometrics*. 86(2):299-315.
203. ‡Tang, Li and **Philip Shapira**. 2011. "China-US Scientific Collaboration in Nanotechnology: Patterns and Dynamics." *Scientometrics*. 88(1):1-16. doi: 10.1007/s11192-011-0376-z
204. Te Kulve, Haico and **Arie Rip**. 2011. "Constructing Productive Engagement: Pre-engagement Tools for Emerging Technologies." *Science and Engineering Ethics*. 17(4):699-714. doi: 10.1007/s11948-011-9304-0
205. ‡Valdivia, Walter. 2011. "The Stakes in Bayh-Dole: Public Values Beyond the Pace of Innovation." *Minerva*. 49(1):25-46. doi: 10.1007/s11024-011-9162-6
206. Van Est, Rinie. 2011. "The Broad Challenge of Public Engagement in Science Commentary on: Constitutional Moments in Governing Science and Technology." *Science and Engineering Ethics*. 17(4):639-648. doi: 10.1007/s11948-011-9296-9
207. Van Oudheusden, Michiel. December 2011. "Questioning 'Participation': A Critical Appraisal of its Conceptualization in a Flemish Participatory Technology Assessment." *Science and Engineering Ethics*. 17(4):673-690. doi: 10.1007/s11948-011-9313-z
208. Von Schomberg, Rene. December 2011. "On Identifying Plausibility and Deliberative Public Policy. Commentary on Negotiating Plausibility: Intervening in the Future of Nanotechnology." *Science and Engineering Ethics*. 17(4):739-742. doi: 10.1007/s11948-011-9305-z
209. ‡**Wang, Jue** and **Philip Shapira**. 2015. "Is There a Relationship between Research Sponsorship and Publication Impact? An Analysis of Funding Acknowledgements in Nanotechnology Papers." *PLoS ONE*. 10(2). doi: <http://www.plosone.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pone.0117727&representation=PDF>.
210. ‡**Wang, Jue** and **Philip Shapira**. 2012. "Partnering with Universities: A Good Choice for Nanotechnology Start-up Firm." *Small Business Economics*. 38(2):197-215.
211. ‡**Wang, Jue** and **Philip Shapira**. 2011. "Funding Acknowledgement Analysis: an Enhanced Tool to Investigate Research Sponsorship Impacts: the Case of Nanotechnology." *Scientometrics*. 87(3):563-586. doi: 10.1007/s11192-011-0362-5
212. ‡Wang, Qian, Qin Zhu and Li Yi Yun. 2010. "Philosophical Reflections on the Management of Nanotechnological Risks." *Chinese Science Bulletin*. 55:0-8.

213. ‡Wender, Benjamin A., **Rider W. Foley**, Valentina Prado-Lopez, Daniel Eisenberg, Dwarakanath Ravikumar, Troy Hottle, Jathan Sadowski, William Flanagan, Angela Fisher, Lisa Laurin, **Thomas P. Seager**, Matthew Fraser, **David H. Guston**. 2014. "Illustrating Anticipatory Life Cycle Assessment for Emerging Photovoltaic Technologies" *Environmental Science and Technology* 48 (18): 10531-10538. DOI.10.1021/es5016923
214. ‡Wender, Benjamin A., **Rider W. Foley**, Troy Hottle, Jathan Sadowski, Valentina Prado-Lopez, Dan E. Eisenberg, Lise Laurin, **Thomas P. Seager**. 2014. "Anticipatory life cycle assessment for responsible research and innovation." *Journal of Responsible Innovation*, 1(2): 200-207.
215. ‡Wender, Benjamin, Rider W. Foley, **David H. Guston**, **Thomas P. Seager** and **Arnim Wiek**. 2013. "Anticipatory Governance and Anticipatory Life Cycle Assessment of Single Wall Carbon Nanotube Anode Lithium ion Batteries." *Nanotechnology, Law and Business*. 9(3):101-118.
216. ‡ Wender, Benjamin A., Rider W. Foley, Valentina Prado, Daniel A. Eisenberg, Troy A. Hottle, Jathan Sadowski and **Thomas P. Seager**. In review. "Anticipatory Life Cycle Assessment for Responsible Research and Innovation." *Journal of Responsible Innovation*.
217. ‡**Wetmore, Jameson**. 2012. "A Place for Religion in Nanotechnology Debates." *Covalence, special issue on Faith, Ethics and Nanotechnology*. Chris Toumey (ed.), June.
218. **Wiek, Arnim**, Barry Ness, Petra Schweizer-Ries and Francesca Farioli. 2012. "From Complex Systems Analysis to Transformational Change: a Comparative Appraisal of Sustainability Science Projects." *Sustainability Science*. 7:5-24. doi: 10.1007/s11625-011-0148-y
219. ‡**Wiek, Arnim**, **David H. Guston**, **Sander van der Leeuw**, **Cynthia Selin** and **Philip Shapira**. 2013. "The Nano-Enhanced City, Sustainability Challenges, and Anticipatory Governance." *Journal of Urban Technology*. 20(2):45-62.
220. ‡**Wiek, Arnim**, Lauren Withycombe Keeler, Vanessa Schweizer and Daniel J. Lang. 2013. "Plausibility Indications in Future Scenarios." *International Journal of Foresight and Innovation Policy*. 9(2/3/4):133-147.
221. ‡**Wiek, Arnim**, Rider W. Foley and **David H. Guston**. 2012. "Nanotechnology for Sustainability: What Does Nanotechnology Offer to Address Complex Sustainability Problems." *Journal of Nanoparticle Research*. 14(9):1093-1112. doi: 10.1007/s11051-012-1093-0
222. ‡**Wiek, Arnim**, Rider W. Foley, **David H. Guston** and Michael J. Bernstein. In review. "Broken Promises and Breaking Ground for Responsible Innovation – Intervention Research to Transform Business-as-Usual in Nanotechnology Innovation." *Technology Analysis & Strategic Management*.
223. William, Logan, **Thomas Woodson**. 2012. "The Future of Innovation Studies: Investigating Innovation in Less Economically Developed Countries." *Minerva*. 50(2).
224. Withycombe, Lauren K., **Rider W. Foley**. 2015 "The monster and the polar bears: Constructing the future knowledge landscape of synthetic biology to inform responsible innovation." *Journal of Responsible Innovation* 2 (1): 81-84. doi. 10.1080/23299460.2014.1003025

225. **Woodson, Thomas**, Duy Dot. 2015. "Nanotechnology Companies in the United States: A Web-based Content Analysis of Companies and Products for Poverty Alleviation". *Journal of Business Chemistry*. 12 (1).
226. ‡Woodson, Thomas. 2012. "Inequality in Nanomedicine." *Journal of Business Chemistry*. 9(3):133-146.
227. **Wynne, Brian**. 2011. "Lab-Work Goes Social, and Vice-Versa: Strategising Public Engagement Processes. Commentary on: What Happens in the Lab Does Not Stay in the Lab: Applying Midstream Modulation to Enhance Reflection in." *Science and Engineering Ethics*. 17(4):791-800. doi: 10.1007/s11948-011-9316-9
228. ‡**Xenos, Michael A., Amy B. Becker**, Ashley A. Anderson, **Dominique E. Brossard** and **Dietram A. Scheufele**. 2011. "Stimulating Upstream Engagement: An Experimental Study of Nanotechnology Information Seeking." *Social Science Quarterly*. 92(5):1191-1214.
229. ‡Ye, X., Yun Liu and **Alan L. Porter**. 2012. "International Collaborative Patterns in China's Nanotechnology Publications." *Journal of Technology Management*. 59(3/4):255-272. doi: 10.1504/IJTM.2012.047246
230. ‡Yeo, Sara K., Michael A. Cacciatore, **Dominique E. Brossard**, **Dietram A. Scheufele**, Kristin K. Runge, Leona Yi-Fan Su and **Elizabeth A. Corley**. 2014. "Partisan Amplification of Risk: American Perceptions of Nuclear Energy Risk in the Wake of the Fukushima Daiichi Disaster." *Energy Policy*. 67:727-736. doi: <http://dx.doi.org/10.1016/j.enpol.2013.11.061>
231. ‡Yeo, Sara K., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. In review. "Selecting our own Science: How Communication Contexts and Individual Traits Shape Information Seeking." *The ANNALS of the American Academy of Political and Social Science*.
232. ‡Yeo, Sara K., Xuan Liang, **Dominique E. Brossard** and **Michael A. Xenos**. In review. "Is the Online Environment Changing the Construction of Scientific Controversies?" *Public Understanding of Science*.
233. ‡**Youtie, Jan, Alan L. Porter, Philip Shapira**, Li Tang and Troy Benn. 2011. "The Use of Environmental Health and Safety Research in Nanotechnology Research." *Journal of Nanoscience and Nanotechnology*. 11:158-166.
234. ‡**Youtie, Jan, Diana Hicks, Philip Shapira** and Travis Horsley. 2012. "Pathways from Discovery to Commercialisation: Using Web Sources to Track Small and Medium-Sized Enterprise Strategies in Emerging Nanotechnologies." *Technology Analysis & Strategic Management*. 24(10):981-995. doi: 10.1080/09537325.2012.724163
235. ‡**Youtie, Jan**, Juan D. Rogers, Thomas Heinze, **Philip Shapira** and Li Tang. 2013. "Career-based influences on scientific recognition in the United States and Europe: Longitudinal Evidence from Curriculum Vitae Data." *Research Policy*. 42(8):1341-1355.

236. ‡**Youtie, Jan and Luciano Kay**. 2014. "Acquiring nanotechnology capabilities: role of mergers and acquisitions." *Technology Analysis & Strategic Management*. 26(5). doi: <http://dx.doi.org/10.1080/09537325.2013.872773>
237. ‡**Youtie, Jan, Maurizio Iacopetta and Stuart Graham**. 2008. "Assessing the Nature of Nanotechnology: Can We Uncover an Emerging General Purpose Technology." *Journal of Technology Transfer*. 33:315-329.
238. ‡**Youtie, Jan and Philip Shapira**. 2008. "Mapping the Nanotechnology Enterprise: A Multi-indicator Analysis of Emerging Nanodistricts in the U.S. South." *Journal of Technology Transfer*. 33:209-223.
239. ‡**Youtie, Jan, Philip Shapira and Alan L. Porter**. 2008. "Nanotechnology Publications and Citations by Leading Countries and Blocs." *Journal of Nanoparticle Research*. 10(6):981-986.
240. ‡**Youtie, Jan**, Stephen Carley, **Philip Shapira, Elizabeth A. Corley and Dietram A. Scheufele**. In review. "Perceptions and Actions: Examining the Relationship between Views on Risk and Citation Actions of Nanotechnology Scientists." *Risk Analysis*.
241. ‡**Youtie, Jan**, Stephen Carley, **Philip Shapira, Elizabeth A. Corley and Dietram A. Scheufele**. 2011. "Perceptions and Actions: Examining the Relationship between Views on Risk and Citation Actions of Nanotechnology Scientists." *Research Evaluation*. 20(5):377-388. doi: [10.3152/095820211X13176484436014](http://dx.doi.org/10.3152/095820211X13176484436014).
242. ‡Zhang, Yi, **Alan L. Porter**, Zhengyin Hu, Ying Guo, and Nils Newman. 2014. "'Term Clumping' for Technical Intelligence: A Case Study on Dye-Sensitized Solar Cells." *Technology Forecasting & Social Change*. 85: 26-39. doi: <http://dx.doi.org/10.1016/j.techfore.2013.12.019>.
243. ‡Zhou, Xiao, Yi Zhang, **Alan L. Porter**, Ying Gue and Donghua Zhu. 2014. "Nano-enabled drug delivery: A research profile." *Nanomedicine: Nanotechnology, Biology and Medicine*. 10(5): 889-896. doi: <http://dx.doi.org/10.1016/j.nano.2014.03.001>.

Trade Journal Article

1. ‡**Corley, Elizabeth A. and Dietram A. Scheufele**. 2010. "Outreach Going Wrong? When We Talk Nano to the Public, We are leaving Behind Key Audiences." *The Scientist*. 24(1):22.
2. ‡**Guston, David H.** 2010. "5 Questions: About Nanoscience." *Phoenix Business Journal*.
3. Ladwig, Peter, Ashley A. Anderson, **Dominique E. Brossard, Dietram A. Scheufele** and Bret Shaw. May 2010. "Narrowing the Nano Discourse." *Materials Today*. 13(5):52-54. doi: [10.1016/S1369-7021\(10\)70084-5](http://dx.doi.org/10.1016/S1369-7021(10)70084-5)
4. ‡**Nisbet, Matthew C. and Dietram A. Scheufele**. October 2007. "The Future of Public Engagement." *The Scientist*. 21(10):38-44.
5. ‡**Scheufele, Dietram A.** 2007. "Nano Does Not Have a Marketing Problem Yet." *Nano Today*. 2(5):48.

6. ‡**Scheufele, Dietram A.** 2006. "Five Lessons in Nano Outreach." *Materials Today*. 9(5):64.
7. ‡**Scheufele, Dietram A.** 2006. "If We Are to Communicate Successfully With the Public, We Need to Learn How to Frame the Message for Different Audiences." *Materials Today*. 9(5):64.
8. ‡**Scheufele, Dietram A.** and **Dominique E. Brossard**. 2008. "Nanotechnology as a Moral Issue? Religion and Science in the U.S." *AAAS Professional Ethics Report*. 21(1):1-3.
9. ‡**Scheufele, Dietram A., Dominique E. Brossard, Sharon Dunwoody, Elizabeth A. Corley, David H. Guston** and **Hans P. Peters**. 2009. "Are Scientists Really Out of Touch?" *The Scientist*.
10. ‡**Scheufele, Dietram A.** and **Elizabeth A. Corley**. 2008. "The Science and Ethics of Good Communication." *Next Generation Pharmaceutical*. 4(1):66.
11. **Wetmore, Jameson**. 2010. "Science's Influence: Response to Science's Uncertain Authority in Policy by John Marburger." *Issues in Science and Technology*. 27(1):10-12.
12. ‡**Wetmore, Jameson** and **Jonathan Posner**. 2009. "Should Corporations Contribute to Nano-Regulation?" *Nano Today*. 4(3):217-219. doi: 10.1016/j.nantod.2009.03.002
13. ‡**Yeo, Sara K., Michael A. Xenos, Dominique E. Brossard** and **Dietram A. Scheufele**. 2014. "Disconnected Discourses." *Materials Today*. 17(2):48-49. doi: <http://dx.doi.org/10.1016/j.mattod.2014.01.002>

Other Journal Article

1. Arora, Sanjay, Jan Youtie, Yin Li, and Philip Shapira. 2015. "Using the Wayback Machine to mine websites in the social sciences: A methodological resource." *Journal of the Association for Information Science and Technology*.
2. Canary, Heather E., Julie L. Taylor, **Joseph R. Herkert, Karin Ellison, Jameson M. Wetmore,** and Carlos A. Tarin. 2014. "Instructors Corner #3: Engaging Students in 'Big Picture' Ethics." *Communication Currents*. 9(2), April 2014.
3. **Downey, Gary Lee, Juan C. Lucena, Donna Riley** and **Jameson Wetmore**. 2013. "They're here to Help: Social Scientists Enable Engineers to See the Gaps in their own Expertise." *Last Word, ASEE Prism*. p. 60
4. ‡**Fisher, Erik**. 2011. "Editorial Overview: Public Science and Technology Scholars: Engaging Whom." *Special Issue of Science and Engineering Ethics*. 17(4):607-620.
5. ‡**Fisher, Erik**. 2006. "Embedded Nanotechnology Policy Research." *Ogmios*. 14:3-4.
6. **Fisher, Erik**. 2008. "Review of Evan Selinger; Robert P. Crease (eds.). The Philosophy of Expertise." *Isis*. 99(1):232-233. doi: 10.1086/589405
7. **Fisher, Erik, Simon Biggs, Stuart Lindsay** and **Jie Zhao**. 2010. "Correspondence: Research Thrives on Integration of Natural and Social Sciences." *Nature*. 463(7284):1018.

8. **Foley, Rider W., Darren Petrucci, Arnim Wiek.** 2014. "Imagining the Future City." *Issues in Science and Technology* XXXI(Fall): 80-90.
9. Gjefsen, Mads Dahl and ‡**Erik Fisher.** 2014. "From Ethnography to Engagement: The Lab as a Site of Intervention." *Science as Culture.* 23(3): 419-431.
10. ‡**Guston, David H.** 2014. "Who Could Be Against *That*?" *Journal of Responsible Innovation.* 2(1):1-4.
11. ‡**Guston, David H.** 2014. "Giving Content to Responsible Innovation." *Journal of Responsible Innovation.* 1(3): 251-53.
12. ‡**Guston, David H.** 2014. "Responsible Innovation: A Going Concern. *Journal of Responsible Innovation.* 1(2): 147-50.
13. ‡**Guston, David H.** 2013. "Introduction to the Special Issue: Nanotechnology and Political Science." *Review of Policy Research.* 30(5):439-446. doi: <http://dx.doi.org/10.1111/ropr.12038>
14. ‡**Guston, David H.** 2011. "Participating Despite Questions: Toward a More Confident Participatory Technology Assessment." *Science and Engineering Ethics.* 17(4):691-697. doi: 10.1007/s11948-011-9314-y
15. ‡**Guston, David H.** 2009. "Deliberating Nanotechnology in the U.S." *British Science Association's People & Science.* p. 22.
16. ‡**Guston, David H.** 2008. "Innovation Policy: Not Just a Jumbo Shrimp." *Nature.* 454:940-941.
17. ‡**Guston, David H.** 2006. "Responsible Knowledge-Based Innovation." *Society.* 43(4):19-21. doi: 10.1007/BF02687530
18. ‡**Guston, David H., Daniel Sarewitz and Clark A. Miller.** 2009. *Correspondence: Scientists Not Immune to Partisanship.* *Science,* 323:582.
19. ‡**Guston, David H., Erik Fisher, Armin Grunwald, Richard Owen, Tsjalling Swiestra and Simone van der Burg.** 2014. "Responsible Innovation: Motivations for a Journal." *Journal of Responsible Innovation.* 1(1):1-8.
20. ‡**Invernizzi, Noela** and Sarah R. Davies. 2012. "Editorial: Special Issue." *Nanotechnology Law & Business.* 9(3):196-200.
21. Kim, Byoungyoon. 2009. "Socio-Technical Integration Research." *NanoWeekly.* 313:10-11.
22. **Leung, Ricky C.** 2012. "Cluster-Based Advantages in the Innovation Process: The Diffusion of Nanotechnology in Two Chinese Cities." *Frontiers of Business Research in China.* 6(1):25-54. doi: 10.3868/s070-001-012-0002-3
23. ‡**Leung, Ricky C.** 2011. "Network Building in the Innovation Journey: How Chinese Science Institutes Jump on the Nanotech Bandwagon." *East Asian Science, Technology and Society: An International Journal.* 6:167-197.

24. Li, Yin, **Jan Youtie**, and **Philip Shapira**. 2015. "Why do technology firms publish scientific papers? The strategic use of science by small and midsize enterprises in nanotechnology." *The Journal of Technology Transfer*. p. 1-18.
25. ‡Liang, Xuan, Ashley A. Anderson, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. April 2012. "Information Snapshots: What Google Searches Really Tell Us About Emerging Technologies." *Nano Today*. 7(2):72-75. doi: 10.1016/j.nantod.2012.01.001
26. **Mahootian, Farzad**. In preparation. "Complimentarity and Self-Reflexive Science: A Systems View of Laboratory Engagement Studies." *Conference Proceedings of Empirical Philosophy of Science*.
27. **Mahootian, Farzad** and Tara-Marie Mahootian. 2012. "Jung and Laboratory Ethnographies: Lab as Locus of Transformative Research." *Conference Proceedings of Jung in the Academy and Beyond: 100 Years Later*. p. 7.
28. ‡Pirtle, Zach. 2006. "Nanotechnology: Constructing a Proactive Science Policy towards Democracy." *The Triple Helix: The International Journal of Science, Society and Law*. 3(1):48.
29. ‡**Robert, Jason S.** 2008. "Review of Nanoethics." *Studies in Ethics, Law, and Technology*. 2(1). doi: 10.2202/1941-6008.1027
30. ‡**Roco, Mihail C., Barbara Harthorn, David H. Guston** and **Philip Shapira**. 2011. "Innovative and Responsible Governance of Nanotechnology for Societal Development." *Journal of Nanoparticle Research*. 13(9):3557-3590.
31. Sadowski, Jathan and David H. Guston. 2015. "TA as an Institutionalized Practice: Recent Developments in the USA." *Technikfolgenabschätzung – Theorie und Praxis* 24(1): 54-59.
32. ‡**Selin, Cynthia**. 2014. "On Not Forgetting Futures." *Journal of Responsible Innovation*. 1(1):103-108.
33. ‡**Schneider, Jennifer** and **Carl Mitcham**. 2008. "Working toward Nanotechnology Consensus." *ethix*. 59:18-19.
34. ‡**Shapira, Philip, Jan Youtie** and Luciano Kay. 2011. "National Innovation Systems and the Globalization of Nanotechnology Innovation." *Journal of Technology Transfer*. 36(6):604. doi: 10.1007/s10961-011-9212-0
35. ‡**Shapira, Philip** and **Jue Wang**. 2010. "Comment: Follow the Money. What was the Impact of the Nanotechnology Funding Boom of the Past Ten Years." *Nature*, 468(7324): 627-628.
36. Subramanian, Vrishali, **Thomas Woodson, Susan Cozzens**. 2012. Book Chapter: "Nanotechnology in India: Inferring Linking between Emerging Technologies and Development." [Making it to the Forefront of Nanotechnology- A Developing Country Perspective](#).
37. ‡**Wetmore, Jameson**. 2014. "Inspiring Students and Teachers around the Globe: NanoDays in South Africa." *Nanoscale Informal Science Education Network Newsletter*. August 5, 2014.

38. ‡**Wetmore, Jameson**. 2012. "The Value of the Social Sciences for Maximizing the Public Benefits of Engineering." *The Bridge*. 42(3):40-45.
39. ‡**Wetmore, Jameson**. 2007. "Introduction to special issue on science, policy and social inequity." *Science and Public Policy*. 34(2):83-84.
40. ‡**Wetmore, Jameson**. 2006. "Nanotalk: Conversations with Scientists and Engineers about Ethics, Meaning, and Belief in the Development of Nanotechnology." *Science and Engineering Ethics*. 12(3):583.
41. ‡**Wetmore, Jameson, Ira Bennett**, William H. Hooke and Tim Miller. 2009. *Correspondence: Scientists: Listen Up! - Letter*. *Science*, 324: 334.
42. ‡**Wiek, Arnim, David H. Guston**, Emma Frow and Jane Calvert. 2012. "Sustainability and Anticipatory Governance in Synthetic Biology." *International Journal of Social Ecology and Sustainable Development*. 3(2):25-38. doi: 10.4018/jsesd.2012040103
43. ‡**Wiek, Arnim** and **Rider W. Foley**. 2013. "The Shiny City and its Dark Secrets: Nanotechnology and Urban Development." *Curb Magazine*. 4(3):26-27.
44. **Woodson, Thomas**. 2014. "Book Review: Nanotechnology and Development-What's in it for Emerging Countries". *The Journal of Development Studies*. 50 (11).
45. **Woodson, Thomas**. 2014. "Technology Diffusion and Its Impact on Children". *UNICEF-The State of the World's Children 2014*. <http://sowc2015.unicef.org/stories/>
46. **Woodson, Thomas**. Forthcoming. "Book Review: Managing Global Innovation- Framework for integrating capabilities around the world". *International Public Management Journal*.
47. Zhu, Qin and Wang Qian. 2010. "社会技术系统论视角下的工程伦理学研究 [The social technical system approach to engineering ethics studies]." *道德与文明 [Morality and Civilization]*. 6:119-124.

Periodical (popular magazines, newspapers)

1. ‡**Brossard, Dominique E.** and **Dietram A. Scheufele**. 2013. "This Story Stinks." *The New York Times*.

Internet

1. **Allenby, Braden** and **Daniel Sarewitz**. May 27, 2010. "Telepathic Helmets! Power-Generating Pants! How Will Military Technology Change the Way We Live." *The Takeaway*. <http://www.thetakeaway.org/2010/may/27/how-military-tech-will-change-way-we-live/>
2. **Allenby, Braden** and Peter de Marneffe. April 19, 2013. "Privacy in the Nano City: Humans and nano- enabled Communication Technologies." *CNS-ASU Science Café*. <http://vimeo.com/66590177>
3. **Anbar, Ariel** and **Michael E. Smith**. February 19, 2010. "The End of Earth: If Not in 2010, Then When." *CNS-ASU Science Café*.

http://www.youtube.com/watch?feature=player_embedded&list=PL1A16C368795630FA&v=Wvy4RjN25_k#!

4. **Barker, Anna** and Denise Meridith. May 17, 2013. "Healing in the Nano City: Designing Equity into Transformative Healthcare." CNS-ASU Science Café. <http://vimeo.com/67158736>
5. **Bennett, Ira** and Timothy Boyd. November 2012. "Equity in the Nano City: How Can Nanotechnology Empower Equitable Water Distribution?" CNS-ASU Science Café. <http://vimeo.com/61026266>
6. Bernstein, Michael J. 2014. "A Rose by Any Other Name: On Synthetic Biology, Genetic Engineering, and Societal Control of Technology." Workshop on Research Agendas in the Societal Aspects of Synthetic Biology. Invited Pre-conference paper. Tempe, AZ. 4-6 November.
7. Bowditch, Rachel, Matt Watkins and **Karin D. Ellison**. October 16, 2009. "Bone Portraits: Scenes from a Play about the Invention of the X-Ray." CNS-ASU Science Café. <http://www.youtube.com/user/CNSCSPO#p/u/3/oxKLLuSWsAc>
8. Brundage, Miles and Jamie Winteron. 2015. "Chappie and the Future of Moral Machines." http://www.slate.com/articles/technology/future_tense/2015/03/chappie_robot_ethics_the_file_raises_interesting_questions_about_morality.html.
9. Brundage, Miles. November 14, 2014. "The Anti-HAL: The Interstellar Robot Should Be the Future of Artificial Intelligence." http://www.slate.com/blogs/future_tense/2014/11/14/tars_the_interstellar_robot_should_be_the_future_of_artificial_intelligence.html
10. Calabrese, Francesco. December 2, 2010. "Modeling Urban Mobility Using Pervasive Technologies." Emerging Technology & The Future Series. <http://vimeo.com/27543685>
11. Cavalier, Darlene. January 16, 2014. "Citizen Science! New Technologies, New Audiences." CNS-ASU Science Café. <http://vimeo.com/86728343>
12. **Coleman, Grisha** and **Aaron Golub**. October 2012. "Moving in the Nano City: What will the Impact Be?." CNS-ASU Science Café. <http://vimeo.com/60475625>
13. **Conz, David**. February 23, 2012. "What Beer Can Teach Us About Emerging Technologies. The Home-Brew Movement Serves as a Lesson in DIY Innovation." Slate. http://www.slate.com/articles/technology/future_tense/2012/02/home_brew_and_the_diy_innovation_movement_.html
14. **Conz, David**. September 15, 2010. "Getting from Here to There: Aiming at a Moving Target in a Changing Landscape." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100915P8IM/getting-from-here-to-there-aiming-at-a-moving-target-in-a-changing-landscape/>
15. **Cozzens, Susan** and **Jameson Wetmore**. 2011. "Yearbook of Nanotechnology in Society, Volume 2: Nanotechnology and the Challenge of Equity, Equality and Development (Video)."

http://www.youtube.com/watch?v=R_WfmJjTLZ0&list=UU2hhshdW_r3vnk5E_PYybXg&index=6&feature=plcp

16. Davies, Sarah R. et al. May 2014. "Studying Emerge: Findings from an Event Ethnography." *Futures*. <http://www.sciencedirect.com/science/article/pii/S0016328714000810>.
17. Davies, Sarah R. February 16, 2010. "Risk, Narrative, and Dilemma: Reading Public Responses to Emerging Technologies." CNS-ASU Occasional Speaker. http://www.youtube.com/watch?v=UgfftUFP1Dc&feature=player_embedded
18. de Ridder-Vignone, Kathryn. September 17, 2013. "Material Deliberation as Public Engagement in the Nanoscale Informal Science Education (NISE) Network." CNS-ASU Occasional Speaker. <http://vimeo.com/78569389>
19. **Finn, Edward** and **Wiek, Arnim**. September 12, 2012. "Envisioning the Nano City: How Will it Look?" CNS-ASU Science Café. <http://vimeo.com/60348840>
20. **Fisher, Erik** and **Daniel Sarewitz**. 2011. "STIR (Socio-Technical Integration Research)." <http://www.cspo.org/scisip/movies/>
21. **Foladori, Guillermo**. November 24, 2010. "Opinion: Nanotech for health is not just about disease." SciDev Net - Science and Development Network. <http://www.scidev.net/en/new-technologies/opinions/nanotech-for-health-is-not-just-about-disease-1.html>
22. Foley, Rider W. April 18, 2012. "Innovation + City = Prosperity." The Sustainability Review. <http://www.thesustainabilityreview.org/2012/04/18/innovation-city-prosperity/>
23. Foley, Rider W. February 3, 2012. "Sports Science, Technology, and Society." CSPO Soapbox. <http://www.cspo.org/soapbox/view/1202031604P86888696LH/sports--science-technology-and-society/>
24. **Garreau, Joel**. August 26, 2009. "The Future of Cities." CNS-ASU Occasional Speaker. Presentation. http://www.youtube.com/watch?v=Q99ga43ZNd8&feature=player_embedded
25. **Goodnick, Stephen** and **Tim Lant** November 20, 2009. "Good to the Last Drop? The Water-Energy Connection." CNS-ASU Science Café. http://www.youtube.com/watch?v=HryWsrq4XSA&feature=player_embedded#at=154
26. **Guston, David H.** March 03, 2013. "The March 03, 2013. "The Scholars Circle and Insighters Radio." KPFK Radio. <http://www.armoudian.com/log/scholars-circle/the-scholars-circle-insighters-radio-mar-3rd-2013/>
27. **Guston, David H.** December 5, 2011. "Michael Crichton's Last Stand." Slate. http://www.slate.com/articles/technology/future_tense/2011/12/michael_crichton_s_micro_and_how_scientists_talk_to_the_public_single.html
28. **Guston, David H.** February 21, 2011. "Are We Alone - Nano Nano." SETI Radio. <http://radio.seti.org/blog/2011/02/are-we-alone-nano-nano-david-guston/>

29. **Guston, David H.** December 10, 2010. "Golden Fleece 2.0." CSPO Soapbox. <http://www.cspo.org/soapbox/view/101210P6OT/golden-fleece-20/>
30. **Guston, David H.** August 9, 2010. "The Puddle Gator." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100809P5HQ/the-puddle-gator/>
31. **Guston, David H.** March 30, 2010. "Public Engagement with Nanotechnology." 2020Science.org. <http://2020science.org/2010/03/30/public-engagement-with-nanotechnology/>
32. **Guston, David H.** September 25, 2009. "Who by Fire." CSPO Soapbox. <http://www.cspo.org/soapbox/view/090925P5PS/who-by-fire/>
33. **Guston, David H.** March 20, 2009. "Nanotechnology and Public: Data for Decision Makers Briefing to the U.S. Congressional Nanotechnology Caucus." ASU President's Office Podcast. <http://president.asu.edu/node/661>
34. **Guston, David H.** September 25, 2007. "Toward Anticipatory Governance." nanoHUB.org. <http://nanohub.org/resources/3270/>
35. **Guston, David H.** and **Cynthia Selin.** January 2013. "Life In 2030." IEEE Spectrum Radio. <http://www.prx.org/pieces/89782-life-in-2030>
36. **Guston, David H.,** George Poste and Subhash Mahajan. October 10, 2007. "Tools of the Trade - Nanotechnology." ASU Spotlight. http://www.youtube.com/watch?v=E-cxH_KShNQ
37. Harsh, Matthew. May 12, 2011. "Careful design is key to success of development prizes." Science and Development Network. <http://www.scidev.net/en/opinions/careful-design-is-key-to-success-of-development-prizes-1.html>
38. **Honsberg, Christiana** and Nancy LaPlaca. March 15, 2013. "Power in the Nano City: Electricity, Democracy, and Mutual Influence." CNS-ASU Science Café. <http://vimeo.com/64846660>
39. **Irwin, Alan.** February 12, 2010. "The Good, the Bad, and the Perfect: Anticipating Engagement amidst Critical Regimes." CNS-ASU Occasional Speaker. http://www.youtube.com/watch?v=TFns52m-wL4&feature=player_embedded#at=15
40. **Jenik, Adriene** and Dee Dee Falls. January 2013. "Learning the Nano City." CNS-ASU Science Café. <http://vimeo.com/60685521>
41. **Kosal, Margaret E.** February 4, 2010. "Nanotechnology for Chemical and Biological Defense: Policy, Programs, and Threat Anticipation." CNS-ASU Occasional Speaker. http://www.youtube.com/watch?v=ETnhbdyWVTg&feature=player_embedded#at=70
42. Klug Boonstra, Sheri. February 20, 2014. "Citizen Science Goes to Mars." CNS-ASU Science Café. <http://vimeo.com/90169360>

43. **Martins, Paulo** and **David H. Guston**. May 3, 2011. "Center for Nanotechnology in Society at Arizona State University." Renanosomo Brazilian Research Network.
<http://nanotecnologiadoavesso.org/tv/programa-n-112-0>
44. **Miller, Clark A.** October 26, 2010. "Why Nano Matters: Saving the World." Nanoscale Informal Science Education Network.
http://www.nisenet.org/blogs/real_world_nano/why_nano_matters_saving_world
45. **Miller, Clark A.** April 27, 2010. "Nanotechnology for Human Enhancement: What Does the Public Think?" Nanoscale Informal Science Education Network.
http://www.nisenet.org/blogs/real_world_nano/nanotechnology_human_enhancement_what_does_public_think
46. **Miller, Clark A.** April 22, 2010. "Why Does Nano Matter? Bio-Non-Bio Interfaces." Nanoscale Informal Science Education Network.
http://www.nisenet.org/blogs/real_world_nano/why_does_nano_matter_bio-non-bio_interfaces
47. **Miller, Clark A.** February 15, 2010. "Why does Nano Matter? Surface Area." Nanoscale Informal Science Education Network. <http://www.nisenet.org/blogs/real-world-nano>
48. **Miller, Clark A.** January 26, 2009. "Welcome to Real World Nano." Nanoscale Informal Science Education Network. <http://www.nisenet.org/blogs/real-world-nano>
49. **Nisbet, Matthew C., Dominique E. Brossard** and **Dietram A. Scheufele**. 2009. "Science Needs a Storyline." The Observatory (Columbia Journalism Review).
http://www.cjr.org/the_observatory/science_needs_a_storyline.php?page=all
50. **Petrucci, Darren** and **Kelly Campbell Rawlings**. March 15, 2013. "Evolving in the Nano City: Urban Design, Urban Culture and Forces of Changes." CNS-ASU Science Café.
<http://vimeo.com/60790108>
51. **Randles, Sally**. October 22, 2013. "Toward an Institutional Sociology of Responsible Innovation." Presentation. CNS-ASU Occasional Speaker. <http://vimeo.com/86551033>
52. **Rittmann, Bruce** and **Dawn Schwenke**. September 18, 2009. "Ending Age-Related Disease: How Will Our Lives Change if We're Healthier Longer." CNS-ASU Science Café.
<http://www.youtube.com/user/CNSCSPO#p/u/0/OosMX0OH14>
53. **Sarewitz, Daniel** and **Erik Fisher**. 2011. "New Tools for Science Policy."
<http://www.cspo.org/scisip/movies/>
54. **Scheufele, Dietram A.** 2013. "Comment isn't Free: The Downside of Web 2.0." New Scientist.
<http://www.newscientist.com/article/dn24403-comment-isnt-free-the-downside-of-web-20.html#.UzSGZM4bGbJ>
55. **Scheufele, Dietram A.** 2011. "Science 2.0: Media, Politics and Emerging Technologies."
<http://deimos3.apple.com/WebObjects/Core.woa/Browse/wisc-public.4152237876>

56. Schuurbiers, Daan. April 15, 2009. "In Amerika." TU Delta. <http://www.delta.tudelft.nl/artikel/in-amerika-3/19402>
57. Schuurbiers, Daan. March 11, 2009. "In Amerika." TU Delta. <http://www.delta.tudelft.nl/artikel/in-amerika-2/19206>
58. Schuurbiers, Daan. February 5, 2009. "In Amerika." TU Delta. <http://www.delta.tudelft.nl/article/in-amerika-1/19054>
59. **Selin, Cynthia.** December 24, 2014. "Merging art and design in foresight: Making sense of Emerge." Futures. <http://www.sciencedirect.com/science/article/pii/S0016328714002006>.
60. **Selin, Cynthia.** October 30, 2009. "Does Time Need Saving." CSPO Soapbox. <http://www.cspo.org/soapbox/view/091030P7XS/does-time-need-saving/>
61. **Selin, Cynthia.** August 13, 2009. "More than a Policy: the Future of Energy Technologies." CSPO Soapbox. <http://www.cspo.org/soapbox/view/090813P0QU/more-than-a-policy-the-future-of-energy-technologies/>
62. **Selin, Cynthia.** June 14, 2009. "Flag Day 2009." CSPO Soapbox. <http://www.cspo.org/soapbox/view/090620P2PP/flag-day-2009/>
63. **Selin, Cynthia, Thanassis Rakakis and Joel Garreau.** February 28, 2012. "Emerge: Artists, Scientists Redesigning the Future." KAET Horizon. https://asunews.asu.edu/20120229_video_emerge
64. **Sommerfield, Milton R., Mark Edwards and David Conz.** January 15, 2010. "Bugs for Fuel: Microbes in our Energy Future." CNS-ASU Science Café. http://www.youtube.com/watch?v=T0IbiYOH4TU&feature=player_embedded#at=26
65. **Wetmore, Jameson.** January 09, 2013. "Creating Space in Science Centers for Public Discussions about the Social Aspects of Science and Technology." Genotype: a blog from the ESRC Genomics Policy and Research Forum. <http://esrcgenomicsforum.blogspot.com/2013/01/creating-space-in-science-centers-for.html>
66. **Wetmore, Jameson.** December 24, 2012. "New Technology is Making Us More like the Amish." Slate. http://www.slate.com/blogs/future_tense/2012/12/24/smartphones_tablets_make_us_think_about_technology_like_the_amish_do.html
67. **Wetmore, Jameson.** December 3, 2012. "We're becoming a Bit More Amish." As We Now Think. <http://aswenowthink.wordpress.com/2012/12/03/were-becoming-a-bit-more-amish/>
68. **Wetmore, Jameson.** December 20, 2012. "The Frustrations of a Luddite Handwasher." As We Now Think. <http://aswenowthink.wordpress.com/2012/12/20/the-frustrations-of-a-luddite-handwasher/>
69. **Wetmore, Jameson.** October October 31, 2012. "Dubai: Technology or Freedom." As We Now Think. <http://aswenowthink.wordpress.com/2012/10/31/dubai-technology-or-freedom/>

70. **Wetmore, Jameson.** 2012. "Decisions in Personal Lives." NISE Net Video Series. <http://vimeo.com/50532883>
71. **Wetmore, Jameson.** 2012. "Light Switch." NISE Net Video Series. <http://vimeo.com/50538701>
72. **Wetmore, Jameson.** 2012. "Cell Phone Rules." NISE Net Video Series. <http://vimeo.com/50530764>
73. **Wetmore, Jameson.** 2012. "Speed Bump." NISE Net Video Series. <http://vimeo.com/50530523>
74. **Wetmore, Jameson.** November 21, 2011. "The Dangers of Hype and Hope." CSPO Soapbox. <http://archive.cspo.org/soapbox/view/100524P3FA/the-dangers-of-hype-and-hope/>
75. **Wetmore, Jameson.** September 7, 2010. "Engaging Policymakers: Not an Academic Exercise." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100907P1JQ/engaging-policymakers-not-an-academic-exercise/>
76. **Wetmore, Jameson.** August 29, 2010. "Blogging from France: Consensus Conferences." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100829P5YL/blogging-from-france-consensus-conferences/>
77. **Wetmore, Jameson.** August 27, 2010. "Blogging from France: Benny was the Star." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100827P5HQ/blogging-from-france--benny-was-the-star/>
78. **Wetmore, Jameson.** August 26, 2010. "Blogging from France: The Deficit Model." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100826P5YJ/blogging-from-france-the-deficit-model/>
79. **Wetmore, Jameson.** August 25, 2010. "Blogging from France: Values and Airplane Food." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100825P5SJ/blogging-from-france-values-and-airplane-food/>
80. **Wetmore, Jameson.** August 24, 2010. "Blogging from France: Science and the Public Debate." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100824P9QS/blogging-from-france--science-and-the-public-debate/>
81. **Wetmore, Jameson.** February 12, 2010. "Powering Down on Valentines Day." CSPO Soapbox. <http://www.cspo.org/soapbox/view/100212P3YZ/powering-down-on-valentines-day/>
82. **Wetmore, Jameson.** April 5, 2009. "The View from a Tuc-Tuc." CSPO Soapbox. <http://www.cspo.org/soapbox/view/090620P9VF/the-view-from-a-tuctuc/>
83. **Wienroth, Matthias.** August 26, 2009. "Strategic Science: Research Intermediaries and the Governance of Innovation." CNS-ASU Occasional Speaker. <http://www.youtube.com/user/CNSCSPO#p/u/2/6xsBtM3Rdno>
84. Yeo, Sara K., **Dominique E. Brossard, Dietram A. Scheufele, Paul Nealey and Elizabeth A. Corley.** 2013. "Tweeting to the Top." The Scientist. <http://www.the-scientist.com/?articles.view/articleNo/36274/title/Opinion--Tweeting-to-the-Top/>

85. **Youtie, Jan** and **Philip Shapira**. June 2007. "US Nanodistrict Development: 1990-2006." Post on YouTube. <http://www.youtube.com/watch?v=tpBxLGcFjug>

Report

1. ‡Carley, Stephen. 2008. *RTTA1 Nanotechnology Research Publication Databases: Updated to 2008*. CNS-ASU Report # R08-0004 Center for Nanotechnology in Society at ASU. Georgia Institute of Technology. Atlanta, GA.
2. ‡Davies, Sarah R. 2011. *Nanotechnology, Business, and Anticipatory Governance*. CNS-ASU Report #R11-0004 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
3. ‡Davies, Sarah, **Cynthia Selin** and Rebecca Allen. 2010. *Solar to Fuels: Report on Interdisciplinary Workshop*. CNS-ASU Report #R10-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
4. ‡**Fisher, Erik**. 2012. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 3*. Tempe, AZ.
5. ‡**Fisher, Erik**. 2011. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 2*. Tempe, AZ.
6. ‡**Fisher, Erik**. 2010. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 1*. Tempe, AZ.
7. **Foley, Rider W.**, Marcel Weil, Benjamin A. Wender, Manuel Baumann, Benedikt Zimmerman, Jens Buchgeister. 2015. *Advancing future-oriented life cycle assessment for responsible innovation: A workshop report*. Report, #R14-0001. Center for Nanotechnology in Society. Arizona State University. Tempe, AZ
8. ‡**Guston, David H.**, et al. 2013. *CNS-ASU Annual Report to the National Science Foundation, Year 8*. Annual Report for NSF Award #0937591 for the period of September 1, 2012 to August 31, 2013 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
9. ‡**Guston, David H.**, et al. 2012. *CNS-ASU Annual Report to the National Science Foundation, Year 7*. Annual Report for NSF Award #0937591 for the period of September 15, 2011 to September 14, 2012 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
10. ‡**Guston, David H.**, et al. 2011. *CNS-ASU Annual Report to the National Science Foundation, Year 6*. Annual Report for NSF Award #0937591 for the period of September 15, 2010 to September 14, 2011 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
11. ‡**Guston, David H.** 2010. *Societal Dimensions Research in the National Nanotechnology Initiative*. CSPO Report # 10-02 Consortium for Science, Policy and Outcomes and Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

12. ‡**Guston, David H.**, et al. 2010. *CNS-ASU Annual Report to the National Science Foundation, Year 5*. Annual Report for NSF Award #0531194 for the period October 1, 2009 to September 30, 2010 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
13. ‡**Guston, David H.**, et al. 2009. *CNS-ASU Annual Report to the National Science Foundation, Year 4*. Annual Report for NSF Award #0531194 for the period October 1, 2008 to September 30, 2009 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
14. ‡**Guston, David H.**, et al. 2008. *CNS-ASU Annual Report to the National Science Foundation, Year 3*. Annual Report for NSF Award #0531194 for the period October 1, 2007 to September 30, 2008 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
15. ‡**Guston, David H.**, et al. 2007. *CNS-ASU Annual Report to the National Science Foundation, Year 2*. Annual Report for NSF Award #0531194 for the period October 1, 2006 to September 30, 2007 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
16. ‡**Guston, David H.**, et al. 2006. *CNS-ASU Annual Report to National Science Foundation, Year 1*. Annual Report for NSF Award #0531194 for the period October 1, 2005 to September 30, 2006. Center for Nanotechnology in Society, Arizona State University, Tempe, AZ.
17. ‡**Hamlett, Patrick, Michael Cobb and David H. Guston**. 2008. *National Citizens Technology Forum: Nanotechnologies and Human Enhancement*. CNS-ASU Report #R08-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
18. ‡**Hays, Sean**. 2011. *Can Art and Religion Serve as Methods for Governing Emerging Science and Technology*. CNS-ASU Report # R11-0005 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
19. ‡**Miller, Clark A.** 2006. *Boundary Organizations: Strategies for Linking Knowledge to Action*. CNS-ASU Report #R06-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
20. ‡**Miller, Clark A.** 2006. *Nanotechnology in Society: A New Model of Anticipatory Governance*. Workshop Report No. 8 (ECETOC: Brussels). CNS-ASU Report #R06-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
21. ‡**Miller, Clark A., David H. Guston, Daniel Barben, Jameson Wetmore, Cynthia Selin and Erik Fisher**. 2007. *Nanotechnology and Society: Ideas for Education and Public Engagement*. CNS-ASU Report #R07-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
22. Rothwell, Jonathan, **Jose Lobo, Deborah Strumsky** and Mark Muro. February 1, 2013. *Patenting Prosperity: Invention and Economic Performance in the United States and its Metropolitan Areas*. Washington, DC: Brookings Institute Report.
23. ‡**Porter, Alan L., Jan Youtie and Philip Shapira**. 2006. *Briefing Paper: Refining Search Terms for Nanotechnology*. CNS-ASU Report #R06-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

24. **Scheufele, Dietram A. and Elizabeth A. Corley.** 2010. *Capstone: Risk Management Methods & Ethical, Legal, and Societal Implications of Nanotechnology*. Report of the March 2010 National Nanotechnology Initiative Workshop. Part IV of IV in the 2009-2010 NNI Environmental, Health, and Safety Workshop Series.
25. ‡**Selin, Cynthia** and Jennifer P. Banks. 2014. *Futurescape City Tours: A Novel Method for Public Engagement*. Guidebook for Practitioners, Center for Nanotechnology in Society, Arizona State University.
26. ‡**Selin, Cynthia.** 2011. *Gaming the Future*. CNS-ASU Report #R11-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
27. ‡**Selin, Cynthia.** 2008. *The Future of Medical Diagnostics*. Scenario Development Workshop Report, CNS-ASU Report #R08-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
28. ‡**Selin, Cynthia.** 2008. *CNS Visioning Workshop: Creating Scenarios about the Future of Anticipatory Governance*. CNS-ASU Report #R08-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
29. ‡**Selin, Cynthia, Arnim Wiek, David H. Guston, Angela Wilkinson, Rafael Ramirez.** 2010. *Plausibility Project Workshop: Creating Research Agendas*. CNS-ASU Report #R10-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
30. ‡**Shapira, Philip, Jan Youtie, Ajay S. Bhaskarabhatla,** et al. 2006. 2006. *Connecting the Dots: Creating a Southern Nanotechnology Network*. Georgia Tech Program in Science, Technology and Innovation Policy. Southern Growth Policies Board. Research Triangle Park, NC.
31. ‡**Valdivia, Walter and David H. Guston.** 2006. *Public Value Mapping*. Workshop Report, CNS-ASU Report #R06-0004 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
32. ‡**Van Horn, Carl and Aaron Fichtner.** 2008. *The Workforce Needs of Companies Engaged in Nanotechnology Research in Arizona*. #R08-0005 John J. Heldrich Center for Workforce Development. Rutgers, the State University of New Jersey. New Brunswick, NJ.
33. ‡**Van Horn, Carl,** Jennifer Cleary and **Aaron Fichtner.** 2009. *The Workforce Needs of Pharmaceutical Companies in New Jersey That Use Nanotechnology: Preliminary Findings*. #R09-0002 John J. Heldrich Center for Workforce Development. Rutgers, The State University of New Jersey. New Brunswick, NJ.
34. ‡**Van Horn, Carl,** Jennifer Cleary, Leela Hebbar and **Aaron Fichtner.** 2009. *A Profile of Nanotechnology Degree Programs in the United States*. #R09-0001 John J. Heldrich Center for Workforce Development. Rutgers, The State University of New Jersey. New Brunswick, NJ.
35. **Von Schomberg, Rene** and Sarah Davies. 2010. *Understanding Public Debate on Nanotechnologies: Options for Framing Public Policy*. European Commission.

36. ‡**Wiek, Arnim** and Rider W. Foley. 2011. *CNS Systematic Analysis Workshop: Urban Sustainability Syndromes*. CNS-ASU Report #R11-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
37. ‡**Wiek, Arnim** and Rider W. Foley. 2011. *CNS Systematic Analysis Workshop: Urban NanoScape - Nanotechnology Expert Panel: Urban NanoScape Review*. CNS-ASU Report #R11-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

Working Papers

1. ‡Anderson, Ashley A., **Jason A. Delborne, Daniel L. Kleinman**, Maria Powell and Mathilde Colin. 2009. "Communication of Emerging Technologies: How Individuals Engage in Information Seeking in Deliberative Settings." Working Paper.
2. ‡Carley, Stephen. 2010. "Charting the Growth of a New Field: Who is Citing Nanotoxicology Research." Working Paper.
3. ‡Carley, Stephen. 2009. "Diffusion Indicators for Nanotechnology Research in the United States and Europe." Working Paper.
4. ‡**Corley, Elizabeth A.** and **Meghna Sabharwal**. 2011. "Scholarly Collaboration and Productivity Patterns in Public Administration: Analyzing Recent Trends." Working Paper. Public Administration.
5. Davies, Sarah R. and **Cynthia Selin**. "Peopling Energy: The Difficulty with Deliberation on Nanotechnology, Energy, and Society." Working Paper. Under preparation for Environmental Communication: a Journal of Nature and Culture.
6. ‡**Fernandez-Ribas, Andrea**. 2009. "Global Patent Strategies of SMEs in Nanotechnology." Working Paper.
7. Foley, Rider W., Michael J. Bernstein, **Arnim Wiek, David H. Guston**. "**Normative principals to guide processes for responsible innovation.**" Working Paper.
8. **Garcia-Mont, Aixa** and **David Konz**. 2009. "Latinas/os in Science, Technology, Engineering and Mathematics: Culture, Gender and Mentorship." Working Paper.
9. Guo, Ying, Lu Huang and **Alan L. Porter**. 2009. "Profiling Research Patterns for a New and Emerging Science and Technology: Dye-sensitized Solar Cells." Working Paper. Atlanta Conference on Science and Innovation Policy, October 2-3, 2009.
10. **Guston, David H.** "Understanding Anticipatory Governance." Working Paper. Social Studies of Science. Revise and resubmit.
11. ‡Laurent, Brice and **Erik Fisher**. In review. "Integration Discourses: Neo-determinism, Reflexivity, and the Mainstreaming of Science Studies." Working Paper.
12. ‡McKeon, Patrick. 2008. "Characterization of State-Level Nanotechnology Policy Initiatives and What It Means for Georgia." Working Paper.

13. ‡Meng, Yu and **Philip Shapira**. 2008. "Women in Patenting: Does Nanotechnology Make a Difference." Working Paper.
14. ‡Meng, Yu, **Philip Shapira** and Li Tang. 2010. "A Case Study of Nano-pigment Innovation in China: Probing the Co-evolution of Nanotechnology and the Innovation System." Working Paper. Nanomaterial Innovation Case Study, Chemical Heritage Foundation.
15. **Pereira, Angela** and **Cynthia Selin**. "Plausibility in Post-Normal Times." Working Paper. Under development.
16. ‡Powell, Maria, **Mathilde Colin**, **Daniel L. Kleinman**, **Jason A. Delborne** and Ashley A. Anderson. 2009. "Imagining Ordinary Citizens? Conceptualized and Actual Participants for Deliberations on Emerging Technologies." Working Paper.
17. ‡Powell, Maria, **Mathilde Colin**, **Jason A. Delborne**, **Daniel L. Kleinman** and Ashley A. Anderson. 2009. "Citizens' Reflections on their Participation in a Deliberative Exercise on Emerging Technologies." Working Paper.
18. **Rafols, Ismael**. 2010. "Missing Links in Nanomaterials Governance: Bringing Industrial Dynamics and Downstream Policies into view." Working Paper.
19. ‡Robinson, Douglas K. R., Lu Huang, Ying Guo and **Alan L. Porter**. 2010. "Towards a Systematic Framework for Anticipating and Evaluating Emerging S and T: Forecasting Innovation Pathways in Nanobiosensors and Deep Brain Interface Devices." Working Paper.
20. ‡**Rogers, Juan D.** 2008. "Research Centers as a Policy Tool in the U.S. National Nanotechnology Initiative: An Assessment of their Role in the U.S. System of Innovation." Working Paper.
21. **Selin, Cynthia**, et al. "New Dimensions of Plausibility." Working Paper. Under preparation for Nature.
22. **Selin, Cynthia** and **Arnim Wiek**. "A. Seeing and Unseeing: The Refracted Relevance of Plausibility in Scenario Development." Working Paper. Under development for World Future Review.
23. ‡**Shapira, Philip** and **Jan Youtie**. 2012. "The Economic Contributions of Nanotechnology to Green and Sustainable Growth." Working Paper. The International Symposium on Assessing the Economic Impact of Nanotechnology, Organization for Economic Cooperation and Development and the U.S. National Nanotechnology Initiative, Washington, DC.
24. ‡**Shapira, Philip**, **Jan Youtie** and **Alan L. Porter**. 2009. "The Emergence of Social Science Research in Nanotechnology." Working Paper. Science, Technology and Innovation Policy, Georgia Institute of Technology, Atlanta, GA.
25. ‡**Shapira, Philip**, **Jan Youtie** and Luciano Kay. 2010. "Corporate Entry into Nanotechnology through Patents and Publications: 1990 to 200." Working Paper. White Paper.
26. ‡**Shapira, Philip** and Jue Wang. 2008. "Case Study: Nanotechnology in the USA." Working Paper.

27. **Strumsky, Deborah, Jose Lobo and Sander van der Leeuw.** Strumsky, Deborah, Jose Lobo and Sander van der Leeuw. 2011. "Measuring the Relative Importance of Reusing, Recombining and Creating Technologies in the Process of Invention." Working Paper. Working paper #11-02-003 of the Santa Fe Institute.
28. ‡Subramanian, Vrishali. 2009. "Active Nanotechnology: What Can We Expect? A Perspective for Policy from Bibliographical and Bibliometric Analysis." Working Paper.
29. ‡Tang, Li and **Philip Shapira.** 2007. "Networks of Research Collaboration in China: Evidence from Nanotechnology Publication Activities, 1990-2006. Working Paper. Program on Nanotechnology Research and Innovations Assessment, Georgia Institute of Technology, Atlanta, GA.
30. Tang, Li, **Philip Shapira** and Yu Meng. 2010. "A Spin-in Model of Nanomaterials Innovation in China." Working Paper. Nanomaterial Innovation Case Study, Chemical Heritage Foundation.
31. **van der Leeuw, Sander, Arnim Wiek, J. Harlow and James Buizer.** 2012. "How Much Time Do We Have to Fail? The Urgency of Sustainability Challenges vis-a-vis Roadblocks and Opportunities in Sustainability Science." Working Paper. Sustainability Science February 2012, Special Issue (ICSS 2010).
32. **Wiek, Arnim and Cynthia Selin.** "Sustainable Anticipatory Governance." Working Paper. Under development.
33. Withycombe Keeler, Lauren and **Arnim Wiek.** In preparation, "What if the Future is not what we Envisioned? Advances in Sustainability Research and Planning through Contrasting, Non-intervention Scenarios." Working Paper.
34. Xenos, Michael A., **Dietram A. Scheufele** and **Dominique E. Brossard.** June 2013. "News Media Use and the Informed Public in the Digital Age." Working Paper.
35. Ying, Gao, **Alan H. Porter** and Lu Huang. 2009. "Nanotechnology-Enhanced Thin-Film Solar Cells: Analysis of Global Research Activities with Future Prospects." Working Paper. 2009 IAMOT Conference.
36. **Youtie, Jan, Philip Shapira** and **Juan D. Rogers.** 2009. "Blind Matching Versus Matchmaking: Comparison Group Selection for Highly Creative Researchers." Working Paper. Paper prepared for Atlanta Conference on Science and Innovation Policy on October 2-3, 2009.
37. ‡**Youtie, Jan, Philip Shapira** and **Juan D. Rogers.** 2009. "Nanotechnology-Enhanced Thin-Film Solar Cells: Analysis of Global Research Activities with Future Prospects."
38. Zhou, X. and **Alan L. Porter.** 2013. "Patent and Publication Comparison for a Promising Emerging Industry Nano-Enabled Drug Delivery." Working Paper.
39. Zhou, X., **Alan L. Porter** and Douglas K. R. Robinson. 2013. "Analyzing Research Publication Patterns to Gauge Future Innovation Pathways for Nano-Enabled Drug Delivery." Working Paper.

Thesis/Dissertation

1. ‡Akin, Heather. In review. 2014. "A Cross-cultural Comparison of Values, Knowledge, and Media Factors Affecting Public Perceptions of Climate Change." Doctoral Dissertation. Mass Communications. University of Wisconsin-Madison. Madison, WI.
2. Anderson, Ashley A. 2012. "The Social Context of Online News: How Incivility in Online Comments Impacts Public Perceptions of and Public Engagement with Science." Doctoral Dissertation. Department of Mass Communications. University of Wisconsin - Madison. Madison, WI.
3. ‡Benn, Troy M. 2009. "The Release of Engineered Nanomaterials from Commercial Product." Doctoral Dissertation. Civil and Environmental Engineering. Arizona State University. Tempe, AZ.
4. ‡Bhaskarabhatla, Ajay S. 2006. "Nanotechnology Enterprise in the United States: Structure and Location." Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.
5. ‡Brants, Tanner. 2009. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
6. ‡Burdis, Connie M. 2008. "Nanotechnology and Electricitrees: A Strategic Plan for a Future-Oriented Technology and Product." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
7. Cacciatore, Michael A. 2013. "Differentiating the Applicability of Constructs from their Accessibility: Returning to a Narrow Conceptualization of Framing Effects in Communication Research." Doctoral Dissertation. Department of Mass Communications. University of Wisconsin - Madison. Madison, WI.
8. Choi, Joshua. 2007. "miRNA Expression Analysis in *Aligadendrolia* with and without 1p/19e Deletions." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
9. Conley, Shannon. N. 2014. "Negotiating Socio-Technical Contracts: Anticipatory Governance and Reproductive Technologies." Doctoral Dissertation. Political Science. Arizona State University. Tempe, AZ.
10. Conley, Shannon. 2007. "Voting Rights Act of 1965 Renewal: The Official Congressional Report on Voting Rights in Arizona (1982-2006)." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
11. ‡Davis, Robert W. 2007. "Nanotechnology in Society: Stakeholder Analysis and Nanotechnology Stakeholders." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
12. Edwards, David. 2011. "Elderly and the E-Health Barrier." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
13. Egnatios, Tara. 2008. "Myspace: Ultimate Authorship of the Youniverse." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

14. ‡Finney, Sharyn. 2007. "Multinational Comparative Analysis of Nanotechnology Research: 1990 to 2005 Knowledge Flow Assessment." Undergraduate Thesis. Georgia Institute of Technology. Atlanta, GA.
15. ‡Fisher, Erik. 2006. "Midstream Modulation: Integrating Societal Considerations Into and During Nanotechnology Research and Development: A Case Study in Implementing U.S. Federal Legislation." Doctoral Dissertation. Environmental Sciences. University of Colorado. Boulder, CO.
16. ‡Flipse, Steven M. 2013. "Enhancing Socially Responsible Innovation in Industry: Practical Use for Considerations of Social and Ethical Aspects of Industrial Life Science & Technology." Doctoral Dissertation. Technical University of Delft. Delft, The Netherlands.
17. ‡Foley, Rider W. 2013. "Toward Sustainable Anticipatory Governance: Analyzing and Assessing Nanotechnology Innovation Processes." Doctoral Dissertation. School of Sustainability. Arizona State University. Tempe, AZ.
18. ‡Fremling, Alicia. 2008. "SCIO: An Innovative Health Product that Uses Nanotechnology to Monitor for Cancer." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
19. Fu, Jinglin. 2010. "Exploring Peptide Space for Enzyme Modulation." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
20. Gallo, Jason. 2008. "Speaking of Science: The Role of the National Science Foundation in the Development of the United States Information Infrastructure." Doctoral Dissertation. Media, Technology and Society. Northwestern University. Evanston, IL.
21. ‡Gano, Gretchen. 2014. "The Soft Megamachine: Lewis Mumford's Metaphor of Technological Society and Implications for (Participatory) Technology Assessment." Doctoral Dissertation. Human and Social Dimensions of Science and Technology. Arizona State University. Tempe, AZ.
22. Hall, Hannah. 2011. "Nanotechnology Applications in Urban Sustainability: An Innovative Solution to Electronic Waste Management." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
23. ‡Hays, Sean. 2009. "A Genealogical Examination and Grounded Theory of the Role of Human Enhancement Technology in American Political Culture." Doctoral Dissertation. School of Politics and Global Affairs. Arizona State University. Tempe, AZ.
24. ‡Ho, Shirley S. 2008. "Value Predispositions, Communication, and Attitudes Toward Nanotechnology: The Interplay of Public and Experts." Doctoral Dissertation. Department of Philosophy. University of Wisconsin. Madison, WI.
25. ‡Hu, Qian. 2011. "Fostering Collaboration through IT Tools and Experimental Study of Public Deliberation on Water Sustainability." Doctoral Dissertation. Public Affairs. Arizona State University. Tempe, AZ.

26. Jolley, Craig C. 2007. "Structure and Dynamics in Photosystem I." Doctoral Dissertation. Physics. Arizona State University. Tempe, AZ.
27. Kibel, Ashley A. 2010. "Instrumentation for Molecular Electronics Device Research." Doctoral Dissertation. Physics. Arizona State University. Tempe, AZ.
28. Lappe, Jason. 2009. "Photoreactivation and Positive Cell Selection for the Directed Evolution of Proteins." Doctoral Dissertation. Chemistry and Biochemistry. Arizona State University. Tempe, AZ.
29. ‡Lee, Caroline. 2009. "Innovation in Nanotechnology Services and Products: Strategic Marketing Plan." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
30. Lepkowski, William. 2010. "Optimizing the Design of Partially and Fully Depleted MESFETs for Low Dropout Regulators." Doctoral Dissertation. Electrical Engineering. Arizona State University. Tempe, AZ.
31. ‡Leung, Ricky. 2007. "Doing Nanotechnology in 21 Century China." Doctoral Dissertation. Sociology. University of Wisconsin. Madison, WI.
32. ‡Liang, Xuan. 2014. "Expressing political disagreement on online social networking sites and the impact of exposure to disagreement on public understanding of controversial science." Doctoral Dissertation. Department of Life Sciences Communication. University of Wisconsin - Madison. Madison, WI.
33. ‡Lidberg, Shannon. 2008. "Examining Potential Futures: A Designers Toolbox for Identifying Potential Social and Cultural Implications." Master's Thesis. School of Design. Arizona State University. Tempe, AZ.
34. ‡Lohmeier, Stephanie. 2008. "Innovation Space: Nanotechnology for Human Health." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
35. ‡Lougee, Michelle. 2009. "Bridging Technology and Environment to Provide Shelter for Natural Disaster Victims." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
36. ‡Lowder, Jessica. 2008. "Creating Sustainable Solutions with Nanotechnology, Energy, and Equity for Natural Disaster Victims." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
37. ‡Lucivero, Federica. 2012. "Too Good to be True? Appraising Expectations for Ethical Technology Assessment." Doctoral Dissertation. Technical University of Delft. Delft, The Netherlands.
38. ‡Lull, Madeline. 2008. "Innovation Space Strategic Marketing Plan for Braille PDA." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
39. Maricle, Genevieve. 2008. "Shaping Science: How to Turn Science Studies into Science Action." Doctoral Dissertation. Environmental Studies. University of Colorado. Boulder, CO.

40. ‡McIntosh, Daniel. 2008. "Integrated New Product Development for Nanotechnology." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
41. ‡Mellinger, Michelle. 2011. "Innovation Space and The Center for Nanotechnology in Society: Creating an Educational Energy Harvesting Playground." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
42. ‡Milford, Richard. 2008. "A Dialog on Nanotechnology and Religion: New Methods in Public Engagement." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
43. Panaretos, Anastasios. 2007. "A Discrete Time-Domain Electromagnetics Formulation with Minimized Numerical Artifacts." Doctoral Dissertation. Electrical Engineering. Arizona State University. Tempe, AZ.
44. ‡Panjwani, Azra. 2007. "The Psychological Impact of Mass Surveillance on Society: A Quantitative Approach." Master's Thesis. Department of Mathematics. Arizona State University. Tempe, AZ.
45. Philbrick, Mark. 2010. "Operationalizing Anticipatory Governance: Steering Emerging Technologies Towards Sustainability." Doctoral Dissertation. Graduate Division. University of California, Berkeley. Berkeley, CA.
46. Pirtle, Zach. 2007. "Democratizing Nanotechnology: Intersecting the Philosophy of Science with Science Policy." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
47. ‡Reed, Jaron. 2010. "A Geospatial Analysis of Fast-Food Outlets and Demographic Variables in Phoenix, AZ: The Political Economy of Food." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
48. ‡Rogers, Lucas. 2010. "Fire Into Ice: Refrigeration Through Waste Heat in Ghanu." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
49. ‡Runge, Kristin. In review. 2014. "Social Science: Investigating the Effects of Interpersonal Networks on Perceptions of Emerging Technologies." Doctoral Dissertation. Mass Communications. University of Wisconsin-Madison. Madison, WI.
50. ‡Sandler, Shane. 2011. "Nano-piezoelectrics for Energy Generation." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
51. ‡Schnell-Vivas, Dusana. 2008. "Innovation Space: Creating Sustainable Solutions with Nanotechnology, Energy and Equity for Native Americans Living Off the Electricity Grid." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
52. Schuurbiens, Daan. 2009. "Social Responsibility in Scientific Practice." Doctoral Dissertation. Department of Biotechnology. Delft Technical University. Delft, The Netherlands.

53. ‡Shaw, Timothy. 2007. "An Innovation Space Addendum: An Analysis and Critique of the Dialog Design, with the Presentation of Alternate Designs and Implications." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
54. ‡Shih, Tsung-Jen. 2009. "Public Opinion and Nanotechnology: Linking Psychological and Cultural Factors in Constructing an Integrated Theory of Public Understanding of Science." Doctoral Dissertation. School of Journalism and Mass Communication. University of Wisconsin. Madison, WI.
55. ‡Silverman, Arielle M. 2007. "Healing the Blind? Perspectives of Blind Persons on Methods to Restore Sight." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
56. Spadola, Quinn Acelia. 2008. "Novel Approaches to DNA Sequencing." Doctoral Dissertation. Department of Physics. Arizona State University. Tempe, AZ.
57. Stubbings, Maria. 2012. "Media Portrayal of Gene Patents: Overall and Thematic Coverage." Master's Thesis. Life Sciences Communication. University of Wisconsin - Madison. Madison, WI.
58. ‡Tang, Li. 2010. "U.S.-China Scientific Collaboration and the Role of Knowledge Moderation in Nanotechnology Development." Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.
59. ‡Tassiello, Lauren. 2009. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
60. Tosi, Justin. 2007. "Hobbe's Reply to the Foole: Obligation and Personal Identity." Graduate Thesis. Political Science. Arizona State University. Tempe, AZ.
61. Tufail, Yusuf Z. 2011. "Development of a Neurostimulation Method Using Pulsed Ultrasound." Doctoral Dissertation. Biology. Arizona State University. Tempe, AZ.
62. ‡Valdivia, Walter. 2011. "Equity Considerations in the Assessment of the Bayh-Dole Act." Doctoral Dissertation. Public Administration. Arizona State University. Tempe, AZ.
63. Van Merkerk, Rutger. 2008. "Intervening in Emerging Nanotechnologies: A CTA of Lab-on-a-chip Technology." Doctoral Dissertation. Innovation & Environmental Sciences. University of Twente. Enschede, The Netherlands.
64. ‡Verdiani, Jennifer. 2008. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
65. ‡Wang, Jue. 2007. "Resource Spillover from University to High Tech Industry: Evidence from New Nanotechnology Based Firms in the U.S." Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.
66. ‡Watkins, Jennifer. 2008. "Altruism in Community Healthcare by Medical Professionals." Graduate Thesis. Biochemistry. Arizona State University. Tempe, AZ.

67. Williams, Berea. 2010. "Designing Recognition Elements Based on DNA Scaffolds." Doctoral Dissertation. Chemistry. Arizona State University. Tempe, AZ.
68. **Woodson, Thomas.** 2014. "Emerging Technologies for Developing Countries: How nanomedicine and public private partnerships are used to address diseases of poverty?" Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.
69. ‡Wu, Ke. 2010. "Pedagogical Approach Towards Socially and Economically Disadvantaged Children: An Analysis of Education-Based Non-Governmental Organizations Around the World." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
70. Zhang, Jinglei. 2010. "Evolving Functional Peptides by mRNA Display." Doctoral Dissertation. Biochemistry. Arizona State University. Tempe, AZ.
71. Zhu, Win. 2011. "Engineering Ethics Studies: From the Perspective of Practical Effectiveness." Doctoral Dissertation. Dalian University of Technology. Dalian, China.

Presentations

1. Akin, Heather, Sara K. Yeo, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. May 2014. "The Spillover Heuristic? How the GMO Labeling Debate Affects Information Processing of Nanotechnology." Presentation. Annual Convention of the International Communication Association (ICA). Seattle, WA.
2. **Allenby, Braden**. August, 2006. "Schumpeters Next Wave: Convergence of Nanotechnology, Biotechnology, Information Science, and Cognitive Science." Chaired and contributed to the session. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
3. **Allenby, Braden** and **Peter de Marneffe**. April 19, 2013. "Privacy in the Nano City: Humans and Nano-enabled Communication Technologies." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
4. Anbar, Ariel and Michael E. Smith. February 19, 2010. "The End of Earth: If Not in 2010, Then When." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
5. Anderson, Ashley A., **Dietram A. Scheufele** and **Dominique E. Brossard**. May, 2010. "Trust in Scientists: The Role of Media in Establishing Trust in Sources of Information about Nanotechnology." Presentation. Annual Convention of the World Association for Public Opinion Research, Chicago, IL.
6. Anderson, Ashley A., **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. March, 2012. "Parole Toxique? Comment L'incivilite "En Ligne" Peut Miner Les Perceptions de la Credibilite des Medias." Texte Presente au Colloque International "Com. L'Information et la Communication dans Les Enjeux Contemporains de la "Mondailisation, Co-Organise par ICA, GERIICO et la SFSIC, Roubaix, France.
7. Anderson, Ashley A., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. August, 2012. "Caustic Comments: Measuring Incivility in Online Comments and Testing its Effects

- on Political Participation." Paper Presentation. The Annual Convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.
8. Arora, Sanjay. May, 2012. "Website Indicators for the Strategic Management of Emerging Technologies." Poster Session. International Conference on Innovative Methods for Innovation Management and Policy, Beijing, China.
 9. Arora, Sanjay, et al. February, 2012. "Commercialization of New and Emerging Technologies: A Cross Country Comparison of Graphene Firms." Poster Session. Georgia Tech Research and Innovation Conference, Atlanta, GA.
 10. Arora, Sanjay, **Alan L. Porter**, **Jan Youtie** and **Philip Shapira**. 2012. "Capturing New Developments in an Emerging Technology: An Updated Search Strategy for Identifying Nanotechnology Research Output." Presentation. Global Tech Mining Conference, Montreal.
 11. Arora, Sanjay, Rider W. Foley, P. Shapiro and **Arnim Wiek**. November, 2011. "Nanotechnology in Building Construction - an Industry Study of Innovation." Poster Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
 12. **Askland, Andrew** and **James Elser**. October 15, 2010. "A Weak Link: Phosphorous Scarcity and Our Food Chain." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
 13. **Barben, Daniel**. July 18, 2009. "Was ist "neu" an neuen Technologien? Die vergangene und gegenwaertige Zukunft der Biotechnologie in soziologischer Perspektive." Talk. Deutsches Museum, Neue Technologien im Spannungsfeld von Wissenschaft, Politik, Oeffentlichkeit und Wirtschaft, Munich, Germany.
 14. **Barben, Daniel**. June 05, 2009. "Reflexive Governance toward Sustainable Development: Combining Deliberation, Anticipation, and Transformation." Talk. 1st European Conference on Sustainability Transitions: Dynamics and Governance of Transitions to Sustainability, Amsterdam, The Netherlands.
 15. **Barben, Daniel**. May 23, 2009. "Antizipatorische Governance von Zukunftstechnologien: Kapazitaetsbildung im Spannungsfeld von Technikgestaltung und Akzeptanzpolitik." Talk. German Political Science Association (DVPW), Section on Politics und Technology, Berlin University of Technology: Governance von Zukunftstechnologien, Berlin, Germany.
 16. **Barben, Daniel**. June 16, 2008. "Biotechnologieregime im Gesellschaftsvergleich. Zur Soziologie neuer Wissenschaft und Technik." Guest lecture. Institute for Science and Technology Studies, University of Bielefeld, Bielefeld, Germany.
 17. **Barben, Daniel**. April 16, 2007. "Innovation Regimes and Institutional Reflexivity in Comparative Perspective." Talk. Swiss Federal Institute of Technology, EAWAG: Innovation, Institutions and Path Dependency: The Management of Variation and Diversity in Innovation Systems, Zurich, Switzerland.
 18. Barben, Daniel. August, 2006. "Visions of Nanotechnology in a Divided World: The Acceptance Politics of a Future Key Technology." Panel Series on Social Studies of Nanotechnology. Conference

of the European Association for the Study of Science Technology (EASST), University of Lausanne, Lausanne, Switzerland.

19. Barben, Daniel and **Frank Laird**. June, 2006. "Acceptance Politics of Contested Technologies: A Comparison between Nuclear Power, Biotechnology, and Nanotechnology." Annual Meeting of the Science and Democracy Network, Kennedy School of Government, Harvard University, Cambridge, MA.
20. **Barker, Anna** and Denise Meridith. May 17, 2013. "Healing in the Nano City: Designing Equity into Transformative Healthcare." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
21. Beute, Stacie. November 21, 2013. "Citizen Science! Bridging the Gap: Meeting Challenges, Building Capacity." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
22. Benn, Troy M. November, 2008. "The Transport of Nanomaterials in Various Environments." Workshop on Nanotechnology, Equity and Equality. Center for Nanotechnology in Society at Arizona State University and Project Resultar at the Technology Policy and Assessment Center, Georgia Institute of Technology, Tempe, AZ.
23. Benn, Troy M., **Jameson Wetmore** and Ira Bennett. July, 2008. "Nanosilver from Socks into Wastewater." Experiment demonstration. Arizona Science Center, Triple Play Days, Phoenix, AZ.
24. **Bennett, Ira**. October 15, 2014. "Introduction to Publicly Funded Science." Invited Presentation. Appalachian State University, Boone, NC.
25. **Bennett, Ira**. September 27, 2014. "Careers in Science Policy." Invited Presentation. University of Florida, Gainesville, FL.
26. **Bennett, Ira**. November 15, 2014. "Science Outside the Lab: Teaching scientists how the government works and then to believe it might not be so bad." Invited Presentation. American Chemical Society Midwest Regional Meeting, University of Missouri, Columbia, MO.
27. **Bennett, Ira** and Kiera Reifshneider. April 10, 2014. "Nanotechnology Around the World." Invited Presentation. *Nanohub Users Meeting*, Phoenix, AZ.
28. **Bennett, Ira, Jameson Wetmore**, Brad Herring, Kevin Dilly and Douglas Coler. March 4, 2014. "Nano and Society Brownbag." Invited Presentation. *Nanoscale Informal Science Education Network Online Brownbag Series*.
29. **Bennett, Ira**. May 10, 2014. "An Unbelievable Roadmap." Invited Presentation. Unbelievable Biomed, Arizona Science Center, Phoenix, AZ.
30. **Bennett, Ira, Jameson Wetmore**, Stephanie Long, Rae Ostman, Brad Herring, Kevin Dilly and Heather Barnes. October 17, 2014. "Engaging Visitors in Nanotechnology and Society, Pre-conference workshop." Academic Presentation. Association of Science and Technology Centers, Durham, NC.

31. **Bennett, Ira**. March, 2010. "Visions for Future Innovation and Implications." Presentation. Atlanta Transatlantic Workshop on Nanotechnology Innovation and Policy. Georgia Tech, Atlanta, GA.
32. **Bennett, Ira**. February, 2010. "Lessons of Engagement: Learning from Policymakers and the Public." Presentation. Annual Meeting of the American Association for the Advancement of Science, San Diego, CA.
33. **Bennett, Ira**. March, 2009. "Anticipatory Governance of Emerging Nanotechnologies." American Chemical Society, Salt Lake City, UT.
34. **Bennett, Ira**. 2009. "Thinking Longer Term about Technologies: is there Value in Science Fiction-Inspired Approaches to Constructing Futures." Presentation. Publics and Emerging Technologies, Banff, Canada.
35. Bennett, Ira. 2007. "Frozen in Time: A Tour of Alcor Life Extension Foundation." Tour. Spirit of the Senses, Scottsdale, AZ.
36. Bennett, Ira. 2007. "What if I Dont Want My Advisors Job: Careers Outside (gasp) the Academic Laboratory." Talk. Association of Women in Science Central Arizona Chapter, Tempe, AZ.
37. Bennett, Ira. 2006. "Emerging Technologies." Talk. Spirit of the Senses, Phoenix, AZ.
38. **Bennett, Ira** and **Jameson Wetmore**. December 18, 2012. "Exploring Nanotechnology around the World." Presentation. Books and Beakers, Yard Gnome Bookstore, Phoenix, AZ.
39. **Bennett, Ira** and **Jameson Wetmore**. September 12, 2011. "Science and Regulatory Challenges of Commercial Nanoparticles." Presentation. Science Cafe', Berkeley, CA.
40. Bennett, Ira and Tim Boyd. November 16, 2012. "Equity in the Nano City: How Can Nanotechnology Empower Equitable Water Distribution?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ
41. Bernstein, Michael J. and **Ira Bennett**. September 17-19, 2015 submitted. "Responsible Innovation and Science Policy: The Case for an Intervention Research Approach." Panel. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
42. Bernstein, Michael J. September 17-19, 2015 submitted. "An Intervention Research Approach to Responsible Innovation. Presentation." Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
43. Bernstein Michael J. and **Rider W. Foley**. April 10-11, 2015 accepted. Intervention Research for Responsible Innovation: A Pragmatic Approach. Presentation. STGlobal Consortium. Washington, DC.
44. Bernstein Michael J., Kiera Reifschneider, **Ira Bennett**, **Jameson Wetmore**. February 12 -16, 2015. "Science Outside the Lab: Changing Perspectives on the Role of Science & Engineering in Society." Poster. American Association for the Advancement of Science (AAAS) Annual Meeting, San Jose, CA.

45. Bernstein, Michael J., **Rider W. Foley** and **Ira Bennett**. 2014. "Guidelines for Solutions to Socio-technical Problems." Presentation. STGlobal Consortium. Washington, DC, April 4-5.
46. Binder, Andrew R., Michael A. Cacciatore, **Dietram A. Scheufele**, Bret R. Shaw and **Elizabeth A. Corley**. August, 2010. "Measuring Perceptions of Emerging Technologies: Errors in Survey Self-Reports and their Potential Impact on Communication of Public Opinion Toward Science." Presentation. Annual Convention of the Association for Education Journalism and Mass Communication, Denver, CO.
47. **Bowditch, Rachel**, Matt Watkins and **Karin D. Ellison**. October 16, 2009. "Bone Portraits: Scenes from a Play about the Invention of the X-Ray." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
48. **Brossard, Dominique E.**, Eunkyung Kim and **Dietram A. Scheufele**. May, 2007. "The Politics of Nanotech: Communication and Opinion Formation about Scientific Issues and Policies." Paper presentation. Annual convention of the International Communication Association, San Francisco, CA.
49. **Brune, Daniel C.** and **David Conz**. October 29, 2006. "Alternative Fuels: What We Can Do (and Cant Do) to Make Our Skies Blue Again." Public talk. CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.
50. **Cacciator, Michael A., Dietram A. Scheufele, Dominique E. Brossard** and **Michael A. Xenos**. May 2014. "Nanotechnology, Synthetic Biology, and Nuclear Power: Understanding the Social Media Discourse of Science Issues." Presentation. Annual conference of the International Communication Association. Seattle, WA.
51. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. 2013. "Explaining Attitudes toward Nanotechnology: The Interaction between Risk Perceptions and Regulatory Trust on Public Support." Presentation. Paper presented at the Annual Convention of the Society for the Study of Nanoscience and Emerging Technologies. Boston, MA.
52. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. December, 2012. "Communicating Risks about Science: Exploring the Interactive Effects of Cognitive Schema and Journalist News Frames on Public Risk Perceptions." Paper Presentation. The Annual Convention of the Society for Risk Analysis, San Francisco, CA.
53. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2011. "Institutional Trust, Risk Information Processing and Support for an Emerging Technology." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, St. Louis, MO.
54. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. January, 2011. "Re-examining Science Knowledge Acquisition: Exploring the Internet as a Leveler of Education-Based Nanotechnology Knowledge Gaps." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.
55. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2010. "A New (Methodological) Look at Science Knowledge Gaps: Merging Trend-Data to Examine Widening

- Nanotechnology Knowledge Gaps." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Denver, CO.
56. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. May, 2010. "The Emergence of Nanotechnology Knowledge Gaps: Differences in Knowledge across Education Levels and Media Exposure." Presentation. Annual Convention of the American Association for Public Opinion Research, Chicago, IL.
57. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. May, 2010. "From Enabling Technology to Applications: The Evolution of Risk Perceptions about Nanotechnology." Paper Presentation. National Science Foundation Site Visit for the Center for Nanotechnology in Society at ASU, Tempe, AZ.
58. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. November, 2009. "In God we Trust? Exploring the Link between Religiosity and Risk Perceptions in Nanotechnology Attitude Formation." Presentation. Annual Convention of the Midwest Association for Public Opinion Research, Chicago, IL.
59. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2009. "It depends on what you have heard: Exploring the Link between Risk Perception and Attitudes across different Applications of Nanotechnology." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Boston, MA.
60. Cacciatore, Michael A., **Dietram A. Scheufele**, **Elizabeth A. Corley**, **Philip Shapira** and **Jan Youtie**. April, 2012. "Practicing what they preach? Comparing the Self-Reported Attitudes of Nanoscientists with their EHS Publication Records." Paper Presentation. 12th International Public Communication of Science and Technology Conference, Florence, Italy.
61. Cacciatore, Michael A., **Dietram A. Scheufele**, **Elizabeth A. Corley**, **Philip Shapira** and **Jan Youtie**. December, 2011. "Do Leading U.S. Nanoscientists Practice what they preach? Using Publication Records as a Predictor of Scientists' Attitudes toward the Regulation and Communication of Nanoscience." Paper Presentation. Annual Convention of the Society for Risk Analysis, Charleston, SC.
62. Cacciatore, Michael A., **Dietram A. Scheufele**, Sarah K. Yeo, Michael A. Xenos, Doo-Hun Choi, **Dominique E. Brossard**, and **Elizabeth A. Corley**. June 2013. "Misperceptions in Polarized Politics: The Role of Knowledge, Religiosity and Media." Presentation. Annual Convention of the International Communication Association. London, United Kingdom.
63. Cacciatore, Michael A., Doo-Hun Choi, **Dietram A. Scheufele** and **Elizabeth A. Corley**. November, 2011. "Unpacking the Relationships between Religiosity, Deference to Scientific Authority and Support for Nanotechnology: A Structural Equation Modeling Approach." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
64. Cacciatore, Michael A., Doo-Hun Choi, **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2011. "Support for Emerging Technologies: Disentangling the Predispositional, Affective and Cognitive Pathways." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, St. Louis, MO.

65. Cacciatore, Michael A., Doo-Hun Choi, **Dietram A. Scheufele** and **Elizabeth A. Corley**. Under review, "Religiosity, Deference to Scientific Authority and Support for Nanotechnology: A Structural Equation Modeling Approach." Paper submission. Annual meeting of the Association for Education in Journalism and Mass Communication, St. Louis, MO.
66. Cacciatore, Michael A., Sara K. Yeo, **Dominique E. Brossard**, **Dietram A. Scheufele**, Kristin K. Runge, Leona Yi-Fan Su, Elizabeth A. Corley. November, 2012. "Partisan Amplification of Risk: American Perceptions of Nuclear Energy Risk in the Wake of the Fukushima Daiichi Disaster." Paper Presentation. The Annual Convention of the Midwest Associate for Public Opinion, Chicago, IL.
67. Cacciatore, Michael A., Sara K. Yeo, **Dominique E. Brossard**, **Dietram A. Scheufele**, Kristin K. Runge, Leona Yi-Fan Su, Elizabeth A. Corley. 2013. "Partisan Amplification of Nuclear Energy Risk in the Wake of the Fukushima Daiichi Disaster." Paper Presentation. The Annual Conference of the Association for Education in Journalism and Mass Communication, Washington, DC.
68. Cacciatore, Michael A., Sarah K. Yeo, L. Y-F Su, Doo-Hun Choi, Michael A. Xenos, **Dietram A. Scheufele**, et al. 2012. "Is Facebook Making us Dumber? Exploring Social Media use as a Predictor of Political Knowledge." Paper Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.
69. Calleja, Antonio and **Erik Fisher**. 2009. "Dialogues from the Lab: Contemporary Maieutics for Socio-Technical Inquiry." Presentation. Converging Technologies, Changing Societies. Proceedings for Philosophy and Technology. University of Twente, the Netherlands.
70. Carley, Stephen. November 16, 2012. "Valuing Government Collaborator Involvement in University-Industry Partnerships." Doctoral Research on Nanotechnology Triple Helix C. Workshop on Original Policy Research, Georgia Institute of Technology School of Public Policy, Atlanta, GA.
71. Carley, Stephen. October 19, 2007. "'Nano Research Profiling on Demand" on nanotechnology datamining techniques and applications." Poster Presentation. Atlanta Conference on Science, Technology, and Innovation Policy, Atlanta, GA.
72. Carley, Stephen and **Alan L. Porter**. November 05, 2011. "A New Measure of Knowledge Diffusion." Session. Measuring Research Interdisciplinarity and Knowledge Diffusion, American Evaluation Association.
73. Carley, Stephen, **Alan L. Porter** and Li Tang. November, 2011. "Testing for Nano EHS Convergence at the State Level." Poster Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
74. **Carlson, Marilyn P.** April, 2006. "An Overview of a Project to Improve Mathematics and Science Education for a Technical Society: Cognitive Research Informs Curriculum Development and Instructional Support." Presentation. Materials Research Society Symposium on Education in Nanoscience and Engineering, San Francisco, CA.
75. Castillo, Rafael. September 26-28, 2013. "Impact of Nanotechnology- infused Industries on Employment and Wage Inequality in the United States." Presentation. Atlanta Conference on Science and Innovation Policy. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

76. Cavalier, Darlene. January 16, 2014. "Citizen Science! New Technologies, New Audiences." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
77. Choi, Doo-Hun, Anthony D. Dudo and **Dietram A. Scheufele**. November, 2011. "U.S. Newspaper Coverage of Neuroscience Nanotechnology." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
78. Choi, Doo-Hun, Anthony D. Dudo and **Dietram A. Scheufele**. January, 2011. "Food Nanotechnology in the News: Coverage Patterns and Thematic Emphases during the Last Decade." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.
79. Choi, Doo-Hun, Michael A. Cacciatore, **Dietram A. Scheufele** and **Elizabeth A. Corley**. November, 2011. "Nanotechnology and Talk: Differential Gains Model for an Emerging Technology." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
80. Choi, Doo-Hun, Michael A. Cacciatore, **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2011. "Connecting Interpersonal Discussion and the Internet: How Interpersonal Discussion Moderates the Effect of the Internet on being informed about Nanotechnology." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, St. Louis, MO.
81. Choi, Doo-Hun, Michael A. Cacciatore, **Dominique E. Brossard** and **Michael A. Xenos**. May, 2012. "Disentangling Public Opinion of Nanotechnology: Exploring the Interactive Effects of News Media, Values, and Information Processing on Opinion Formation." Paper Presentation. Annual Convention of the American Association for Public Opinion Research, Orlando, FL.
82. Choi, Doo-Hun, Michael A. Cacciatore, **Michael A. Xenos**, **Dietram A. Scheufele** and **Dominique E. Brossard**. May, 2012. "The Digital Production Gap: The Role of News Media Use, Information Processing, and Opinion Expression." Paper Presentation. Annual Conference of the International Communication Association, Phoenix, AZ.
83. Choi, Doo-Hun, Michael A. Cacciatore, **Michael A. Xenos**, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Elizabeth A. Corley**. 2013, "How do Individuals Develop Attitude Extremity in the New Media Environment? The Interplay between the Internet, Schemas, and Information Seeking." Presentation. The Annual Conference for the Association for Education in Journalism and Mass Communication, Washington, DC.
84. Choi, Doo-Hun, Michael A. Cacciatore, Youngjae Kim, **Dietram A. Scheufele** and **Dominique E. Brossard**. May, 2013. "Issue Publics in Nanotechnology in the New Media Environment." Paper Presentation. The Annual Convention of the American Association for Public Opinion Research, Boston, MA.
85. **Cobb, Michael D.** March, 2009. "Public Engagement: National Citizens Technology Forum." Presentation. Nanotechnology and Public: Data for Decision Makers briefing to the U.S. Congressional Nanotechnology Caucus, Washington, DC.

86. **Cobb, Michael D.** January, 2009. "U.S. Public Opinion about Nanotechnologies used for Human Enhancements: Consensus Conferences, Deliberation and Framing Effects on Risk Perceptions." Communicating Emerging Technologies II: Risks and Uncertainties, University of Nevada, Las Vegas, NV.
87. **Cobb, Michael D.** and **Patrick Hamlett.** June 27, 2008. "The First National Citizens Technology Forum on Converging Technologies and Human Enhancement: Adapting the Danish Consensus Conference in the USA." Paper presentation. Tenth International Conference on Public Communication of Science and Technology (PCST-10), Malmo, Sweden.
88. Coleman, Grisha and Aaron Golub. October 19, 2012. "Moving in the Nano City: What Will the Impact Be." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
89. Conley, Shannon. April, 2009. "Nanotechnology Policy in Cambridge, Massachusetts: Local Reflexive Governance." Presentation. Midwest Political Science Association Conference, Chicago, IL.
90. Conley, Shannon. November, 2008. "Regulating Life: The Regulation of Assisted Reproduction in Canada and the UK." Center for the Study of Institutional Diversity Weekly Seminar Series, Arizona State University, Tempe, AZ.
91. **Conz, David.** October 12, 2007. "Reflexivity Assessment of STS Engagement of Nanotechnology." Presentation. Annual Meeting of the Society for Social Studies of Science, Montreal, Canada.
92. **Corley, Elizabeth A.** 2013. "The Science of Science Communication II: Creating Collaborations for Communication about Nanotechnology Regulation." Presentation. The National Academy of Sciences. Washington, DC.
93. **Corley, Elizabeth A.** April, 2011. "Soft Law Mechanisms for Nanotechnology Governance." Paper Presentation. Workshop on Soft Law Oversight Mechanisms for Nanotechnology, Scottsdale, AZ.
94. **Corley, Elizabeth A.** March, 2011. "Public Attitudes about Nanotechnology Regulation." Paper Presentation. Biggest Issues for the Smallest Stuff: Regulation and Risk Management of Nanotechnology, Phoenix, AZ.
95. **Corley, Elizabeth A.** March, 2010. "Public Attitudes about Nanotechnology." Paper Presentation. NNI Capstone Workshop: Risk Management Methods & Societal, Ethical, and Legal Implications of Nanotechnology, Washington, DC.
96. **Corley, Elizabeth A.** 2010. "Expert and Public Perceptions about Nanotechnology Risks, Benefits and Regulations." Paper Presentation. David Lincoln Lecture Series, Paradise Valley, AZ.
97. **Corley, Elizabeth A.** 2009. "Public and Nano-Scientist Perceptions about Nanotechnology." Workshop on Emerging Technologies, Military Operations and National Security." Presentation. Case Western University, Cleveland, OH.

98. **Corley, Elizabeth A.** 2009. "Eliciting Public Understanding of and Values toward Emerging Technologies through Opinion Polls." Presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.
99. **Corley, Elizabeth A.** July, 2008. "Societal Dimensions of Nanotechnology: An Exploration of Public and Scientist Perceptions." Invited presentation. Young Scientists Nanotechnology Workshop, French Embassy, Washington, DC.
100. **Corley, Elizabeth A.** April, 2008. "Scientists and the Public: Comparing Views on Nanotechnology Risks and Regulations." Talk. CSPO Enlightening Lunch, Arizona State University, Tempe, AZ.
101. **Corley, Elizabeth A.** 2008. "Scientist and the Public Risk Perceptions about Nanotechnology." Societal Implications of Nanotechnology 2008 Principal Investigators Meeting at National Science Foundation, Arlington, VA.
102. **Corley, Elizabeth A.** and Dietram A. Scheufele. February, 2008. "A Comparative Look at Markets, Media, and Emerging Attitudes about Nanotechnology." Presentation. American Association for the Advancement of Science (AAAS) Annual Meeting, Boston, MA.
103. **Corley, Elizabeth A.** and **Dietram A. Scheufele.** November, 2006. "Factors Impacting Public Support of Federal Funding for Nanotechnology." Presentation. 28th Annual Association for Public Policy Analysis and Management Research Conference, Madison, WI.
104. **Corley, Elizabeth A., Dietram A. Scheufele** and Qian Hu. November, 2008. "Exploring Public and Scientist Attitudes About the Risks and Regulation of Nanotechnology Research: What Does the Future Hold for Policy-Making?" Presentation. Annual convention of the Association for Policy Analysis and Management, Los Angeles, CA.
105. **Corley, Elizabeth A., Dietram A. Scheufele, Sharon Dunwoody, Elliott D. Hillback, Tsung-Jen Shih** and **David H. Guston.** October, 2007. "Nanotechnology Attitudes among Scientists and the Public." Presentation. Annual Meeting, Society for Social Studies of Science, Montreal, Canada.
106. **Corley, Elizabeth A.** and **Jan Youtie.** 2009. "Learning to Manage Multi-institutional Multidisciplinary Research Centers: A Case Study the LIFE Center." Paper Presentation. 10th Public Management Research Association Conference.
107. Cortes Lobos, Rodrigo. October, 2012. "Advocacy Groups Participation in the Public U.S. agrifood Nanotechnology Research Agenda." Presentation. Fourth Annual Conference of Society for the Study of Nanoscience and Emerging Technologies, Twente, the Netherlands.
108. Cortes Lobos, Rodrigo. March, 2012. "Can Nanotechnology research contribute to Sustainable Development of the US Agri-food sector?" Presentation. S&T Global PhD Conference, Washington, DC.
109. Cortes Lobos, Rodrigo. November, 2011. "The Chilean Nanotechnology Sector: Catching up or falling behind." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

110. Cortes Lobos, Rodrigo. September, 2011. "Nanotechnology and the Millennium Development Goals: Energy, Water, and Agri-food." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
111. Cortes Lobos, Rodrigo. May, 2011. "Can Agri-food Nanotechnology contribute to achieve the Millennium Development Goals in Developing Countries?" Presentation. 7th International Globelics Academy, Tampere, Finland.
112. **Cozzens, Susan**. March, 2013. "Invited Lecture." Tshwane University of Technology, South Africa.
113. **Cozzens, Susan**. October, 2012. "Equity, Equality, and National Contexts: The U.S. and South Africa as Environments for Nanotechnologies." Presentation. Fourth Annual Conference of Society for the Study of Nanoscience and Emerging Technologies, Twente, the Netherlands.
114. **Cozzens, Susan**. April 03, 2012. "Keynote Lecture." NanoAfrica Conference, Bleoemfontein, South Africa.
115. **Cozzens, Susan**. April, 2012. "Environmental Health and Safety in Nanotechnology: A Critical Interface with the Public." Presentation. NanoAfrica 2012, University of Freestate, South Africa.
116. **Cozzens, Susan**. November, 2011. "Equity, Equality, and Development: A Framework for Analyzing Nanotechnology Potentials." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
117. **Cozzens, Susan**. July, 2011. "Equity, Equality, and Nanotechnology." Presentation. Tshwane University of Technology, Pretoria, South Africa.
118. **Cozzens, Susan**. January, 2011. "TRC 1 - Equity and Responsibility Program Assessment." Presentation. Center for Nanotechnology in Society at ASU, Tempe, AZ.
119. **Cozzens, Susan**. December 03, 2010. "Knowledge to Policy: Contributing to the Measurement of Social, Health, and Environmental Benefits." Presentation. Science Measurement Workshop presented by the Office of Science and Technology Policy, Washington, DC.
120. **Cozzens, Susan**. July, 2010. "Nanotechnology and Society." Presentation. REU students at GA Tech NNIN Node, Atlanta, GA.
121. **Cozzens, Susan**, Rodrigo Cortes Lobos, Diran Soumonni and Thomas Woodson. November, 2011. "Nanotechnology and the Millennium Development Goals: Energy, Water, and Agri-food." Presentation. Globelics, Argentina.
122. Cunningham, S. W. and **Alan L. Porter**. 2011. "Bibliometric Discovery of Innovation and Commercialization Pathways in Nanotechnology." Presentation. 2011 Proceedings of Technology Management for Emerging Technologies (PICMET). Portland, OR.
123. **Dalrymple, Kajsa E.**, Amy B. Becker, **Dominique E. Brossard**, **Dietram A. Scheufele** and Al C. Gunther. August, 2009. "Getting Citizens Involved: How Controversial Science Policy Debates

Stimulates Issue Participation during a Political Campaign." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Boston, MA.

124. **Dalrymple, Kajsa E., Dietram A. Scheufele and Elizabeth A. Corley.** May, 2009. "Proximity to Experts? Rethinking Operationalizations of Cognitive Outcomes Based on Dual-source Measures." Paper presentation. International Communication Association (Mass Communication Division) Conference, Chicago, IL.
125. Davies, Sarah R. November, 2011. "Knowing and Loving: Pleasure in Public Engagement." Presentation. 4S Annual Meeting, Cleveland, OH.
126. Davies, Sarah R. September, 2011. "Invited Discussant." Inaugural Conference of the Belgian Science, Technology and Society (BSTS) Network, Brussels.
127. Davies, Sarah R. September, 2011. "Deliberating Futures: Pathways, Locales, and Imagery in the Imagination of Technoscientific Change." Paper Presentation. Governing Futures Conference, Vienna.
128. Davies, Sarah R. May 16, 2011. "NanoEthics: Responsibility, Risk, and Responsible Innovation." Presentation to Private Sector audience. Training Session, SESH (ESH for High Technology) Annual Symposium, Scottsdale, AZ.
129. Davies, Sarah R. December, 2010. "Deliberation beyond Discourse: Experimenting with Science-Society Engagement." Presentation. CSPO Enlightening Lunch, Arizona State University, Tempe, AZ.
130. Davies, Sarah R. November, 2010. "Public Engagement: Genealogies and Reflections." Presentation. Practices of Anticipatory Governance Workshop, Arizona State University, Tempe, AZ.
131. Davies, Sarah R. September, 2010. "'Unethical for them': The Ethical as a Category in Public Talk." Presentation. Annual Meeting of the Society for the Study of Nanoscience and Emerging Technologies, Darmstadt, Germany.
132. Davies, Sarah R. April, 2010. "How we talk when we talk about Nano: Public Discussion of Future Technologies." Presentation. Center for Nanotechnology in Society, University of California Santa Barbara, Santa Barbara, CA.
133. Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira.** May, 2011. "Finding Futures." Presentation. Science in a Digital Society, EC-JRC Workshop, Lisbon.
134. Davies, Sarah R. and **Denisa Kera.** February, 2012. "DIY Micro-Governance: Hackerspaces as Science Policy." Presentation. Inaugural Asia Pacific Science Policy Studies Research Conference, Wellington, New Zealand.
135. Davies, Sarah R. and **Noela Invernizzi.** November, 2011. "Nanotechnology and the Private Sector: Innovation, Governance, and Regulation." Panel Organizer. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

136. de Ridder-Vignone, Kathryn. August 2014. "Images as Authoritative Knowledge in Public Engagement with Emerging Technologies." Presentation. Social Studies of Science. Buenos Aires.
137. de Ridder-Vignone, Kathryn. November 2013. "Four Design Principles of Public Engagement." Presentation. Sensing Change: Mapping the Climatic Imaginary Through Art, Science and History Workshop. Chemical Heritage Foundation. Philadelphia, PA.
138. de Ridder-Vignone, Kathryn. October 2013. "The Futurescape City Tours: Material Deliberation as Public Engagement." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET) Annual Conference. Boston, MA.
139. de Ridder-Vignone, Kathryn. October 2013. "The Futurescape City Tours: Material Deliberation as Public Engagement." Presentation. Society for the Social Studies of Science Annual Meeting. San Diego, CA.
140. de Ridder-Vignone, Kathryn. September 10, 2013. "How Material Deliberation Creates More Democratic Governance of Emerging Technologies." Presentation. Enlightening Lunch Series. Arizona State University. Tempe, AZ.
141. de Ridder-Vignone, Kathryn. August-September 2013. "Visual Methods Seminar: Observing and Visualizing Urban Culture by Jon Wagner, Richard Chalfen, Luc Pauwels, and John Grady." Presentation. University of Antwerp Summer School. Belgium.
142. de Ridder-Vignone, Kathryn. September 2013. "Design and the Appropriation of Place – Experimenting with Photography as a Method." Presentation. Visual Methods Seminar: Observing and Visualizing Urban Culture. Belgium.
143. de Ridder-Vignone, Kathryn. July 2013. "Material Deliberation as Public Engagement in the Nanoscale Informal Science Education Network." Presentation. Science in Public 2013: Critical Perspectives on Making Science Public. Nottingham, United Kingdom.
144. de Ridder-Vignone, Kathryn, **Cynthia Selin** and Gretchen Gano. October 8, 2013. "Futurescape City Tours: Incorporating the Temporal, Sensual and Material in Public Engagement with Nanotechnology." Presentation. Science and Its Publics: Exploring Emergent Forms of Public Engagement, Newkirk Center: Promoting Scientific Knowledge in Society's Interest. University of California Irvine.
145. Dudo, Anthony D. May, 2010. "Project Overview: Nanotechnology in the News." Paper Presentation. National Science Foundation Site Visit for the Center for Nanotechnology in Society at ASU, Tempe, AZ.
146. Dudo, Anthony D., **Dominique E. Brossard**, **James Shanahan**, **Dietram A. Scheufele**, Michael Morgan and **Nancy Signorelli**. August, 2009. "Science on Television in the 21st Century: Recent Trends in Portrayals and their Contributions to Public Attitudes toward Science." Presentation. Annual Conference of the Association for Education in Journalism and Mass Communication, Boston, MA.

147. Dudo, Anthony D., Doo-Hun Choi and **Dietram A. Scheufele**. January, 2011. "Food Nanotechnology in the News: Coverage Patterns and Thematic Emphases during the Last Decade." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.
148. Dudo, Anthony D., **Sharon Dunwoody** and **Dietram A. Scheufele**. August, 2009. "The Emergence of Nano News: Tracking Thematic Trends and Changes in Media Coverage of Nanotechnology." Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, Boston, MA.
149. Falls, Dee Dee and Adriene Jenik. January 18, 2013. "Learning in the Nano City." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
150. **Fernandez-Ribas, Andrea**. October 03, 2009. "Firms' Global Patent Strategies in an Emerging Technology." Paper presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
151. **Fernandez-Ribas, Andrea** and **Philip Shapira**. October, 2009. "The Globalization of Innovation in Nanotechnology: Some Empirical Evidence for US, Japanese, and European Firms." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
152. **Fernandez-Ribas, Andrea** and **Philip Shapira**. May, 2008. "Technological Diversity, Scientific Excellence and the Location of Inventive Activities Abroad: The Case of Nanotechnology." Presentation. National Bureau of Economic Research (NBER) Nanobank Conference, Boston, MA.
153. **Fichtner, Aaron**. 2007. "Preliminary Results: The Workforce Needs of Companies Using Nanotechnology in Arizona." Presentation. Nanotechnology 2007 Conference, San Jose, CA.
154. Finn, Edward and Arnim Wiek. September 12, 2012. "Envisioning the Nano City: How Will it Look." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
155. **Fisher, Erik**. March 20-21, 2015. "Reflections on Responsible Innovation, Training, and Institutional Capacity Building." Invited Presentation. Can Innovators Be Made? A Dialogue on the Past, Present, and Future of Innovation Expertise, Washington, DC.
156. **Fisher, Erik**. May 29, 2014. "How to Talk to Scientists about Ethics." Invited Presentation. Workshop on Ethics and Society, French National Research Agency, Paris, France.
157. **Fisher, Erik**. May 28, 2014. "Socio-Technical Communication for Integration." Invited Presentation. Technical University of Delft, The Netherlands.
158. **Fisher, Erik**. April 2-4, 2014. "Responsible Innovation: Integrating Care and Creativity." Invited Presentation. Association for Managers of Innovation, Spring 2014 Conference, San Diego, CA.
159. **Fisher, Erik**. June 9, 2014. "STIR Overview." Academic Presentation. Communities of Integration 2nd Annual Meeting, University of Waterloo, Kitchener, Ontario, Canada.
160. **Fisher, Erik** and Michael O'Rourke. June 9, 2014. "Mapping Socio-Technical Integration." Academic Presentation. University of Waterloo, Kitchener, Ontario, Canada.

161. **Fisher, Erik.** May 23, 2014. "Modulating the Laboratory: Integrating Care and Creativity." Academic Presentation. Department of Science, Technology, Engineering and Public Policy, University College, London.
162. **Fisher, Erik.** February 15, 2014. "Responsible Collaborations in Interdisciplinary Research." Presentation. American Association for the Advancement of Science. Chicago, IL.
163. **Fisher, Erik.** February 11, 2014. "Invited Testimony." Presentation. The Presidential Commission for the Study of Bioethical Issues. Sixteenth meeting. Washington, DC.
164. **Fisher, Erik.** December 16, 2013. "Socio-Technical Collaboration in Science: Building Capacities for Responsible Innovation." Presentation. International Symposium for Responsible Research and Innovation. Osaka University. Japan.
165. **Fisher, Erik.** June 24-27, 2013. "Probing Capacities for Socio-Technical Integration." Presentation. Communities of Integration Track. 4th Annual International Science for Team Science Conference. Northwestern University. Evanston, IL.
166. **Fisher, Erik.** September, 2012. "Exploring the Possibility, Utility, and Meaning of Lab-based Socio-Technical Collaborations." Presentation. Science of Science and Innovation Policy Conference 2012. The National Academy of the Sciences, Washington, DC.
167. Fisher, Erik. June, 2012. "Broader Societal Implications: Long-Term Scenarios, Challenges for Humankind." Presentation. NBIC2: International Study on Converging Technologies for Societal Benefit. The National Science Foundation.
168. Fisher, Erik. April 26, 2012. "Self-Critical Public Science: How to Integrate Creativity and Responsibility." Presentation. New Tools for Science Policy Seminar. ASU Washington Center, Washington, DC.
169. **Fisher, Erik.** March 22, 2012. "The Code of Conduct for Responsible Nanosciences and Nanotechnologies Research as a Platform for Deliberation." Presentation. Soft Law Oversight Mechanisms for Nanotechnology. Skysong, Arizona State University.
170. **Fisher, Erik.** November, 2011. "Stirring the Governance Capacities of Experts-in-the-Making." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
171. Fisher, Erik. November, 2011. "Lost in the NanoWorld: 10 years of Emergence." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
172. **Fisher, Erik.** June 17, 2011. "Future Regimes of Science, Politics and Convergence Work." Presentation. The Future of Science and Society: A Symposium in Honor of Arie Rip, University of Twente.

173. **Fisher, Erik.** May, 2011. "Responsible Innovation R&D: the US Experience." Presentation. . Franco-British Workshop on Responsible Innovation: From Concepts to Practice. Residence of the French Ambassador, London.
174. **Fisher, Erik.** May, 2011. "STIR Spin-offs: Beyond the Laboratory Engagement Study." Presentation. Institute for Innovation and Governance Studies. University of Twente.
175. **Fisher, Erik.** February 16, 2011. "Workshop Public Agenda: International Network for Responsible Innovation." Workshop organizer and principal investigator. STIR Project Workshop 4, Washington, DC.
176. **Fisher, Erik.** February, 2011. "STIR Project Overview." Presentation. International Network for Responsible Innovation. STIR Project Workshop. Woodrow Wilson International Center for Scholars, Washington, DC.
177. **Fisher, Erik.** December 03, 2010. "Public Value Integration in Science and Innovation Policy Processes." Presentation. Science Measurement Workshop presented by the Office of Science and Technology Policy, Washington, DC.
178. **Fisher, Erik.** October 28, 2010. "Science, Democracy and the Reinvention of the Liberal Arts." Presentation. Lowdenslager Annual Lecture. Western State College, Gunnison, CO.
179. **Fisher, Erik.** October, 2010. "Midstream Modulation and Socio-Technical Integration Research." Presentation. Ethics on the Work Floor: Interdisciplinary Research and Responsible Innovation workshop. Technical University of Delft, Delft, Netherlands.
180. **Fisher, Erik.** October, 2010. "Socio-Technical Integration Research." Presentation. NSF Science of Science and Innovation Policy Workshop: Building a Community of Practice II. American Association for the Advancement of Science, Washington, DC.
181. **Fisher, Erik.** August, 2010. "Integration Outcomes." Presentation. Integration Study Comparisons. STIR Project Workshop. University of Tokyo, Tokyo, Japan.
182. **Fisher, Erik.** June 09, 2010. "Lab-level Socio-technical Integration." Presentation. Genome British Columbia, GSEAC Retreat, Vancouver, Canada.
183. **Fisher, Erik.** June 02, 2010. "Midstream Modulation of Emerging Technology: Probing the Capacity of Research Decisions." Presentation. Research Council of Norway, Oslo, Norway.
184. **Fisher, Erik.** April, 2010. "The Political Ethnography of Lab-Level Bureaucrats: Probing the Capacity of Research Decisions." Presentation. Midwest Political Science Association 68th Annual National Conference, Chicago, IL.
185. **Fisher, Erik.** February 27, 2010. "What is Midstream Modulation?" Presentation. Reflexive Systems Biology Kick-Off Meeting. University of Bergen, Bergen, Norway.
186. **Fisher, Erik.** February 26, 2010. "TA-Trends in the U.S.." Keynote Lecture. TA Workshop: Keeping Pace with T.A. Instituut Samenleving and Technologie. Flemish Parliament, Brussels, Belgium.

187. **Fisher, Erik.** September 08, 2009. "Integration and Reflexivity: Integrating Social Science and Humanistic Work with Laboratory Research in Emerging Science and Technology." Presentation. S.NET Pre-Conference Workshop: Real-time Technology Assessment and Anticipatory Governance. University of Washington.
188. **Fisher, Erik.** July, 2009. "Inquiry as Intervention." STIR Workshop 2: Inquiry as Intervention, Vatnahalsen, Norway. July 4-7, 2009.
189. **Fisher, Erik.** June, 2009. "Laboratory Engagement, STIR: Initial Project Results." Presentation. TA NanoNed Annual Meeting, Utrecht, the Netherlands.
190. **Fisher, Erik.** June, 2009. "The Two Cultures in Science Policy." Presentation. Center for Science and Technology Policy Research. University of Colorado at Boulder, Boulder, CO.
191. **Fisher, Erik.** June, 2009. "Science and Society in the Laboratory? Reflections of an Embedded Humanist." Presentation. Colorado Fuel Cell Center. Colorado School of Mines, Golden, CO.
192. **Fisher, Erik.** June, 2009. "Integrating Science and Society in Nanotechnology Laboratories." Presentation. The Nano Renewable Energy Summit, Denver, CO.
193. **Fisher, Erik.** June, 2009. "Integrating Ethics and Engineering in the Laboratory: Reflections of an Embedded Humanist." Presentation. Graduate Interdisciplinary Liberal Engineering Ethics Workshop on Integrating Ethics and Societal Issues into a Graduate Curriculum. Virginia Tech, Blacksburg, VA.
194. **Fisher, Erik.** May 18, 2009. "Inquiry and Nanotechnology." Presentation. Human Practices Workshop. University of California at Berkeley, Berkeley, CA.
195. **Fisher, Erik.** May, 2009. "The "Two Cultures" in Science Policy Today." Presentation. University of Colorado-Denver, School of Public Affairs, Denver, CO.
196. **Fisher, Erik.** March, 2009. "Socio-Technical Integration Research." Presentation. Research Funding and the Good Life, University of Twente, the Netherlands.
197. **Fisher, Erik.** January, 2009. "STIR Project Overview." STIR Workshop 1: Constructing Foundations. Arizona State University, Tempe, AZ.
198. **Fisher, Erik.** November, 2008. "Deliberation on the Implementation of a Code of Conduct and fostering International Dialogue and Collaboration." Expert participant. European Commission, Brussels, Belgium.
199. **Fisher, Erik.** November, 2008. "Nanotechnology: Environment, Health and Safety." Presentation. Environmental Professionals of Arizona / Academy of Certified Hazardous Materials Managers, Tempe, AZ.
200. **Fisher, Erik.** October, 2008. "Laboratory Engagements: Risky Discourse and Research Decisions." Presentation. Networks, Risk and Knowledge Sharing, University of Massachusetts, Amherst, MA.

201. **Fisher, Erik.** July, 2008. "Collaborations for Financial Success: Universities Collaborating with Government and the Private Sector." Panelist. The Nano Renewable Energy Summit, Denver, CO.
202. **Fisher, Erik.** July, 2008. "Midstream Modulation: Embedding the Humanities in Engineering Practice and Education." Presentation. Kluwyver Colloquium, Delft Technical University, Delft, the Netherlands.
203. **Fisher, Erik.** April, 2008. "Embedded Humanists." Presentation. Engineering in Context, Colorado School of Mines, Golden, CO.
204. **Fisher, Erik.** March, 2008. "Midstream Modulation and the Politics of Engagement." Presentation. STS in Action, Claremont, CA.
205. **Fisher, Erik.** December, 2007. "Inventing the Socially Conscious Laboratory." Presentation. Consortium for Science, Policy & Outcomes, Arizona State University, Tempe, AZ.
206. **Fisher, Erik.** September, 2007. "Integrating Social Considerations into Nanotechnology Research." Presentation. 1st Rocky Mountain Nanotechnology Showcase, Denver, CO.
207. **Fisher, Erik.** August, 2007. "Broader Impacts and the Embedded Humanist." Presentation. Making Sense of the Broader Impacts of Science and Technology, Golden, CO.
208. **Fisher, Erik.** July, 2007. "Integrating Societal Considerations and Nanotechnology in the Four Corners Region." Presentation. Colorado Nanotechnology Alliance, Denver, CO.
209. **Fisher, Erik.** June 27, 2007. "Integrating Science and Society in the Laboratory." Presentation. Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM.
210. **Fisher, Erik.** June, 2007. "Drilling Down on U.S. Ethics Policy for Nanotechnology." Presentation. Center for Interdisciplinary Research (ZiF), Bielefeld University, Bielefeld, Germany.
211. **Fisher, Erik.** June, 2007. "Socio-technical Integration and the Nanotechnology Laboratory." Presentation. Visions about Nanoscience and Technology Workshop, Leuven, Belgium.
212. **Fisher, Erik.** June, 2007. "Investigating the Implementation of U.S. Ethics Policy for Nanotechnology." Presentation. Institute for Technology Assessment and Systems Analysis, Forschungszentrum Karlsruhe in der Helmholtz-Gemeinschaft, Karlsruhe, Germany.
213. **Fisher, Erik.** June, 2007. "Engaging the Reflexive Capacity of Nanotechnology Researchers." Presentation. Nanotechnology, Ethics & Sustainability; NANOMAT Conference, Bergen, Norway.
214. **Fisher, Erik.** June, 2007. "Socio-technical Integration at Macro and Micro Levels." Presentation. Rathenau Institute, Den Haag, The Netherlands.
215. **Fisher, Erik.** January, 2007. "Social and Policy Issues in Nanotechnology." Presentation. 5th CINT Users Workshop, Center for Integrated Nanotechnologies, Albuquerque, NM.

216. **Fisher, Erik**. November 20, 2006. "Current Societal Considerations in Nanotechnology." Presentation. Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM.
217. **Fisher, Erik**. November, 2006. "Reflecting on the Shape of Nanotechnology Research from Within." Presentation. 4S Conference (Society for Social Studies of Science), Vancouver, Canada.
218. **Fisher, Erik**. September, 2006. "Socratic Engagement of Nanotechnology: A Case Study in Ethics Policy." Presentation. University of North Texas, Department of Philosophy and Religion Studies, Denton, TX.
219. Fisher, Erik. August, 2006. "From Upstream Engagement to Midstream Modulation: Shaping Technology from Within." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
220. Fisher, Erik. July, 2006. "Midstream Modulation: U.S. Federal Nanotechnology Policy Implementation." Presentation. TA NanoNed Day, Utrecht University, the Netherlands.
221. Fisher, Erik. May, 2006. "Midstream Modulation of Technological Trajectories." Trading Zones and Interactional Expertise Workshop, Arizona State University, Tempe, AZ.
222. **Fisher, Erik** and Antonio Calleja. October, 2009. "Reflexive Modulation of Laboratory Practices for the Governance of Science and Technology." Presentation. Society for the Social Studies of Science Annual Meeting, Washington, DC.
223. **Fisher, Erik, Daan Schuurbiens** and **Harro Van Lente**. June, 2011. "A Whole New Set of Lab Responsibilities? Responsible Innovation and its Consequences for Research Practices." Presentation. Risky Entanglements? Contemporary Research Cultures Imagined and Practiced, Vienna, Austria.
224. **Fisher, Erik** and **David H. Guston**. July, 2011. "Integration of Social Science and Humanities Scholars with Natural Scientists." Presentation. Anticipatory Governance of Emerging Technologies: Foresight, Engagement and Integration. Euroscience Open Forum, Turino, Italy.
225. **Fisher, Erik** and **David H. Guston**. June, 2010. "Changing Practices: An Engagement of Expert Epistemologies in the Making." Presentation. Ninth Annual Meeting of the Science and Democracy Network. Kavli Royal Society International Centre, Chicheley Hall, United Kingdom.
226. **Fisher, Erik** and Derrick Anderson. December 04, 2009. "From Lab to Legislature: Public Value Mapping of Nanotechnology Science and Innovation Policy Making." Presentation. Dupont Summit on Science and Technology Policy, "The New Administrations Challenges on Science and Technology: Staying the Course in Times of Crisis." Policy Studies Organization, Carnegie I, Washington, DC.
227. **Fisher, Erik**, Derrick Anderson and David Renolds. August, 2008. "Mapping and Modulating the Public Value of Academic Research." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

228. **Fisher, Erik** and Eric Kennedy. September 8-11, 2013. "Communities of Practice: Sociotechnical Integration (CoPSI)." Digital Poster. 1st Global Conference on Research Integration and Implementation. Australia National University. Canberra, Australia.
229. **Fisher, Erik** and Francois Thoreau. September, 2010. "On Reflection and Reflexiveness: Positioning the Self, Enframing the Other." Presentation. Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Darmstadt, Germany.
230. **Fisher, Erik** and Hannot Rodriguez. August, 2010. "Socio-technical Integration in European Framework Programmes." Poster Presentation. Gordon Research Conference on Science and Technology Policy, Waterville Valley, NH.
231. **Fisher, Erik** and Hannot Rodriguez. April, 2010. "Tracking the Pervasiveness of Socio-Technical Integration in the European Research and Development Framework Programmes." Presentation. Science and Governance: Global and Comparative Perspectives. Arizona State University, Tempe, AZ.
232. **Fisher, Erik** and **Roop L. Mahajan**. November, 2006. "Midstream Modulation." Presentation. International Mechanical Engineering Conference, Chicago, IL.
233. **Fisher, Erik** and Shannon Conley. November, 2011. "Socio-Technical Integration: Collaborating with Geneticists in Patient Engagement." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
234. **Fisher, Erik**, Shannon Conley and Cameron Keys. September 8-11, 2013. "Socio-Technical Integration Research: Around the world in 30 labs." Presentation. Digital Poster. 1st Global Conference on Research Integration and Implementation. Australia National University. Canberra, Australia.
235. **Fisher, Erik** and Topi Heikkero. May, 2011. "Public Deliberation in the Education of Science: Contemporary Practices and Classical Ideals." Presentation. Annual Meeting of the Society for Philosophy and Technology. University of North Texas.
236. **Foley, Rider W.** August 18-19, 2015 accepted. "Accounting for community knowledge in environmental policy at the Motorola 52nd Street Superfund Site." The Knowledge from the Margins: Social Justice and Sustainability Conference. East Lansing, Michigan.
237. **Foley, Rider W.**, Darren Petrucci. February 28, 2014. "New Tools for Science Policy - Design thinking, sustainability and the future city." Consortium for Science, Policy & Outcomes, Washington, DC.
<http://www.cspo.org/dc/tools/022814>
238. **Foley, Rider W.** and Lauren Withycombe-Keeler. January 20-22, 2015. "Cities, innovation, sustainability, and the future of health." Presentation. Assembling Cities: STS Concepts and Methodologies in Planning Studies. Zurich, Switzerland.
239. **Foley, Rider W.** and Richard Rushforth. November 4-6, 2014. "Can nZVI Decontaminate Water in a Socially Contested Context? Evaluating EPA Community Involvement Processes for Technology Adoption." 3rd Sustainable Nanotechnology Organization (SNO) Conference. Boston, MA.

240. **Foley, Rider W.** October 29, 2014. "How can interactions between scientists and social scientists, upstream in the research process, help create an ethos of reflexivity?" Trading Zone on Responsible Research and Innovation in Synthetic Biology. European Commission Workshop, Wilson Center.
241. **Foley, Rider W.**, Colette Bos, Michael J. Bernstein and Lauren Keeler-Withycombe. September 21-24, 2014. "Intersections and divergences: Sustainability, Responsible Innovation and Intervention Research". 6th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Karlsruhe, GER.
242. **Foley, Rider W.** and Michael J. Bernstein. September 17-19, 2014. "Normative principals to guide the process of responsible innovation." Presentation. European Association for the Study of Science and Technology. Turin, PL.
243. **Foley, Rider W.** November 18, 2013. "Scenarios: A Means to Understand Future Implications of Science and Technology." Presentation. Invited Talk at BioScience High School. Phoenix, AZ.
244. **Foley, Rider W.** November, 2012. "Guiding Innovation Sustainably: Applying Principles of Sustainability and Anticipatory Governance." Paper Presentation. 1st Sustainable Nanotechnology Organization Conference (SNO), Washington, DC.
245. **Foley, Rider W.** and **Arnim Wiek.** October, 2012. "Nanotechnology Innovation: Governance by Urban Actors." Paper Presentation. 4th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Enschede, the Netherlands.
246. **Foley, Rider W.** and **Arnim Wiek.** November, 2011. "Reconciling Urban Sustainability Syndromes and Urban Nanoscape." Poster Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
247. **Foley, Rider W.**, **Arnim Wiek** and **David H. Guston.** June 2013. "Integrating Nanotechnology into Comprehensive Interventions to Global Challenges." Presentation. Gordon Research Conference: Environmental Nanotechnology. Stowe, VT.
248. **Foley, Rider W.**, **Arnim Wiek** and **David H. Guston.** February 2013. "Risk versus Reward: Comparing Cultures of Innovation." Presentation. Annual Meeting of the American Association for the Advancement of Science (AAAS). Boston, MA.
249. **Foley, Rider W.**, Braden Kay, Richard Rushforth and **Arnim Wiek.** May, 2012. "Can Nanotechnology Decontaminate Water in a Morally Contested Context?" Presentation. International Symposium on Sustainable Systems and Technology, Boston, MA.
250. **Foley, Rider W.**, C. Kuzdas, B. Warner, Lauren Withycombe Keeler, D. Iwaniec and **Arnim Wiek.** February, 2012. "Designing Sustainable Governance: Cross-Domain Comparison and Evaluation." Poster Presentation. 3rd Annual International Conference on Sustainability Science, Tempe, AZ.
251. **Foley, Rider W.**, **Darren Petrucci** and **Renata Hejduk.** October 2013. "Scenarios of the Nano-enhanced City." Presentation. 5th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET). Boston, MA.

252. Foley, Rider W., **Ira Bennett, Jameson Wetmore, David H. Guston and Arnim Wiek**. October, 2012. "Applied Nanoethics: Who is Reponsible for what." Paper Presentation. 4th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Enschede, the Netherlands.
253. Foley, Rider W., Michael J. Bernstein and Youngjae Kim. May 2013. "Ground Control: Linking Top-down and Bottom-up Approaches for International Nanotechnology Governance." Presentation. First Annual Conference on Governance of Emerging Technologies. Chandler, AZ.
254. Foley, Rider W., Tomasz Kalinowski and Richard Rushforth. December, 2012. "Rethinking Participatory Technology Assessment: Integrating Diverse Perspectives from the Community, Engineering, and Sustainability." Paper Presentation. Dupont Summit on Science, Technology, and Environmental Policy, Carnegie Institute for Science, Washington, DC.
255. Gallo, Jason. October 19, 2007. "The National Science Foundation and the Creation of a Standing Army for Science." Paper presentation. Annual Meeting of the Society for the History of Technology, Washington, DC.
256. Gallo, Jason. April, 2007. "The National Science Foundation and the Control of Information." Department of Life Sciences Communication colloquium series, University of Wisconsin, Madison, WI.
257. Gano, Gretchen. August 2014. "Participatory Technology Assessment (pTA) as Technological Wayfinding." Presentation. New Designs for Engagement: Theories and Practices of Material Deliberation Panel. Society for the Social Studies of Science/ECOSITE Annual Meeting.
258. Gano, Gretchen. 2011. "Local Deliberation and Imagined Transition Epistemologies." Presentation. Annual Meeting of the Society for the Social Studies of Science, Cleveland, OH.
259. Gano, Gretchen. 2011. "Finding Futures." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
260. Gano, Gretchen. 2011. "Empowerment and Social Learning: Long Term Benefits of Citizen Deliberation about Nanotechnologies for Human Enhancement." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
261. Gano, Gretchen. 2011. "What we've learned about Nano and Society a Working Session on Data Sharing for NSF NSECs." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
262. Gano, Gretchen. 2011. "Emergent Technology Assessment: the Transition Initiative and Energy Futures." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
263. Gano, Gretchen. 2011. "Exploring the Uncertain Technological Future: Lessons in Anticipatory Governance." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

264. Gano, Gretchen and Krista Harper. April 2014. "Futurescape Springfield." Presentation. Museums à la Carte Lecture. Springfield Museums.
265. Gao, L., **Alan L. Porter**, Tingting Ma, Wenping Wang, Stephen Carley and X. Zhang. 2011. "Measuring the Interdisciplinarity of Nano-Biosensor Research based on Citation Analysis." Presentation. Atlanta Conference on Science and Innovation Policy 2011, Atlanta, GA.
266. Garay, Manuel and **Erik Fisher**. August, 2008. "NSECs and the Integration of Societal Concerns into R&D." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
267. **Garcia, Antonio** and **Joan McGregor**. October 17, 2008. "Will Genetic Discrimination Replace Racial Discrimination?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
268. Glerup, Cecilie. October 20, 2012. "Managing Demands for Social Engagement." Presentation. Panel Presentation on "Displacing the Laboratory and STS with It. New Modes of Engagement-Natural Scientists and the Lab. 4S/EASST Conference, Copenhagen, Denmark.
269. Glerup, Cecilie. 2012. "Scientific Social Responsibility as a Mode of Ordering." Presentation. Arizona State University, Tempe, AZ.
270. **Goodnick, Stephen** and **Tim Lant**. November 20, 2009. "Good to the Last Drop? The Water-Energy Connection." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
271. **Gordon, Claire** and Ira Bennett. February 16, 2007. "Why Things (Still) Don't Fit: Human Variation and Ergonomics in the 21st Century." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
272. Guo, Ying, **Alan L. Porter** and Lu Huang. May, 2011. "Empirically Informing a Technology Delivery System Model for an Emerging Technology: Illustrated for Dye-Sensitized Solar Cells." Presentation. 4th International Seville Conference on "Future-Oriented Technology Analysis".
273. Guo, Ying, **Alan L. Porter** and Lu Huang. October, 2009. "Comparing and Probing National Research Strategies for Nanotechnology Thin-film Solar Cells." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
274. Guo, Ying, **Alan L. Porter** and Lu Huang. April 09, 2009. "Nano-enhanced Thin-film Solar Cells: Global Activity and Forecast." Paper presentation. IAMOT 2009, 18th International Conference on Management of Technology, Management of Green Technology, International Association for Management of Technology, Orlando, FL.
275. Guo, Ying, Lu Huang and **Alan L. Porter**. October, 2009. "Profiling Research Patterns for a New and Emerging Science and Technology: Dye-sensitized Solar Cells." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
276. Guo, Ying, Lu Huang, L. Zhang, D. Zhu and **Alan L. Porter**. 2011. "Up-to-down Science & Technology Planning: a New Approach Based on Patent Data and Technology Roadmapping." Presentation. Global TechMining Conference, Atlanta, GA.

277. Guo, Ying, Tingting Ma, **Alan L. Porter** and Ismael Rafols. October, 2011. "A Comparative Analysis of Asia-Pacific Research Thrusts vs. Euro-North American for DSSC by Employing Tech Mining Approach." Presentation. The 6th Aceanian Conference on Dye-sensitized and Organic Solar Cells, Beppu, Japan.
278. Guo, Ying, Tingting Ma, **Alan L. Porter**, Jose M. Vicente Gomila and Chen Xu. October, 2011. "Technology Opportunities Analysis for DSSCs using Text Mining and Semantic-TRIZ." Presentation. The 6th Acenian Conference on Dye-sensitized and Organic Solar Cells, Beppu, Japan.
279. Guston, David H. September, 2014. "The Case for Responsible Innovation." Schlinger Symposium Plenary Address, Innovation Day, Chemical Heritage Foundation, Philadelphia, PA.
280. Guston, David H. September, 2014. "From Frankenstein to Synthetic Biology: Responsible Innovation and the Insufficiency of 'Cool'." Presentation. Drexel University Alumni Association, Mutter Museum, Philadelphia, PA.
281. Guston, David H. May 21-23, 2014. "Building the Capacity for Public Engagement with Science in the US." Presentation. Science-Policy Interface Meeting, University of Waterloo, Waterloo, Ontario, Canada.
282. Guston, David H. July, 2014. "Understanding Anticipatory Governance." Presentation. Science Policy Research Unit, University of Sussex, Brighton, UK.
283. Guston, David H. July, 2014. "Understanding Anticipatory Governance." Presentation. Science, Technology, Engineering and Public Policy Department, University College, London, London, UK.
284. Guston, David H. November 21, 2014. "Understanding Anticipatory Governance." Presentation. National Academy of Sciences Board on Life Sciences, Tempe, AZ.
285. **Guston, David H.** May 2013. "Responsible Innovation." Presentation. Video presentation at Society of Environmental Toxicology and Chemistry annual meeting. Glasgow, United Kingdom.
286. **Guston, David H.** May 2013. "Rethinking Responsibility in Innovation." Presentation. The Brookings Institution. Washington, DC.
287. **Guston, David H.** March, 2013. "The Role of Real-Time Technology Assessment in STI Processes." Keynote Address. Second Annual International Symposium on Science, Technology and Innovation Governance, University of Tokyo, Tokyo, Japan.
288. **Guston, David H.** October, 2012. "Anticipatory Governance as a Form of Making Science Public." Presentation. Annual Meeting of the Society for Social Studies of Science, Copenhagen, Denmark.
289. **Guston, David H.** October, 2012. "Back to the Future: Why Should We Promote Oublic Engagement with Science?" Presentation. Annual Meeting of the Society for Social Studies of Science, Copenhagen, Denmark.

290. **Guston, David H.** May 11, 2012. "The Pumpkin or the Tiger?: Frederick Soddy, Michael Polanyi and the Anticipatory Governance of Emerging Technologies." Presentation. Come and Tell About the Future Seminar.
291. **Guston, David H.** March 06, 2012. "The Pumpkin or the Tiger? Polanyi, Soddy and the Anticipation of Emerging Technologies." Presentation. Workshop on Pacing Governance with Technology, Scottsdale, AZ.
292. **Guston, David H.** March 01, 2012. "EMERGE: From Technology to Democracy." Presentation. Emerge: Artists + Scientists Redesign the Future, Tempe, AZ.
293. **Guston, David H.** February 14, 2012. "Nanotechnology and Anticipation." Talk. UW Bothell Innovation Forum, with other panelists speaking on Innovation Squared: Why innovations in technology require innovations in ethics, Bothell, WA.
294. **Guston, David H.** February 13, 2012. "Anticipatory Governance of Emerging Technologies." Talk. Biological Futures in a Globalized World colloquium series at University of Washington, Seattle, WA.
295. **Guston, David H.** December, 2011. "Innovation and Advances in Governance of Nanotechnology: New Research in Anticipatory Governance of Nanotechnology." Presentation. National Science Foundation 2011 NSF NSE Grantees Meeting, Arlington, VA.
296. **Guston, David H.** November 03, 2011. "The Pumpkin or the Tiger? Or, Michael Polanyi, Frederick Soddy and the Anticipatory Governance of Emerging Technoscience." Presentation. Society for the Study of Science (4S) Annual Conference, Cleveland, OH. Guston,
297. **Guston, David H.** June, 2011. "Shaping Science and Nanotechnology Future." Presentation. 2011 "Environmental Nanotechnology" Gordon Research Conference, Waterville Valley, NH.
298. **Guston, David H.** May 22, 2011. "The Role of Nanotechnologies in our Future." Presentation. Humanist Society of Greater Phoenix.
299. **Guston, David H.** April 04, 2011. "Nano and the City: Anticipatory Governance and Urban Sustainability." Presentation at 8th Annual U.S. - Korea Forum on N. California Technical Institute, Pasadena, CA.
300. **Guston, David H.** March 14, 2011. "Anticipatory Governance: A Strategic Vision for Building Reflexivity into Emerging Technologies." Presentation. Resilience 2011, Arizona State University, Tempe, AZ.
301. **Guston, David H.** March 11, 2011. "CNS-ASU and its Strategic Vision of Anticipatory Governance." Talk. Service Academy Alumni of Arizona.
302. **Guston, David H.** March 02, 2011. "Anticipatory Governance of Emerging Technologies." Presentation. Technology and Ethics Working Group, Yale University, New Haven, CT.

303. **Guston, David H.** December 06, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. "New Tools for Science Policy: Better S&T for the Real World" series, CSPO, Washington, DC.
304. **Guston, David H.** November 17, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. ESRC Genomics Forum, University of Edinburgh, Edinburgh, United Kingdom.
305. **Guston, David H.** November 15, 2010. "The Pumpkin of the Tiger? Or, When to Consider the Risks of Research." Presentation. Institute of Hazard, Risk, and Resilience, Durham University, Durham, United Kingdom.
306. **Guston, David H.** November 10, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. Institute of Systems and Synthetic Biology, Imperial College, London, United Kingdom.
307. **Guston, David H.** November 04, 2010. "Anticipatory Governance of Emerging Technologies: The Center for Nanotechnology in Society at ASU." Presentation. Triple Helix at ASU, Tempe, AZ.
308. **Guston, David H.** July, 2010. "Anticipatory Governance of Emerging Technologies: Foresight, Engagement and Integration." Presentation. Euroscience Open Forum 2010, Torino, Italy.
309. **Guston, David H.** May 10, 2010. "Reflections on Anticipatory Governance of Nanotechnology: Meanings for the Regulatory Environment." Talk. Toward Regulation of Nanomaterials: Conversation between academia, industry, law, and government, University of Notre Dame, IN.
310. **Guston, David H.** March, 2010. "Broader Societal Implications." Plenary remarks. Nano2: International Study of the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering, Evanston, IL.
311. **Guston, David H.** March, 2010. "The Anticipatory Governance of Emerging Technologies." Plenary remarks. INEW 2010: The Second International Nanomaterials Ethics Workshop, Korea Institute of Science and Technology, Seoul, Korea.
312. **Guston, David H.** March, 2010. "The Center for Nanotechnology at Arizona State University." Lecture. Program in the History and Philosophy of Science, Seoul National University, Seoul, Korea.
313. **Guston, David H.** February, 2010. "Bridging Nanoscience and Society: The Center for Nanotechnology in Society at ASU." Presentation. Annual Meeting of the American Association for the Advancement of Science, San Diego, CA.
314. **Guston, David H.** December, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society." Lecture. ESRC Critical Public Engagement Seminar. Durham University, Durham, UK.
315. **Guston, David H.** December, 2009. "Public Engagement at CNS-ASU: The National Citizens Technology Forum and Other Modes." Lecture. Institute for Hazard Risk Research. Durham University, Durham, UK.

316. **Guston, David H.** October, 2009. "Genealogies of Anticipatory Governance." Presentation. Annual Meeting of the Society for Social Studies of Science, Washington, DC.
317. **Guston, David H.** October, 2009. "STS and Policy in the Academy." Chairs Plenary Panel. Annual Meeting of the Society for Social Studies of Science, Washington, DC.
318. **Guston, David H.** October, 2009. "Emerging Technologies and Sustainability: Parts I and II." Webinar briefing. Consultative Group on Biodiversity with the Center for Genetics and Society, San Francisco, CA.
319. **Guston, David H.** September 09, 2009. "The Roots, Branches and First Fruits of Anticipatory Governance." Presentation. Nanoethics Graduate Education Symposium, University of Washington, Seattle, WA.
320. **Guston, David H.** June, 2009. "Anticipatory Governance of Emerging Technologies." Presentation. NINE Summer Students Program. Sandia National Laboratory, Sandia, NM.
321. **Guston, David H.** June, 2009. "From the Lab to the Legislature: Locating Technology Assessment." Lecture on Science and Values. The Politicisation of Science. University of Bielefeld, Bielefeld, Germany.
322. **Guston, David H.** April, 2009. "Anticipatory Governance of Emerging Nanotechnologies at CNS-ASU." Video Plenary Lecture. Nanotechnology: Here and Now Meeting. Ministry of Research, Science and Technology, Wellington, New Zealand.
323. **Guston, David H.**, et al. March 09, 2009. "Nanotechnology and the Public: Data for Decision Makers." Briefing. U.S. Congressional Nanotechnology Caucus, Washington, DC.
324. **Guston, David H.** March, 2009. "Nano, Human Enhancement, and Public Engagement." Presentation. Faculty seminar on transhumanism, Center for the Study of Religion and Conflict, Arizona State University, Tempe, AZ.
325. **Guston, David H.** March, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Presentation. Center for the Study of Institutional Diversity brown bag, Arizona State University, Tempe, AZ.
326. **Guston, David H.** March, 2009. "Public Engagement: National Citizens' Technology Forum." Presentation. Nanotechnology and the Public: Data for Decision Makers briefing before the U.S. Congressional Nanotechnology Caucus, Washington, DC.
327. **Guston, David H.** March, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Presentation. Department of Political Science brown bag, Arizona State University, Tempe, AZ.
328. **Guston, David H.** March, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Video lecture. Graduate class in Science and Technology Policy, Ford School of Public Policy, University of Michigan, Ann Arbor, MI.

329. **Guston, David H.** September 10, 2008. "CNS-ASU and Nano-in-Society in the USA." Presentation by video. Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
330. **Guston, David H.** July, 2008. "Reflections on CNS-ASU and Nano in Society in the U.." Keynote talk. Dutch NanoNed Flagship TA and Societal Aspects of Nanotechnology meeting, Utrecht, The Netherlands.
331. **Guston, David H.** June, 2008. "The Center for Nanotechnology in Society at ASU and the Anticipatory Governance of Emerging Technologies." Presentation. Institute for Science and Technology Studies, Bielefeld University, Bielefeld, Germany.
332. **Guston, David H.** June, 2008. "Anticipatory Governance of Nanotechnologies: The Center for Nanotechnology in Society at ASU." Special talk. Visiting Japanese technology assessment delegation, Arizona State University, Tempe, AZ.
333. **Guston, David H.** April 04, 2008. "Governing Emerging Technologies." Presentation. Arizona Institute of Nanoelectronics opening ceremonies, Tempe, AZ.
334. **Guston, David H.** February, 2008. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Video lecture. Graduate class in Science and Technology Policy, Ford School of Public Policy, University of Michigan, Ann Arbor, MI.
335. **Guston, David H.** November, 2007. "Toward Anticipatory Governance of Emerging Technologies." Presentation. Special Series on Science and Public Policy, Brown University, Providence, RI.
336. **Guston, David H.** November, 2007. "Governing Emerging Technologies." Presentation. Spirit of the Senses Salon, Phoenix, AZ.
337. **Guston, David H.** June 14, 2007. "Anticipatory governance and reflexivity: A means for realtime technology assessment." Talk. The Future of Nanotechnology: A Celebration of the 30th Anniversary of the Cornell NanoScale Science & Technology Facility, Cornell University, Ithaca, NY.
338. **Guston, David H.** December, 2006. "Anticipatory Governance of Emerging Technologies." Presentation. Monthly meeting of the Arizona Nanotechnology Cluster, Tempe, AZ.
339. **Guston, David H.** October, 2006. "Anticipatory Governance of Emerging Technologies: The Center for Nanotechnology in Society at ASU." Presentation. Stanford University Seminar in Science, Technology and Society, Stanford, CA.
340. **Guston, David H.** August, 2006. "Anticipatory Governance of Emerging Technologies." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
341. **Guston, David H.** May, 2006. "CNS-ASU: Interdisciplinary Programs in a Self-Styled Boundary Organization." Presentation. Conference of Trading Zones, Interactional Expertise, and Interdisciplinary Collaboration, Arizona State University, Tempe, AZ.

342. **Guston, David H.** May, 2006. "What Do We Want to Learn from Public Participation in Nanotechnology?" Presentation. NNI Public Participation in Nanotechnology Workshop, Arlington, VA.
343. **Guston, David H.** April, 2006. "Social Science Engages Nanotechnology." Invited talk. Virginia Tech, Blacksburg, VA.
344. **Guston, David H.** February 17, 2006. "The Center for Nanotechnology in Society at ASU." Nanotechnology Seminar: Social Science Engages Nanotechnology, AAAS Annual Meeting 2006, St. Louis, MO.
345. **Guston, David H.** February, 2006. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Video lecture. Graduate class in Science and Technology Policy, Ford School of Public Policy, University of Michigan, Ann Arbor, MI.
346. **Guston, David H.** February, 2006. "Societal Implications of Nanotechnology." Lecture. Discovery Lecture Series 2006, Transforming Society Through Emerging Technologies: The National Nanotechnology Initiative at Five Years, Purdue University, West Lafayette, IN.
347. **Guston, David H.** and **Arnim Wiek.** November 16, 2010. "Nano and the City: Anticipatory Governance and Urban Sustainability." Presentation. Department of Geography, Durham University, Durham, United Kingdom.
348. **Guston, David H.** and **Arnim Wiek.** September, 2010. "Urban Design, Materials, and Built Environment: Nano in the City Research at ASU-CNS." Presentation. S.NET Conference, Darmstadt Technical University, Darmstadt, Germany.
349. **Guston, David H., Erik Fisher** and **Daniel Sarewitz.** April 27, 2012. "Introduction to Responsible Innovation." Presentation. International Collaboration Working Group Seminar.
350. **Halden, Rolf** and **Ben Hurlbut.** May 20, 2011. "Germ-Free and other Myths: Examining Antimicrobial Products." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
351. **Hamlett, Patrick.** March, 2008. "Public Deliberations About Science and Technology: Should the Public Have a Say on the Future of Nanotechnology." Presentation. NSF Science and Technology Center Program, Center for Environmentally Responsible Solvents and Processes Innovation Seminar Series, North Carolina State University, Raleigh, NC.
352. **Hamlett, Patrick** and **Michael D. Cobb.** August, 2008. "Reporting the Results of the first National Citizens Technology Forum." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
353. **Hamlett, Patrick** and **Michael D. Cobb.** July, 2008. "The First National Citizens Technology Forum on Human Enhancement: Results and Prospects." Paper presentation. VIPSI-2008 (Information Processing Society, International) Conference: Knowledge Engineering, Tutorials, & Brainstorming, Pisa, Italy.

354. **Hamlett, Patrick** and **Michael D. Cobb**. May, 2008. "The First National Citizens Technology Forum on Nanotechnology - First Results." Presentation. University & Industry Consortium, Spring 2008 Meeting, Lansing, MI.
355. **Harper, Krista, Gretchen Gano** and Marc Lorenc. October 30-November 2, 2014. "Futurescape City Tour Springfield: Science and Technology Studies in a Deindustrializing City." Presentation. Association of Collegiate Schools of Planning Annual Conference
356. **Harsh, Matthew, Susan Cozzens, Jameson Wetmore**, Michael J Bernstein, Rafael Castillo, Thomas Woodson, Diran Soumonni, Rodrigo Cortes-Lobos. December 15-17, 2014. "Postgraduate Training as a Space to Shape the Interface between Emerging Technologies and Development: A Short Course Approach." Presentation. The Closing Conference of the Nanotechnology for Development Conference, Maastricht University Brussels Campus, Brussels, Belgium.
357. **Harsh, Matthew**. January 2014. "Designing a Community Engagement Short Course for Engineers." Presentation. Global Engineering Symposium, Engineers without Borders Canada National Conference. Toronto, Ontario, Canada.
358. **Harsh, Matthew**. December 2013. "Nanotechnology Public Engagement Program NanoNews Writing Workshop (for graduate students)." Presentation. Co-facilitator for the South African Agency for Science and Technology Advancement. Cape Town, South Africa.
359. **Harsh, Matthew**. November 2013. "Ethics and Nanomaterials." Presentation. South African Department of Science and Technology's Nanoscience and Nanotechnology Summer School. University of the Western Cape. Cape Town, South Africa.
360. **Harsh, Matthew**. 2013. "Ethics and Nanomaterials." Presentation. Invited presentation at the South African Department of Science and Technology's Nanoscience and Nanotechnology Summer School. University of the Western Cape. Cape Town, South Africa.
361. Harsh, Matthew. April, 2012. "Biotechnology and Nanotechnology in Sub-Saharan Africa: Who Decides?" Paper Presentation. Centre for Engineering and Society, Concordia University, Montreal, Canada.
362. Harsh, Matthew. November, 2011. "Issues Facing STS Research on the Governance of Emerging Technologies in sub-Saharan Africa." Presentation. Annual Meeting of the Society for the History of Technology, Cleveland, OH.
363. Harsh, Matthew. March 29, 2011. "Pro-poor Nanotechnology Applications for Water: Characterizing Private Sector Research Using Publication Data." Paper presentation. Winter School on Emerging Nanotechnologies, organized by Grenoble Ecole de Management, Autrans, France.
364. **Harsh, Matthew, Susan Cozzens, Jameson Wetmore**, Rafael Castillo, Rodrigo Cortes Lobos, Ogundiran Soumonni and Thomas Woodson. 2013. "Preparing Engineers for the Challenges of Community Engagement: A Short Training Course Approach." Presentation. Engineering, Social Justice, and Peace Conference. Rensselaer Polytechnic Institute. Troy, NY.

365. Harsh, Matthew and Thomas Woodson. November, 2011. "Pro-Poor Nanotechnology Applications for Water: Characterizing Private Sector Research." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
366. Harsh, Matthew and Thomas Woodson. April, 2011. "Mapping Nano-Innovation Systems for Water Applications." Presentation. Winter School on Emerging Nanotechnologies, Grenoble cole de Management, Pinsot, France.
367. Hays, Sean A. July, 2009. "Nietzsche and the Philosophical Underpinnings of Human Enhancement." Presentation. SPT 2009: Converging Technologies, Changing Societies. Society for Philosophy and Technology, University of Twente, the Netherlands.
368. Hays, Sean A. March, 2009. "Transhumanism, Anti-humanism, and Nietzsche's Overman." Presentation. Human Enhancement & Nanotechnology, Western Michigan University, Kalamazoo, MI.
369. **He, Jiping** and Jason S. Robert. June 04, 2006. "Wiring Brains to Machines: Science Fiction or Science Fact." Talk. CNS-ASU Science Cafe, Mills End Coffee Shop, Tempe, AZ.
370. **Hendrickson, Kirstin** and **Scott Lefler**. November 19, 2010. "You Are What You Eat: America's Relationship with Food." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
371. **Herkert, Joseph, Heather Canary, Karin D. Ellison** and **Jameson Wetmore**. November, 2011. "Integrating Microethics and Macroethics in Graduate Science and Engineering Education." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
372. **Hibner Koblitz, Ann, Priscilla Greenwood** and **Jennifer McNeill Bekki**. March 21, 2008. "Women in Science: Various Issues and Viewpoints." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
373. **Hillback, Elliott D.**, Anthony D. Dudo, Jiun-Yi Tsai, **Sharon Dunwoody, Dominique E. Brossard** and **Dietram A. Scheufele**. December, 2009. "Tracking Online Behavior after Exposure to News of a Local Nanotechnology Risk: A Risk Information Seeking and Processing (RISP) Model Approach." Presentation. Annual Convention of the Society for Risk Analysis (Emerging Nanoscale Materials Specialty Group Student Merit Award), Baltimore, MD.
374. **Ho, Shirley S., Dietram A. Scheufele** and **Elizabeth A. Corley**. June, 2010. "Integrating Models of Mass-Interpersonal Communication: Testing Moderation and Mediation Effects of Elaborative Processing and Interpersonal Discussion on Scientific Knowledge and Public Attitudes Tow." Presentation. Annual Convention of the International Communication Association, Singapore.
375. **Ho, Shirley S., Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2009. "Value Predispositions, Mass Media, and Attitudes toward Nanotechnology: The Interplay of Public and Experts." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Bostom, MA.

376. **Ho, Shirley S., Dietram A. Scheufele and Elizabeth A. Corley.** May, 2009. "Making Sense of Policy Choices: A Closer Look at the Mediating Roles of Elaborative Processing and Interpersonal Discussion on Public Perceptions of Nanotechnology." Paper presentation. Annual convention of the International Communication Association, Chicago, IL.
377. **Ho, Shirley S., Dietram A. Scheufele and Elizabeth A. Corley.** August, 2008. "Influences of Mass Media, Interpersonal Communication, and Cognitive Processing on Risks versus Benefits Perception of Nanotechnology." Paper presentation. Annual convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.
378. **Ho, Shirley S.,** Xuan Liang, **Dominique E. Brossard, Dietram A. Scheufele, Michael A. Xenos, X. Hao and X. He.** June 2013. "Value Predispositions as Perceptual Filters: A Cross-cultural Comparison of Public Attitudes toward Nanotechnology in the United States and Singapore." Presentation. Annual Convention of the International Communication Association. London, United Kingdom.
379. **Hogle, Linda F.** March, 2007. "Stem Cells as a Study in Transience: A Future History." Paper presentation. Max Planck Institute for the History of Science, Berlin, Germany.
380. **Holbert, Keith and Clark A. Miller.** January 18, 2008. "Why Not Nuclear Power? The Science and Politics behind Nuclear Energy." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
381. **Honsberg, Christiana and Nancy LaPlaca.** March 15, 2013. "Power in the Nano City: Electricity, Democracy and Mutual Influence." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
382. Huang, Lu, **Alan L. Porter** and Ying Guo. April 06, 2009. "Identifying the Role of Emerging Nanoparticles in Biosensors." Paper presentation. IAMOT 2009, 18th International Conference on Management of Technology, Management of Green Technology, International Association of Management of Technology, Orlando, FL.
383. Huang, Lu, Ying Guo and **Alan L. Porter.** October, 2009. "A Systematic Technology Forecasting Approach for New and Emerging Science and Technology: Case Study of Nano-enhanced Biosensors." Presentation. 2009 Atlanta Conference on Science and Innovation Policy. The Paper won the Best Graduate Student Paper Award at the 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
384. Huang, Lu, Ying Guo, D. Zhu, **Alan L. Porter, Jan Youtie and Douglas K.R. Robinson.** 2011. "Organizing a Multidisciplinary Workshop for Forecasting Innovation Pathways: The Case of Nano-Enabled Biosensors." Presentation. Atlanta Conference on Science and Innovation Policy 2011, Atlanta, GA.
385. Huang, Lu, Ying Guo, **Jan Youtie and Alan L. Porter.** "Early Commercialization Pattern Profiling: Nano-Enhanced Biosensors." Presentation. PICMET (Portland International Conference on Management of Engineering and Technology, Vancouver, Canada.

386. Huang, Lu, Ying Guo, Tingting Ma and **Alan L. Porter**. May, 2011. "Text Mining of Information Resources to Inform Forecasting of Innovation Pathways." Presentation. 4th International Seville Conference on "Future-Oriented Technology Analysis".
387. **Huang, Wan-Ling, Eric Welch and Elizabeth A. Corley**. 2009. "Public Sector Voluntary Initiatives: The Adoption of the Environmental Management System for Biosolids by Public Waste Water Treatment Facilities in the United States." Paper Presentation. Midwest Political Science Association Conference.
388. **Jacobs, Bert and Jameson Wetmore**. March 23, 2007. "Transferring Western Technology to Developing Countries: Good Intentions, Unexpected Outcomes." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
389. Jensen, Camilla. July 20, 2014. "Cross-disciplinary Education in Social & Ethical Aspects of Nanotechnology." Poster presentation. SciRanch, Oracle, AZ.
390. Jensen, Camilla. November 2, 2014. "Cross-disciplinary Education in Social & ethical Aspects of Nanotechnology." NEAP Project, Sustainable Nanotechnology Organization (SNO) Conference, Boston, MA.
391. Jensen, Camilla and Tamara Christensen. March 6, 2015. "Future Fairy Tales." Visitation. Emerge 2015, Arizona State University-Skysong, Scottsdale, AZ.
392. Jensen, Camilla. March 7, 2015. "Future Fairy Tales." Panel presentation. Staging the Future Conference, Emerge2015, Arizona State University-Skysong, Scottsdale, AZ.
393. **Jimenez, Benedict, Eric Welch and Elizabeth A. Corley**. 2009. "Explaining Differences in the Quality and Effectiveness of Environmental Management Systems in Public Organizations: The Experience of Public Sewage and Wastewater Treatment Facility Operators in the." Paper Presentation. Midwest Political Science Association Conference.
394. Johnson, Darlene, Santiago Manriquez, **Terry Ryan**, Lynda Zeise and **Cynthia Selin**. November 21, 2008. "Democratizing Science: Should the Public Have a Voice in Science Research and Development." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
395. **Johnston, Stephen and Joan McGregor**. September, 2006. "Predicting Your Medical Future (Doc-in-a-Box)." CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.
396. **Jung, Ranu and Jason S. Robert**. January, 2007. "Adaptive Technologies for the Central Nervous System: Are We Changing What It Means to be Human." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
397. **Kambhampati, Subbarao** and David Calverley. November 16, 2007. "Do Robots Need a Bill of Rights? Implications of Artificial Intelligence." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
398. **Kavazanjian, Edward and Tim Lant**. April 15, 2011. "Disasters in Arizona: Are We Prepared." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

399. Kay, Luciano. November 05, 2011. "Aggregate Patterns of Linkage of Nanotechnology Centers with Industry: Program Outcomes." Session. Evaluation of a Nano Science and Technology Centers Program: Mixed Methods Approach to Assessing its Realization of Policy Objectives, American Evaluation Association.
400. Kay, Luciano. October, 2009. "The Emergence of Nanotechnology Enterprise in Brazil." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
401. Kay, Luciano. October, 2009. "Nanotecnologia en America Latina. Brasil y la Emergencia de Nanoempresas." Presentation. VI Seminario Internacional Nanotecnologia, Sociedade e Meio Ambiente - VI Seminariosoma, Manaus, Brazil.
402. Kay, Luciano. May, 2009. "Developing Nanotechnology in Latin America." Poster presentation. NSF Site Visit for CNS Renewal, Tempe, AZ.
403. Kay, Luciano. May, 2009. "Nanotechnology R and D Collaboration with Brazil. Managing Challenges and Opportunities in an Emerging Networked Technology." Presentation. Workshop of International R and D Cooperation with Latin America, Madrid, Spain.
404. Kay, Luciano. January, 2009. "Nanotechnology Research Networks in Brazil." Poster presentation. CNS All Hands Meeting, Tempe, AZ.
405. Kay, Luciano. January, 2008. "Nanotechnology in Latin America." Paper presentation. DRUID-DIME Academy Winter 2008 Ph.D. Conference on Economics and Management of Innovation and Organizational Change, Rebild, Denmark.
406. Kay, Luciano and **Jan Youtie**. October, 2012. "Emerging Technologies and Corporate Strategies: The Case of Nanotechnology for Energy Storage Solutions." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET), University of Twente, the Netherlands.
407. Kay, Luciano, **Noela Invernizzi** and **Philip Shapira**. October, 2009. "The Role of Brazilian Firms in Nanotechnology Development." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
408. **Kim, Matt** and **Prasad Boradkar**. September, 2007. "Designing Things: Balancing Beauty, Utility and Sustainability in Products." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
409. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. May, 2013. "The Role of Social Responsibility in Leading Nano-Scientists' Perceptions about Nanotech Research and Regulation." Paper Presentation. The Annual Conference on Governance of Emerging Technologies: Law, Policy, and Ethics, Chandler, AZ.
410. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. 2013. "How Do Leading U.S. Nano-scientists View their Social Responsibility for Nanotech Research?" Presentation. The Second Conference of the Sustainable Nanotechnology Organization Santa Barbara. Santa Barbara, CA.

411. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. November, 2011. "How Should We Regulate Nanotechnology? Perceptions of Leading U.S. Nano-scientists." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
412. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. January, 2011. "Should we Regulate Nanotech at the Local, National, or International Level." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.
413. Kimbell, Lucy and Cynthia Selin. May 30-31, 2014. "Future Things." Exhibition. Oxford Futures Forum. University of Oxford. Oxford, England.
414. Klochikhin, Evgeny A. and **Philip Shapira**. October, 2012. "Giants in Small Worlds? Innovation and Nanotechnology Development in China and Russia." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET), the Netherlands.
415. Klug Boonstra, Sherri. February 20, 2014. "Citizen Science! Goes to Mars!" Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
416. Kullman, Joe and **Joel Garreau**. March 19, 2010. "Facts or Hype: What is the Media Telling Us About Nano and Other New Technologies." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
417. Ladwig, Peter, Doo-Hun Choi, Ashley A. Anderson, Michael A. Cacciatore, Xuan Liang, **Dominique E. Brossard**, et al. May, 2011. "Coverage of Emerging Technologies: A Comparison Between Print and Online Media." Paper Presentation. Annual Convention of the International Communication Association, Boston, MA.
418. Ladwig, Peter, Kajsa E. Dalrymple, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Elizabeth A. Corley**. August, 2010. "Perceived or Factual Knowledge? Comparing Operationalizations of Science Knowledge." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, Denver, CO.
419. Laurent, Brice and **Erik Fisher**. August, 2007. "The Integration of Public Input into the American Nanotechnology Federal Program: Meanings and Contradictions." Presentation. Third Living Knowledge conference, Ecoles des Mines, Paris, France.
420. Li, Nan, **Dominique E. Brossard** and **Dietram A. Scheufele**. December 2013. "What do Government and Non-profit Stakeholders Want to Know about Nuclear Fuel Cycles? A Semantic Network Analysis Approach." Presentation. Annual Convention of the Society for Risk Analysis (SRA). Baltimore, MD.
421. Li, Nan, Heather Akin, Leona Yi-Fan Su, **Michael A. Xenos**, **Dietram A. Scheufele** and **Dominique E. Brossard**. June 2013. "Using Twitter to Assess Public Opinion about Nuclear Power Pre- and Post-Fukushima." Presentation. Annual Convention of the International Communication Association. London, United Kingdom.

422. Li, Nan, Leona Yi-Fan Su, Xuan Liang, **Dominique E. Brossard** and **Dietram A. Scheufele**. May 2014. "Policy Decision-making, Public Involvement and Nuclear Energy: What do Expert Stakeholders Think and Why." Presentation. Annual Convention of the International Communication Association (ICA). Seattle, WA.
423. Liang, Xuan, Leona Yi-Fan Su, Sara K. Yeo, **Dietram A. Scheufele**, **Dominique E. Brossard**, **Michael A. Xenos**, **Paul Nealey** and **Elizabeth A. Corley**. 2014. "Building Buzz (Scientists) Communicating Science in New Media Environments." Presentation. 13th Annual International Public Communication of Science and Technology (PCST) Conference. Salvador, Brazil.
424. **Libaers, Dirk**. September, 2006. "The Role and Contribution of Foreign-born Scientists and Engineers to the U.S. Nano Science and Technology Research Enterprise." Presentation. 2006 Technology Transfer Society Conference, Atlanta, GA.
425. Lidberg, Shannon. November, 2008. "Who Benefits? India's National Design Policy and the Setting of Designers' Priorities." Presentation. CNS-ASU Workshop on Nanotechnology, Equity and Equality, Tempe, AZ.
426. Lidberg, Shannon. August, 2008. "Design Policy Around the Globe: How Developed and Emerging Markets are Using Design for Economic Competitiveness." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
427. Lidberg, Shannon. March, 2008. "Examining Potential Futures: A Designer's Toolbox for Identifying Potential Social and Cultural Implications." Presentation. ST Global Conference, Washington, DC.
428. **Lindsay, Stuart**. March 23, 2006. "Humankind's Future on the Head of a Pin: Nanotechnology - What it is, what it can do." Talk. CNS-ASU Science Cafe, Mills End Coffee Shop, Tempe, AZ.
429. **Lobo, Jose**. November 09, 2011. "How Green is Nano." Presentation. Society for the study of Nanoscience and Emerging Technologies 2011 Conference, Tempe, AZ.
430. **Lobo, Jose** and **Deborah Strumsky**. March, 2010. "What Can Be Learned From Successful Nanotechnology Patent Applications." Presentation. Transatlantic Workshop on Nanotechnology Innovation and Policy, Atlanta, GA.
431. **Lynch, John** and Matthew Cooper. February 17, 2012. "Science and Religion: How Can We Peace It All Together." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
432. **Lynch, John** and **Norbert Samuelson**. February 20, 2009. "Evolution and Faith Revisited: Can the Two be Reconciled." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
433. Ma, Tingting, **Alan L. Porter**, Jud Ready, Chen Xu, Lidan Gao, Wenping Wang, et al. May, 2011. "A Technology Opportunities Analysis Model: Applied to Dye-Sensitized Solar Cells for China." Presentation. 4th International Seville Conference on "Future-Oriented Technology".
434. **Mahootian, Farzad**. October, 2012. "Innovation by Disequilibrium." Presentation. Society for the Study of Nanoscience and Emerging Technologies, University of Twente, Twente, the Netherlands.

435. **Mahootian, Farzad, Erik Fisher and Michael Gorman.** March, 2012. "Self-Reflexive Science and Emergence of Microtrading and Integration Zones in Bio-, Info- and Nano-Science Research Labs." Presentation. 3rd Annual Conference on Empirical Philosophy of Science, Aarhus University, Denmark.
436. **Mahootian, Farzad** and Tara-Marie Linne. October, 2012. "Jung and Laboratory Ethnographies: Lab as Locus of Transformative Research." Presentation. Jung in the Academy and Beyond 100 Years Later, Fordham University, New York, NY.
437. **Maracas, George, Patrick Phelan and Braden Allenby.** September 19, 2008. "Is Nanotechnology Good for Sustainability or Not." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
438. **Marchant, Gary E.** July, 2006. "Nanotechnology Regulation: The United States Approach." Presentation. Conference on New Global Regulatory Frontiers: Evaluating what will work for Nanotechnology, Monash University, Melbourne, Australia.
439. Maricle, Genevieve. January, 2008. "The State of Policy and Socio-Economic Research." Presentation. American Meteorological Society Annual Meeting, New Orleans, LA.
440. Maricle, Genevieve. December, 2007. "Shaping Science: Turning Science Studies into Science Action." Presentation. Center for Science and Technology Policy Research Noontime Seminar Series, Boulder, CO.
441. Maricle, Genevieve. October, 2007. "Wrestling with Engagement: Tools for Iterating Intervention in STS." Presentation. Society for the Social Studies of Science Annual Meeting, Montreal, Canada.
442. **McBeath, Michael.** September 19, 2013. "Citizen Science! Executing an Effective and Ethical Citizen Science Study." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
443. **McCray, Patrick.** November 8, 2013. "The Visioneers: In Pursuit of Space Colonies, Nanotechnologies, and a Limitless Future." Presentation. CNS-ASU Occasional Speaker. Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
444. **McGregor, Joan and Jameson Wetmore.** August, 2008. "Researching and Teaching the Ethics and Social Implications of Emerging Technologies." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
445. McKeon, Patrick. September 23, 2008. "State-Level Nanotechnology Policy Initiatives and Implications for Georgia." Presentation. Nano@Tech, Georgia Institute of Technology, Atlanta, GA.
446. McKeon, Patrick. 2008. "State-Level Nanotechnology Policy Initiatives and Implications for Georgia." Presentation. Fresh Perspectives on Economic Development, Atlanta, GA.
447. **Meldrum, Deirdre and Jameson Wetmore.** October 19, 2007. "Less is More Technology: Is Smaller and Cheaper Always Better." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

448. Meng, Yu. April, 2009. "Female Involvement in Nanotechnology Patenting: Does it make a Difference." Presentation. Workshop on Original Policy Research, School of Public Policy, Georgia Institute of Technology, Atlanta, GA.
449. Merkerk, Rutger van, **David H. Guston** and **Ruud Smits**. November, 2006. "An International Comparison of Recent Technology Assessment Approaches: Bypassing Collingridge." Presentation. 4S Conference (Society for Social Studies of Science), Vancouver, British Columbia, Canada.
450. Miao, Liao. 2012. "Laboratory Collaboration as a Way of Practicing Nano-ELSI." Presentation. Institute for Science, Technology, and Society, Tsinghua University, Beijing, P.R. China.
451. Miao, Liao. 2012. "Humanistic Cultivation in the Sciences: Why Do Laboratory Engagements Matter." Presentation. Arizona State University, Tempe, AZ.
452. **Michelaki, Kostalena** and **Sandwip Dey**. February 18, 2011. "Invention Then and Now: Ancient and Modern Materials." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
453. **Miller, Clark A.** 2012. "Nanotechnology, the Brain, and the Future." Keynote Lecture. Integrating Nanotechnology with Cell Biology and Neuroscience Symposium, University of New Mexico, Albuquerque, NM.
454. **Miller, Clark A.** September, 2010. "Readying Citizens for Anticipatory Governance: A Challenge for Science Museums." Presentation. NISE Network Meeting, San Francisco, CA.
455. **Miller, Clark A.** March, 2010. "Innovation: Thoughts on Science, Technology, Transformation, and Valuation." Talk. Manifolds-A Social Innovation Symposium, Fergus, Canada.
456. **Miller, Clark A.** 2010. "Systems Integration: The Human and Social Dimensions of Energy System Transformation." Talk. Advisory Meeting, Directorate of Mathematical and Physical Sciences, National Science Foundation, Washington, DC.
457. **Miller, Clark A.** 2009. "Themes in Nanotechnology in Society Research." Talk. Nanoscale Informal Science Education Annual Meeting, San Francisco, CA.
458. **Miller, Clark A.** 2009. "Nanotechnology: Environment, Health, and Safety." Talk. Semiconductor Environment, Safety, and Health Association, Scottsdale, AZ.
459. **Miller, Clark A.** April, 2007. "Commentary: The Law and the Future Brain." Presentation. U.S. District Court and Sandra Day OConnor College of Law, Arizona State University, Tempe, AZ.
460. **Miller, Clark A.** December 09, 2006. "Boundary Organizations: Strategies for Linking Knowledge to Action." Presentation. Workshop on Boundary Organizations, Tempe, AZ.
461. **Miller, Clark A.** November 16, 2006. "Informing Anticipatory Governance of New and Emerging Technologies through Nanotechnology in Society Research." Presentation. Nanoscale Informal Science Education Network (NISE Net).

462. **Miller, Clark A.** October, 2006. "Reflexive, Anticipatory Governance of Science and Technology." Roundtable presentation. Public Administration and Challenges of Emerging Technologies Roundtable, 2006 NASPAA Annual Conference: The Future of the Public Sector, National Association of Schools of Public Administration and A, Minneapolis, MN.
463. **Miller, Clark A.** June, 2006. "Think Differently! Strategies for Success in Nano." Presentation. Food Research Institute, University of Wisconsin-Madison, Madison, WI.
464. **Miller, Clark A.** April 19, 2006. "Nanotechnology in Society Education: Teaching the Mental Habits of Social Engineers and Critical Citizens." Presentation. Education in Nanoscience and Engineering Symposium, 2006 Spring Meeting, Materials Research Society, San Francisco, CA.
465. **Miller, Clark A.** March, 2006. "Nanotechnology in Society." Presentation. Ohio State University, Columbus, OH.
466. **Miller, Clark A. and Ira Bennett.** March, 2009. "Imagining the Future: Can Science Fiction Help Us Govern Technology." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
467. **Miller, Clark A. and Ira Bennett.** April, 2007. "Science Fiction as Technology Assessment: Some Preliminary Thoughts on Anticipatory Governance for the Rest of Us." Presentation. Cornell University, Ithaca, NY.
468. **Miller, Thaddeus R.** May 2014. "Futurescape City Tours: Public Engagement in Science and Technology." Presentation. CityWise: A Public Forum with the Toulan School. Portland, OR.
469. **Miller, Thaddeus R.** February 26, 2014. "Futurescape City Tours: Public Engagement in the City." Presentation. President's Umbrella Tours. PSU.
470. **Moore, Ana L.** September 27, 2006. "Renewable Energy Through Photosynthesis." Talk. CNS-ASU Science Cafe, Friendly House, Phoenix, AZ.
471. **Newman, Nils.** November, 2006. "Nanotechnology Research Mapping and Assessment." Presentation. STI Indicators Conference, Leuven, Belgium.
472. **Newman, Nils.** June 07, 2006. "Where is Nano Going?" Presentation. Advancing Measures of Innovation: Knowledge Flows, Business Metrics, and Measurement Strategies Workshop, National Science Foundation, Arlington, VA.
473. **Newman, Nils, Ismael Rafols, Jan Youtie, Alan L. Porter** and Luciano Kay. November, 2011. "Patent Overlay Mapping: Visualizing Technological Distance." Panel Presentation. Nanotechnology, Innovation, and Commercialization: Learning about a Technology Cycle through Patent Data, Patent Statistics for Decision Makers 2011.
474. **Panzda, Kristo,** Paul Ellwood and **Erik Fisher.** October, 2009. "From Social Aspirations to Organizational Capability: Identifying Micro-Foundations and the Role of Strategizing." Presentation. Interactive Strategy Work-in-Progress Workshop/SMS Pre-Conference: Advancing Strategy Process Research, Washington, DC.

475. Pei, R., **Alan L. Porter** and P. Gao. December, 2010. "Profiling a Decade of Chinese Nano-Biomedical Science Research." Presentation. IEEE International Engineering and Engineering Management (IEEM), China.
476. **Petrucci, Darren** and **Kelly Campbell Rawlings**. February 15, 2013. "Evolving in the Nano City: Urban Design, Urban Culture and Forces of Change." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
477. **Petrucci, Darren** and Rider W. Foley. February 28, 2014. "New Tools for Science Policy - Design Thinking, Sustainability and the Future City." Presentation. Consortium for Science, Policy & Outcomes. Washington, DC.
478. Philbrick, Mark. September, 2009. "Operationalizing Anticipatory Governance: Steering Emerging Technologies towards Sustainability." Presentation. Inaugural Meeting of the Society for the Study of Nanoscale and Emerging Technologies. September 8-11, 2009, Seattle, WA.
479. Philbrick, Mark. 2009. "The National Citizens Technology Forum: Lessons for the Future." Presentation. Annual Meeting of the Society for the Social Studies of Science. October 28-November 1, 2009, Washington, DC.
480. **Porter, Alan L.** December, 2010. "Profiling and Knowledge Tracking." Presentation. Chinese Academy of Sciences Library, Beijing.
481. **Porter, Alan L.** November, 2009. "Assessing Nanotechnology: Research Metrics and Maps." Presentation. American Evaluation Association Annual Conference, Orlando, FL.
482. **Porter, Alan L.** August, 2009. "Locating Nanotechnology among the Disciplines, Nano @ Tech."
483. **Porter, Alan L.** November 30, 2007. "Trends in Data Treatment in the United States." Keynote presentation. International Conference on Competitive Intelligence, Carlos III University of Madrid, Madrid, Spain.
484. **Porter, Alan L.** October, 2007. "Public Lecture." Institute for S&T Information, Beijing, China.
485. **Porter, Alan L.** November 15, 2006. "Mining Patents and Research Publications to Improve Technology Management: Nano Illustrations." Presentation. 2nd PATINEX Conference, Seoul, South Korea.
486. **Porter, Alan L.**, David J. Schoeneck, **Ajay S. Bhaskarabhatla**, **Jan Youtie** and **Dirk Libaers**. May, 2006. "Explorations in Research and Innovation Systems Assessment: Where Is Nano Going?" Presentation. The Atlanta Conference on Science and Technology Policy 2006 US-EU Policies for Research and Innovation, Atlanta, GA.
487. **Porter, Alan L.**, David J. Schoeneck, **Nils Newman**, **Philip Shapira**, **Jan Youtie** and Rich Kolar. September, 2006. "Nano R&D Profiles: A Deeper Look." Presentation. International Conference on Science & Technology Indicators, Leuven, Belgium.

488. **Porter, Alan L.**, David J. Schoeneck, **Philip Shapira, Jan Youtie** and Rich Kolar. September, 2006. "Defining the Nanotechnology Domain in Realtime Technology Assessment." Presentation. Presented at 2006 Technology Transfer Society Conference, Atlanta, GA.
489. **Porter, Alan L.** and **Ismael Rafols**. 2009. "Measuring and Mapping Interdisciplinary in Six Research Fields Over Time (1975-2005)." Presentation. ISSI Conference, Rio de Janeiro.
490. **Porter, Alan L.** and **Ismael Rafols**. September, 2008. "Science Overlay Maps: Easy-to-use Tools to Help Visualize and Track Bodies of Research, A Deeper Look at the Visualization of Scientific Discovery in the Federal Context." Presentation. Workshop at the National Science Foundation, Arlington, VA.
491. **Porter, Alan L., Jan Youtie, Philip Shapira**, David J. Schoeneck, Li Tang and Pratik Mehta. April, 2007. "Profiling Nano R&D." Presentation. Presented at Nano-Giga Challenges, Phoenix, AZ.
492. **Porter, Alan L.** and **Jayesh Patil**. March, 2007. "Where Is Nano Going?" Presentation. Nano-Giga Challenges, Phoenix, AZ.
493. **Porter, Alan L.** and Lu Huang. December, 2010. "Tech Mining and Forecasting of Innovation Pathways, as Applied to Nano-enhanced Biosensors." Presentation. International Conference on Technological Innovation and Competitive Technical Intelligence, Beijing.
494. **Porter, Alan L., Martin Meyer** and **Ismael Rafols**. May, 2008. "The Cognitive Geography of Nanotechnologies: Location and Knowledge Flows of Nano-Research in the Map of Science." Presentation. Presentation at the NBER Conference on Emerging Industries: Nanotechnology and NanoIndicators, Cambridge, MA.
495. **Porter, Alan L., Nils Newman** and **Jan Youtie**. October, 2009. "Tech Mining, VantagePoint, and Science Overlay Mapping." Presentation. Pre-conference Workshop of 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
496. **Porter, Alan L., Philip Shapira** and **Jan Youtie**. October, 2008. "Nano Social Science: An Emerging Specialization." Presentation. Nanotechnology and Society: Emerging Opportunities & Challenges Networks, Risk and Knowledge Sharing, University of Massachusetts, Amherst, MA.
497. **Porter, Alan L., Philip Shapira** and **Jan Youtie**. September, 2006. "Defining the Nanotechnology Domain in a Real Time Technology Assessment." Presentation. Technology Transfer Society Annual Conference, Atlanta, GA.
498. **Porter, Alan L.** and Stephen Carley. November, 2010. "Three Generation Research Knowledge Tracking: Publication and Citation Analyses." Demonstration Workshop. American Evaluation Association Conference, San Antonio, TX.
499. **Porter, Alan L.**, Tingting Ma and Ying Gao. November, 2011. "Tracking Emergence of Nanotechnology Dye-Sensitized Solar Cells (DSSCs)." Panel Presentation. Nanotechnology, Innovation, and Commercialization: Learning about a Technology Cycle through Patent Data, Patent Statistics for Decision Makers 2011.

500. **Porter, Alan L.**, Tingting Ma and Ying Guo. November, 2011. "Patents+ in Newly Emerging Science and Technology: Tracking Emergence of Dye-Sensitized Solar Cells." Presentation. Patent Statistics for Decision Makers, Alexandria, VA.
501. **Porter, Alan L.**, Tingting Ma and Ying Guo. June, 2011. "Multiple Perspective Research Profiling: Illustrated for Dye-Sensitized Solar Cells." Proceedings. International Council for Scientific and Technical Information 2011 Summer Conference.
502. **Porter, Alan L.**, Ying Guo and Lu Huang. October 12, 2010. "Integrating Patent Analysis with R and D and Business Analyses to Forecast Innovation Prospects: Nano-Enhanced Solar Cells." Presentation. Patent Information Users Group PIUG 2010 Northeast Conference, New Brunswick, NJ.
503. **Porter, Alan L.**, Ying Guo, Lu Huang and Douglas K. R. Robinson. November, 2011. "Forecasting Innovation Pathways: The Case of Nano-enhanced Solar Cells." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
504. **Porter, Alan L.**, Ying Guo, Lu Huang and Douglas K. R. Robinson. December, 2010. "Forecasting Innovation Pathways: The Case of Nano-enhanced Solar Cells." Paper Presentation. International Conference on Technological Innovation and Competitive Technical Intelligence, Beijing.
505. **Posner, Jonathan** and **Jameson Wetmore**. April, 2009. "Technologies of Distraction: Mobile Phones, iPods, and E-mail." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
506. **Rafols, Ismael** and **Alan L. Porter**. October, 2009. "Interdisciplinary in Nanoscience: What is the Nano Field and how does it Share its Knowledge." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
507. **Rafols, Ismael**, **Alan L. Porter**, **Jan Youtie** and Li Tang. September, 2008. "Nanotechnology as a Multi-polar Science." Presentation. Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
508. **Rafols, Ismael**, **Alan L. Porter** and **Loet Leydesdorff**. October, 2009. "Science Overlay Maps: A New Tool for Research Evaluation." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
509. **Rafols, Ismael**, **Alan L. Porter** and **Loet Leydesdorff**. 2009. "The Use of Global Maps of Science in Management and Policy Contexts." Presentation. Accepted. ENID Indicators Conference 2010.
510. **Rafols, Ismael**, **Alan L. Porter** and **Martin Meyer**. September, 2009. "A Model of Interdisciplinarity in Nanotechnology: How Local Knowledge Integration Links a Globally Fragmented Field." Presentation. SNET Conference.
511. **Rafols, Ismael**, **Martin Meyer**, Jung-Hwan Park and **Alan L. Porter**. August, 2008. "The Cognitive Geography of Nanotechnologies: Location and Knowledge Flows of Nano-Research in the Map of Science." Presentation. Presented at Society for Social Studies of Science (4S), Rotterdam, the Netherlands.

512. Raman, Sujatha. March 24, 2015. "What would it take to Materialize Energy? The Role of Responsible Innovation. Energy & Society Brown Bag Talk. Tempe, AZ.
513. Raman, Sujatha. January 21, 2015. Making Antimicrobial Resistance Public: Apprehension, Stewardship & Innovation in Health-Care's Version of Global Warming." CNS-ASU Occasional Speaker Series. Tempe, AZ.
514. Raman, Sujatha. October 8-9, 2014. "Making Green Growth Public, Imagining Responsible Innovation." Presentation. Unpacking Green Growth, Global Systems Science Transnational Conference. Phoenix, AZ.
515. **Randles, Sally and Jan Youtie.** November, 2011. "Responsible Innovation and Responsible Governance." Roundtable Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
516. **Randles, Sally.** October 22, 2013. "Toward an Institutional Sociology of Responsible Innovation." Presentation. CNS-ASU Occasional Speaker Presentation. Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
517. Reifschneider, Kiera and Michael J Bernstein. August 10-15, 2014. "Science Outside the Lab: Reporting on a Science Policy Education Intervention." Poster. Science & Technology Policy Gordon Research Conference: Systems Approaches to Research and Practice, Waterville Valley, NH.
518. **Rittmann, Bruce and Dawn Schwenke.** September 18, 2009. "Ending Age-Related Disease: How Will Our Lives Change if we're Healthier Longer." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
519. **Robert, Jason S.** January, 2009. "Technology and Human Enhancement: Whats the Connectio." Presentation. Midwestern University, Glendale, AZ.
520. **Robert, Jason S.** June, 2007. "Braving the Brain." Presentation. Canadian Bioethics Society, Toronto, Canada.
521. **Robert, Jason S.** May, 2007. "Cyborgs, Ratbots, and Bionic Humans: Wiring Brains to Machines." Presentation. Discovery Center, Halifax, Nova Scotia, Canada.
522. **Robert, Jason S.** May, 2007. "Neural Interface Systems: Ethical and Conceptual Issues at the Frontier of Brain Repair." Presentation. Neuroethics Program, Stanford Center for Biomedical Ethics, Palo Alto, CA.
523. **Robert, Jason S.** April, 2007. "Problematizing Enhancement." Presentation. Dartmouth College, , N, Hanover, NH.
524. **Robert, Jason S.** February, 2007. "Braving the World of Neurotechnology." Presentation. Health Law Institute Seminar Series, Dalhousie University, Nova Scotia, Canada.
525. **Robert, Jason S.** October, 2006. "Brain Repair and Neural Enhancement." 4S Conference (Society for Social Studies of Science), Vancouver, Canada.

526. **Robert, Jason S.** October, 2006. "Nanotechnology, Neurotechnology, and Society." Presentation. Institute of Nanotechnology Symposium, Northwestern University, Evanston, IL.
527. **Robert, Jason S.** October, 2006. "Forbidden Science Boundaries on New Emerging Science and Technology." Presentation. Jewish Women's Symposium, Tempe, AZ.
528. **Robert, Jason S.** August, 2006. "Controversial Science, Controversial Scientist." Presentation. NABIS Conference, Chicago, IL.
529. **Rogers, Juan D.** November 05, 2011. "Program Level Assessment of Outcomes and Impacts of Research Performance of Centers." Session. Evaluation of a Nano Science and Technology Centers Program: Mixed Methods Approach to Assessing Its Realization of Policy Objectives, American Evaluation Association.
530. **Rogers, Juan D.** December, 2010. "Publication Patterns and Collaborative Work at NSECs." Presentation. 2010 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
531. **Rogers, Juan D.** October, 2009. "Nanotechnology Research Centers: What Value do they add? What Values do they Operate on." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
532. **Rogers, Juan D., Jan Youtie** and Luciano Kay. November, 2011. "Commercialization Patterns of Nanoscale Science and Engineering Centers: The Cafe of Polymer v. Clean-Room based Technology." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
533. **Rogers, Robert P. Jr.** June, 2008. "Research Centers as Policy Tools in Emerging Technologies: Scientific and Technical Human Capital in Nanotechnology Centers in the U.S." Presentation. Chinese Academy of Sciences, Beijing, China.
534. **Rogers, Robert P. Jr.** April, 2007. "The Role of Research Centers in the US Nanotechnology Initiative." Presentation. Workshop on Social Dimensions of Nanotechnology, Paris, France.
535. **Roland, Kenneth** and **Antonio Garcia.** September 16, 2011. "Vaccines: Can they give us a Disease-Free World." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
536. Runge, Kristin R., Sara K. Yeo, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos.** May, 2013. "God, Money, Politics, and Science: The Role of Religion, Conservative Economic and Liberal Social Attitudes on Perception of Science in the Last Weeks of the 2012 U.S. Presidential Election." Paper Presentation. The Annual Convention of the American Association for Public Opinion Research, Boston, MA.
537. Rushforth, Richard and **Rider W. Foley.** May 19-22, 2014. "Nanotechnology versus the Dragon: CVOC Contaminated Groundwater and the Socially Contested M52 Superfund Site." Presentation. Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA. May 19-22.

538. **Samuelson, Hava** and **Braden Allenby**. April 16, 2010. "Upgrading Ourselves: Can Technology Make Us Better." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
539. **Sarewitz, Daniel**. October, 2008. "Paths to Outcomes Based Innovation Policy." Presentation. National Institutes of Health Science of Science Management Meeting, Bethesda, MD.
540. **Sarewitz, Daniel**. September, 2008. "Science Policy and Innovation." Presentation. Presidential Council of Advisors on Science and Technology, Washington, DC.
541. **Sarewitz, Daniel**. November 26, 2007. "New Tools for Science Policy Making." Presentation. Harvard University, Science, Technology, and Society Circle, Cambridge, MA.
542. **Sarewitz, Daniel**. October, 2007. "Anticipatory Governance of Emerging Technologies: Competing Values, Irreducible Uncertainties, and Transformation Innovation." Presentation. University of Oviedo, Oviedo, Spain.
543. **Sarewitz, Daniel**. October, 2007. "Technology and Effectiveness in Contested Political Settings, Center for Research on Energy, Environment, and Transportation." Presentation. CIEMAT, Madrid, Spain.
544. **Sarewitz, Daniel**. April 16, 2007. "Political Effectiveness in Science and Technology." Presentation. Workshop on Science and Social Values, Center for Interdisciplinary Research, Bielefeld University, Bielefeld, Germany.
545. **Sarewitz, Daniel**. March, 2007. "Connecting Research to Social Outcomes." Presentation. Presentation to the University of Nebraska Board of Regents, Lincoln, NE.
546. **Sarewitz, Daniel**. January, 2007. "Ways of Knowing Novel Materials, Symposium on Environmental Effects of Novel Materials and Processes." Presentation. Royal Commission on Environmental Pollution, London, England.
547. **Sarewitz, Daniel**. August, 2006. "Policy Perspectives." Panel. Meta-Analysis: Emerging Themes in Science Policy. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
548. **Sarewitz, Daniel**. February, 2006. "Tools for Goldilocks: Rethinking the Relationships among Research, Funding, and Progress." Presentation. AAAS Annual Meeting, Symposium on The Goldilocks Dilemma Facing Science Funding: Can it be Just Righ, St. Louis, MO.
549. **Sarewitz, Daniel** and **Roy Curtis**. May 18, 2007. "Forbidding Science: Are There Things We Just Shouldn't Know." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
550. **Scheufele, Dietram A**. February 15, 2014. "Trust Deficit Models: The New Dead End for Communicating Controversial Science?" Presentation. American Association for the Advancement of Science (AAAS). Chicago, IL.
551. **Scheufele, Dietram A**. February 1, 2014. "Communicating Science in New Information Environments: Challenges at the Interface of Science, Politics and Media." Presentation. Keynote at DGPuK/Universität Zürich Conference. Zürich, Switzerland.

552. **Scheufele, Dietram A.** January 17, 2014. "Why Polarized Debates used to be Good for us." Presentation. TEDxUWMadison. Madison, WI.
553. **Scheufele, Dietram A.** December 5, 2013. "The Science of Communicating Nanoscience." Presentation. Keynote Presentation at NSF Nanoscale Science and Engineering Grantees Conference. Arlington, VA.
554. **Scheufele, Dietram A.** November 26, 2013. "Trollish Behavior and the Future of Online Comments." Presentation. Panelist at Society of Professional Journalists. Madison, WI.
555. **Scheufele, Dietram A.** November 15, 2013. "A Brave New (Online) World: Emerging Technologies at the Intersection of Science, Policy, and Rapidly Changing Media Environments." Presentation. Neuroscience & Public Policy Program, Kavli Lecture. Madison, WI.
556. **Scheufele, Dietram A.** October 7, 2013. "From Behavior Change Research to Program Design." Presentation. Association of Energy Services Professionals. Madison, WI.
557. **Scheufele, Dietram A.** September 23, 2013. "Science Communication as Political Communication." Presentation. Sackler Colloquium on the Science of Science Communication II. National Academy of Sciences. Washington, DC.
558. **Scheufele, Dietram A.** July 9, 2013. "Public Engagement with Science." Presentation. Webinar for Association of Science-Technology Centers (ASTC). Washington, DC.
559. **Scheufele, Dietram A.** June 20, 2013. "The Future of (Environmental) Communication as a Discipline." Presentation. Panelist at International Communication Association Annual Conference. London, England.
560. **Scheufele, Dietram A.** May 20, 2013. "Public Engagement in Science (Policy): Opportunities and Dead Ends." Presentation. Annual Conference on Governance of Emerging Technologies: Law, Policy, and Ethics. Sandra Day O'Connor College of Law. Arizona State University. Tempe, AZ.
561. **Scheufele, Dietram A.** May 9, 2013. "Barriers to Addressing Our Climate and Energy Challenges." Presentation. Panelist at Wisconsin Academy of Science, Arts & Letters. Madison, WI.
562. **Scheufele, Dietram A.** May 3, 2013. "A Brave New (Online) World: Emerging Technologies at the Intersection of Science, Policy, and Rapidly Changing Media Environments." Presentation. Emerging Technologies at the Intersection of Science, Policy, and Rapidly Changing Media Environments. Arizona State University. Tempe, AZ.
563. **Scheufele, Dietram A.** 2013. "Communicating Science in Social Settings." Presentation. Proceedings of the National Academy of Sciences.
564. **Scheufele, Dietram A.** March, 2009. "Public Understanding of and Attitudes toward Nanotechnology: An Overview." Presentation. Presented at the Nanotechnology and Public: Data for Decision Makers briefing to the Congressional Nanotechnology Caucus, Washington, DC.

565. **Scheufele, Dietram A.** February, 2008. "A Comparative Look at Markets, Media, and Emerging Attitudes about Nanotechnology." Panel. The Annual Convention of the American Association for the Advancement of Science, Boston, MA.
566. **Scheufele, Dietram A.** February, 2008. "Engaging Religious Audiences on Nanotechnology." Presentation. Annual Convention of the American Association for the Advancement of Science, Boston, MA.
567. **Scheufele, Dietram A.** May, 2007. "Public Perceptions and Understanding of Nanotechnology." Presentation. Center for Nanoscale Science and Technology (CNST) Nanotechnology Workshop, University of Illinois, Urbana-Champaign, IL.
568. **Scheufele, Dietram A.** March 16, 2007. "Public Perceptions and Understandings of Nanotechnology." Presentation. Nano and Giga Challenges in Electronics and Photonics conference, Tempe, AZ.
569. **Scheufele, Dietram A.** March 08, 2007. "Risky Business? Risk Perception & Nano Business." Panel. Symposium, Illinois Institute of Technology, Center on Nanotechnology and Society, Chicago, IL.
570. **Scheufele, Dietram A.** January 30, 2007. "How Media and Audiences Make Sense of Scientific Issues: The Case of Nanotechnology." Presentation. CMCIS Research Lecture Series, University of South Carolina, Columbia, SC.
571. **Scheufele, Dietram A.** 2007. "Understanding the Opinion and Communication Dynamics Surrounding Nanotechnology." Presentation. Symposium on the Social Studies of Nanotechnology, University of Pennsylvania, Wharton School of Business & Chemical Heritage Foundation, Philadelphia, PA.
572. **Scheufele, Dietram A.** 2006. "Influences on Public Opinion about Nanotechnology." Presentation. Public Participation in Nanotechnology & Nanoscale Science workshop, National Nanotechnology Coordination Office, Washington, DC.
573. **Scheufele, Dietram A.** 2006. "It's Not All About Information: Exploring People's Attitudes Toward New Technologies." Lecture. Science, Democracy, and Public Policy colloquium, La Follette School of Public Affairs, University of Wisconsin, Madison, WI.
574. **Scheufele, Dietram A.** 2006. "Public Communication and Policy Making About Nanotechnology." Talk. Nano Workshop for Policy Makers, Materials Research Science and Engineering Center and Engineering Center on Nanostructured Interfaces, University of Wisconsin, Madison, WI.
575. **Scheufele, Dietram A.** 2006. "Successful Public Communication about Nanotechnology." Talk. The Baldwin Nano Workshop for Journalists, Materials Research Science and Engineering Center and Engineering Center on Nanostructured Interfaces, University of Wisconsin, Madison, WI.
576. **Scheufele, Dietram A.** 2006. "Successful Public Communication about Nanotechnology." Talk. Integration of Societal Implications into Science workshop, U.S. Department of Energy, Washington, DC.

577. **Scheufele, Dietram A., Dominique E. Brossard and Kajsa E. Dalrymple.** November 16, 2007. "Whose Voice Matters Most? Public Opinion about the Role of Scientists, Religious Groups, Officials, and Citizens in Public Discourse about Science." Presentation. Annual Convention of the Midwest Association for Public Opinion Research, Chicago, IL.
578. **Scheufele, Dietram A., Elizabeth A. Corley, Elliott D. Hillback,** Tsung-Jen Shih, **Sharon Dunwoody** and **David H. Guston.** October 13, 2007. "Nano Attitudes among Scientists and the Public." Presentation. Annual Convention of the Society for Social Studies of Science, Montreal, Canada.
579. **Scheufele, Dietram A., Elizabeth A. Corley,** Tsung-Jen Shih, **Kajsa E. Dalrymple** and **Shirley S. Ho.** November, 2008. "Public Opinion Dynamics Surrounding Emerging Technologies in Europe and the U.S." Presentation. Annual convention of the Midwest Association for Public Opinion Research.
580. Schuurbiens, Daan. May 04, 2009. "In and Out of the Lab." Lab Meeting. Center for Bioenergy and Photosynthesis, Arizona State University, Tempe, AZ.
581. Schuurbiens, Daan. January 19, 2009. "Bugs in the Petri Dish and Beyond - Results from a Midstream Modulation Study in a Microbiology Lab in Delft." Presentation. STIR Workshop 1: Constructing Foundations, Tempe, AZ.
582. Schuurbiens, Daan. January 17, 2009. "Can Shadows Shed Light." Presentation. STIR Workshop 1: Constructing Foundations, Tempe, AZ.
583. Schuurbiens, Daan. January 15, 2009. "Midstream Modulation as Part of a PhD on Social Responsibility in Science." Presentation. CNS All Hands Meeting, Tempe, AZ.
584. Schuurbiens, Daan. September 19, 2008. "Of Social Responsibility and Scientific Practice - Midstream Modulation in Two Microbiology Laboratories." Presentation. CSG Workshop "Doing Society and Genomics", Nijmegen, The Netherlands.
585. **Seager, Thomas P., Diane Gruber** and **David Uhlman.** November 18, 2011. "Will Our Products Last? Or is it Just a Thing of the Past." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
586. **Selin, Cynthia.** 2013. "Mediating Urban Imaginaries: Designing and Doing the Futurescape City Tours." Presentation. Society for the Social Studies of Science. San Diego, CA.
587. **Selin, Cynthia.** February, 2012. "Materializing Futures: How Artifacts, Prototypes and Objects Support Public Deliberation of Alternative Futures." Presentation. ASU School of Public Affairs Colloquium series, Tempe, AZ.
588. **Selin, Cynthia.** December, 2011. "Climate of Uncertainty: Civic Scenarios for Decision Making." Presentation. New Tools for Science Policy, CSPO, Washington, DC.
589. **Selin, Cynthia.** December, 2011. "Museums as Mediums for Engaging Citizens in Climate Change Adaptation Scenario Planning." Presentation. Dupont Summit 2011: Pressing Issues, Little Time, Washington, DC.

590. **Selin, Cynthia.** July, 2011. "Urban Foresight: Rethinking Technology in Complex Systems." Invited Talk. Joint Research Centre, European Commission, Ispra, Italy.
591. **Selin, Cynthia.** May, 2011. "Diagnosing Futures: How Scenarios Support Reflexive Governance of Socio-Technical Systems." Presentation. School of Sustainability. Future Scenarios of Nanotechnology. Society for the Study of Nanotechnology and Emerging Technologies, Tempe, AZ.
592. **Selin, Cynthia.** May, 2011. "Futuring and Foresight in Nanotechnology." Presentation. CNS Private Sector Engagement Workshop, Tempe, AZ.
593. **Selin, Cynthia.** March 14, 2011. "Rethinking Urban Governance: Knitting together Foresight and Sustainability." Presentation. Resilience, Innovation and Sustainability: Navigating the Complexities of Global Change, Tempe, AZ.
594. **Selin, Cynthia.** March, 2011. "Scenario Thinking and Earth Systems Engineering and Management: A Generative Dialogue." Presentation. CESEM Distinguished Lecture Series, Arizona State University, Tempe, AZ.
595. **Selin, Cynthia.** March, 2011. "Diagnosing Futures: How Scenarios Support Reflexive Governance of Socio-Technical Systems." Presentation. School of Sustainability Brown Bag, Arizona State University, Tempe, AZ.
596. **Selin, Cynthia.** December, 2010. "Plausibility Reasoning and Nanotechnology Futures." Presentation. Society for Risk Analysis Annual Conference, Salt Lake City, UT.
597. **Selin, Cynthia.** November, 2010. "Foresight and Innovation." Presentation. Practices of Anticipatory Governance Workshop, Arizona State University, Tempe, AZ.
598. **Selin, Cynthia.** October, 2010. "Foresight and Scenarios." Presentation. Nanoscale Informal Science Education Network Annual Meeting, San Francisco, CA.
599. **Selin, Cynthia.** September, 2010. "Plausibilistic Reasoning in Nanotechnology Futures." Presentation. Society for the Study of Nanotechnology and Emerging Technologies, Darmstadt, Germany.
600. **Selin, Cynthia.** August, 2010. "Nanotechnology & Plausibility." Presentation. Society for the Social Studies of Science, Tokyo, Japan.
601. **Selin, Cynthia.** July, 2010. "The Future of Sustainable Phoenix." Presentation. Institute for the Future, Palo Alto, CA.
602. **Selin, Cynthia.** May, 2010. "The Future of Organizing." Presentation. Organization Design Forum Annual Meeting, Denver, CO.
603. **Selin, Cynthia.** April, 2010. "The Future of Nanotechnology." Presentation. Nanotechnology Law and Policy Course, Arizona State University, Tempe, AZ.

604. **Selin, Cynthia.** March, 2010. "Anticipation and Foresight." Presentation. International Study of the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering Worksho, Chicago, IL.
605. **Selin, Cynthia.** March, 2010. "Envisioning Solar To Fuels." Workshop on Energy Futures, Policy and Society. Arizona State University, Tempe, AZ.
606. **Selin, Cynthia.** November, 2009. "Plausibility." ASU Plausibility Workshop, Tempe, AZ.
607. **Selin, Cynthia.** October, 2009. "Diagnosing Futures." Presentation. Society for the Social Studies of Science, Washington, DC.
608. **Selin, Cynthia.** September, 2009. "Deliberation and Anticipation." Presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.
609. **Selin, Cynthia.** June, 2009. "Anticipation and Deliberation on the Nano City." Risoe National Laboratory, Denmark.
610. **Selin, Cynthia.** April, 2009. "Using Scenarios and Foresight to Manage Turbulence." Presentation. Organizational Design Forum, Tacoma, WA.
611. **Selin, Cynthia.** May, 2008. "Managing the Uncertainty of Nanotechnologies." Panel. Challenges to Law, Ethics, and Policy Making Conference at University of Padua, Padua, Italy.
612. **Selin, Cynthia.** February, 2008. "Evidencing the Future and other Dilemmas Working in the Future Tense." Presentation. Anthropology Department, Rice University, Houston, TX.
613. **Selin, Cynthia.** October 12, 2007. "Between Hope and Prudence: Experiments with Scenaric Learning." Presentation. Society for the Social Studies of Science, Annual Meeting, Montreal, Canada.
614. **Selin, Cynthia.** October, 2007. "The Future Tense: The Ways and Means of Anticipation." Presentation. CSPO Enlightening Lunch, Tempe, AZ.
615. **Selin, Cynthia.** September, 2007. "The Future of Nano & Bio Technologies." Panel. CRN conference on Challenges & Opportunities, Tucson, AZ.
616. **Selin, Cynthia.** July, 2007. "Real Time Technology Assessment: Anticipation, Integration, & Engagement." Presentation. Program on Technology Scenarios, Risoe, National Laboratory, Roskilde, Denmark.
617. **Selin, Cynthia.** April, 2007. "Hope and Prudence: Experiments in Scenaric Learning." Presentation. Futures of Life: Acquiring and Creating Anticipatory Knowledge, Cornell University, Ithaca, NY.
618. **Selin, Cynthia.** March 23, 2007. "Anticipatory Governance through Scenarios." Presentation. Workshop on Global Environmental Futures: Interrogating the Practice and Politics of Scenarios, Watson Institute for International Studies, Brown University, Providence, RI.

619. Selin, Cynthia. September, 2006. "The Center for Nanotechnology in Society." Presentation. NanoTX Conference, Dallas, TX.
620. Selin, Cynthia and Ira Bennett. November 19, 2006. "Visions of Nanotechnology." Talk. CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.
621. **Selin, Cynthia**, Kathryn de Ridder-Vignone and **David Tomblin**. June 13, 2014. "Deliberating Differently: The Futurescape City Tours." Presentation. CSPO New Tools for Science Policy Breakfast Seminar.
622. **Selin, Cynthia**, Kathryn de Ridder-Vignone and Gretchen Gano. 2013. "Incorporating the Temporal, Sensual and Material in Public Engagement with Nanotechnology." Presentation. Science and Its Publics: Exploring Emergent Forms of Public Engagement. University of California, Irvine.
623. **Selin, Cynthia** and **Prasad Boradkar**. 2013. "Prototyping Nanotechnology: Experiences with Design Education." Presentation. Invited talk, Technology and Innovation Management Research Seminar. Danish Technological University.
624. **Selin, Cynthia**, Sarah R. Davies, Gretchen Gano and **Angela Pereira**. December, 2010. "Material Deliberation: Tapping the Dilemmas of Water, Technology, and the City." Presentation. Spaces and Flows Conference, University of California, Los Angeles, CA.
625. **Selover, Nancy** and **Ray Quay**. October 21, 2011. "Will Arizona's Climate Change Leave us Thirsty." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
626. **Selover, Nancy** (Presenter) and Rider W. Foley (Moderator). October 17, 2013. "Citizen Science: the Community Collaborative Rain, Hail & Snow Network." Presentation. CNS-ASU Science Cafe. Arizona Science Center. Phoenix, AZ.
627. Shanley, Lea A. September, 2006. "Control and Access: GIS Legal Issues for Indian Nations in the United States." Presentation. URISA 2006 Annual Conference, Chicago, IL.
628. Shanley, Lea A. June, 2006. "Privacy and Security: Internet Publication of Digital Spatial Data and Land Records in Wisconsin." Presentation. Presentation at WLIA Regional Meeting on Privacy, Copyright, Data Distribution and GIS Law, Elkhart Lake, WI.
629. Shanley, Lea A. and Steve J. Ventura. August, 2007. "Land Records and Map Services: Internet Privacy Policies in Wisconsin." for URISA 2007 Annual Conference, Chicago, IL.
630. **Shapira, Philip**. November 21, 2012. "Nanotechnology: Trajectories and Policies, Challenges in Science, Technology and Innovation Policy." Presentation. Executive Program, University of Manchester, United Kingdom.
631. **Shapira, Philip**. October 19, 2012. "The Future of Nanotechnology: History, Status, and Prospects." Presentation. OECD-HSE International Conference, Foresight for Innovative Responses to Grand Challenges, Moscow, Russia.

632. **Shapira, Philip.** March 27, 2012. "The Economic Contributions of Nanotechnology to Green and Sustainable Growth." Presentation. OECD/NNI International Symposium on assessing the Economic Impact of Nanotechnology, Washington, DC.
633. **Shapira, Philip.** October 14, 2011. "The Emergence of Distributed Technology Assessment in the USA, Research Workshop: Foresight and Science, Technology and Innovation Policies: Best Practices." Panel. Policy Instruments for Science, Technology and Innovation (Evaluation of Science and Technology Policies). National Research University - Higher School of Economics, Moscow.
634. **Shapira, Philip.** March 29, 2011. "Trajectories of Nanotechnology Research and Innovation." Presentation. Grenoble Ecole de Management's Winter School on Emerging Nanotechnologies, Autrans, France.
635. **Shapira, Philip.** December, 2010. "Trajectories of Nanotechnology Research and Innovation." Presentation. 2010 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
636. **Shapira, Philip.** October 01, 2010. "Innovation System Dynamics and the Globalization of Nanotechnology Innovation." Presentation. S.NET Conference 2010, Darmstadt, Germany.
637. **Shapira, Philip.** March, 2010. "Nanotechnology Innovation and Commercialization." Panel. Innovative and Responsible Governance to Address Grand Challenges of Human Development, Workshop on the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering (NANO2), Chicago, IL.
638. **Shapira, Philip.** June, 2009. "Anticipating Nanotechnology: Applying Real-Time Technology Assessment to Develop Strategic Insights for Nanotechnology Research and Innovation." Seminar. Centre for Self Organising Molecular Systems (SOMS), University of Leeds, UK.
639. **Shapira, Philip.** May, 2009. "From Lab to Market: Pathways of Research Commercialization in Nanotechnology Firms in China." Presentation. Colloquium on Nanotechnology Innovation and Commercialization in China, Manchester, UK.
640. **Shapira, Philip.** April, 2009. "State Models for Supporting Emerging Nanotechnology." Presentation. Workshop on Regional, State and Local Initiatives in Nanotechnology, National Nanotechnology Initiative, Oklahoma City, OK.
641. **Shapira, Philip.** March, 2009. "Anticipating Nanotechnology: Real-Time Technology Assessment of Research and Innovation Systems." Presentation. School of Management and Economics, Knowledge Management and Data Analysis Laboratory, Beijing Institute of Technology, Beijing, China.
642. **Shapira, Philip.** March, 2009. "Anticipating Nanotechnology: Real-Time Technology Assessment and the Center for Nanotechnology in Society." Presentation. Institute for Future Technology (IFTECH), Tokyo, Japan.
643. **Shapira, Philip.** March, 2009. "Emergence of Distributed Technology Assessment in the USA: From OTA to the Center for Nanotechnology in Society." Presentation. International Workshop on Innovation and Institutionalization of TA in Japan, I2TA, University of Tokyo, Tokyo, Japan.

644. **Shapira, Philip**. June 20, 2007. "Nanotechnology in Society: Research and Innovation Systems Program Assessment." Presentation. Beijing Institute of Economic Management, Chinese Academy of Science, June 19, 2007; and at Institute of Policy and Management, Chinese Academy of Sciences, Beijing, China.
645. **Shapira, Philip**. February, 2007. "Societal Assessment of Nanotechnology U.S. Experience." Presentation. Symposium on Nanotechnology by the Ministry of Research, Science and Technology at the Advanced Materials and Nanotechnology (AMN-3) 2007 Conference, Wellington, New Zealand.
646. **Shapira, Philip** and **Alan L. Porter**. March 23, 2009. "Nanotechnology: Will it Drive a New Innovation Economy for the US." Presentation. Project on Emerging Nanotechnologies, Woodrow Wilson International Center for Scholars, Washington, DC.
647. **Shapira, Philip** and **Alan L. Porter**. September, 2005. "Mapping the Nanotechnology Enterprise." Presentation. American Political Science Association Annual Meeting, Washington, DC.
648. **Shapira, Philip**, **Alan L. Porter** and **Jan Youtie**. August, 2006. "Refining Search Terms for Nanotechnology." Presentation. Presented at the National Science Foundation, Arlington, VA.
649. **Shapira, Philip**, **Alan L. Porter**, **Jan Youtie** and Li Tang. September, 2008. "Nanotechnology Questions, Methods, Metrics and Results: CNS." Presentation. Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
650. **Shapira, Philip** and **David H. Guston**. March, 2007. "Societal Assessment of Nanotechnology US Experience." Presentation. Ministry of Research, Science and Technology, Wellington, New Zealand.
651. **Shapira, Philip** and **Jan Youtie**. January, 2013. "Research and Innovation Systems Assessment of Emerging Technologies." Co-taught Modules. CNS Winter School on Anticipatory Governance of Emerging Technology, Mesa, AZ.
652. **Shapira, Philip** and **Jan Youtie**. December 07, 2012. "Interpreting Trajectories of Nanotechnology Research and Innovation (and, is there a "Nanotechnology Paradox?")." Presentation. Center for Nanotechnology in Society at Santa Barbara, Santa Barbara, CA.
653. **Shapira, Philip** and **Jan Youtie**. January, 2011. "RTTA 1 - Research Program Assessment." Presentation. Center for Nanotechnology in Society at ASU, Tempe, AZ.
654. **Shapira, Philip** and **Jan Youtie**. March, 2010. "Transatlantic Workshop on Nanotechnology Innovation and Policy." Presentation. Transatlantic Workshop on Nanotechnology Innovation and Policy, Atlanta, GA.
655. **Shapira, Philip** and **Jan Youtie**. May, 2008. "What's New about Emerging Metropolitan Nanodistricts in the United States and Europe? Characteristics of Research and Commercialization." Presentation. The NBER Conference on Emerging Industries: Nanotechnology and NanoIndicators, Cambridge, MA.

656. **Shapira, Philip, Jan Youtie** and **Alan L. Porter**. November 11, 2011. "Trajectories of Global Nanotechnology Commercialization." Presentation. IGERT Seminar, Georgia Institute of Technology, Atlanta, GA.
657. **Shapira, Philip, Jan Youtie** and Luciano Kay. October, 2009. "Global Developments in Nanotechnology Commercialization." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
658. **Shapira, Philip, Jan Youtie** and Sanjay Arora. November, 2011. "Probing Early Patterns of Commercialization in Graphene." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
659. **Shapira, Philip** and Jue Wang. April, 2008. "From Lab to Market: Strategies and Issues in the Commercialization of Nanotechnology in China." Presentation. Panel on Cultures Meet Technology: New Approaches to Innovation and Economic Development in Asia and the West, Association for Asian Studies, 2008 Annual Meeting, Atlanta, GA.
660. Shih, Tsung-Jen, **Dietram A. Scheufele** and **Elizabeth A. Corley**. June, 2010. "Exploring Item Non-Response in Public Opinion Surveys about Nanotechnology: Evidence from 21 Countries." Presentation. Annual Convention of the International Communication Association, Singapore.
661. Shih, Tsung-Jen, **Dietram A. Scheufele** and **Elizabeth A. Corley**. June, 2010. "A Multilevel Model of Risk and Benefit Perception." Presentation. Annual Convention of the International Communication Association, Singapore.
662. Simis, Molly J. May 2014. "Predicting Adherence to the Defecit Model: Research I Scientists' Perceptions of How Lay Individuals Form Attitudes toward Nanotechnology." Presentation. 13th International Public Communication of Science and Technology Conference. Salvador, Brazil.
663. **Slade, Catherine**. December 04, 2009. "Public Values in Nanomedicine." Presentation. The Dupont Summit on Science and Technology Policy. "The New Administration Challenges on Science and Technology: Staying the Course in Times of Crisis." Policy Studies Organization, Carnegi, Washington, DC.
664. **Slade, Catherine**, Derrick Anderson, **Erik Fisher** and **Barry Bozeman**. August, 2009. "Public Value Mapping of Nanotechnology: A Developing Approach for Tracking Public and Social Values in Science and Innovation Policies." Presentation. Annual Meeting of the American Sociological Association. August 7-11, 200, San Francisco, CA.
665. **Sommerfield, Milton R., Mark Edwards** and **David Conz**. January 15, 2010. "Bugs for Fuels: Microbes in out Energy Future." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
666. Soumonni, Ogundiran, **Susan Cozzens, Thomas Woodson**, et al. November, 2011. "Assessing Equity and Equality in South Africa's Nanotechnology Initiative." Presentation. *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Meeting*, Tempe, AZ.

667. Soumonni, Diran. February, 2012. "Assessing South Africa's Nanotechnology Strategy: What Role for the Private Sector in Pro-Poor Innovation." Presentation. Workshop on Original Policy Research (WOPR) seminar in the School of Public Policy, Atlanta, GA.
668. Soumonni, Ogundiran. August, 2012. "Nanotechnology and Renewable Energy Development in China and South Africa: Bridging the Gap between Research and Innovation." Presentation. Globelics Doctoral Academy, Rio de Janeiro, Brazil.
669. Soumonni, Ogundiran and **Susan Cozzens**. September 26-28, 2013. "Innovation in Nanotechnology for Renewable Energy Applications: A Comparative Analysis of South Africa and the U.S.A." Presentation. Atlanta Conference on Science and Innovation Policy. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.
670. **Stone, Anne** and **William H. Kimbel**. September 17, 2010. "Who Are You Calling Neandertal? Tracing Our Ancient Ancestors." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
671. **Strumsky, Deborah**. November 16, 2011. "How Green is Nano." Presentation. The Institute for Operations Research and the Management Sciences (INFORMS) Annual Conference, Charlotte, NC.
672. Su, Leona Yi-Fan, **Ashley A. Anderson, Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. May, 2012. "Public Opinion and Uncertain Science: Exploring the Dynamics behind Real and Perceived Expertise Gaps in Nanotechnology." Paper Presentation. The Annual Conference of the American Association for Public Opinion Research, Orlando, FL.
673. Su, Leona Yi-Fan, **Dietram A. Scheufele, Dominique E. Brossard** and **Michael A. Xenos**. August, 2012. "Seeking Information about Complex Science: The Interplay of Risk-Benefit Perceptions and Prior Knowledge." Paper Presentation. The Annual Convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.
674. Su, Leona Yi-Fan, **Dominique E. Brossard**, Ashley A. Anderson and **Dietram A. Scheufele**. April, 2012. "Audience Tectonics: Implications of Changing News Environments for Public Understanding of Science." Paper Presentation. The Annual Convention of the International Network on Public Communication of Science and Technology (PCST), Florence, Italy.
675. Su, Leona Yi-Fan, Heather E. Akin, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. Under review, "Science Audience Tectonics: News Consumption Pattern and its Implication for Public Understanding." Paper Presentation. The Annual Conference of the Association for Education in Journalism and Mass Communication, Washington, DC.
676. Su, Leona Yi-Fan, Michael A. Cacciatore, **Dominique E. Brossard, Dietram A. Scheufele, Michael A. Xenos** and **Elizabeth A. Corley**. 2013. "Attitudinal Gap: How Experts and Lay Audiences Form Policy Attitudes toward Controversial Science." Presentation. Association for Public Policy Analysis & Management (APPAM). Washington, DC.
677. Su, Leona Yi-Fan, Xuan Liang, Nan Li, **Dietram A. Scheufele, Dominique E. Brossard** and **Michael A. Xenos**. May, 2013. "Public Sentiments Online: New Tools of Measurement Combining Human- and Computer-Based Coding." Paper Presentation. The Annual Convention of the American Association for Public Opinion, Boston, MA.

678. **Suchman, Mark C.** 2007. "The Implications of Nanotechnology for Social Science and Social Policy." Presentation. Cornell CNF Public Interest Talk Series, Ithaca, NY.
679. **Suchman, Mark C.** 2007. "Sharing is (S)caring on the Digital Frontier: The Challenges of Information Technology Governance in Health Care Organizations." Presentation. Cornell Center for the Study of Economy and Society, 2006-2007 Seminar Series on Institutions, Market Processes, and the Firm and to Brown University Department of Sociology Colloquium, Ithaca, NY.
680. **Suchman, Mark C.** 2007. "HIT or Miss? The Governance Challenges of Health Information Technology." Presentation. Cornell Law School Faculty Workshop; and to Duke Law School Faculty Workshop, Ithaca, NY.
681. **Suchman, Mark C.** 2006. "Taming the Market for Medical Information: Sharing is (S)caring on the Digital Frontier." Presentation. University of California-Irvine Critical Legalities Symposium, Irvine, CA.
682. Tang, Li. April, 2008. "Networks of Research Collaboration in China: Evidence from Nanotechnology Publication Activities, 1990-2006." Presentation. Invited Presentation at the University of Maastricht, The Netherlands, Maastricht, the Netherlands.
683. Tang, Li. February, 2008. "Nanotechnology Knowledge Networks in China." Presentation. PRIME Nanotechnology Winter School, Grenoble, France.
684. Tang, Li. October, 2007. "Networks of Research Collaboration in China: Evidence from Nanotechnology Publication Activities, 1990-2006." Presentation. Atlanta Science and Technology Policy Conference, Atlanta, GA.
685. Tang, Li. October, 2007. "New Argonauts & Scientific Networks: Evidence from Chinas Nanotech Publication." Presentation. Atlanta Science and Technology Policy Conference, Atlanta, GA.
686. Thoreau, Francois. September 08, 2009. "Integrated Research and Protected Spaces: A New Role for ST." Poster presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.
687. **Thorpe, Michael and Eric Ramsey.** April 20, 2007. "Could a Computer Become Sentient? Reductionism and Emergence in Science." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
688. **Thorpe, Michael and Manfred Laubichler.** April, 2007. "Reductionism and Emergence in Science: New versus Old Views of Nature and the Universe." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
689. **Tomblin, David.** In review. June 27, 2014. "Futurescape City Tours and Citizen-driven Deliberations: What are the Possibilities for Generative Justice?." Presentation. Workshop: Generative Justice – Values from the Bottom-up.
690. **Tomblin, David.** 2014. "The Influence of Demographic Diversity on the Outcomes of Futurescape City Tours: A Multi-site Comparison." Presentation. Dupont Summit on Science Policy 2014.

691. Triplican, Dwarakanath R., Benjamin A. Wender, **Thomas P. Seager**, and Matthew P. Fraser. 2013. "Towards Anticipatory Life Cycle Assessment of Photovoltaics." Proceeding of the IEEE Photovoltaics Specialist Conference. Tampa, FL.
692. Valdivia, Walter. August, 2008. "Technology, Growth, and Inequality." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
693. Valdivia, Walter. June, 2008. "Inequality and Nanotechnology." Presentation. Workshop on Inequality and Emerging Technologies, Valleta, Malta.
694. Valdivia, Walter. January, 2008. "Science Policy and Inequality." Presentation. First Indo-American Institute of Nano-scale Science and Engineering, Chennai, India.
695. Valdivia, Walter. January, 2008. "Science Policy and Inequality: A Research Program." Presentation. NISTADS, New Delhi, India.
696. Valdivia, Walter. October, 2007. "Non-Cooperative Games in Science Policy." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
697. Valdivia, Walter. March, 2007. "Anticipatory Governance of Emerging Technologies." Presentation. Science-Society Interface at Universite de Lausanne, Lausanne, Switzerland.
698. **Vermaas, Willem, Michael White and Barry Ritchie**. February 15, 2008. "Evolution and Faith: Room for Both." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
699. Vortherms, Kaitlin. March 28, 2014. "Engineering Empathy". Poster presentation. Living Compassion Conference. Northern Arizona University, Flagstaff, AZ.
700. Vortherms, Kaitlin. April 7 & 9, 2014. "Empathy, Awareness and Perspective." Presentation. CEE300 Engineering Business Practices, Arizona State University, Tempe, AZ.
701. Vortherms, Kaitlin. March 5, 2014. "Engineering Empathy." Sustainable Engineering & Built Environment, Graduate Symposium, Arizona State University, Tempe, AZ.
702. Wang, Jing, **Elizabeth A. Corley and Eric Welch**. 2009. "Barriers and Motivators for the Adoption of Public Sector Environmental Management Systems." Paper Presentation. Western Social Science Association.
703. Wang, Jue. February, 2008. "From Lab to Market: Strategies and Issues in the Commercialization of Nanotechnology in China." Presentation. Presentation at the National Academy of Sciences, Student Forum on Science and Technology Policy, Washington, DC.
704. Wang, Jue. September, 2007. "From Lab to Market: Strategies and Issues in the Commercialization of Nanotechnology in China." Presentation. National Academy of Science, Conference on the Dragon and the Elephant: Understand the Development of Innovation Capacity in China and India, Washington, DC.

705. Wang, Jue. September, 2006. "Resource Spillover from Academia to High Tech Industry: Evidence from Nanotech Start-up Enterprises." Presentation. 2006 Technology Transfer Society Conference, Atlanta, GA.
706. Wang, Wenping. November 05, 2011. "Analyzing the Effect of Interdisciplinary Research on Patent Evaluation: Case Studies in NBS and DSSCs." Session. Measuring Research Interdisciplinarity and Knowledge Diffusion, American Evaluation Association.
707. Wender, Benjamin A., **Thomas P. Seager**, **Rider W. Foley**. November 4-6, 2014. "Anticipatory LCA for Responsible Innovation of Nanotechnology." Presentation. 3rd Sustainable Nanotechnology Organization (SNO) Conference. Boston, MA.
708. Wender, Benjamin A. September 2014. "Advancing Life Cycle Assessment for Emerging technologies." Presentation. Institute for Technology Assessment and Systems Analysis (ITAS). Karlsruhe, Germany.
709. Wender, Benjamin A. April 2014. "LCA 101 for QESST Scholars." Presentation. Quantum Energy and Sustainable Solar Technologies (QESST) Scholar Symposium. Tempe, AZ.
710. Wender, Benjamin A. January 2014. "Sustainable Solar Scenarios." Presentation. CA 101 for QESST Scholars." Presentation. Quantum Energy and Sustainable Solar Technologies (QESST) Workshop. Tempe, AZ.
711. Wender, Benjamin A., **Rider W. Foley**, Valentina Prado-Lopez, Dan Eisenberg, Troy Hottle Jathan Sadowski, Dwarak Triplican, **Thomas P. Seager**, **David H. Guston**, and Matt Fraser. May 19-20, 2014. "Anticipatory Life Cycle Assessment for Environmentally Responsible Innovation" International Symposium on Sustainable Systems and Technology. Oakland, CA.
712. Wender, Benjamin A. and Dwarakanath R. Triplican. 2013. "Anticipatory Life Cycle Assessment of Photovoltaics." Presentation. Arizona Student Energy Conference (AzSEC). Tucson, AZ.
713. Wender, Benjamin A. April 2013. "Social and Technical Barriers and Burdens to TW-Scale PV." Presentation. Graduates in Integrative Society and Environmental Research – QESST Sustainability Workshop. Tempe, AZ.
714. Wender, Benjamin A. June 2014. "Anticipatory LCA of Photovoltaics." Presentation. Palo Alto Research Center (PARC). Palo Alto, CA.
715. Wender, Benjamin A. May 2014. "Life Cycle Assessment: Beyond Compliance." Presentation. Intel Corp. Chandler, AZ.
716. Wender, Benjamin A. April 2014. "LCA 101 for PV Engineers." Presentation. EEE 498. Solar Energy. Tempe, AZ.
717. Wender, Benjamin A. December 2012. "Anticipatory Life Cycle Assessment of PV Technologies." Presentation. First Scholar Inc. Tempe, AZ.

718. Wender, Benjamin A. June 2012. "Life Cycle Assessment for Risk Analysts." Presentation. US Army Corps of Engineers. Concord, MA.
719. Wender, Benjamin A. December 2010. "Closing the Anthropogenic Carbon Cycle." Presentation. SOS 324. Sustainable Energy, Materials, and Technology. Tempe, AZ.
720. Wender, Benjamin A., Dwarakanath R. Triplican, **Thomas P. Seager** and **Matthew P. Fraser**. 2012. "Anticipatory LCA of Photovoltaics." Presentation. Invited Presentation for First Solar Inc. Tempe, AZ.
721. Wender, Benjamin A., Rider W. Foley and **Thomas P. Seager**. November 2013. "Towards Anticipatory Life Cycle Assessment." Presentation. 2nd Sustainable Nanotechnology Organization Conference (SNO). Santa Barbara, CA.
722. Wender, Benjamin A., Rider W. Foley, **Thomas P. Seager** and **David H. Guston**. 2013. "Anticipatory Life Cycle Assessment and Responsible Innovation." Presentation. Society for the Study of Nano and Emerging Technologies (S.NET). Boston, MA.
723. Wender, Benjamin A., Rider W. Foley, **Thomas P. Seager** and **David H. Guston**. 2012. "Anticipatory Governance and Anticipatory Life Cycle Assessment." Presentation. Poster Presentation at the Gordon Research Symposium on Science and Technology Policy. Waterville Valley, NH.
724. Wender, Benjamin A. and **Thomas P. Seager**. 2012. "Anticipatory Life Cycle Assessment." Presentation. Poster Presentation at the International Symposium on Sustainable Systems and Technology. Boston, MA.
725. Wender, Benjamin A. November 2014. "Anticipatory LCA of Emerging PV Technologies." Presentation at the Society of Environmental Toxicology and Chemistry. Long Beach, CA.
726. Wender, Benjamin A. and **Thomas P. Seager**. 2011. "Prospective LCA of Nano-enabled Lithium ion Batteries." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET). Tempe, AZ.
727. Wender, Benjamin A. November 2011. "LCA Under Uncertainty: Evaluating the Environmental Impacts of Emerging Technologies." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET). Tempe, AZ.
728. Wender, Benjamin A. June 2011. "LCA, Nanotech, and Scale: Assessing the Promise of Photocatalytic Reduction of CO₂." Presentation. International Society for Industrial Ecology. Berkeley, CA.
729. Wender, Benjamin A. and **Thomas P. Seager**. 2011. "Towards Prospective Life Cycle Assessment: Single Wall Carbon Nanotubes for Lithium-ion Batteries." Presentation. International Symposium on Sustainable Systems and Technologies. Chicago, IL.

730. Wender, Benjamin A., **Thomas P. Seager**, **David H. Guston** and **Matthew P. Fraser**. 2013. "Anticipatory LCA for Emerging Nanotechnologies." Presentation. Gordon Research Conference on Nanomaterials for Energy Applications. Ventura, CA.
731. **Westerhoff, Paul** and Meredith Gartin. January 21, 2011. "A Drop to Drink: What could Wind Up in Our Water." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
732. **Wetmore, Jameson**. December 1, 2014. "Tools for Sustainable Development of Impoverished Areas." Presentation. Materials Research Society Annual Meeting. Boston, MA.
733. **Wetmore, Jameson**. December 1, 2014. "Engaging the Public in Constructive Conversation about the Future of Technology." Presentation. Materials Research Society Annual Meeting. Boston, MA.
734. Wetmore, Jameson. August 12, 2014. "Social and Ethical Implications of Nanotechnology." Presentation. NNIN Research Experience for Undergraduates Convocation. Atlanta, GA.
735. **Wetmore, Jameson**. December 12, 2012. "Engaging the Public in Conversations about Nano and Society." Presentation. NISE Net Network Wide Meeting, Cambridge, MA.
736. **Wetmore, Jameson**. November 28, 2012. "Teaching Ethics, Policy and Societal Implications of Research to Scientists and Engineers: Outlining Content." Presentation. Materials Research Society Fall Meeting, Boston, MA.
737. **Wetmore, Jameson**. November 08, 2012. "Facilitating Conversations on the Science Museum Floor: Engaging Visitors in the Social Aspects of Science and Technology." Workshop. ESRC Genomics Policy and Research Forum, University of Edinburgh, Scotland.
738. **Wetmore, Jameson**. October 24, 2012. "STS Concepts and Educational Approaches for Engaging the Public in Nanotechnology and Society." Presentation. Annual Meeting of the Society for the Study of Nanoscience and Emerging Technologies (S.NET), University of Twente, Twente, the Netherlands.
739. **Wetmore, Jameson**. October 08, 2012. "The Need for Local Sensitivities in International Standards." International Workshop. Engineering Ethics for a Globalized World (EGW12), University of Illinois, Champaign, IL.
740. **Wetmore, Jameson**. October, 2012. "Whose Nano is it anyways? Exploring the Equity Implications of Nanotechnology through an Interactive Game." Presentation. Annual Meeting for the Society for Social Studies of Science, Copenhagen, Denmark.
741. **Wetmore, Jameson**. October, 2012. "STS Engagements with Science Centers: Bringing Broader Implications to the Museum Floor." Panel Organizer. Society for Social Studies of Science, Copenhagen, Denmark.
742. **Wetmore, Jameson**. September 25, 2012. "Social Studies of Technology and Religion." Presentation. Nano Impacts Group, University of Notre Dame, Notre Dame, IN.

743. **Wetmore, Jameson** September 24, 2012. "Facilitating Reflection on Nanotechnology and Society: Actively Engaging the Public to Think about our Collective Future." Presentation. ND Nano Seminar, University of Notre Dame, Notre Dame, IN.
744. **Wetmore, Jameson**. September 24, 2012. "Nanotechnology and Society: Actively Engaging the Public to Think about our Collective Future." Facilitating Reflection. ND Nano Seminar, University of Notre Dame, Notre Dame, IN.
745. **Wetmore, Jameson**. September 15, 2012. "World Wide Views on Biodiversity." Facilitator. Arizona State University, Tempe, AZ.
746. **Wetmore, Jameson**. August 08, 2012. "Inclusive Innovation for Inclusion Development." Discussion Leader. Gordon Research Conference on Science and Technology Policy, Waterville Valley, NH.
747. **Wetmore, Jameson**. August 05, 2012. "Ecology Governance Challenges Presented by Emerging Technologies." Moderator. Science Beyond the Field: a Policy (dis)Orientation Workshop, Portland, OR.
748. **Wetmore, Jameson**. March 09, 2012. "A Users Guide to Everyday Technology." Keynote Speech. Issue Day, Maumee Valley Country Day School, Toledo, OH.
749. **Wetmore, Jameson**. March 09, 2012. "Amish Technology." Workshop. Issue Day, Maumee Valley Country Day School, Toledo, OH.
750. **Wetmore, Jameson**. March 09, 2012. "Nano Equity Game: Whose Nano is it?" Workshop. Issue Day, Maumee Valley Country Day School, Toledo, OH.
751. **Wetmore, Jameson**. March, 2012. "Nano Equity Game: Whose Nano is it?" Presentation. Nano and Society training program, Arizona Science Center, Phoenix, AZ.
752. **Wetmore, Jameson**. January, 2012. "Nano Equity Game: Whose Nano is it?" Presentation. NISENet Program committee meeting, Oregon Museum of Science & Industry.
753. **Wetmore, Jameson**. December, 2011. "Nano Equity Game: Whose Nano is it?" Presentation. Adult Night, Arizona Science Center, Phoenix, AZ.
754. **Wetmore, Jameson**. November, 2011. "Equity, Equality, and Responsibility." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
755. **Wetmore, Jameson**. November, 2011. "Congress on Teaching the Social and Ethical Implications of Research." Conference Organizer. Joint Meeting of the NNIN SEI Coordinators, NSEC SEI Coordinators, ASUs three EESE grants, and NISENets social implications group, Tempe, AZ.
756. **Wetmore, Jameson**. November, 2011. "The Challenges of Equity, Equality, and Development." Panel Organizer. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

757. **Wetmore, Jameson.** November, 2011. "Teaching Social and Ethical Implications of Research to Scientists and Engineers." Panel Organizer. Society for Social Studies of Science, Cleveland, OH.
758. **Wetmore, Jameson.** November, 2011. "Nano Equity Game: Whose Nano is it?" Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
759. **Wetmore, Jameson.** October, 2011. "The Challenge of Path Dependency and the Need for Anticipatory Governance." Presentation. CSPO in DC: New Tools for Science Policy, Washington, DC.
760. **Wetmore, Jameson.** September 20, 2011. "New Technologies New Risks? What are the Implications of a Technologically Complex World on the Way we think about the Risks of Novel Technologies and Practices?" Panel Presentation. Symposium on Risk Uncertainty and Sustainable Innovation, University of Michigan, Ann Arbor, MI.
761. **Wetmore, Jameson.** July 18, 2011. "Swimming Upstream: When Scientists and Engineers are More Concerned about Science & Technology than the Public." Presentation. Upstream Engagement with Science and Technology: Opportunities and Challenges, a mini-symposium, ESRC Genomics Network, University of Edinburgh, Scotland.
762. **Wetmore, Jameson.** March 14, 2011. "The Challenges of Path Dependence and the Need for Anticipatory Governance." Presentation. CNS-ASU Resilience 2011 Workshop at ASU, Tempe, AZ.
763. **Wetmore, Jameson.** April 03, 2010. "Nanodays-Student Presentations of Basic Science and Nanotechnology Applications." Arizona Science Center, Phoenix, AZ.
764. **Wetmore, Jameson.** March 25, 2010. "Opportunities for Engaging with the Public." Asilomar International Conference on Climate Intervention Technologies, Pacific Grove, CA.
765. **Wetmore, Jameson.** March, 2010. "Nanodays-Student Presentations of Basic Science and Nanotechnology Applications." Tempe Festival of the Arts. March 26-28, 2010, Tempe, AZ.
766. **Wetmore, Jameson.** February 22, 2010. "Lessons of Engagement: Learning from Policymakers and the Public." Presentation. Annual Meeting of the American Association for the Advancement of Science.
767. **Wetmore, Jameson.** December 09, 2009. "'Overview of CNS-ASU" with David H. Guston." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
768. **Wetmore, Jameson.** December 09, 2009. "Best Practices of NSEC's and MRSEC's for Advancing NSE Education-Diversity Aspects." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
769. **Wetmore, Jameson.** November 08, 2009. "Technology and the City." Presentation. On the Cutting Edge...Today's Jewish Women Symposium, Scottsdale, AZ.

770. **Wetmore, Jameson.** October 30, 2009. "Begging for Regulation: The Quest to Tame Nanotechnology." Presentation. Annual Meeting of the Society for Social Studies of Science, Washington, DC.
771. **Wetmore, Jameson.** July 22, 2009. "Anticipatory Governance of Emerging Technologies." Presentation. National Institute for Nano-Engineering Summer Student Program, Sandia National Labs. Invited.
772. **Wetmore, Jameson.** July 08, 2009. "Nanotechnology and Society." Presentation with Troy Benn. Arizona Science Center's Junior Science Correspondents Program, Phoenix, AZ.
773. **Wetmore, Jameson.** June 16, 2009. "What Should Everyone Know about Technology?" Panel discussion. American Society for Engineering Education Annual Conference, Austin, TX.
774. **Wetmore, Jameson.** June 15, 2009. "Integrating Microethics and Macroethics in Graduate Science and Engineering Education: Developing Instructional Models." Presentation with Joe Herkert. American Society for Engineering Education Annual Conference, Austin, TX.
775. **Wetmore, Jameson.** March, 2009. "Innovation and Graduate Education." Presentation. Presented at Centers, Universities, and the Scient, Arlington, VA.
776. **Wetmore, Jameson.** December, 2008. "Amish Sociologists: Building Society with Technology." Presentation. National Nanotechnology Infrastructure Network, Indian Institute of Technology, Kanpur Winter School on Organic Electronics, Kanpur, India.
777. **Wetmore, Jameson.** November, 2008. "Nanotechnology the Promise, Politics, and Personal Impacts." Presentation. Presentation to the Women's Symposium, co-sponsored by the Jewish Studies Department at Arizona State University and the Bureau of Jewish Education of Greater Phoenix, Phoenix, AZ.
778. **Wetmore, Jameson.** August, 2008. "A Dialogue on Nanotechnology and Religion: Using Religious Expertise to Build Nanotechnology." Poster Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
779. **Wetmore, Jameson.** June, 2008. "The Challenge of Path Dependence." Presentation. IEEE Symposium on Technology & Society, Fredericton, New Brunswick, Canada.
780. **Wetmore, Jameson.** April, 2008. "What Do You Think About a Technology You Can't Even Se." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
781. **Wetmore, Jameson.** December, 2007. "Amish Technology." Presentation. Spirit of the Senses Salon, Phoenix, AZ.
782. **Wetmore, Jameson.** November, 2007. "ASB 591: Seminar on Professionalism, on the Academic job search." Presentation. Seminar on Professionalism.

783. **Wetmore, Jameson.** October, 2007. "Building a Better Air Bag: the Continuing Search for a Technical Fix." Presentation. Mobility History, Heritage and Design Fifth Annual Conference on History of Transport, Traffic and Mobility (T2M), Helmond, the Netherlands.
784. **Wetmore, Jameson.** September, 2007. "Bureaucrats, Lobbyists, and Regulators, Oh My! Introducing Graduate Students to Science Outside the Lab." Presentation. CSPOs Enlightening Lunch, with Ira Bennett, Arizona State University, Tempe, AZ.
785. **Wetmore, Jameson.** August, 2007. "Cats Cradle, by Kurt Vonnegut." Presentation. Spirit of the Senses Salon, Scottsdale, AZ.
786. **Wetmore, Jameson.** June, 2007. "Teaching the Ethics and Social Implications of Emerging Technologies to Graduate Level Students." Presentation. American Society for Engineering Education Annual Conference, Honolulu, HI.
787. **Wetmore, Jameson.** March, 2007. "Transferring Western Technology to Developing Countries: Good Intentions, Unexpected Outcomes." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
788. **Wetmore, Jameson.** March, 2007. "STS in the Trenches: Engaging Scientists and Engineers." Presentation. STS Engaged Workshop, University of Virginia Department of Science, Technology and Society, Charlottesville, VA.
789. **Wetmore, Jameson.** February, 2007. "Nanotech and Religion: Ambitions, Influence, and Policy." Presentation. CNS-UCSB, Santa Barbara, CA.
790. **Wetmore, Jameson.** August, 2006. "Religious Forays into Nanotechnology Policy." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
791. **Wetmore, Jameson and Andrea Lewis.** January 20, 2012. "What's in our Skincare?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
792. **Wetmore, Jameson and Ira Bennett.** August 14, 2013. "Social and Ethical Implications of Nanotechnology." Presentation. NNIN REU Convocation. Atlanta, GA.
793. **Wetmore, Jameson and Ira Bennett.** July 10, 2013. "Education and Training Panel." Presentation. Sixth International Meeting on Synthetic Biology (SB 6.0), Imperial College. London.
794. **Wetmore, Jameson and Ira Bennett.** July 4, 2013. "Nano around the World." Presentation. 1st Common Summer school of ERASynBio and ST-Flow: Synthetic Biology in Action. Madrid, Spain.
795. **Wetmore, Jameson and Ira Bennett.** January, 2012. "SEI Professional Development Plans." Presentation. Societal and Ethical Implications Meeting, Nanoscale Informal Science Education Network, Oregon Museum of Science and Industry, Portland, OR.
796. **Wetmore, Jameson, Shobita Parthasarathy and Regula Valerie Burri.** October 30, 2009. "The New Sentinels of Progress? Investigating Emerging Approaches to Governing Technology." Panel

- Organizer. Series of three panels, Society for Social Studies of Science Annual Meeting, Washington, DC.
797. **White, Dave** and Troy M. Benn. May 15, 2009. "To Drink or Not to Drink: What Should We Do to Have Good-Tasting, Safe and Sustainable Water into the Future." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
798. **Wiek, Arnim**. November, 2011. "STIR and the City: Integration Research and Sustainability Science." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
799. **Wiek, Arnim**. March 14, 2011. "Resilience, Sustainability, and Anticipatory Governance - Pieces of the Puzzle." Presentation. Resilience 2011, Arizona State University, Tempe, AZ.
800. **Wiek, Arnim** and **Cynthia Selin**. 2009. "The Future of Phoenix - Crafting Sustainable Development Strategies for Phoenix." Presentation. School of Sustainability. Arizona State University.
801. **Wiek, Arnim** and Rider W. Foley. March 16, 2012. "Will Science and Technology put the Able into Sustainable?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
802. **Wiek, Arnim** and Rider W. Foley. December 19, 2011. "The Dragon beneath Phoenix: Meaningful Community Involvement, Effective Remediation, and Sustainable Urban Development at the M52 Superfund Site in Phoenix." Presentation. Jiangsu Senior Executive Public Administration Training Program. Arizona State University, Phoenix, AZ.
803. **Wiek, Arnim** and Rider W. Foley. November, 2011. "Nanotechnology for Sustainability? Analyzing the Demand for and Supply of Nanotechnology in City Environments." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
804. **Wiek, Arnim**, Rider W. Foley and **David H. Guston**. November 2013. "Broken Promises and Breaking Ground – Anticipatory Governance Research against Business-as-Usual in Nanotechnology Innovation." Presentation. 2nd Sustainable Nanotechnology Organization Conference (SNO). Santa Barbara, CA.
805. **Wolbring, Gregor**. August, 2006. "Governance of Nano-bio-info-cogno-synbio." Presentation. NABIS Conference, Chicago, IL.
806. **Wolbring, Gregor**. December, 2005. "The Triangle of Enhancement Medicine, Disabled People, and the Concept of Health: A New Challenge for HTA, Health Research, and Health Policy. Health Technology Assessment (HTA) Initiative #23." Presentation. Alberta Heritage Foundation for Medical Research., Edmonton, Alberta, Canada.
807. **Woodbury, Neal**. April, 2006. "Evolution on a Chip: Making Molecules Work for U." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
808. **Woodbury, Neal** and **David H. Guston**. November 02, 2010. "Life Saver or Privacy Invasion? Identifying Disease before Symptoms." Presentation. Spirit of the Senses, Tempe, AZ.

809. **Woodson, Thomas.** March, 2014. "Nanotechnology for the poor: A look at water, energy, food and health technologies". Lecture presentation. *College for Nanoscale Science and Engineering, University of Albany, Albany, New York.*
810. **Woodson, Thomas.** February, 2014. "Nanotechnology for the poor: A look at water, energy, food and health technologies". Lecture presentation. *Oregon State University, Corvallis, Oregon.*
811. **Woodson, Thomas.** June, 2013. "Emerging Nanotechnologies for the Poor: How nanomedicine and public-private partnerships are used to address diseases of poverty". Lecture presentation. *Universidade Federal do Parana, Parana, Brazil.*
812. **Woodson Thomas.** November, 2014. "Private Public Partnerships and Disease of Poverty Research". Poster presentation. *Democratizing Technologies, Santa Barbara, CA.*
813. Woodson, Thomas. November 6-9, 2013. "Inequality in Nanomedicine." Presentation. Association for Public Policy Analysis and Management.
814. **Woodson, Thomas.** October, 2104. "Private Public Partnerships and Disease of Poverty Research". Presentation. *Globelics, Addis Ababa, Ethiopia.*
815. **Woodson, Thomas,** Thema Monroe-White. September, 2013. "Inequalities in Scholarly Knowledge: International Co-Authorship Patterns of African Factor Driven Economies." Presentation. *The Atlanta Conference on Science and Innovation Policy, Atlanta, GA.*
816. **Woodson, Thomas.** September, 2013. "Inequality and Public Private Partnerships in Nanomedicine." Presentation. *The Atlanta Conference on Science and Innovation Policy, Atlanta, GA.*
817. **Woodson, Thomas,** Matthew Harsh. November, 2011. "Pro-Poor Nanotechnology Applications for Water: Characterizing Private Sector Research." Presentation. *Society for the Study of Nanoscience and Emerging Technologies (SNET) Meeting, Tempe, AZ.*
818. **Woodson, Thomas.** April, 2011. "Pro-Poor Nanotechnology: A Bibliometric Analysis of Water Nanotechnology." Presentation. *ST Global, Washington D.C.*
819. Woodson, Thomas. September 26-28, 2013. "Inequality in Nanomedicine." Presentation. Atlanta Conference on Science and Innovation Policy. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.
820. Woodson, Thomas. June 3-5, 2013. "Inequality in Nanomedicine." Presentation. Universidade Federal do Paraná.
821. Woodson, Thomas. May 17-31, 2013. "Inequality in Nanomedicine." Presentation. Globelics Academy.

822. Woodson, Thomas. March, 2013. "Research Inequality in Nanomedicine." Poster Presentation. Georgia Tech Graduate Student Conference, Atlanta, GA.
823. Woodson, Thomas. August, 2012. "Research Inequality in Nanomedicine." Poster Presentation. Gordon Research Conference: Science and Technology Policy, Waterville Valley Resort, Waterville Valley, NH.
824. Woodson, Thomas and Vrishali Subram Anian. November, 2011. "Nanotechnology in India: An examination of the Productivity and Equitable Nature of their Research Program." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
825. Woodson, Thomas. September, 2011. "The 10/90 Gap in Health Related Nanotechnology Research." Presentation. The Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
826. Woodson, Thomas and **Susan Cozzens**. April 28-May 1, 2011. "New Technologies, New Power Relationships?: The Case of Nanomedicine." Presentation. Conference on the Political Sociology of Science and Technology, Rensselaer, NY.
827. Woodson, Thomas, Susan Cozzens, Jameson M. Wetmore, Matthew Harsh, Ogundiran Soumonni and Rodrigo Cortes Lobos. October, 2012. "Assessing Equity and Equality in South Africa's Nanotechnology Initiative." Presentation. Society for the Social Studies of Science, Copenhagen.
828. **Xenos, Michael A., Dietram A. Scheufele, Dominique E. Brossard**, Doo-Hun Choi, Michael A. Cacciatore, Sara K. Yeo and Leona Yi-Fan Su. June 2013. "News Media Use and the Informed Public in the Digital Age." Presentation. Annual Convention of the International Communication Association. Lodon, United Kingdom.
829. **Xenos, Michael A., Dietram A. Scheufele, Dominique E. Brossard**, Doo-Hun Choi and Michael A. Cacciatore. August, 2012. "News Media Use and the Informed Public in the Digital Age." Paper Presentation. The American Political Science Association (APSA) Political Communication Pre-Conference, Baton Rouge, LA.
830. Xenos, Michael A., **Dietram A. Scheufele, Dominique E. Brossard**, Doo-Hun Choi, Michael A. Cacciatore, Sarah K. Yeo, et al. Forthcoming, June, 2013. "News Media use and the Informed Public in the Digital Age." Paper Accepted for Presentation. Annual Convention of the International Communication Association, London, England.
831. Yeo, Sara K., Ashley A. Anderson, Nan Li, Kristin K. Runge, **Dominique E. Brossard, Dietram A. Scheufele**, et al. November, 2012. "Exploring the Interplay of Values and Use of Information Channels on Public Opinion of Nuclear Energy." Paper Presentation. The 2012 Behavior, Energy, and Climate Change (BECC) Conference, Sacramento, CA.
832. Yeo, Sara K., **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. May, 2013. "Dangerous Disconnects? How Public Discourse about Nanotechnology is Missing the Point." Paper Presentation. The Annual Convention of the American Association for Public Opinion Research, Boston, MA.

833. Yeo, Sara K., **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. November, 2012. "Is the Online Environment Changing the Construction of Scientific Controversies?" Paper Presentation. The Annual Convention of the Midwest Association for Public Opinion Research, Chicago, IL.
834. Yeo, Sara K., Kristin K. Runge, Nan Li, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. May, 2012. "The Opinion Dynamics Surrounding Nuclear Energy in the U.S.: Exploring the Interplay of Risk Perceptions, Values, Mass Media Use and Knowledge on Public Support for Nuclear Energy." Paper Presentation. The Annual Conference of the American Association for Public Opinion Research, Orlando, FL.
835. Yeo, Sara K., **Michael A. Cacciatore, Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. May 2014. "Twitter as the Social Media of Choice for Sharing Science." Presentation. 13th International Public Communication of Science and Technology Conference. Salvador, Brazil.
836. Yeo, Sara K., **Michael A. Xenos, Dominique E. Brossard** and **Dietram A. Scheufele**. May 2014. "Contextual Cues, Selective Exposure, and Information Utility." Presentation. Annual Convention of the International Communication Association (ICA). Seattle, WA.
837. Yeo, Sara K., **Michael A. Xenos, Dominique E. Brossard** and **Dietram A. Scheufele**. Under review, "Information Seeking in an Age of (Un)Reliable Information." Paper Presentation. The Annual Pre-Conference of the American Political Science Association, Chicago, IL.
838. **Youtie, Jan**. November 05, 2011. "Societal Dimensions of the Nano Science and Technology Center Program." Session. Evaluation of a Nano Science and Technology Centers Program: Mixed Methods Approach to Assessing its Realization of Policy Objectives, American Evaluation Association.
839. **Youtie, Jan**. December 03, 2010. "Anticipating Developments in Nanotechnology Commercialization: The Potential Economic Impacts of Nanoelectronics." Presentation. Federal Reserve Bank of Dallas and the Semiconductor Industry, Austin, TX.
840. **Youtie, Jan**. October 26, 2010. "Silos or Systems in Emerging Science Domains." Presentation. Nano@Tech, Atlanta, GA.
841. **Youtie, Jan**. October 23, 2010. "Silos or Systems in Emerging Science Domains." Presentation. National Organization of Black Chemists and Chemical Engineers, Atlanta, GA.
842. **Youtie, Jan**. October 02, 2010. "Silos or Systems in Emerging Science Domains." Keynote. S.NET Conference 2010, Darmstadt, Germany.
843. **Youtie, Jan**. December, 2009. "Anticipating Developments in Nanotechnology Commercialization." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference December 7-9, 2009, Arlington, VA.
844. **Youtie, Jan**. August, 2009. "Understanding and Stimulating Highly Creative Research: Measurement and Analysis - U.S. and Europe." Special Session. Developing a Social Science of Science and Innovation Policy, American Sociological Association Annual Meeting, San Francisco, CA.

845. **Youtie, Jan.** August, 2009. "Center for Nanotechnology in Society." Presentation. Georgia Tech President, Dr. G.P. (Bud) Peterson, Atlanta, GA.
846. **Youtie, Jan.** January, 2009. "Center for Nanotechnology in Society." Presentation. Biotechnology and Public Forum, Georgia Tech, Atlanta, GA.
847. **Youtie, Jan.** November, 2007. "Nanotechnology Workshop: Definitions, Directions, Debate." Presentation. National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Atlanta, GA.
848. **Youtie, Jan.** October, 2007. "Nanodistricts in the United States: Metropolitan Trajectories and Clustering." Presentation. Atlanta Conference on Science, Technology, and Innovation Policy, Atlanta, GA.
849. **Youtie, Jan.** October, 2006. "Nano Research Enterprise Assessment." Presentation. Workshop on Next Generation Metrics, SRI, Arlington, VA.
850. **Youtie, Jan.** September, 2006. "Searching for Nanotechnology: Explorations in Research and Innovation Systems." Presentation. Technology Transfer Society Annual Meeting, Atlanta, GA.
851. **Youtie, Jan and Alan L. Porter.** November, 2011. "Using Large-scale Datasets to Understand the Trajectories." Roundtable Organizers. Society for the study of Nanoscience and Emerging Technologies 2011 Conference, Tempe, AZ.
852. **Youtie, Jan and Alan L. Porter.** October, 2009. "Conducting Research on Emerging Innovation Systems through Bibliometric Analysis." Presentation. S.NET Conference 2009, Pre-conference CNS-ASU Workshop, Seattle, WA.
853. **Youtie, Jan and Alan L. Porter.** October, 2009. "Datamining Researcher Recognition of Nanotechnology Risk." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
854. **Youtie, Jan, Alan L. Porter, Kevin Boyack and Jose Lobo.** November, 2011. "Using Large-Scale Datasets to Understand the Trajectories of Emerging Technologies." Roundtable Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
855. **Youtie, Jan and Luciano Kay.** October, 2012. "Acquiring Nanotechnology Capabilities: Role of Mergers and Acquisitions in the Nanotechnology Ecosystem." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET), the Netherlands.
856. **Youtie, Jan, Maurizio Iacopetta and Stuart Graham.** September, 2006. "Long Views of Nanotechnology: Is it a General Purpose Technolog." Presentation. Technology Transfer Society Annual Conference, Atlanta, GA.
857. **Youtie, Jan and Philip Shapira.** February 19, 2013. "Time to Reassess the Promise of Nanotechnology? An Analysis of Research, Developments and Commercialization." Presentation. New Tools for Science Policy, Washington, DC.

858. **Youtie, Jan** and **Philip Shapira**. September 13, 2012. "Emerging Nanotechnologies: Scaling and Scoping Environmental, Health, and Safety Applications." Presentation. Seminar, Center for the Environmental Implications of NanoTechnology, Duke University.
859. **Youtie, Jan, Philip Shapira** and **Juan D. Rogers**. October, 2009. "Blind Matching Versus Matchmaking: Comparison Group Selection for Highly Creative Researchers." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
860. **Youtie, Jan, Philip Shapira, Juan D. Rogers** and **Thomas Heinze**. September, 2012. "Highly Creative Researchers Careers in Context." Presentation. SciSIP Principal Investigators Conference, The National Academy of Sciences, Wasington, DC.
861. **Youtie, Jan, Philip Shapira** and Luciano Kay. December 07, 2011. "Global Innovation in Nanotechnology: Visualization and Modeling." Presentation. NSF Nanoscale Science and Engineering Grantees Conference, Washington, DC.
862. **Youtie, Jan, Philip Shapira** and Luciano Kay. November, 2011. "U.S. Nanotechnology Firms from Discovery to Commercialization." Panel Presentation. Nanotechnology, Innovation, and Commercialization: Learning about a Technology Cycle through Patent Data, Patent Statistics for Decision Makers 2011.
863. **Youtie, Jan, Philip Shapira** and Luciano Kay. September, 2011. "Nanotechnology Firms from Discovery to Commercialization." Presentation. Technology Transfer Society Conference, Augsburg, Germany.
864. **Youtie, Jan, Philip Shapira** and Luciano Kay. July, 2011. "Anticipating Developments in Nanotechnology Commercialization." Presentation. Workshop on Nanotechnologies: Economic and Societal Perspectives, Karlsruhe, Germany.
865. **Youtie, Jan, Philip Shapira**, Sanjay Arora, Ying Guo, Lu Huang, **Douglas K. R. Robinson**, et al. November, 2011. "Anticipating Future Commercial Applications of Nanotechnology." Session. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.
866. **Youtie, Jan, Philip Shapira, Thomas Heinze** and **Juan D. Rogers**. October, 2009. "Highly Creative Research: How it is defined and Organized." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
867. **Youtie, Jan**, Stephen Carley, **Philip Shapira, Elizabeth A. Corley** and **Dietram A. Scheufele**. September, 2011. "Perceptions and Actions: Examining the Relationship between Views on Risk and Citation Actions of Nanotechnology Scientists." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

Other

1. ‡**Allenby, Braden**. 2010. "Emerging Technologies." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 185-189. Thousand Oaks, CA: Sage Publications.

2. ‡**Allenby, Braden**. 2010. "Enabling Technology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 189-191. Thousand Oaks, CA: Sage Publications.
3. ‡**Allenby, Braden**. 2010. "Life Cycle Analysis and Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 399-401. Thousand Oaks, CA: Sage Publications.
4. ‡**Barandiaran, Javiera**. 2010. "Berkeley, CA, Local Regulatory Efforts." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 45-47. Thousand Oaks, CA: Sage Publications.
5. ‡**Barandiaran, Javiera**. 2010. "California." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 63-65. Thousand Oaks, CA: Sage Publications.
6. ‡**Barben, Daniel**. 2010. "Acceptance Politics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 4-5. Thousand Oaks, CA: Sage Publications.
7. ‡**Barben, Daniel**. 2010. "Anticipatory Governance." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 17-18. Thousand Oaks, CA: Sage Publications.
8. ‡**Barben, Daniel**. 2010. "Glossary." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 803-811. Thousand Oaks, CA: Sage Publications.
9. ‡**Barben, Daniel**. 2010. "Innovation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 335-337. Thousand Oaks, CA: Sage Publications.
10. ‡**Barben, Daniel**. 2010. "Reflexive Governance." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 654-655. Thousand Oaks, CA: Sage Publications.
11. ‡**Barben, Daniel**. 2010. "Social Science." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 724-726. Thousand Oaks, CA: Sage Publications.
12. ‡**Benn, Troy**. 2010. "Nano-Silver." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 533-534. Thousand Oaks, CA: Sage Publications.
13. **Bennett, Ira** and **Jameson Wetmore**. "Nanotechnology." Episode of the AZ Cox Channel 7 television show "The STEM Journal." Directed by David Routt. <http://www.cox7.com/stem-journals/nanotechnology>.
14. **Wetmore, Jameson**. August 2014. "Inspiring Students and Teachers around the Globe: Nano Days in South Africa." Nanoscale Informal Science Education Network Newsletter.
15. **Bennett, Ira**. 2012. "Course Overview: Energy and Energy Policy (CHM 501)."
16. **Bennett, Ira**. 2011. "DC schedule 2011."
17. **Bennett, Ira**. 2011. "Syllabus: Nanoscience and Society."
18. **Bennett, Ira**. 2011. "Syllabus: Responsible Innovation and Research (HSD 540)."

19. **Bennett, Ira.** 2011. "Syllabus: Social Implications of Research (Center for Nanotechnology in Society Short Course)."
20. **Bennett, Ira.** 2011. "Syllabus: The Social, Political, and Scientific Challenges of New Technologies: Nanotechnology." Syllabus for learning community on the social, political, and scientific challenges of new technologies, focusing on nanotechnology.
21. ‡Calleja-Lopez, Antonio. 2010. "Reflexive Modulation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 655-656. Thousand Oaks, CA: Sage Publications.
22. ‡Conley, Shannon. 2010. "Cambridge, MA, Local Regulatory Efforts." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 65-67. Thousand Oaks, CA: Sage Publications.
23. ‡**Corley, Elizabeth A.** 2010. "Scientists' Attitudes Toward Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 704-706. Thousand Oaks, CA: Sage Publications.
24. ‡**Cozzens, Susan.** 2010. "Equity." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 214-215. Thousand Oaks, CA: Sage Publications.
25. ‡Dalrymple, Kajsia E. and **Dietram A. Scheufele.** 2010. "Public Understanding of Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 641-642. Thousand Oaks, CA: Sage Publications.
26. ‡Davies, Sarah R. 2010. "Democs." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 145-146. Thousand Oaks, CA: Sage Publications.
27. ‡Davies, Sarah R. 2010. "Nanoscale Informal Science Education Network." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 520-522. Thousand Oaks, CA: Sage Publications.
28. Domareski, J. Spring 2011. "Responsible Innovation Network." *Genomics and Society: Social Science and Humanities Research in Genomics (Newsletter of Genome BC)*, 4:13.
29. **Fiedeler, Ulrich, Christopher Coenen, Sarah R. Davies and Arianna Ferrari.** 2010. *Understanding Nanoscience and Emerging Technologies*. Heidelberg: Akademische Verlagsgesellschaft.
30. ‡**Fisher, Erik,** et al. 2010. *Correspondence: Research Thrives on Integration of Natural and Social Sciences*. *Nature*. 463(7284): 1018.
31. ‡**Fisher, Erik.** 2010. "21st Century Nanotechnology Research and Development Act." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 771-773. Thousand Oaks, CA: Sage Publications.
32. ‡**Fisher, Erik.** 2010. "Integration." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 343-344. Thousand Oaks, CA: Sage Publications.
33. ‡**Hamlett, Patrick.** 2010. "National Citizens Technology Forum." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 215. Thousand Oaks, CA: Sage Publications.

34. ‡**Harsh, Matthew**. 2013. "South African Nanotechnology Public Engagement Program: NanoNews Writing Workshop for Postgraduate Students." Cape Town, South Africa.
35. ‡Harsh, Matthew. 2010. "International Development." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 353-356. Thousand Oaks, CA: Sage Publications.
36. ‡Harsh, Matthew. 2010. "United Nations Millenium Development Goals." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 780-782. Thousand Oaks, CA: Sage Publications.
37. ‡Hays, Sean. 2010. "Ethical Issues of Brain-Machine Interface." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 56-59. Thousand Oaks, CA: Sage Publications.
38. ‡Hays, Sean. 2010. "Foresight Institute." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 249-253. Thousand Oaks, CA: Sage Publications.
39. ‡Hays, Sean. 2010. "Human Enhancement." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 317-318. Thousand Oaks, CA: Sage Publications.
40. ‡Hays, Sean. 2010. "Transhumanism." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 769-770. Thousand Oaks, CA: Sage Publications.
41. ‡**Ho, Shirley**. 2010. "Media Representations of Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 412-413. Thousand Oaks, CA: Sage Publications.
42. ‡**Ho, Shirley**. 2010. "Risk Communication." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 674-676. Thousand Oaks, CA: Sage Publications.
43. ‡**Ho, Shirley**. 2010. "Singapore." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 714-716. Thousand Oaks, CA: Sage Publications.
44. ‡**Ho, Shirley**. 2010. "The Nanotech Chronicles." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 537-538. Thousand Oaks, CA: Sage Publications.
45. **Hogle, Linda F.** 2007. "Sentinel Beings: The Biopolitics of Human Biosensors." *Invited paper submitted to BioSocieties, theme issue on Biopower, Biotechnology and Globalization*.
46. ‡**Kleinman, Daniel Lee**. 2010. "Consensus Conference on Nanotechnology (2005)." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 116-117. Thousand Oaks, CA: Sage Publications.
47. ‡**Marchant, Gary**. 2010. "Law." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 394-398. Thousand Oaks, CA: Sage Publications.
48. ‡Milford, Richard and **Jameson Wetmore**. 2010. "American Scientific Affiliation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 11-13. Thousand Oaks, CA: Sage Publications.

49. ‡Milford, Richard and **Jameson Wetmore**. 2010. "Journal of Lutheran Ethics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 376-377. Thousand Oaks, CA: Sage Publications.
50. **Mitcham, Carl** and **Erik Fisher**. 2012. "Ethics and Policy." *Encyclopedia of Applied Ethics*, ed(s). Ruth Chadwick, 2nd ed. p. 165-172. San Diego, CA: Academic Press.
51. ‡**Philbrick, Mark**. 2010. "Environmental Protection Agency." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 207-209. Thousand Oaks, CA: Sage Publications.
52. ‡**Philbrick, Mark**. 2010. "Nanoscale Materials Stewardship Program." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 522-523. Thousand Oaks, CA: Sage Publications.
53. ‡**Philbrick, Mark**. 2010. "Office of Science and Technology Policy." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 612-613. Thousand Oaks, CA: Sage Publications.
54. ‡**Philbrick, Mark**. 2010. "Risk-Benefit Perceptions of Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 673-674. Thousand Oaks, CA: Sage Publications.
55. ‡**Philbrick, Mark**. 2010. "Toxic Substances Control Act and Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 764-765. Thousand Oaks, CA: Sage Publications.
56. ‡**Porter, Alan L.** 2010. "Bibliometrics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 47-48. Thousand Oaks, CA: Sage Publications.
57. ‡**Porter, Alan L.** and **Ismael Rafols**. 2010. "Nano Research Patterns." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, Thousand Oaks, CA: Sage Publications.
58. **Queraltá, Ramón**. March 11, 2009. "[Note on first STIR project workshop]." *Boletín Interno de Noticias de la Universidad de Sevilla (BINUS)*.
59. **Randles, Sally, Jan Youtie, David H. Guston, Barbara Harthorn, Chris Newfield**, et al. 2012. "A Trans-Atlantic Conversation on Responsible Innovation and Responsible Governance." *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Proceedings*.
60. ‡Reifschneider, Kiera. April 11, 2012. "'Speed Date a Scientist' Event Recap."
61. ‡**Rogers, Juan D.** 2010. "Research and Innovation Assessment." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 668-669. Thousand Oaks, CA: Sage Publications.
62. Schuurbiens, Daan. November 3, 2010. "Maatschappelijke verantwoordelijkheid." *Delta*, 42(31).
63. Schuurbiens, Daan. 2010. "Midstream Modulation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 425-426. Thousand Oaks, CA: Sage Publications.
64. ‡Schuurbiens, Daan. 2009. *In Amerika. A Tryptic on Daily Life at ASU for TU Delta*. Published in the weekly magazine of Delft University of Technology.

65. Schuurbiens, Daan. 2008. "Ethics in Action." Winning essay of the Mekelprize 2008 for PhD students, Platform for Ethics.
66. ‡**Selin, Cynthia**. 2010. "Anticipation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 13-16. Thousand Oaks, CA: Sage Publications.
67. ‡**Selin, Cynthia**. 2010. "Foresight." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 249-253. Thousand Oaks, CA: Sage Publications.
68. ‡**Shapira, Philip**. 2010. "Active Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 7-8. Thousand Oaks, CA: Sage Publications.
69. ‡**Shapira, Philip** and **Jan Youtie**. 2010. "United States." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 782-788. Thousand Oaks, CA: Sage Publications.
70. ‡**Shapira, Philip, Jan Youtie** and Stephen Carley. 2010. "Nanodistricts." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 464-465. Thousand Oaks, CA: Sage Publications.
71. ‡**Slade, Catherine**. 2010. "Public Value Mapping." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 642-644. Thousand Oaks, CA: Sage Publications.
72. ‡Tang, Li and **Alan L. Porter**. 2010. "Data Mining." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 137-138. Thousand Oaks, CA: Sage Publications.
73. ‡Tang, Li, **Philip Shapira** and Ju Wang. 2010. "China." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 86-90. Thousand Oaks, CA: Sage Publications.
74. Thoreau, Francois. 2011. "On Reflection and Reflexivity: Unpacking Research Despositifs." *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Proceedings*
75. Triplican, Dwarakanath R., Benjamin A. Wender, **Thomas P. Seager** and **Matthew P. Fraser**. 2013. "Towards Anticipatory Life Cycle Assessment of Photovoltaics." *Proceedings of the IEEE Photovoltaics Specialist Conference*, Tampa, FL.
76. Wender, Benjamin A. and **Thomas P. Seager**. 2011. "Towards prospective life cycle assessment: Single Wall Carbon Nanotubes for Lithium-ion Batteries." *Proceedings of the IEEE International Symposium on Sustainable Systems and Technology*, Chicago, IL.
77. **Wetmore, Jameson**. 2011. "View from the Street: A World of Traffic Jams." *Newsletter of the International Association for the History of Transport, Traffic, and Mobility*, 8(2):17-19.
78. ‡**Wetmore, Jameson**. 2010. "Benny the Bear." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 45-47. Thousand Oaks, CA: Sage Publications.
79. ‡**Wetmore, Jameson**. 2010. "Religion." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 665-667. Thousand Oaks, CA: Sage Publications.

80. ‡**Wetmore, Jameson**. 2010. "Society, Religion and Technology Project, Church of Scotland." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 729. Thousand Oaks, CA: Sage Publications.
81. ‡**Wetmore, Jameson**. 2010. "Series of Five Posters on the Social Implications of Nanotechnology (with other Collaborators)." Distributed by the Nanoscale Informal Science Education Network to Museums Across the Country for Nanodays and Other Programs.
82. ‡**Wetmore, Jameson**. 2010. "Series of Five Informational Sheets on the Social Implications of Nanotechnology (with other Collaborators)." Distributed by the Nanoscale Informal Science Education Network to Museums Across the Country for Nanodays and Other Programs.
83. **Wetmore, Jameson W., Ira Bennett**, Ali Jackson and Brad Herring. 2014. "Nano and Society Guide." Handbook for museum professionals to be distributed to over 300 museums in the 2014 NISE Net Nanodays.
84. ‡**Wolbring, Gregor**. 2010. "Abel-Ism." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 2-3. Thousand Oaks, CA: Sage Publications.
85. ‡**Wolbring, Gregor**. 2010. "Cancer Treatment, Nanoenabled." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 72-74. Thousand Oaks, CA: Sage Publications.
86. ‡**Wolbring, Gregor**. 2010. "Design and Construction." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 157-160. Thousand Oaks, CA: Sage Publications.
87. ‡**Wolbring, Gregor**. 2010. "Disability and Nanoscience." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 165-166. Thousand Oaks, CA: Sage Publications.
88. ‡**Wolbring, Gregor**. 2010. "International Risk Governance Council." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 358-360. Thousand Oaks, CA: Sage Publications.
89. ‡**Wolbring, Gregor**. 2010. "Nano Hazard Symbol Contest." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 486-487. Thousand Oaks, CA: Sage Publications.
90. ‡**Wolbring, Gregor**. 2010. "Nanoparticle Occupational Safety and Health Consortium." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 514. Thousand Oaks, CA: Sage Publications.
91. ‡**Wolbring, Gregor**. 2010. "Nanophotovoltaics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 516-518. Thousand Oaks, CA: Sage Publications.
92. ‡**Wolbring, Gregor**. "Zinc Oxide." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 801-802. Thousand Oaks, CA: Sage Publications
93. **Youtie, Jan, Alan L. Porter, Kevin Boyack, Jose Lobo, Richard Klavan, Ismael Rafols**, et al. 2012. "Using Large-scale Databases to Understand the Trajectories of Emerging Technologies." *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Proceedings*.

94. ‡Zhuang, Wei. 2008. "The Impact of State R&D Investment on Nanotechnology: A Review of Nanotechnology Initiatives at the State Level." *Master of Science in Public Policy (MSPP) Professional Research Paper*, Atlanta, GA.

Search and Mapping Tools and Thesauri

1. Carley, S. (September, 2009) GeoMap Tool Macro for VantagePoint and Google Earth.
2. Carley, S. (October, 2009). Citation Counter Macro for Vantage Point and Web of Science.
3. Carley, S. (January, 2010,). Citation Extractor Macro for Vantage Point and Web of Science.
4. Kay, L. (January, 2009). Pajek Network, Vector, and Partition Macros for VantagePoint.
5. Kay, L. (January, 2009). Catenate Macro for VantagePoint.
6. Kay, L. (November, 2009). Random selection Macro for VantagePoint.
7. Kay, L. (November, 2009). Macro for estimating number of internal and external collaborators for VantagePoint.
8. Kay, L. (July, 2009). Thesauri for patent record classification based on kind codes, patent authorities, publication dates, and publication number for VantagePoint and Patstat.
9. Kay, L. (March, 2009). Thesauri for global affiliation name clean up and organizational type classification.
10. Tang, L. and **Walsh J.** (2009, May). Name disambiguation algorithm.
11. Tang, L. (January, 2009). Chinese affiliation thesaurus for Vantage Point.
12. Tang, L. (January, 2009). Chinese researchers thesaurus for Vantage Point.
13. Wang, J. (January, 2010). Funding agency thesaurus for Vantage Point and Web of Science.

Press

1. **Allenby, Braden.** April 16, 2012. Exemplary faculty named President's Professors. ASU News. https://asunews.asu.edu/20120418_presidents_professors
2. **Allenby, Braden.** October 15, 2009. Organization Analyzes How New War Weapons will Impact Society. Arizona State University News. http://asunews.asu.edu/20091015_consortium
 - a) October 15, 2009 – Physorg. <http://www.physorg.com/print174841213.html>
3. Arizona State University Insight News. October 9, 2009. InnovationSpace takes on New Challenges. Page 6. <http://asunews.asu.edu/files/20091009.pdf>

4. Arizona State University News. March 1, 2010. ASU faculty, students present at world's largest science meeting. http://asunews.asu.edu/20100305_AAASroundup
5. Arizona State University News. October 19, 2010. ASU awarded \$6.5 million to study nanotechnology in society. http://asunews.asu.edu/20101015_cnsrenewal
 - a) October 12, 2010 – NSF. http://nsf.gov/news/news_summ.jsp?cntn_id=117862&org=NSF&from=news
 - b) October 13, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-10/asu-asu101310.php
 - c) October 13, 2010 – First Science. http://www.firstscience.com/home/news/science-business/arizona-state-university-awarded-6-5-million-to-study-nanotechnology-and-society_93553.html
 - d) October 14, 2010 – R&D. <http://www.rdmag.com/News/Feeds/2010/10/policy-arizona-state-university-awarded-65-million-to-st/>
 - e) October 14, 2010 – Phoenix Business Journal. <http://www.bizjournals.com/phoenix/stories/2010/10/11/daily54.html>
 - f) October 14, 2010 – Safe Nano. <http://www.safenano.org/SingleNews.aspx?NewsId=1095>
 - g) October 14, 2010 – Molecular Station. <http://www.molecularstation.com/science-news/2010/10/arizona-state-university-awarded-6-5-million-to-study-nanotechnology-and-society/>
 - h) October 14, 2010 – Physorg. <http://www.physorg.com/wire-news/48509977/arizona-state-university-awarded-65-million-to-study-nanotechnol.html>
 - i) October 14, 2010 – Bio-Medicine. <http://72.167.81.51/biology-technology-1/Arizona-State-University-awarded--246-5-million-to-study-nanotechnology-and-society-17617-1/>
 - j) October 14, 2010 – Nanowerk. <http://www.nanowerk.com/news/newsid=18510.php>
 - k) October 15, 2010 – Scientific Computing. <http://www.scientificcomputing.com/WelcomeBack.aspx>
 - l) October 15, 2010 – Nano Science News. <http://www.nanonews.tv/documents/sciencepressreleases.html>
 - m) October 15, 2010 – AzoNano. <http://www.azonano.com/news.asp?newsID=20020>
 - n) October 19, 2010 – Nanotechnology Development. <http://www.nanotechnologydevelopment.com/investment/nsf-award-of-65-million-to-arizona-state-university-to-study-nanotechnology-and-society.html>
 - o) October 20, 2010 – ElectroIQ. <http://www.electroiQ.com/index/display/nanotech-wire-news/1283651372.html>
6. Arizona State University, Research Magazine. Spring 2009. Nano is now! Pages 12-17. http://researchstories.asu.edu/files/past_issues/2009_spring.pdf
7. **Barrientos Rastrojo, Jose**. 2009. Review: CNS Yearbook of Nanotechnology in Society Vol. 1. Argumentos de Razon Technica. http://cns.asu.edu/files/home_Yearbook-of-Nanotechnology-Vol1-translation.pdf

8. **Benn, Troy**. July 30, 2010. Feeding your Research into the Policy Debate. Science Careers. http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2010_07_30/caredit.a1000074
9. **Bennett, Ira**. May 17, 2012. Transforming and Repositioning the American Science Museum: New Tools for Engaging the Public. Talk.
10. **Boradkar, Prasad**. September 13, 2010. Culture of objects is focus of professor's new book. Arizona State University News. http://asunews.asu.edu/20100910_Boradkar_Things
11. **Boradkar, Prasad**. November 2, 2010. InnovationSpace: Bringing water to rural Arizona. Arizona State University News. http://asunews.asu.edu/video_20101029_InnovationSpace
12. **Brossard, Dominique**. February 1, 2013. Preserving Science News in an online World. Science Friday. <http://sciencefriday.com/segment/02/01/2013/preserving-science-news-in-an-online-world.html>
 - a) February 1, 2013 – NPR. <http://www.npr.org/2013/02/01/170855378/preserving-science-news-in-an-online-world>
 - b) February 1, 2013 – North Country Public Radio. <http://www.northcountrypublicradio.org/news/npr/170855378/preserving-science-news-in-an-online-world>
13. **Brossard, Dominique** and **Scheufele, Dietram A.** March 2, 2013. This Story Stinks. The New York Times. <http://www.nytimes.com/2013/03/03/opinion/sunday/this-story-stinks.html>
14. Cacciatore, Michael A., **Dietram A. Scheufele**, and **Elizabeth A. Corley**. May 2011. From enabling technology to applications: The evolution of risk perceptions about nanotechnology. Public Understanding of Science. 20:3. <http://pus.sagepub.com/content/20/3/385.abstract?etoc>
 - a) May 2011 – Science Index. http://scienceindex.com/stories/1655760/From_enabling_technology_to_applications_The_evolution_of_risk_perceptions_about_nanotechnology.html
15. **Center for Nanotechnology in Society** and **Selin, Cynthia**. April 11, 2012. Redesigning the future with Emerge. ASU Art Museum. <http://asuartmuseum.wordpress.com/2012/04/11/redesigning-the-future-with-emerge/>
16. **Center for Nanotechnology in Society Science Café**. April 20, 2012. Science Café: Redesigning the Future: Where is science taking us? Is that where we want to go? Arizona Science Center. <http://sustainability.asu.edu/docs/gios/events/other-events/2012/redesigning-future-cafe/redesigning-future-cafe.pdf>
17. **Center for Nanotechnology in Society**. May 1, 2012. Kids invited to design the future at ASU Art Museum. Easy Valley Tribune. http://eastvalleytribune.com/get_out/article_1a1fd71a-9304-11e1-b674-001a4bcf887a.html
18. **Center for Nanotechnology in Society**. June 7, 2012. Niño Futures. Public Understanding of Science. <http://pus-journal.blogspot.com/2012/06/nano-futures.html>

19. **Center for Nanotechnology in Society.** November 20, 2012. Nanotechnology in Arizona: Market Report. AZO Niño. <http://www.azonano.com/article.aspx?articleID=3132>
20. **Center for Nanotechnology in Society.** December 10, 2012. Futures cape City Tour educates public on nanotechnology in Phoenix. Downtown Devil. <http://downtowndevil.com/2012/12/10/36475/futurescape-city-tour-nanotechnology/>
21. **Center for Nanotechnology in Society Science Café.** February 15, 2013. Science Café: Evolving in the Niño City. Arizona SciTech Festival.
22. **Center for Nanotechnology in Society Science Café.** March 15, 2013. Science Café: Power in the Niño City. Arizona SciTech Festival.
23. **Corley, Elizabeth A.** July 19, 2011. National Nanotechnology Initiative releases 4 workshop reports from the nanoEHS Series. National Nanotechnology Initiative. <http://www.nano.gov/node/648>
 - a) July 20, 2011 – EurekAlert. http://www.eurekalert.org/pub_releases/2011-07/nncor-f072011.php
 - b) July 21, 2011 – Bio-Medicine. <http://www.bio-medicine.orgwww.bio-medicine.org/medicine-news-1/NNI-releases-4-workshop-reports-from-the-nanoEHS-Series-83825-1/>
 - c) July 21, 2011 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=43020
 - d) July 21, 2011 – Nanowerk. <http://www.nanowerk.com/news/newsid=22183.php>
 - e) July 21, 2011 – R&D. <http://www.rdmag.com/News/Feeds/2011/07/materials-nni-releases-4-workshop-reports-from-the-nanoehs-s/>
 - f) July 26, 2011 – InterNano. <http://www.internano.org/content/view/555/251/>
 - g) August 21, 2011 – Meridian Institute. http://www.merid.org/Content/News_Services/Nanotechnology_and_Development_News/Articles/2011/Jul/21/new_papers.aspx
 - h) October 21, 2011 – NanoEthics Bank. <http://ethics.iit.edu/NanoEthicsBank/node/2635>
24. **Corley, Elizabeth A., and Dietram A. Scheufele.** January 2010. Outreach Going Wrong? When we talk nano to the public, we are leaving behind key audiences. *The Scientist*. 24:22.
 - a) January 2010 – Docstoc. <http://www.docstoc.com/docs/45489662/OUTREACH-GOING-WRONG--When-we-talk-nano-to-the-public--we-are>
25. **Corley, Elizabeth A. and Dietram A. Scheufele.** January 21, 2011. Study finds flaw in surveying public opinion about science. Arizona State University News. http://asunews.asu.edu/20110119_puosstudy
 - a) January 13, 2011 – North Carolina State University News. <http://news.ncsu.edu/releases/wmsbindersurveys/>
 - b) January 13, 2011 – RxPG News. http://www.rxpnews.com/research/Study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science_465206.shtml

- c) January 13, 2011 – E! Science News.
<http://esciencenews.com/articles/2011/01/13/study.highlights.flaw.common.approach.public.opinion.surveys.about.science>
 - d) January 13, 2011 – News Guide US. <http://newsguide.us/education/science/Study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science/>
 - e) January 13, 2011 – Physorg. <http://www.physorg.com/news/2011-01-highlights-flaw-common-approach-opinion.html>
 - f) January 13, 2011 – EurekAlert. http://www.eurekalert.org/pub_releases/2011-01/ncsu-shf011311.php
 - g) January 13, 2011 – University of Wisconsin College of Agricultural and Life Sciences News. <http://news.cals.wisc.edu/communities/2011/01/13/study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science/>
 - h) January 14, 2011 – Science Daily. <http://www.sciencedaily.com/releases/2011/01/110113101709.htm>
 - i) January 18, 2011 – US News: Science. <http://www.usnews.com/science/articles/2011/01/18/study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science>
 - j) January 19, 2011 – Media Newswire. http://media-newswire.com/release_1139378.html
 - k) January 20, 2011 – AZoNano. <http://www.azonano.com/news.asp?NewsID=21286>
26. **Cozzens, Susan E. and Jameson M. Wetmore.** November 18, 2010. Nanotechnology, equity issues explored in new book. Arizona State University News. http://asunews.asu.edu/20101118_cnsyearbook2
- a) November 18, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=40859
 - b) November 18, 2010 – Nanowerk. <http://www.nanowerk.com/news/newsid=19074.php>
 - c) November 18, 2010 – First Science. http://www.firstscience.com/home/news/science-business/nanotechnology-and-equity-issues-explored-in-new-book-page-1-1_95836.html
 - d) November 18, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-11/asu-nae111810.php
 - e) November 18, 2010 – Nanotech. <http://nanotech.sujanani.com/news/?p=33001242>
 - f) November 18, 2010 – R&D. <http://www.rdmag.com/News/Feeds/2010/11/materials-nanotechnology-and-equity-issues-explored-in-new-b/>
 - g) November 18, 2010 – Scientific Computing. <http://www.scientificcomputing.com/news-nanotechnology-and-equity-issues-explored-in-new-b-111810.aspx>
 - h) November 19, 2010 – AzoNano. <http://www.azonano.com/news.asp?newsID=20609>
 - i) November 20, 2010 – ElectroIQ. <http://www.electroiq.com/index/display/nanotech-wire-news/1307302203.html>
 - j) December 12, 2010 – Nanotechnology Today. <http://nanotechnologytoday.blogspot.com/2010/12/nanotechnology-and-equity-issues.html>
27. **Davies, Sarah.** 30 November 2010. Hedonistic Travel: The Pleasures of Carlessness. Blooming Rock. <http://bloomingrock.com/?p=1423>

28. **Debone, Jason A.**, Ashley A. Anderson, **Daniel Lee Klein man**, **Motile Colin**, and **Maria Powell**. May 2011. Virtual deliberation? Prospects and challenges for integrating the Internet in consensus conferences. *Public Understanding of Science*. 20:3.
<http://pus.sagepub.com/content/20/3/367.abstract?etoc>
- a. May 2011 – Mendeleyev. <http://www.mendeley.com/research/virtual-deliberation-prospects-challenges-integrating-internet-consensus-conferences-2/>
29. de Gruyter, Naartje. November 2009. "Ethiek op de werkvloer: Bewustwording is het toverwoord." *CSG-magazine LEV*. 2:18-22.
30. **Dirks, Gary**. April 22, 2011. ASU's Gary Dirks chases the sun. Arizona State University News.
http://asunews.asu.edu/20110422_GaryDirks
- a. April 22, 2011 – Academic Keys. [http://humanities.academickeys.com/all/news.php?dothis=display&news\[IDX\]=1905](http://humanities.academickeys.com/all/news.php?dothis=display&news[IDX]=1905)
 - b. April 22, 2011 – Arizona Solar Center. <http://www.azsolarcenter.org/news-highlights/541-asus-gary-dirks-chases-the-sun.html>
 - c. April 22, 2011 – Planet Forward. <http://planetforward.org/productions/gary-dirks/>
31. Euroresidentes. January 23, 2009. Call for Experts in Nanotechnology.
http://translate.google.com/translate?hl=en&sl=pt&tl=en&u=http%3A%2F%2Fwww.euroresidentes.com%2FBlogs%2Fnanotecnologia%2F2009_01_01_archive.html
- a) January 20, 2009 – Nanowerk. <http://www.nanowerk.com/news/newsid=8957.php>
32. **Fisher, Erik**. February 11, 2014. Bioethics Commission Testimony. Presidential Commission for the Study of Bioethical Issues. Sixteenth Meeting. Washington, DC.
<http://www.tvworldwide.com/events/bioethics/140210/>
33. **Fisher, Erik**. June 15, 2011. Franco-British Workshop on Responsible Innovation: Responsible Innovation R&D-The U.S. Experience. French Embassy. <http://www.ambafrance-uk.org/Videos-and-presentations-from-the>
- a. July 6, 2011 – Daily Motion. http://www.dailymotion.com/video/xj5nh1_talk-06-15-erik-fisher-franco-british-workshop-on-responsible-innovation_tech
34. **Fisher, Erik**. May 16, 2011. Responsible Research and Innovation Workshop. European Commission. http://ec.europa.eu/research/science-society/document_library/pdf_06/responsible-research-and-innovation-workshop-newsletter_en.pdf
35. **Fisher, Erik**. Spring 2011. STIR Workshop 2: International Network for Responsible Innovation. Center for Nanotechnology in Society. <http://cns.asu.edu/stir/workshops.php?ws=4>
- a. Spring 2011 – Genome British Columbia. <http://www.genomebc.ca/portfolio/genomics-and-society/genomics-and-society-newsletter/>

36. **Fisher, Erik.** Causing a STIR. Center for Science and Technology Policy Research.
<http://sciencepolicy.colorado.edu/news/fisher.pdf>
37. **Fisher, Erik** and Michael Lightner. December 2009. Entering the Social Experiment: A Case for the Informed Consent of Graduate Engineering Students. Informaworld.
<http://www.informaworld.com/smpp/section?content=a918038010&fulltext=713240928>
38. Frodeman, Robert. November 23, 2010. Experiments in Field Philosophy. Opinionator – The New York Times. <http://opinionator.blogs.nytimes.com/2010/11/23/experiments-in-field-philosophy/>
39. Frow, Emma. November 16, 2010. Clear Skies, Cacti and Collaborations. Genotype.
<http://esrcgenomicsforum.blogspot.com/2010/11/clear-skies-cacti-and-collaborations.html>
40. Galileo: Journal of Science and Global Issues. December 9, 2008. If the Assessment is Moral.
<http://translate.google.com/translate?hl=en&sl=it&tl=en&u=http%3A%2F%2Fwww.galileonet.it%2Fprimo-piano%2F10909%2Fse-il-giudizio-e-morale%3Fprint%3D1>
41. **Garreau, Joel.** January 12, 2010. Technology and Enhancement. Coast to Coast AM Radio Show with George Noory. <http://www.coasttocoastam.com/show/2010/01/12>
42. **Gust, Devens.** April 30, 2009. DOE Funds Bio-Inspired Solar Fuel Center at ASU. Arizona State University News. http://asunews.asu.edu/20090430_EFRC
 - a) May 6, 2009 – SolarServer. <http://www.solarserver.com/solar-magazine/solar-news/current/us-department-of-energy-funds-solar-fuel-center-at-arizona-state-university.html>
43. **Guston, David H.** March 7, 2014. ASU Director finds new journal on responsible innovation. Arizona State University News <https://asunews.asu.edu/20140307-jri-release>
44. **Guston, David H.** February 20, 2014. ASU-led symposium at AAAS conference examines responsible innovation across cultures, political settings. Arizona State University News <https://asunews.asu.edu/2014217-AAAS-responsible-innovation-symposium>
45. **Guston, David H.** March 30, 2010. Public Engagement with Nanotechnology. 2020 Science. <http://2020science.org/2010/03/30/public-engagement-with-nanotechnology>
 - a) March 30, 2010 – NanoCEO. http://www.nanoceo.net/nanonews_03_30_10
46. **Guston, David H.** July 4, 2010. A ‘nano’ overdose? Science and Development Network. <http://scidevnet.wordpress.com/2010/07/04/a-%E2%80%99nano%E2%80%99-overdose/>
47. **Guston, David H.** July 16, 2010. Focus: Preventative Governance. Fondazione Giannino Bassetti. http://www.fondazionebassetti.org/en/focus/2010/07/preventative_governance.html
48. **Guston, David H.** July 17, 2010. Reinventing Technology Assessment for the 21st Century. Science Debate. <http://www.sciencedebate.org/www/index/php?id=77>

- a) April 28, 2010 – Arizona State University News. http://asunews.asu.edu/20100428_cspeocast
- b) April 29, 2010 – R&D. <http://www.rdmag.com/White-Papers/2010/04/Policy-and-Industry-Reinventing-technology-assessment-for-the-21st-century/>
49. **Guston, David H.** August 9, 2010. Curious about nanoscience? Encyclopedia has answers. Arizona State University News. http://asunews.asu.edu/20100805_nanoencyclopedia
- a) August 5, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-08/asu-nre080510.php
- b) August 5, 2010 – AzoNano. <http://www.azonano.com/news.asp?newsID=18920>
- c) August 5, 2010 – Nanowerk. <http://www.nanowerk.com/news/newsid=17537.php>
- d) August 6, 2010 – Bioscience Technology. <http://www.biosciencetechnology.com/News/Feeds/2010/08/industries-new-resource-examines-questions-about-the-role-of/>
- e) August 6, 2010 – News Blaze. <http://newsblaze.com/story/20100806123036zzzz.nb/topstory.html>
- f) August 6, 2010 – R&D. <http://www.rdmag.com/News/Feeds/2010/08/materials-new-resource-examines-questions-about-the-role-of/>
- g) August 6, 2010 – Physorg. <http://www.physorg.com/wire-news/42548277/new-resource-examines-questions-about-the-role-of-nanoscience.html>
- h) August 6, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=39495
- i) August 7, 2010 – Nanovip. <http://www.nanovip.com/new-resource-examines-questions-about-the-role-of-nanoscience.html>
- j) August 8, 2010 – Red orbit. http://www.redorbit.com/news/science/1901941/revolution_on_a_nano_scale/index.html
- k) August 9, 2010 – Medical News Today. <http://www.medicalnewstoday.com/articles/197205.php>
- l) August 9, 2010 – Emedist. <http://emedist.com/pathology/questions-about-the-role-of-nanoscience-examined-in-encyclopedia-of-nanoscience-and-society/>
- m) August 9, 2010 – Nanite News. http://www.nanitenews.com/research/New_resource_examines_questions_about_the_role_of_nanoscience.asp?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+NaniteNews+%28Nanotechnology+News+And+Research%29
50. **Guston, David H.** August 17, 2010. Georgia Tech researchers highlight implications of nanotechnology in new Encyclopedia of Nanoscience and Society. <http://spp.gatech.edu/aboutus/newsarchive>
- a) October 14, 2010 – Georgia Tech News. <http://www.gatech.edu/newsroom/release.html?nid=62178>
- b) October 23, 2010 – Nano Techwire. <http://www.nanotechwire.com/news.asp?nid=10854>

51. **Guston, David H.** October 1, 2010. Reference Reviews. Library Journal. http://www.libraryjournal.com/lj/ljinprintcurrentissue/886705-403/reference_reviews_october_1_2010.html.csp
- a) October 1, 2010 – The Free Library. <http://www.thefreelibrary.com/Encyclopedia+of+nanoscience+and+society%3b+2v.-a0236325480>
52. **Guston, David H.** October 5, 2010. Societal and Ethical Issues in Nanotechnology. Harvard University Center for Nanoscale Systems. www.cns.harvard.edu/nnin/sei.php
53. **Guston, David H.** October 26, 2012. The Much-Needed and Sane Congressional Office That Gingrich Killed Off and We Need Back. The Atlantic. <http://www.theatlantic.com/technology/archive/2012/10/the-much-needed-and-sane-congressional-office-that-gingrich-killed-off-and-we-need-back/264160/>
54. **Guston, David H.** November 30, 2010. Anticipatory Governance of Emerging Technologies. Scientists and Engineers for America. <http://us1.campaign-archive1.com/?u=b3cf515e44b296da2a0004fc0&id=7d9d89bf34>
- a) November 30, 2010 – Slideshare. <http://www.slideshare.net/seforaDOTorg/sea-virtual-seminar-david-guston-nov-30-700-pm-et>
55. **Guston, David H.** December 15, 2010. Cluster One Highlights: Toward the Regulation of Nanomaterials Conference. Youtube. http://www.youtube.com/watch?v=LzdQT4rFDNA&feature=player_embedded#
56. **Guston, David H.** January 6, 2011. Most-Cited Articles as of January 1, 2011. Sage Journals Online – Social Studies of Science. <http://sss.sagepub.com/reports/most-cited>
57. **Guston, David H.** January 7, 2011. 2010 – That was the year that was. Fondazione Giannino Bassetti. http://www.fondazionebassetti.org/en/focus/2011/01/2010_-_that_was_the_year_that.html
58. **Guston, David H.** February 21, 2011. Are We Alone? Make Contact with Science: Nano Nano. SETI Institute. http://radio.seti.org/episodes/Nano_Nano
- a) February 23, 2011 – Arizona State University News. http://asunews.asu.edu/20110223_nanonanoshow
59. **Guston, David H.** June 15, 2011. Chuck Roger: Programming Scientists to Perform Social Engineering. The Dakota Beacon. http://dakotabeacon.com/entry/chuck_roger_programming_scientists_to_perform_social_engineering/
- a. June 13, 2011 – National Association of Scholars. http://www.nas.org/articles/Programming_Scientists_to_Perform_Social_Engineering
- b. June 14, 2011 – Clear Thinking. <http://www.chuckroger.com/2011/06/14/programming-scientists-to-perform-social-engineering/>

60. **Guston, David H.** and Douglas Sylvester. 2009. Sizing Up the Nanotech Situation: How Technology Will Be Used Poses Ethical, Moral and Environmental Questions. Tech Connect, The Nano Issue. http://www.techconnect-digital.com/techconnect/2009fall?pg=25&search_term=guston&search_term=guston#pg25
61. **Guston, David H.** July 2, 2012. Big Picture Science – Nano Nano: David Guston. Blog Picture Science. <http://radio.seti.org/blog/2012/07/big-picture-science-nano-nano-david-guston/>
62. **Guston, David H.** and **Sanborn, Regina.** January 13, 2012. Students operate on nanoscale. The State Press.
63. Hall, Hollie. September 17, 2010. Science Outside the Lab. Integrative Graduate Education and Research Internship. <http://www.igert.org/stories/44>
64. **Haq, Cynthia.** June 19, 2012. Doctor, plant biologist among those named to Wisconsin Academy. Milwaukee Journal Sentinel. <http://www.jsonline.com/blogs/news/159508675.html>
65. Harsh, Matthew. May 12, 2011. Careful design is key to success of development prizes. Science and Development Network. <http://www.scidev.net/en/opinions/careful-design-is-key-to-success-of-development-prizes-1.html>
66. Hays, Sean. April 19, 2011. Can “Do-It-Yourself” Biology handle Our Biggest health Challenges? Arizona State University. <http://asu.edu/president/email/dcinvitation.html>
67. Hendrickson, Kristen and **Scott Lefler.** November 19, 2010. Science Café: You are What You Eat – America’s Relationship with Food. East Valley Tribune. http://www.eastvalleytribune.com/calendar/get_out_calendar/event_bb9fe588-d6cc-5a30-a7d1-897df49f67fd.html
- a) August 20, 2010 – Phoenix Science Café. <http://phoenixsciencecafe.wordpress.com/2010/08/30/you-are-what-you-eat-americas-relationship-with-food/>
 - b) November 18, 2010 – College Times. <http://media.www.collegetimes.com/media/storage/paper991/news/2010/11/18/Calendar/16.Things.To.Do.This.Week-3959902.shtml>
 - c) November 19, 2010 – Eventful. <http://eventful.com/phoenix/events/science-cafe-you-you-eat-americas-relationship-/E0-001-035239672-0>
 - d) November 19, 2010 – Facebook. <http://www.facebook.com/event.php?eid=105425882860281>
 - e) November 19, 2010 – Showup. http://phoenix.showup.com/event/detail/440953956/Science_Cafe_You_Are_What_You_Eat_Americas_Relationship_with_Food
68. Jornal do Brazil – The First Brazilian Internet Newspaper. June 7, 2009. New Border Regulation. http://translate.google.com/translate?hl=en&sl=pt&u=http://jbonline.terra.com.br/leiajb/noticias/2009/06/07/ciencia/nova_frenteira_da_regulacao.asp&ei=7HKqS5CPK4ywsGpntMC9Bg&sa=X&oi=translate&ct=result&resnum=1&ved=0CAoQ7gEwAA&prev=/search%3Fq%3Dnova%2Bfrenteira%2Ba%2Bregulacao%26hl%3Den

69. **Lindsay, Stuart.** August 30, 2010. Lindsay receives White House honors for ‘Recovery Act’ research. Arizona State University News. http://asunews.asu.edu/20100826_lindsaywhitehousehonors
70. **Marchant, Gary.** October 29, 2010. ASU faculty receive federal nanotech renewal grant. Arizona State University News. http://asunews.asu.edu/20101029_nanogrant?utm_source=Arkayne.com&utm_medium=Plugin&utm_campaign=ASU%20News
- a) October 29, 2010 – AzoNano. <http://www.azonano.com/news.asp?newsID=20260>
 - b) October 30, 2010 – ElectroIQ. <http://www.electroiq.com/index/display/nanotech-wire-news/1293323157.html>
 - c) October 30, 2010 – Nanowerk. <http://www.nanowerk.com/news/newsid=18743.php>
 - d) October 31, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=40598
 - e) October 31, 2010 – Nano Techwire. <http://www.nanotechwire.com/news.asp?nid=10904>
 - f) November 1, 2010 – Eureka Alert. http://www.eurekaalert.org/pub_releases/2010-11/asu-fnr110110.php
 - g) November 1, 2010 – First Science. http://www.firstscience.com/home/news/chemistry-physics-and-materials-sciences/federal-nanotechnology-renewal-grant-awarded-to-asu-faculty_94670.html
 - h) November 2, 2010 – R&D. <http://www.rdmag.com/News/Feeds/2010/11/policy-federal-nanotechnology-renewal-grant-awarded-to-as/>
71. **Marchant, Gary, David Guston and Jane Maienshein.** May 2011. Rapid Revolution: ASU faculty explore how to manage technology’s advance. ASU Magazine. <http://trendmag2.trendoffset.com/publication/?i=70000>
72. **Marchant, Gary, Kenneth Abbott and Douglas Sylvester.** December 2, 2009. LST Builds First Global Nanotech Regulation Database. Arizona State University News. http://asunews.asu.edu/2009122_LSTNanotechnology
- a) December 2, 2009 – Physorg. <http://www.physorg.com/news178997767.html>
 - b) December 2, 2009 – Flinn Foundation. <http://www.flinn.org/bio-briefs/2122>
 - c) December 3, 2009 – Institute of Nanotechnology. <http://www.nano.org.uk/news/290/>
 - d) December 7, 2009 – Nanoforum. <http://www.nanoforum.org/nf06~modul~showmore~folder~99999~scc~news~scid~4038~.html?action=longview>
 - e) December 8, 2009 – InterNano. <http://www.internano.org/content/view/325/95/>
 - f) January 5, 2010 – Nanodialog. http://nanodialog.eu/index.php?option=com_content&task=view&id=85&Itemid=38
73. **Miller, Clark A.** July 25, 2010. Viewpoints: Coverage of massive problems leaves the public feeling helpless. The Sacramento Bee. <http://www.sacbee.com/2010/07/25/2911646/coverage-ofmassive-problems-eaves.html#ixzz0uuFqqXkq>

74. **Miller, Clark A.** October 26, 2010. Why Nano Matters: Saving the World. NISE Network. http://www.nisenet.org/blogs/real_world_nano/why_nano_matters_saving_world
75. **Petrucci, Darren** and Rider W. Foley. February 26, 2014. ASU Collaborators use scenarios to explore future of Phoenix. Arizona State University News. <https://asunews.asu.edu/20140226-scenarios-future-phoenix>
76. Phoenix Business Journal. April 3, 2009. E-mail, Instant Messaging and Internet Use are Rampant, but Do They Make Us More Productive? <http://www.bizjournals.com/phoenix/stories/2009/04/06/focus1.html>
77. Phoenix Business Journal. October 17, 2010. Nanotechnology Could Spur Medical Breakthroughs. <http://www.bizjournals.com/phoenix/stories/2010/10/18/focus1.html>
78. Phoenix Business Journal. October 17, 2010. 5 Questions: About Nanoscience. <http://www.bizjournals.com/phoenix/stories/2010/10/18/focus2.html>
79. Pirtle, Zachary. January 4, 2011. Bridging Technological and Philosophical Worlds. Arizona State University News – Ira A. Fulton Schools of Engineering. <http://engineering.asu.edu/news/8215>
- a) January 4, 2011 – Arizona State University News. <http://asunews.asu.edu/node/17462>
80. **Porter, Alan L.** and **Jan Youtie.** September, 2009. Where Does Nanotechnology Belong in the Map of Science. *Nature Nanotechnology*, 4: 534-536. <http://www.nature.com/nnano/journal/v4/n9/full/nnano.2009.207.html>
- a) September 7, 2009 - Georgia Tech Research News. <http://gtresearchnews.gatech.edu/mapping-nanotechnology/>
- b) September 7, 2009 – EurekAlert. http://www.eurekalert.org/pub_releases/2009-09/giot-act090409.php
- c) September 7, 2009 – AZoNano. <http://www.azonano.com/news.asp?newsID=13504>
- d) September 7, 2009 – ScienceDaily. <http://www.sciencedaily.com/releases/2009/09/090907141912.htm>
- e) September 7, 2009 – e! Science News. <http://esciencenews.com/articles/2009/09/07/analysis.confirms.nano.related.research.has.strong.multidisciplinary.roots>
- f) September 7, 2009 – R&D. <http://www.rdmag.com/News/Feeds/2009/09/life-sciences-analysis-confirms-that-nano-related-research-has-s/>
- g) September 7, 2009 – Physorg. <http://www.physorg.com/news171521941.html>
- h) September 7, 2009 – NewsGuide. <http://newsguide.us/index.php?path=/education/science/Analysis-confirms-that-nano-related-research-has-strong-multidisciplinary-roots/&date=2009-09-07>
- i) September 7, 2009 – First Science. http://www.firstscience.com/home/news/breaking-news-all-topics/analysis-confirms-that-nano-related-research-has-strong-multidisciplinary-roots_70063.html
- j) September 9, 2009 – Flinn Foundation. <http://foundation.flinn.org/bio-briefs/1843>

- k) September 9, 2009 – newswise. <http://www.newswise.com/articles/nano-research-has-strong-multidisciplinary-roots>
- l) September 9, 2009 – innovations report. http://www.innovations-report.com/html/reports/studies/analysis_confirms_nano_related_research_strong_139335.html
- m) October 23, 2009 – Nanotechnology Today. <http://nanotechnologytoday.blogspot.com/2009/10/analysis-confirms-that-nano-related.html>
81. **Posner, Jonathan.** March 3, 2010. Exploring the Implications of Nanotechnology. Arizona State University News. http://asunews.asu.edu/20100226_posnernanotechnology
- a) February 27, 2010 – Nanowerk. <http://www.nanowerk.com/news/newsid=15076.php>
- b) March 3, 2010 – Physorg. <http://www.physorg.com/wire-news/29076975/exploring-the-implications-of-nanotechnology.html>
82. **Posner, Jonathan.** April 30, 2010. Nanotechnology Promises Water Resource Gains But Raises Concerns. Arizona Water Resource – Spring 2010. <http://ag.arizona.edu/azwater/awr/awr-Spring-2010.html>
83. **Posner, Jonathan.** May 2010. Too Small to Ignore. Arizona State University Magazine. <http://trendmag2.trendoffset.com/publication/index.php?i=37797&m=&l=&p=4&pre=&ver=swf>
84. **Robert, Jason.** November 23, 2010. Professors Study Repercussions of Living Longer. State Press. <http://www.statepress.com/2010/11/23/professors-study-repercussions-of-living-longer/>
85. **Sarewitz, Daniel and Jameson Wetmore.** August 27, 2010. Blogging from France: science and public debate. Arizona State University News. http://asunews.asu.edu/20100824_eurosummerschool
86. **Sarewitz, Daniel, Lee Gutkind, David Guston, and Jameson Wetmore.** May 26, 2011. New faculty books: From nanotechnology to creative nonfiction. Arizona State University News. https://asunews.asu.edu/20110526_newfacultybooks
87. **Scheufele, Dietram A. and Elizabeth A. Corley.** June 19, 2009. Scientists and Public Differ on Views about Nanotechnology Regulation. University of Wisconsin-Madison News. <http://www.news.wisc.edu/16840>
- a) June 19, 2009 – Physorg. <http://www.physorg.com/news164642077.html>
- b) June 19, 2009 – Nano Techwire. <http://nanotechwire.com/news.asp?nid=8103>
- c) June 19, 2009 – AzoNano. <http://www.azonano.com/news.asp?newsID=12164>
- d) June 19, 2009 – Nanowerk. <http://www.nanowerk.com/news/newsid=11272.php>
- e) June 22, 2009 – Nanotechnology Now. http://nanotech-now.com/news.cgi?story_id=33616
- f) June 24, 2009 – Arizona State University News. http://asunews.asu.edu/20090622_nanotechnologystudy
88. **Scheufele, Dietram A. and Elizabeth A. Corley.** January 12, 2010. U.S. Faces Widening Information Gap on Nanotechnology. University of Wisconsin-Madison News. <http://www.news.wisc.edu/17527>

- a) January 1, 2010 – The Scientist. <http://www.the-scientist.com/2010/1/1/22/1/>
 - b) January 11, 2010 – Nanotechnology Now. http://nanotech-now.com/news.cgi?story_id=36214
 - c) January 12, 2010 – Safe Nano. <http://www.safenano.org/SingleNews.aspx?NewsID=948>
 - d) January 12, 2010 – Arizona State University News. http://asunews.asu.edu/20100111_nanotechreport
 - e) January 12, 2010 – Wisconsin Technology Network News. <http://wistechnology.com/articles/6985/>
 - f) January 12, 2010 – Physorg. <http://www.physorg.com/print182534558.html>
 - g) January 13, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=36243
 - h) January 13, 2010 – Nano Techwire. <http://www.nanotechwire.com/news.asp?nid=9282>
89. **Scheufele, Dietram A., Dominique Brossard, Sharon Dunwoody, Elizabeth A. Corley, David H. Guston** and Hans Peter Peters. August 4, 2009. Are Scientists Really Out of Touch? The Scientist. <http://www.the-scientist.com/news/display/55875/>
90. **Scheufele, Dietram A.** August 1, 2012. Flavors of Uncertainty: The Difference between Denial and Debate. Environmental Health Perspectives.
a) August 1, 2012 – Medscape Today. <http://www.medscape.com/viewarticle/768722>
91. **Scheufele, Dietram A.** November 8, 2012. UW contingent among Kavli Frontiers of Science fellows. University of Wisconsin Madison News. <http://www.news.wisc.edu/21250>
92. **Scheufele, Dietram A.** March 8, 2013. A brave new (online) world: Emerging technologies at the intersection of science, policy, and rapidly changing media environments. Talk.
93. **Seager, Thomas P.** July 16, 2012. Are smartphone apps influencing our humanity?. Arizona State University News. https://asunews.asu.edu/20120716_inthenews_apps
94. **Selin, Cynthia** and **Wiek, Arnim.** December 17, 2012. Sustainability & Nanotechnology: Generating Excitement in Emerging Sciences. The Tomorrow Project. <http://us.tomorrow-projects.com/2012/12/sustainability-nano-technology-generating-excitement-in-emerging-sciences/>
95. **Selin, Cynthia.** December 2012. Future Forward. ASU Magazine.
96. **Shapira, Phillip** and Jue Wang. December 11, 2010. Nanotechnology Research: Study Finds Web of International Collaboration in \$8.6 Billion Worldwide Research Activity. Georgia Tech Research News. <http://gtresearchnews.gatech.edu/nanotech-international-collaboration/>
a) December 9, 2010 – Physorg. <http://www.physorg.com/news/2010-12-web-international-collaboration-boosts-worldwide.html>
b) December 9, 2010 – Science Blog. <http://scienceblog.com/40957/web-of-international-collaboration-boosts-worldwide-nanotechnology-research/>
c) December 11, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=41109

- d) December 11, 2010 – Infogreen Global. <http://infogreenglobal.com/international-collaboration-boosts-nanotechnology-research/>
 - e) December 12, 2010 – Nano Techwire. <http://nanotechwire.com/news.asp?nid=11255>
 - f) December 12, 2010 – Interesting Tech. <http://interesting.rk.net.nz/?p=9906>
 - g) December 16, 2010 – Scientific Computing.
<http://www.scientificcomputing.com/PrinterFriendly.aspx?id=35816&url=http%3A%2F%2Fwww.scientificcomputing.com%2Fnews-study-finds-international-collaboration-in-nanotec-121710.aspx>
 - h) January 5, 2011 – Arizona State University News.
http://asunews.asu.edu/20110105_nanotech_research
 - i) January 6, 2011 – Nanowerk. <http://www.nanowerk.com/news/newsid=19599.php>
 - j) January 6, 2011 – AzoNano. <http://www.azonano.com/news.asp?NewsID=21122>
97. Technische Universität Darmstadt. 2010. Second Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies. <http://www.philosophie.tu-darmstadt.de/nanobuero/snet2010/welcome.de.jsp>
98. **Tillery, Stephen Helms** and **Robert, Jason**. May 2012. Thinking with the mind's eye. ASU Magazine
99. Toor, Rebecca. September 2012. "Causing a STIR." *International Innovation*. p. 76.
100. Toor, Rebecca. September 2012. "Midstream Transformation." *International Innovation*. p. 77-79.
101. **van der Leeuw, Sander**. June 4, 2012. UN names ASU sustainability dean a 'Champion of the Earth'. Arizona State University News. https://asunews.asu.edu/20120604_UNchampionlaureate
- a) June 4, 2012 – Eureka Alert!. http://www.eurekaalert.org/pub_releases/2012-06/asu-uns060412.php
 - b) June 4, 2012 – News Wise. <http://www.newswise.com/articles/view/590018/>
 - c) September 2012 – ASU Magazine
102. **van der Leeuw, Sander**. October 4, 2012. Future Tense: anticipating implications of emerging technologies. Arizona State University News. https://asunews.asu.edu/20121004_futuretense
103. **Wetmore, Jameson** April 20, 2010. ASU expert discusses 'why cars move men.' Arizona State University News. http://asunews.asu.edu/20100420_cars_wetmore
- a) April 19, 2010 – Men's Health. <http://www.menshealth.com/best-life/men-and-cars>
104. **Wetmore, Jameson** and Mary Jane Parmentier. December 20, 2010. Blogging from Dubai. Arizona State University News. <http://asunews.asu.edu/node/17370>
105. **Wetmore, Jameson, Elizabeth A. Corley** and Neal Woodbury. October 15, 2010. Nano Focus. Phoenix Business Journal.
106. Xenos, Michael A., Amy B. Becker, Ashley A. Anderson, **Dominique Brossard**, and **Dietram A. Scheufele**. Stimulating upstream engagement: An experimental study of nanotechnology information seeking. *Social Science quarterly*. 92:5. <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6237.2011.00814.x/abstract>

107. **Youtie, Jan** and **Phillip Shapira**. October 13, 2010. Beyond the Nobel Prize, what's next for graphene? Arizona State University News. http://asunews.asu.edu/20101012_cnsgraphenestudy
- a) October 12, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-10/asu-btn101210.php
 - b) October 12, 2010 – Softpedia. <http://news.softpedia.com/news/Conducting-Graphene-Studies-Beyond-the-Nobel-160689.shtml>
 - c) October 13, 2010 – Scientific Computing. <http://www.scientificcomputing.com/news-DS-Beyond-the-Nobel-Prize-Whats-Next-for-Graphene-101810.aspx#>
 - d) October 13, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=40392
 - e) October 13, 2010 – Product Sourcing. <http://www.jihsin.com/manufacturers/information-technology/beyond-the-nobel-prize-whats-next-for-graphene.html>
 - f) October 13, 2010 – Electronic Component News. <http://www.ecnmag.com/News/2010/10/Beyond-the-Nobel-Prize--what-s-next-for-graphene-/>
 - g) October 13, 2010 – ChemInsider. <http://www.chem.info/News/Feeds/2010/10/topics-plant-operations-beyond-the-nobel-prize-whats-next-for-graphene-/>
 - h) October 13, 2010 – Bio-Medicine. <http://www.bio-medicine.org/biology-technology-1/Beyond-the-Nobel-Prize--whats-next-for-graphene-3F-17600-1/>
 - i) October 13, 2010 – Physorg. <http://www.physorg.com/news/2010-10-nobel-prize-big-graphene.html>
 - j) October 13, 2010 – Nanowerk. <http://www.nanowerk.com/news/newsid=18468.php>
 - k) October 13, 2010 – R&D. <http://www.rdmag.com/News/2010/10/Materials-Nanotechnology-Beyond-the-Nobel-Prize-whats-next-for-graphene/>
 - l) October 18, 2010 – Georgia Tech News. <http://ww.gatech.edu/newsroom/release.html?nid=62364>
108. **Youtie, Jan** and **Philip Shapira**. May 19, 2011. Miracle Material: Two-dimensional grapheme may lead to faster electronics, stronger spacecraft and much more. National Science Foundation. http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=119493&WT.mc_id=USNSF_1
- a) May 19, 2011 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=42492
 - b) May 19, 2011 – NanoTechwire. <http://nanotechwire.com/news.asp?nid=12081>
 - c) May 19, 2011 – Nanowerk. <http://www.nanowerk.com/news/newsid=21413.php>
109. **Youtie, Jan**. February 19, 2013. Time to reassess the promise of nanotechnology? An analysis of research, developments and commercialization. Talk.

Invention Disclosure

1. Scio: A Nano-enhanced, Convenient, Portable Cancer Biomarker Testing Device. (2008, April).
2. Flux: A Cast with Adjustable Rigidity that Allows for Faster Recovery. (2008, April).

3. Explore: A Mobile Haptic Text to Braille Translator. (2008, April).
4. Nome: An Energy-producing Shelter for Natural Disaster Victims. (2009, April).
5. Everwell: A Device for Rural Users that Converts Air Humidity into Potable Water. (2009, April).
6. Tangent: A Solar-powered Individualized Urban Transportation. (2009, April).

Patents Awards or Filed

1. Walsh, John P., and Li Tang. "Identification disambiguation in databases." U.S. Patent No. 8,799,237. 5 Aug. 2014.

16. Biosketches

New investigators for this grant year include the following team leaders :

1. Rider Foley - assistant professor, University of Virginia
2. Kathryn de Ridder-Vignone – assistant professor, James Madison University

Please note that their biosketches follow in this section.

Rider W. Foley

(a) Professional Preparation

University of New Hampshire, Durham NH	Environmental Science	BS, 2001
Harvard University, Cambridge, MA	Environmental Management	MLA, 2008
Arizona State University, Tempe, AZ	Sustainability	Ph.D, 2013
Arizona State University, Tempe, AZ	Consortium for Science, Policy & Outcomes	Post-Doc 2013 - 2014

(b) Appointments

2014 – Current	Assistant Professor, Engineering and Society, University of Virginia
2012 – Current	Research Collaborator, Sustainability Science Education project, Arizona State University (ASU)
2014 – Current	Co-Leader, Center for Nanotechnology in Society, ASU
2013 – 2014	Postdoctoral Scholar, Consortium for Science, Policy & Outcomes, ASU
2012 – 2013	Faculty Associate, Mary Lou Fulton Teachers College, ASU
2011 – 2012	Faculty Associate, School of Sustainability, ASU
2010 – 2013	Graduate Research Assc., Center for Nanotechnology in Society, ASU
2006 – 2010	General Manager, Triumvirate Environmental
2004 – 2006	On-site Services Manager, Triumvirate Environmental
2002 – 2004	Environmental Chemist, Triumvirate Environmental

(c) Publications

1. **Foley, Rider W.**, Arnim Wiek. (2014). "Scenarios of Nanotechnology Innovation vis-à-vis Sustainability Challenges" *Futures* 64, DOI.10.1016/j.futures.2014.09.005
2. **Foley, Rider W.**, Arnim Wiek. (2013). "Patterns of Nanotechnology Innovation and Governance within a Metropolitan Area." *Technology in Society* 35(4): 233-247.
3. **Foley, Rider W.**, Ira Bennett, Jameson M. Wetmore. (2012). "Practitioners' Views on Responsibility: Applying Nanoethics." *Nanoethics* 6(3): 231-241.
4. Wiek, Arnim, **Rider W. Foley**, David H. Guston. (2012). "Nanotechnology for Sustainability – What Does Nanotechnology Offer to Address Complex Sustainability Problems?" *Journal of Nanoparticle Research* 14: 1093.
5. Bernstein, Michael J., **Rider W. Foley**, Ira Bennett. (2014). "An Operationalized Post-normal Science Framework for Assisting in the Development of Complex Science-policy Solutions: The Case of Nanotechnology Governance." *Journal of Nanoparticle Research* 16(7): 2492.

Other Publications

1. **Foley, Rider W.**, David H. Guston, Daniel Sarewitz. (accepted, 2015) "Toward the Anticipatory Governance of Geoengineering." In J. Blackstock, C. A. Miller, & S. Rayner (eds.) *Engineering our Climate? Ethics, Politics and Governance of Climate Engineering*. Earthscan-Routledge.
2. Wender, Ben, **Rider W. Foley**, Valentina Prado-Lopez, Daniel Eisenberg, Dwarakanath Ravikumar, Troy Hottle, Jathan Sadowski, William Flanagan, Angela Fisher, Lisa Laurin, Thomas P. Seager, Matthew Fraser, David H. Guston. (2014). "Illustrating Anticipatory Life Cycle Assessment for Emerging Photovoltaic Technologies" *Environmental Science and Technology* 48 (18): 10531-10538. DOI.10.1021/es5016923
3. Wender, Ben A., **Rider W. Foley**, Troy Hottle, Jathan Sadowski, Valentina Prado-Lopez, Dan E. Eisenberg, Lise Laurin, Thomas P. Seager. (2014) "Anticipatory Life Cycle Assessment for Responsible Research and Innovation." *Journal of Responsible*, 1(2): 200-207

Foley - 1

4. Arora, Sanjay, **Rider W. Foley**, Jan Youtie, Philip Shapira, Arnim Wiek. (2014). "Drivers of Technology Adoption—The Case of Nanomaterials in Building Construction." *Technological Forecasting and Social Change* 87: 232–244.
5. Wender, Benjamin, **Rider W. Foley**, Thomas P. Seager, David H. Guston, Arnim Wiek. (2012-2013). "Anticipatory Governance and Anticipatory Life Cycle Assessment of Single Wall Carbon Nanotube Anode Lithium Ion Batteries." *Journal of Nanotechnology Law and Business* 9(3): 201-216.

(d) Synergistic Activities

I combine synergistic activities with my professional and scholarly duties. Below are five cases:

1. I developed curriculum materials for an innovative pedagogical approach that couples classroom activities and digital storytelling as part of the Sustainability Science Education project. The curriculum development teams worked collaboratively with contributions from experts in pedagogy, sustainability science, videographers, and graphic artists.
2. I am researching the effectiveness of integrating online learning and classroom activities and a book chapter demonstrates my commitment to the science of learning.
3. In another research project with the Community Involvement Group at the Motorola 52nd Street Superfund Site I involved students at the Bioscience High School in Phoenix, a public magnet school dedicated to science, mathematics, engineering and technology education and with a highly diverse population through activity-based learning and advising.
4. My research with the Community Involvement Group explored a novel approach for participatory technology assessment and design, called *Collaborative On-site Technology Exploration* that allows scientists and engineers to more effectively share knowledge with community members, which will be published in an upcoming book chapter.
5. I have led the development of the Nanotechnology in City Environments (NICE) database, which is an interactive catalogue of nanotechnology applications that supports research and education. The database attracts 1,174 and 1,578 new users per month last year.

(e) Collaborators & Other Affiliations

- **Collaborators and Co-Editors.**

Archambault, Leanna, ASU	Guston, David H., ASU	Seager, Thomas P., ASU
Arora, Sanjay, Ernst Young	Keeler, Lauren, Luephana	Shapira, Philip, Georgia Tech
Bernstein, Michael J., ASU	University	Warren, Annie E., ASU
Bennett, Ira., ASU	Prado-Lopez, Valentina, ASU	Wender, Benjamin A., ASU
Eisenberg, Dan E., ASU	Rushforth, Richard, ASU	Wetmore, Jameson M., ASU
Fraser, Matthew, ASU	Sadowski, Jathan, ASU	Wiek, Arnim, ASU
Hottle, Troy, ASU	Sarewitz, Daniel, ASU	Youtie, Jan, Georgia Tech

- **Graduate Advisors and Postdoctoral Sponsors.**

None

- **Thesis Advisor and Postgraduate-Scholar Sponsor.**

Arnim Wiek, School of Sustainability, ASU
 David H. Guston, Consortium for Science, Policy & Outcomes, Arizona State University
 Thomas P. Seager, Sustainable Engineering & Built Environment, Arizona State University
 Benjamin A. Minter, School of Sustainability, Arizona State University

KATHRYN DUSHANE DE RIDDER-VIGNONE

College of Integrated Science and Engineering

James Madison University

vignonkd@jmu.edu (864) 918 9110

CURRENT POSITION

August 2014 - present

Assistant ProfessorDepartment of Integrated Science & Technology (ISAT),
James Madison University**PREVIOUS EXPERIENCE**

August 2012 – August 2014

Post-doctoral Research Associate
Center for Nanotechnology in Society
Consortium for Science Policy & Outcomes (CSPO)
Arizona State University**EDUCATION****2013 Ph.D. Department of Science & Technology Studies**

Cornell University

Dissertation: *Democratizing Nanotechnology: The Nanoscale Informal Science Education Network and the Meaning of Civic Education*

Committee: Bruce Lewenstein (Chair), Michael Lynch, and Ronald Kline, Stephen Hilgartner (outside reader)

2008 M.A. Department of Science & Technology Studies

Cornell University

Concentrations: Science Communication, Museums Studies, Images and Visualizations in Science, Users in 19th and 20th century History of Technology, Emerging Technologies**2005 Baccalaureus Artium et Scientiae South Carolina Honors College**

University of South Carolina

Concentrations: Interdisciplinary Sciences, History, Art History, Literature, Cultural Studies

Honors Thesis: *Presenting Images Accurately to Maintain the Integrity of Nanotechnologies as They Are Communicated to the Public: The Visual Artist's Role in the Process***AREAS OF RESEARCH EXPERTISE**

Social and ethical issues of emerging technologies, public understanding of and engagement with emerging technologies, civic education and learning in the governance of emerging technologies, materiality in science communication, users as agents of sociotechnical and political change, museum studies, visual studies and visualizations in science policy and communication, issues of sustainability in shaping urban spaces, qualitative research methods, including visual studies

17. Honors and Awards

Arora, Sanjay. Best Doctoral Student 2014, School of Public Policy, Georgia Institute of Technology.

Bernstein, Michael, Kiera Reifschneider, Ira Bennett & Jamey Wetmore. Best Student Poster in the Social Sciences, 2015 AAAS, for poster on Science Outside the Lab (SotL).

Boradkar, Prasad. Promoted to Professor, The Design School, Arizona State University and Co-Director of the Bio-Mimicry Center.

Brossard, Dominique. Received Romnes Faculty Fellowship, March 2015.

Conley, Shannon. Appointed Assistant Professor, Department of Integrated Science and Technology, James Madison University.

Corley, Elizabeth. 2014 Nominee for ASU Commission on the Status of Women Outstanding Contribution and Achievement Award.

Corley, Elizabeth. Chosen for Cohort III of the ASU Leadership Academy for 2015-2016.

De Ridder-Vignone, Kathryn. Appointed Assistant Professor of Social Context, Integrated Science and Technology, James Madison University.

Fisher, Erik. President, Steering Committee, Communities of Integration Network for 2014-2015.

Foley, Rider. Appointed Assistant Professor, Science, Technology, & Society, University of Virginia.

Jabbhdari, Sahra. Best Undergraduate 2014, School of Public Policy, Georgia Institute of Technology.

Keys, Cameron. Presidential Management Fellow at U.S. Army, January 2015.

Porter, Alan. Research Publication Award, International Association of Management of Technology, May 2014.

Reifschneider, Kiera. Joined U.S. Government Accountability Office as Senior Physical Scientist.

Scheufele, Dietram. Received Vilas Distinguished Achievement Professorship, University of Wisconsin—Madison, 2015.

Scheufele, Dietram. Elected member, Deutsche Akademie der Technikwissenschaften (German National Academy of Science and Engineering), 2014.

Scheufele, Dietram. Web of Science Top 1% Highly Cited Paper in General Social Sciences, "Framing, agenda setting, and priming: The evolution of three media effects models" (with David Tewksbury), 2014.

Scheufele, Dietram. Kellett Mid-Career Award, University of Wisconsin – Madison, April 2014.

Selin, Cynthia. Marie Curie Fellowship, Management Engineering Department, Technical University of Denmark.

Vortherms, Kaitlin. Miss Phoenix 2015, CNS-ASU Engineering fellow at ASU School of Sustainable Engineering and the Built Environment.

Wender, Ben. Environmental Protection Agency Science to Achieve Results (EPA-STAR) graduate fellowship, August 2014.

Wetmore, Jameson. Recipient of the 2014 SHESC Director's Award for Excellence in Undergraduate Teaching for the School of Human Evolution and Social Change, Arizona State University.

Woodson, Thomas. Appointed Assistant Professor, Department of Technology and Society, Stonybrook University.

Youtie, Jan. Research Publication Award, International Association of Management of Technology, May 2014.

18. Fiscal Sections

a. Statement of Unobligated Funds

CNS-ASU is projected to expend \$5,803,207 of the \$6,669,900 grant funds received (including one supplement of \$172,900) by August 31, 2015, the current end of the CNS-ASU grant for NSF Grant Award #0937591. This will leave a projected residual of \$866,693.

In order to fully complete the scope of work under the award, CNS-ASU will apply for a one-year, no-cost extension immediately following the submission of this annual report. It is expected that the funds which will be remaining as of August 31, 2015, will support the additional year and be fully expended by the new projected end date of the grant, August 31, 2016.

In addition, CNS-ASU received a second supplement during the reporting year for Broadening Participation in the project in the amount of \$237,498. These funds are planned to be expended primarily in the summers of 2015 and 2016 (after a one year, no-cost extension).

b. Grant Budgets

There are several budget reports and associated budget justifications reported in this section as follows:

- i. Actual budget expenses from September 1, 2014 through February 28, 2015.
- ii. Projected budget expenses from March 1, 2015 through August 31, 2015.
- iii. Projected budget expenses from September 1, 2015 to August 31, 2016.

c. Subaward Grant Budgets

Subaward budget reports and budget justifications are reported in this section as follows:

Georgia Tech

- iv. Actual budget expenses from September 1, 2014 through February 28, 2015.
- v. Projected budget expenses from March 1, 2015 through August 31, 2015.
- vi. Projected budget expenses from September 1, 2015 to August 31, 2016.

University of Wisconsin - Madison

- vii. Actual budget expenses from September 1, 2014 through February 28, 2015.
- viii. Projected budget expenses from March 1, 2015 through August 31, 2015.

University of Virginia

- ix. Actual budget expenses from September 1, 2014 through February 28, 2015.
- x. Projected budget expenses from March 1, 2015 through August 31, 2015.

20. Leverage

The Center for Nanotechnology in Society at Arizona State University (CNS-ASU) has developed over its nine years in operation relationships/partnerships with two hundred seventy-two (272) academic partnering institutions and two hundred thirty-seven (237) non-academic partnering institutions, both domestic and international. The partners are listed in Table 6, at the end of this section.

Arizona State University (ASU) provides salary support for most of the faculty who work on CNS-ASU projects. Table 5 shows the amount of financial support CNS-ASU will receive from ASU and its subawards (Georgia Institute of Technology and University of Wisconsin, Madison) between September 1, 2013 and August 31, 2014

Some successful partnerships include:

1. Consortium for Science, Policy and Outcomes (CSPO) – CNS-ASU receives support from CSPO that includes office space, desktop computers for all CNS-ASU faculty, staff, post-doctoral associates, and students, as well as access to servers, laptop computers, printers, copiers, scanners, projectors, fax machine, telephones, and a conference room with videoconferencing capability. CSPO also provides back-up for CNS-ASU staff.
2. *Emerge: Artists and Scientists Redesign the Future* is a special event held late each winter at ASU uniting artists, engineers, bio-scientists, social scientists, storytellers, and designers to build, draw, write, and rethink the future of the human species and the environments that we share. Together, participants create provocative and evocative stories, games, performances, and objects from which visions of our futures emerge. CNS-ASU has been involved since the first *Emerge* in 2013, with large contributions from the Sandra Day O'Connor College of Law, the School of Arts, Media and Engineering, the Center for Science and the Imagination, the Lincoln Center for Applied Ethics, the Ira A. Fulton Schools of Engineering, and the Global Institute of Sustainability.
3. InnovationSpace -- an entrepreneurial joint venture among the Herberger Institute for Design and the Arts, the Ira A. Fulton Schools of Engineering, and the W.P. Carey School of Business at ASU. The goal of this transdisciplinary education and research lab is to teach students how to develop products that create market value, while serving real societal needs and minimizing impacts on the environment. Students learn to create products that are progressive, possible, and profitable, which also have a meaningful impact on the daily lives of ordinary people. Innovation Space utilizes two fundamental strategies for creating sustainable innovation: a model of new product development known as [Integrated Innovation](#) and the emerging field of [biomimicry](#). CNS-ASU contributes \$30,000 annually to this endeavor.
4. The Biodesign Institute – plays a critical role in advancing the research mission of ASU to conduct use-inspired research, fuse intellectual disciplines, and value entrepreneurship. Encompassing 350,000 square-feet of award-winning, state-of-the-art, LEED-certified buildings, the Biodesign Institute represents the State of Arizona's largest research infrastructure investment in bioscience-related research. ASU is the first university in the US to create an interdisciplinary research institute entirely devoted to bio-inspired innovation principles, representing a vast expansion of ASU's state-of-the-art research capacity, and also serving a core mission to engage the talents of its multidisciplinary scientists to find solutions to some of society's largest challenges. The three major areas in which the Biodesign Institute is working to make a difference are: biomedicine & health

outcomes, sustainability, and security. This framework allows the Institute to address these critical global challenges by creating “use-inspired,” as well as “bio-inspired” solutions.

CNS-ASU and the Biodesign Institute offer fellowships to two graduate students. The purpose of this program is to train students to work in cross-functional teams toward real-world outcomes. Since all research has implications beyond the laboratory, CNS-ASU invests in graduate students to study some of these outcomes by paying a percentage of their salary, employee related expenses, and tuition. CNS-BDI Fellows participate in CNS-ASU sponsored curricular and co-curricular activities, including special courses, seminars, lectures, science cafes, and other opportunities, in addition to adding a “societal implications” chapter to their dissertation, the “PhD plus” component, which discusses the societal context of their research.

5. Ira A. Fulton Schools of Engineering – play a pivotal role in producing engineers and innovations to address the changing needs of society. FSE emphasizes problem-solving, innovation, entrepreneurship, multi-disciplinary interactions, societal context and connections. FSE ranks in the top 50 engineering schools in the United States, and offer 15 degree programs. It also is one of the largest engineering schools, with more than 200 faculty, more than 7,700 students, and more than \$78 million in externally funded research. CNS-ASU and FSE offer fellowships to two graduate students. The purpose of this program is to train students to work in cross-functional teams toward real-world outcomes. Since all research has implications beyond the laboratory, CNS-ASU invest in graduate students to study some of these outcomes by paying a percentage of their salary, employee related expenses, and tuition. CNS-FSE Fellows participate in CNS-ASU sponsored curricular and co-curricular activities, including special courses, seminars, lectures, science cafes, and other opportunities, in addition to adding a “societal implications” chapter to their dissertation, the “PhD plus” component, which discusses the societal context of their research.
6. Barrett Honors College - Barrett students have the unique advantage of experiencing a small, intellectually, and socially vibrant environment, while having access to the vast resources of the major research university at ASU. Barrett students simultaneously benefit from being with others of the same intellectual preparation and commitment, and enjoy the advantages of a university environment actively engaged in exploring all areas of human interest and concern. All students who enter ASU through Barrett, The Honors College, also enroll in a disciplinary college, and pursue one or more of the 275+ available disciplinary majors and concentrations. Their education is the result of the integration of all colleges at ASU, including Barrett, that cultivate the talents and interests of Barrett students and endeavor to meet their changing needs as they develop academically and socially. Barrett students, hired as CNS-ASU student interns, participate in the CNS-ASU poster session at the All Hands Meeting and the site visit from the National Science Foundation. Barrett students who have worked with CNS-ASU have gone on to win Fulbright fellowships and Presidential Management Fellowships.
8. Center for Science and the Imagination – brings writers, artists, and other creative thinkers into collaboration with scientists, engineers, and technologists to reignite humanity’s grand ambitions for innovation and discovery. CNS-ASU partnered with CSI to present a lecture on human enhancement and the singularity in the reporting year. CSI is also working with CSPO and CNS-ASU on the Frankenstein Bicentennial Project.

9. University of Notre Dame – and CNS-ASU will host a collaborative research workshop on the “Anticipatory Governance of Complex Engineered Nanomaterials,” including advanced generation nanosystems. The workshop will be a joint effort of the Centers for Environmental Implications of Nanotechnology, the Centers for Nanotechnology in Society, the Center for Nano Science and Technology, and other relevant groups. The workshop will generate new knowledge about the prospective governance challenges of CENMs, and will take full advantage of the dissemination abilities of the centers and/or groups involved.

10. Nanoscience and Emerging Technologies in Society: Sharing Research and Learning Tools (NETS) project – investigates digital resources to advance the collection, dissemination, and preservation of this body of research, addressing the challenge of marshaling resources, academic collaborators, appropriately skilled data managers, and digital repository services for large-scale, multi-institutional and disciplinary research projects. The central activity of this project involves a workshop that will gather key researchers in the field and digital librarians together to plan the development of a disciplinary repository of data, curricula, and methodological tools. Partners include CNS-ASU, CNS-UCSB, University of Michigan’s Inter-University Consortium for Political and Social Research, and the University of Massachusetts, Amherst Libraries.

**TABLE 5: Other Support
(NSF Grant #093791)**

Designation	Year 1 9/15/10-9/14/11	Year 2 9/15/11-9/14/12	Year 3 9/15/12-9/14/13	Year 4 9/15/13-9/14/14	Year 5 9/15/14-9/14/15
Other NSF	\$0	\$0	\$172,500	\$0	\$237,498
Other Federal	\$0	\$0	\$0	\$0	\$0
State	\$0	\$0	\$0	\$0	\$0
Industry	\$0	\$0	\$0	\$0	\$0
University	\$1,025,128	\$1,723,232	\$2,640,847	\$2,775,665	\$2,051,772
Foreign	\$0	\$0	\$0	\$0	\$0
Other Total	\$1,025,128	\$1,723,232	\$2,813,347	\$2,775,665	\$2,289,270

Table 6: Partnering Institutions (cumulative)										
		Receives Financial Support from Center	Continues financial support to the center	Minority Serving Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
	Name of Institution									
I.a. Academic Partnering Institutions (ASU)										
	Applied Learning Technologies Institute	x								
	Arizona Institute for Nano-Electronics (AINE)									x
	Arizona Technology Enterprises (AzTE)									x
	Arts, Media & Engineering									x
	Axon Technologies									x
	Barrett, The Honors College									x
	Biodesign Institute	x	x							
	Center for Biology & Society									x
	CRESMET									x
	Center for the Study of Religion and Conflict									x
	Center for Law, Science and Innovation	x								
	Center for Science and the Imagination									x
	Center for Solid State Electronics Research	x								
	Center for Study of Institutional Diversity	x								
	College of Liberal Arts and Sciences		x							
	College of Public Programs	x								
	College of Technology & Innovation	x								
	Complex Adaptive Systems Initiative (CASI)									x
	Consortium for Science, Policy and Outcomes		x							
	Decision Theater for a Desert City Foundation, ASU									x
	Global Institute of Sustainability									x
	Graduate College	x								
	Hayden Library									x
	Health Services									x
	Herberger Institute for Design and the Arts	x								
	Hispanic Research Center			x						
	Institute for Human Origin									x
	Ira A. Fulton Schools of Engineering	x	x							
	Learning Sciences Institute									x
	LightWorks	x								
	Mary Lou Fulton School of Education	x								
	New Interdisciplinary Arts & Sciences									x
	Office of China Initiatives and Strategy									x
	Office of Knowledge and Enterprise Development (OKED)		x							
	Office of Public Affairs									x
	Office of the President		x							x
	Office of Vice President and Provost									x
	Office of University Initiatives									x
	Occupational Health and Safety									x
	Phoenix Urban Research Laboratory	x								
	SOLS-Responsible Conduct of Research Program	x								x
	Sandra Day O'Connor School of Law	x								
	School of Earth & Space Exploration									x
	School of Government, Politics, and Global Studies	x	x							
	School of Human Evolution and Social Change	x	x							
	School of International Languages and Cultures	x								
	School of Letters and Sciences	x								
	School of Life Sciences	x								
	School of Mathematical and Statistical Sciences									x
	School of Philosophical, Historical, and Religious Studies									x
	School of Social Transformation									x
	School of Sustainability	x								
	Science Policy Assessment and Research on Climate (SPARC)									x
	Stardust Center	x								
	Technology Based Learning Research							x		x
	Transformative Healthcare Networks									x
	University Art Museum									x
	University Public Schools									x
	W.P. Carey School of Business	x								
	Walter Cronkite School of Journalism and Mass Communication									x
I.b. Academic Partnering Institutions										
	Aarhus University, Denmark								x	
	Ansai Institute of Denmark								x	
	Antwerp University								x	
	Austrian Academy of Science								x	
	Baylor College of Medicine									x
	Beijing Institute of Technology, China	x							x	
	Bioscience High School									x
	Boise State University									x
	Bowling Green State University									x
	Brown University	x								
	California State University, Sacramento									x
	Cardiff University	x								
	Carnegie Mellon University								x	

Table 6: Partnering Institutions (cumulative)										
Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Servicing Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other	
Case Western Reserve University									x	
Chandler Gilbert Community College									x	
Chinese Academy of Sciences										
Claremont Graduate University									x	
Clark University									x	
Collins College									x	
Colorado School of Mines	x									
Columbia College Chicago									x	
Columbia University									x	
Concordia University									x	
Copenhagen Business School, Denmark	x							x		
Corinthian College									x	
Cornell University									x	
Dalian University of Technology, China	x							x		
Delft Technical University, the Netherlands								x		
DeVry University									x	
Dublin City University								x		
Durham University, United Kingdom								x		
Ecoles des Mines, France								x		
ETH Zurich								x		
Eugene Lang College the New School for Liberal Arts									x	
Ewha Women's University				x				x		
Federal University of Parana, Brazil	x							x		
Federal University Santa Catarina, Brazil	x							x		
Flemish Institute of Science & Technology								x		
Florida International University									x	
George Mason University									x	
George Washington University									x	
Georgetown University									x	
Georgia Institute of Technology	x									
Glendale Community College									x	
Grenoble Institute of Technology	x							x		
Grove City College									x	
Harvard University									x	
Howard University									x	
Illinois Institute of Technology									x	
Indiana University	x									
Institute of International Sociology of Gorizia								x		
Institut d'Etudes Politiques de Grenoble, France	x							x		
Iowa State University									x	
James Martin Institute for Science and Civilization, Oxford, UK								x		
Johns Hopkins University									x	
Karlsruhe Institute of Technology, Germany	x							x		
Keele University									x	
Korea Institute of Science and Technology, Seoul, Korea								x		
Lancaster University								x		
Leeds University Business School, UK	x							x		
Lehigh University									x	
Litchfield Elementary School District									x	
Long Island University									x	
Macalester College									x	
Maricopa Community Colleges									x	
McGill University									x	
Mesa Biotech Academy									x	
Mesa Community College									x	
Mesa High School									x	
Michigan State University									x	
MIT SENSEable City Lab									x	
Montana State University									x	
Nagoya University, Japan	x							x		
National Academy of the Sciences									x	
National University of Singapore & Asia								x		
New York University	x									
North Carolina State University	x									
Northeastern University									x	
Northern Alberta Institute of Technology									x	
Northwestern University									x	
Norwegian University of Science & Technology, Norway								x		
NSEC/CNS-University of California, Santa Barbara (UCSB)									x	
Ohio State University										
Osaka University, Japan								x		
Pennsylvania State University									x	
Plymouth University									x	
Portland State University									x	
Purdue University	x									
Queens University								x		
Radboud University								x		
Rensselaer Polytechnic Institute	x									
Rhode Island School of Design	x								x	

Table 6: Partnering Institutions (cumulative)										
Name of Institution	Receives Financial Support from Center	Continues financial support to the center	Minority Servicing Institution Partner	Female Servicing Institution Partner	National Lab/other gov't. Partner	Industry Partner	Museum Partner	International Partner	Other	
Rice University									x	
Rice University/ICON		x								
Rio Salado College									x	
Rochester Institute of Technology									x	
Roger L. Putnam Vocational Technical Academy									x	
Rutgers, The State University of New Jersey	x									
RWTH Aachen University								x		
Said Business School, Oxford								x		
Sapieza University of Rome									x	
Scottsdale Community College									x	
Simon Fraser University, British Columbia								x		
S.I.W.S. N.R. Swamy College, India	x							x		
South Mountain Community College									x	
Stanford University	x								x	
State University of Campinas									x	
Stony Brook University									x	
Tamkang University								x		
Technical University of Delft								x		
Technical University of Denmark								x		
Technical University of Darmstadt								x		
Tennessee State University									x	
Texas State University, San Marcos	x									
The Center for International Development, Harvard University									x	
Tokyo University	x							x		
Tsinghua University, China								x	x	
UCLA/Harvard/NBER: Collaborative Research; Personnel Exchanges									x	
UMC St. Radboud									x	
Unicamp University, Brazil								x		
University de Zacatecas, Mexico	x							x		
Universidad del Pais Vasco, Spain								x		
Universita Ca' Foscari Venezia								x		
University College London									x	
University at Albany									x	
University of Alberta								x		
University of Amsterdam								x		
University of Antwerp, Belgium	x							x		
University of Arizona								x		
University of Athens								x		
University of Basel								x	x	
University of Basque Country									x	
University of Bergen, Norway	x							x		
University of Bielefeld, Germany	x							x		
University of British Columbia								x		
University of Calgary, Canada	x							x		
University of California, Berkeley	x									
University of California, Davis									x	
University of California, Irvine									x	
University of California, Los Angeles									x	
University of California, San Diego	x									
University of California, Santa Barbara									x	
University of Cape Town									x	
University of Central Florida									x	
University of Chicago									x	
University of Colorado, Boulder	x									
University of Colorado, Denver	x									
University of Copenhagen								x	x	
University of Denver									x	
University of Edinburgh	x							x		
University of Exeter, United Kingdom								x	x	
University of Florida									x	
University of Geneva								x		
University of Georgia	x									
University of Gothenburg, Sweden								x		
University of Groningen, the Netherlands								x		
University of Illinois, Chicago									x	
University of Illinois, Springfield									x	
University of Illinois, Urbana-Champaign									x	
University of Iowa									x	
University of Jiangsu, China								x		
University of Lausanne, Switzerland								x		
University of Leeds	x							x		
University of Liege, Belgium	x							x		
University of Manchester, United Kingdom	x								x	
University of Maryland									x	
University of Massachusetts, Amherst									x	
University of Melbourne, Australia								x		
University of Michigan									x	
University of Minnesota									x	
University of Montana									x	

Table 6: Partnering Institutions (cumulative)										
Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Servicing Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other	
University of Nebraska, Lincoln	x									
University of Nevada, Las Vegas									x	
University of New Hampshire	x									
University of New South Wales, Australia								x		
University of North Carolina, Chapel Hill									x	
University of North Carolina, Charlotte									x	
University of North Texas									x	
University of Notre Dame									x	
University of Nottingham								x		
University of Oslo								x		
University of Oxford								x		
University of Padua								x		
University of Seville, Spain	x							x		
University of South Carolina									x	
University of South Florida									x	
University of Southern California									x	
University of Southern Indiana									x	
University of Sussex, United Kingdom								x		
University of Szegeed, Hungary								x		
University of Tennessee, Knoxville									x	
University of Texas, Austin									x	
University of Trieste, Italy								x		
University of Twente, the Netherlands	x							x		
University of Turku									x	
University of Utah									x	
University of Victoria	x							x		
University of Vienna								x		
University of Virginia									x	
University of Washington									x	
University of Waterloo								x		
University of Wisconsin, Madison	x									
UT-Battelle									x	
Utrecht University								x		
Vanderbilt University									x	
Villanova University									x	
Virginia Tech University									x	
VU University of Amsterdam								x		
Washington University, Saint Louis									x	
West Chester University of Pennsylvania									x	
Western Michigan University									x	
Yale University									x	
York University								x		
274 Total Number Academic Partners										
II. Non-academic Partnering Institutions										
Agilent Technologies	x									
Airplayn									x	
Alberta Centre for Advanced Micro Nano Technology Products								x		
Alberta Innovates Technology Futures								x		
ALD Nano Solutions						x				
Alek Research									x	
American Association for the Advancement of Science (AAAS)		x							x	
American Bar Foundator									x	
Apriva ISS									x	
Arizona BioIndustry Organization						x				
Arizona Commerce Authority						x				
Arizona Corporation Commission						x				
Arizona Department of Education						x				
Arizona Department of Health Services						x				
Arizona Nanotechnology Cluster						x				
Arizona Public Service (APS)						x			x	
Arizona Research Institute for Solar Energy						x			x	
Arizona Science Center							x			
Arizona Technology Council						x				
Army Military Command									x	
Australian Government						x		x		
Bank of America									x	
Bassetti Foundation								x	x	
BioIndustry Organization of Southern Arizona						x				
Boudreaux and Associates									x	
BrasEq						x		x		
Brilliant Concepts, LLC.									x	
British Embassy					x			x		
Buckeye Express									x	
Burton Barr Central Library									x	
Cambridge Public Health Department	x									
Carnegie Mellon									x	

Table 6: Partnering Institutions (cumulative)										
Name of Institution	Receives Financial Support from Center	Communities financial support to the center	Minority Servicing Institution Partner	Female Servicing Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other	
CB Richard Ellis									x	
CEA-Saclay									x	
Cell Publishing		x						x		
Center for Business Models in Health Care									x	
Center for Naval Analysis					x					
Center for Responsible Nanotechnology									x	
Changeist, LLC.									x	
Chemical Heritage Foundation							x			
Children's Museum of Phoenix							x			
City of Apache Junction									x	
City of Edmonton								x		
City of Phoenix									x	
City of Scottsdale									x	
Complex Global Risks									x	
Corgan Associates									x	
Council of Scientific and Industrial Research									x	
Danish Board of Technology								x		
David Crowley Gallery									x	
Decker Yeadon LLC									x	
Denise Meridith Consultants, Inc.									x	
Department of Energy (DOE)						x				
Department of the Treasury						x				
Department of Transportation						x				
Depave									x	
Describe, LLC.									x	
Desert Botanical Garden							x			
Digital Thinking Network									x	
Downtown Phoenix Journal									x	
Ecological Society of America									x	
EKLATEK Engineering									x	
E.L. Smith Water Treatment Plant					x					
Emerging Leaders in Science & Society (ELISS)									x	
Engineering & Physical Sciences Research Council (EPSRC)									x	
Environmental Protection Agency (EPA)						x				
Equus Development Corporation						x				
Eureka									x	
European Commission								x		
Exploratorium, San Francisco							x			
Federal Aviation Administration Office of Environment & Energy						x				
FBI Weapons of Mass Destruction					x					
Food and Drug Administration (FDA)					x					
Foundation for Genomics and Population Health								x		
Gallagher and Kennedy									x	
General Dynamics						x				
Genøk Centre for Biosafety								x	x	
Genome British Columbia								x	x	
German Parliament								x		
Global Business Network						x				
Gould Evans									x	
Gordon Research Conferences (GRC)		x								
Greenwall Foundation		x								
Ground Work Portland					x					
Hafen City University									x	
HDR Architecture										
Heatsync Labs					x					
Heliae									x	
Home Depot						x				
Iconic Architecture									x	
Ikologi								x		
INSERM									x	
Institute for Agriculture and Trade Policy									x	
Institute for Ecological Economy Research, Germany								x		
Institute for the Future	x									
Institute of Technical Assessment & Systems Analysis									x	
Intel						x				
Intelligent Information Services Corporation (IISC)						x				
International Nanotechnology in Society Network (INSN)								x		
International Research Center								x		
Ira Domskey Environmental									x	
Italian National Research Council, Turin, Italy								x		
ITel									x	
Ivy Consulting, Inc.									x	
Jennings, Strouss and Salmon PLC		x								
Kaiser Permanente									x	
Kolbe Corp.									x	
Kristine Wilcox Consulting									x	
Las Vegas-Clark County Library District									x	
Lasertel, Inc.									x	
Lawrence Livermore Lab					x					

Table 6: Partnering Institutions (cumulative)										
Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Servicing Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other	
Leathers Milligan & Associates									x	
Loka Institute									x	
London Science Museum							x	x		
Luxe Ventures						x				
Lyman and Merrie Wood Museum of Springfield History							x			
Mabelson Law Group									x	
Mapping & Planning Support (M.A.P.S) Alberta Capital Region								x		
Max Chandler Robot Art									x	
Mayo Clinic-Scottsdale						x				
Meridian Institute	x									
Metacurrency Project									x	
Microchip						x				
MJS Designs, Inc.									x	
Modern Insights									x	
Museum of Life & Science, North Carolina							x			
Museum of Science, Boston							x			
Nano-Alberta								x		
Nanoscale Informal Science Education Network (NISE Net)							x			
National Academy of Engineering	x									
National Advisory Committee on Aeronautics (NASA)					x					
National Business Museum							x			
National Geographic Society									x	
National Institute of Standards and Technology (NIST)									x	
National Institutes of Health (NIH)									x	
National Nanomanufacturing Network (NNN)									x	
National Nanotechnology Coordinating Office									x	
National Nanotechnology Infrastructure Network									x	
National Research Council									x	
National Research Council of Canada								x		
National Science Foundation					x					
Nature.com									x	
Nature Publishing Group		x						x		
New Haven Independent									x	
Norwegian Institute					x			x		
Nothing but NET									x	
NRG Energy, Inc.						x				
Nuclear Waste Review Board					x					
Office of Naval Research					x					
Oregon Museum of Science & Industry							x		x	
PACeHR									x	
Penman PR	x									
Pennsylvania Bio Nano Systems	x									
Phoenix Public Library									x	
Phoenix Rising									x	
Phoenix Spokes People									x	
Phoenix Zoo									x	
Physician Services Group									x	
PING Inc.						x				
Pioneer Valley Transit Authority						x				
Planetary ONE	x								x	
Portland Bureau of Environmental Services					x					
Practical Action									x	
Presidential Commission for the Study of Bioethical Issues					x					
Quantiam Technologies Inc.								x		
QuantTera									x	
Rathenau Institute								x		
RCI Surveys, Inc.									x	
Research Center Berlin								x		
Research Council of Norway	x							x	x	
Research Councils U.K. (RCUK) in the U.S.									x	
Re/Max Fine Properties									x	
Research Media Ltd.									x	
Richard + Bauer Architecture									x	
Rockefeller Foundation		x								
Rose Community Development Corporation						x				
Rutgers and Posch									x	
Ryley Carlock & Applewhite	x									
Salt River Project						x				
Sandia National Laboratory					x					
Savage Film									x	
Science & Technology Policy Institute	x									
Sciencecenter, New York						x				
Science Foundation of Arizona									x	
Science Museum of Minnesota						x			x	
SciStarter									x	
SciTech Strategies, Inc.									x	
Scottsdale League for the Arts									x	
Search Technology									x	
Semi-Conductor Research Corporation	x									

Table 6: Partnering Institutions (cumulative)										
		Receives Financial Support from Center	Continues financial support to the center	Minority Servicing Institution Partner	Female Servicing Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
	Name of Institution									
	SETI Institute									x
	Shannon and Wilson, Inc.									x
	SmithGroup									x
	Snell and Wilmer Law									x
	Social Sciences and Humanities Research Council of Canada								x	
	Sokolov, Sokolov, Burgess Solutions (SSB)									x
	South of Market EcoDistrict									x
	Spirit of the Senses Salon									x
	Springer Publishing		x							
	SRI Institute	x								
	Startup Edmonton								x	
	Strategic Advantage, Inc.									x
	Sundt Construction, Inc.									x
	Synthetic Biology Engineering Research Center (SynBERC)									
	SySTEM Schools, Inc.					x				x
	Targeted Genetics Corporation (TGen)									x
	Teach America									x
	TEC Edmonton								x	
	Televerde									x
	Telus World of Science									
	Tempe Festival of the Arts									x
	Testani Design Troupe, Inc.									x
	The Eluminati, LLC									x
	The Embryo Project									x
	The Energy and Resources Institute (TERI)								x	
	The Foresight Institute									x
	The Galaxy Organization									x
	The Geek Group of Western Massachusetts									x
	The Rockefeller Foundation	x								
	The Royal Society									x
	The Washington Post									x
	Translational Genomics Research Institute (TGEN)									x
	TraskBritt Intellectual									x
	TRIMET Transportation									
	Underwood Bros., Inc.							x		
	Unicorn Media, Inc.									x
	U.S. Government Accountability Office (U.S. GAO)					x				
	U.S. Green Building Council					x				
	U.S. Department of Agriculture									x
	U.S. Department of Homeland Security					x				
	U.S. Department of Transportation					x				
	U.S. DOE/Center for Integrated Nanotechnology (CINT)					x				
	Venezuelan Institute for Scientific Research									x
	Western Massachusetts Electric Company							x		
	Will Bruder & Partners Ltd.									x
	Winnipeg Art Gallery									x
	Woodrow Wilson International Center for Scholars									x
237	Total Number Non-academic Partners:									

21. Current and Pending Support

Following are the Current and Pending Support documents for the PI and all thrust leaders:

1. Ira Bennett – Assistant Director, Education
2. Elizabeth A. Corley – co-PI; RTTA 2 co-team leader
3. Susan Cozzens – TRC 1 co-team leader
4. Erik Fisher – RTTA 4 team leader; Associate Director, Integration
5. David H. Guston – PI and Center Director
6. Jose Lobo – RTTA 1 co-team leader
7. Dietram Scheufele – co-PI; RTTA 2 co-team leader
8. Cynthia Selin – RTTA 3 co-team leader; Associate Director, Anticipation
9. Philip Shapira – RTTA 1 co-team leader
10. Sander E. van der Leeuw – TRC 2 co-team leader
11. Jameson M. Wetmore – TRC 1 co-team leader; Associate Director, Engagement
12. Arnim Wiek – TRC 2 co-team leader
13. Jan Youtie – co-PI; RTTA 1 co-team leader

Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Ira Bennett	Other agencies (including NSF) to which this proposal has been/will be submitted		
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
Science Center Public Forums: Community Engagement for Environmental Literacy, Improved Resilience, and Decision-Making			
Source of Support: National Oceanic and Atmospheric Admin (NOAA)			
Total Award Amount: \$499,901		Total Award Period Covered: 10/1/15-9/30/18	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.	Cal:	Acad:	Sumr:
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
Cultivating Ethical Reflection through Museum Engagement (CERME)			
Source of Support: National Science Foundation			
Total Award Amount: \$398,682		Total Award Period Covered: 10/1/15-9/30/18	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.	Cal:	Acad:	Sumr: 0.25
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
STS and Science Center Collaborations (S2C2): Developing Capacity to Engage Broad Public Audiences in Science, Technology, and Society			
Source of Support: National Science Foundation			
Total Award Amount: \$432,000		Total Award Period Covered: 10/1/15-9/30/18	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.	Cal:	Acad:	Sumr: 0.10
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
PFI:BIC: Restoring Pain-Free Mobility through Smart Personalized Mobile Devices (This Proposal)			
Source of Support: National Science Foundation			
Total Award Amount: \$1,000,000		Total Award Period Covered: 8/1/2015 – 7/31/2018	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.	Cal:	Acad:	Sumr: 0.25
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
SciStarter 2.0: A Dashboard to Drive Research, Participation, and Community-building in Citizen Science			
Source of Support: National Science Foundation			
Total Award Amount: \$256,468		Total Award Period Covered: 6/1/15 – 5/31/17	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.	Cal:	Acad:	Sumr: 0.5
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
Investigating approaches to develop, disseminate, and evaluate new tools for science policy: The case of public value in federal research programs			
Source of Support: National Science Foundation			
Total Award Amount: \$225,700		Total Award Period Covered: 05/01/2015 – 4/30/2017	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.	Cal:	Acad:	Sumr: 1

Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: ASU Site: National Nanotechnology Infrastructure Network – SEI Activities Supplement
Source of Support: National Science Foundation (sub to Cornell University)
Total Award Amount: \$115,000 Total Award Period Covered: 7/1/13 – 8/31/15
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 1
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Participatory Technology Assessment of NASA’s Asteroid Initiative
Source of Support: National Aeronautics and Space Administration
Total Award Amount: \$196,908 Total Award Period Covered: 4/1/14 – 6/31/15
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 1
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: NSEC: Center for Nanotechnology in Society at Arizona State University (CNS-ASU) Renewal
Source of Support: National Science Foundation
Total Award Amount: \$6,500,000 Total Award Period Covered: 10/1/10 – 9/30/15
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 4.5 Sumr:
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: NCCLCs: Material Life Cycle of Nanomaterials (LCNano)
Source of Support: Environmental Protection Agency
Total Award Amount: \$5,000,000 Total Award Period Covered: 12/1/2013 – 11/30/2018
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 0.5
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Broadening Participation in the Social Studies of Emerging Technologies
Source of Support: National Science Foundation
Total Award Amount: \$237,489 Total Award Period Covered:
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.00 Cal: 0.00 Acad: 0.00 Sumr: 0.00
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.



Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior per-

Investigator: Elizabeth A. Corley	Other agencies (including NSF) to which this proposal has been/will be submitted. National Science Foundation
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Center for Nanotechnology in Society – ASU (Role: Co-Principal Investigator)	
Source of Support: National Science Foundation Total Award Amount: \$12,700,000 Total Award Period Covered: October 2005 – September 2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Cal: 0 Acad: 0 Sumr: 0	
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Goodness of Fit Mentoring as Informal Learning Among STEM Students (Role: Co-Principal Investigator)	
Source of Support: National Science Foundation Total Award Amount: \$1,293,567 Total Award Period Covered: September 2015 – September 2019 Location of Project: Arizona State University Person-Months Per Year Committed to the Cal: 0 Acad: 0 Sumr: 0	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Cal: Acad: Sumr:	

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Cozzens, Susan	Other agencies (including NSF) to which this proposal has been/will be submitted.		
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
COLLABORATIVE RESEARCH: WOMEN IN SCIENCE AND TECHNOLOGY POLICY SES-1152980			
Source of Support: National Science Foundation			
Total Award Amount: \$179,487		Total Award Period Covered: 5/15/12 – 4/30/16	
Location of Project: GTRC Atlanta, GA			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr: .05
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
CENTER FOR NANOTECHNOLOGY IN SOCIETY (CNS-ASU) AT GEORGIA TECH SES-0937591			
Source of Support: Arizona State University			
Total Award Amount: \$1,130,174		Total Award Period Covered: 10/1/10 – 8/14/15	
Location of Project: GTRC Atlanta, GA			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr: .05
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title:		
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.			

NSF Form 1239 (10/99)

USE ADDITIONAL SHEETS AS NECESSARY



55

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

Investigator: Foley, Rider W.		Other agencies (including NSF) to which this proposal has been/will be submitted:	
Support	Current: <input checked="" type="checkbox"/> Pending: <input type="checkbox"/>	Submission Planned in Near Future: <input type="checkbox"/>	Transfer of Support: <input type="checkbox"/>
Project/Proposal Title:	TRC2: Urban Design, Materials, & the Built Environment or "Nano in the City"		
Source of Support	Arizona State University		
Total Award Amount:	\$ 39,004.00	Total Award Period Covered:	11/1/2014 to 10/31/2015
Location of Project:	University of Virginia		
Person-Months Per Year Committed to the Project	Cal:	Acad:	Sumr: 2
Support	Current: <input type="checkbox"/> Pending: <input checked="" type="checkbox"/>	Submission Planned in Near Future: <input type="checkbox"/>	Transfer of Support: <input type="checkbox"/>
Project/Proposal Title:	Collaborative Research: Standard: Comparison of Communications across Campus Cultures (The 4C Project): Toward Evidence-based Customization of Learning Experiences		
Source of Support	NSF		
Total Award Amount:	\$ 112,214.00	Total Award Period Covered:	1/1/2016 to 12/31/2020
Location of Project:	University of Virginia		
Person-Months Per Year Committed to the Project	Cal:	Acad:	Sumr: 1
Support	Current: <input type="checkbox"/> Pending: <input checked="" type="checkbox"/>	Submission Planned in Near Future: <input type="checkbox"/>	Transfer of Support: <input type="checkbox"/>
Project/Proposal Title:	NNCI: Materials Characterization With Specialized Capacities in Nanoscale Thermometry (Co-PI)		
Source of Support	NSF		
Total Award Amount:	\$ 5,276,432.00	Total Award Period Covered:	9/1/2015 to 8/31/2020
Location of Project:	University of Virginia		
Person-Months Per Year Committed to the Project	Cal:	Acad:	Sumr: 1

Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.				
Investigator: David Guston	Other agencies (including NSF) to which this proposal has been/will be			
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: Increasing Citizen Efficacy through Transmedia Engagement Activities in Science-in-Society (this proposal)			
Source of Support: National Science Foundation				
Total Award Amount: \$2,981,187		Total Award Period Covered: July 1, 2015 – June 30, 2019		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.50	Cal: 0.50	Acad: 0.00	Sumr: 0.00
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: Informal Learning And Scholarship In Science And Society: A Multi-Disciplinary Workshop On Scientific Creativity And Societal Responsibility			
Source of Support: National Science Foundation				
Total Award Amount: \$49,999		Total Award Period Covered: March 1, 2014 – February 28, 2015		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.50	Cal: 0.00	Acad: 0.00	Sumr: 0.00
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: Workshop on Research Agendas in the Societal Aspects of Synthetic Biology			
Source of Support: National Science Foundation				
Total Award Amount: \$149,924		Total Award Period Covered: August 1, 2014 – July 31, 2015		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.00	Cal: 0.00	Acad: 0.00	Sumr: 0.00
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: Collaborative Research: Workshop on the Anticipatory Governance of Complex Engineered Nanomaterials			
Source of Support: National Science Foundation				
Total Award Amount: \$34,250		Total Award Period Covered: July 1, 2012 – June 30, 2015		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.00	Cal: 0.00	Acad: 0.00	Sumr: 0.00
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: Virtual Institute for Responsible Innovation			
Source of Support: National Science Foundation				
Total Award Amount: \$499,725		Total Award Period Covered: August 1, 2012 – July 31, 2015		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.00	Cal: 0.00	Acad: 0.00	Sumr: 0.00
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: IGERT: Solar Utilization Network (SUN)			
Source of Support: National Science Foundation				
Total Award Amount: \$3,498,193		Total Award Period Covered: July 2012 – June 2017		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.00	Cal: 0.00	Acad: 0.00	Sumr: 0.50
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	Project/Proposal Title: Communicating Science and Innovation Policy through Narrative: Workshops on Fostering Narrative Non-fiction Partnerships between Science Communicators and Science Policy Scholars			
Source of Support: National Science Foundation				
Total Award Amount: \$249,949		Total Award Period Covered: March 2012 – February 2015		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.00	Cal: 0.00	Acad: 0.00	Sumr: 0.00

Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: QESST: ERC for Quantum Energy and Sustainable Solar Technologies				
Source of Support: National Science Foundation				
Total Award Amount: \$18.5million		Total Award Period Covered: March 1, 2011 – February 29, 2016		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.	0.00	Cal: 0.00	Acad: 0.00	Sumr: 0.00
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: NSEC: Center for Nanotechnology and Society at ASU Renewal				
Source of Support: National Science Foundation				
Total Award Amount: \$6,500,000		Total Award Period Covered: October 1, 2010 – September 30, 2015		
Location of Project: Arizona State University				
Person-Months Per Year Committed to the Project.		Cal:	Acad:0	Sumr:

Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
Investigator: Jose Lobo		Other agencies (including NSF) to which this proposal has been/will be submitted.	
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: NSEC: Center for Nanotechnology in Society at Arizona State University			
Source of Support: National Science Foundation			
Total Award Amount: \$6,500,000		Total Award Period Covered: September 2010-August 2015	
Location of Project: Arizona State University			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr: 1.0
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Dynamics of Global Informal Settlements			
Source of Support: Bill & Melinda Gates Foundation			
Total Award Amount: \$19,038		Total Award Period Covered: January 2013 – January 2015	
Location of Project: Santa Fe Institute			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr: 2.0
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Forecasting Progress in Solar Energy Technologies			
Source of Support: U.S. Department of Energy			
Total Award Amount: \$61,340		Total Award Period Covered: April1, 2013 – Aril1, 2016	
Location of Project: UNC-Charlotte			
Person-Months Per Year Committed to the Project.		Cal:	Acad: 2.0 Sumr:
Support:	<input type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support:	<input type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.



Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
Investigator: Dietram Scheufele		Other agencies (including NSF) to which this proposal has been/will be submitted.	
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: NIRT: Center for Nanotechnology in Society at Arizona State University			
PI: David Guston			
Source of Support: NSF			
Total Award Amount: \$6.5mio.		Total Award Period Covered: 2010-15	
Location of Project: ASU with UW-Madison subcontract			
Person-Months Per Year Committed to the Project.		Cal: 1.5	Acad: 0
		Sumr: 0	
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Developing a user experience for the next generation nuclear fuel cycle simulator			
PI: Paul Wilson			
Source of Support: Department of Energy			
Total Award Amount: \$1.2mio		Total Award Period Covered: 2011-14	
Location of Project: UW-Madison			
Person-Months Per Year Committed to the Project.		Cal: 0.25	Acad: 0
		Sumr: 0	
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: UW Nanoscale Science and Engineering Center on Templated Synthesis and Assembly at the Nanoscale I			
PI: Padma Gopalan			
Source of Support: NSF			
Total Award Amount: \$14.7mio		Total Award Period Covered: 2009-14	
Location of Project: UW-Madison			
Person-Months Per Year Committed to the Project.		Cal: 0.25	Acad: 0
		Sumr: 0	
Support:	<input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Subcontract to "Nanoscale Informal Science Education Network"			
PIs: Larry Bell, Paul Martin & Robert J. Semper			
Source of Support: NSF			
Total Award Amount: \$159,989		Total Award Period Covered: 2013-15	
Location of Project: UW-Madison			
Person-Months Per Year Committed to the Project.		Cal: 0.25	Acad:
		Sumr:	
Support:	<input type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future
			<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad:
		Sumr:	
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.			



Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
Investigator: Philip Shapira	Other agencies (including NSF) to which this proposal has been/will be submitted. NSF		
Support: <input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Center for Nanotechnology in Society – Arizona State University			
Source of Support: Arizona State University and National Science Foundation			
Total Award Amount: \$1,139,173		Total Award Period Covered: 10/1/10-9/30/15	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 1	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Supplement to I-Corps: A Transformative National Research Commercialization Network (#1239590)			
Source of Support: National Science Foundation			
Total Award Amount: \$99,986		Total Award Period Covered: 11/1/2014-4/30/2015	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 0.5	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> Transfer of Support
Project/Proposal Title: Disruptive Innovation Systems: Bridging the Gap between Data Mining and Foresight			
Source of Support: National Science Foundation			
Total Award Amount: \$582,000		Total Award Period Covered: 11/1/2015-10/31/2018	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 0.5	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount:		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount:		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.			

Current and Pending Support**(See GPG Section II.C.2.h for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: van der Leeuw, Sander	Other agencies(including NSF) to which this proposal has been/will be submitted
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Urbanization and Global Environmental Change International Project Office Source of Support: NSF-ENG-BCS Total Award Amount: \$750,000.00 Total Award Period Covered: 9/1/2012 - 2/29/2016 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Urbanization and Global Environmental Changes (UGEC) Project Source of Support: NSF-SBE Total Award Amount: \$585,000.00 Total Award Period Covered: 10/1/2009 - 9/30/2014 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Sustaining Digital Antiquity - Preservation and Access for Archaeological Information Source of Support: A.W. MELLON FDN Total Award Amount: \$1,200,000.00 Total Award Period Covered: 3/1/2012 - 2/28/2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: NSEC/Center for Nanotechnology at ASU Source of Support: NSF-SES Total Award Amount: \$6,525,890.00 Total Award Period Covered: 9/15/2010 - 8/31/2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: NSF 12-560 Pathways: Learning through Observation: Expanding the CoCoRaHS Network Source of Support: NSF Total Award Amount: \$249,977.00 Total Award Period Covered: 8/1/2013 - 7/31/2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support	

Project/Proposal Title:	SAVI: Building an AIMES 2.0 Virtual Institute to Advance the Transdisciplinary Understanding of Coupled Human-Environment Dynamics in the Anthropocene
Source of Support:	NSF
Total Award Amount:	\$1,940,537.00 Total Award Period Covered: 1/1/2014 - 12/31/2018
Location of Project:	Arizona State University
Person-Months Per Year Committed to the Project.	Cal: 0 Acad: 0 Sumr: 0
Support:	<input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title:	Sustainability as a Socio-Cultural Challenge
Source of Support:	Qatar Univ.
Total Award Amount:	\$0.00 Total Award Period Covered: -
Location of Project:	Arizona State University
Person-Months Per Year Committed to the Project.	Cal: 0 Acad: 0 Sumr: 0
Support:	<input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title:	A Systems Science Approach to Coupled Model Environments for Bio-Social Systems
Source of Support:	HHS-NIH
Total Award Amount:	\$2,964,862.00 Total Award Period Covered: 9/1/2014 - 8/31/2018
Location of Project:	Arizona State University
Person-Months Per Year Committed to the Project.	Cal: 0 Acad: 0 Sumr: 0
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding Period.	

Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Wetmore, Jameson Michael	Other agencies(including NSF) to which this proposal has been/will be submitted
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: NSECCenter for Nanotechnology at ASU Source of Support: NSF-SES Total Award Amount: \$6,698,390.00 Total Award Period Covered: 9/15/2010 - 8/31/2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 1 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Participant Support: NSEC - Center for Nanotechnology in Society at ASU Source of Support: NSF-SES Total Award Amount: \$28,490.00 Total Award Period Covered: 8/5/2011 - 8/31/2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: IGERT: Person-centered Technologies and Practices for Individuals with Disabilities Source of Support: NSF-EHR Total Award Amount: \$2,972,183.00 Total Award Period Covered: 8/15/2011 - 7/31/2016 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Cost of Education - IGERT: Person-centered Technologies and Practices for Individuals with Disabilities Source of Support: NSF-EHR Total Award Amount: \$545,600.00 Total Award Period Covered: 8/15/2011 - 7/31/2016 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: ASU Site: National Nanotechnology Infrastructure Network - SEI Activities Supplement Source of Support: CORNELL UNIV Total Award Amount: \$115,000.00 Total Award Period Covered: 7/1/2013 - 8/31/2015 Location of Project: Arizona State University Person-Months Per Year Committed to the Project. Cal: 0 Acad: 1 Sumr: 0	

Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Capacity Building in Computer Science as a Driver of Innovation
Source of Support: NSF-SES
Total Award Amount: \$248,101.00 Total Award Period Covered: 9/15/2013 - 8/31/2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0.5 Sumr: 0
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: NCCLCs: Material Life Cycle of Nanomaterials (LCNano)
Source of Support: USEPA-HQ
Total Award Amount: \$5,000,000.00 Total Award Period Covered: 12/1/2013 - 11/30/2017
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Collaborative Research: Foundations of Social and Ethical Responsibility Among Undergraduate Engineering Students: Comparing Across Time Institutions
Source of Support: NSF-SES / Purdue University
Total Award Amount: \$260,491.00 Total Award Period Covered: 5/15/2015 - 4/30/2019
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: .25 Sumr: 0
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Doctoral Dissertation Research: Imagining Community Renewable Electricity
Source of Support: NSF
Total Award Amount: \$14,883.00 Total Award Period Covered: 2/1/2014 - 1/131/2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0.5 Sumr: 0
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Hazards Sees: Portfolio Approach to Enhancing Energy Infrastructure Resilience to Extreme hazards and Disasters
Source of Support: NSF
Total Award Amount: \$2,918,812.00 Total Award Period Covered: 8/15/2015 - 8/14/2020
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: .5 Sumr: 0

Support:	<input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:	STS and Science Center Collaborations (S2C2): Developing Capacity to Engage Broad Public Audiences in Science, Technology, and Society			
Source of Support:	NSF			
Total Award Amount:	\$432,000	Total Award Period Covered: 10/1/15-9/30/18		
Location of Project:	Arizona State University			
Person-Months Per Year Committed to the Project.	Cal: 0	Acad: 0	Sumr: 0.25	
Support:	<input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title:	Cultivating Ethical Reflection through Museum Engagement (CERME)			
Source of Support:	NSF			
Total Award Amount:	\$398,682	Total Award Period Covered: 10/1/2015-9/30/2018		
Location of Project:	Arizona State University			
Person-Months Per Year Committed to the Project.	Cal: 0	Acad: 0	Sumr: 0.25	
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding Period.				

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator:	Other agencies (including NSF) to which this proposal has been/will be submitted:
---------------	---

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

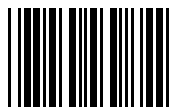
Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.



Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator:	Other agencies (including NSF) to which this proposal has been/will be submitted:
---------------	---

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

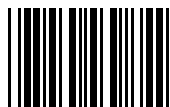
Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

Support:	Current	Pending	Submission Planned in Near Future	*Transfer of Support
Project/Proposal Title:				
This Proposal?				
Source of Support:				
Total Award Amount:		Total Award Period Covered: -		
Location of Project:				
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:				

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.



Current and Pending Support**(See GPG Section II.D.8 for guidance on information to include on this form.)**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
Investigator: Jan Youtie	Other agencies (including NSF) to which this proposal has been/will be submitted. NSF		
Support: <input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Center for Nanotechnology in Society – Arizona State University			
Source of Support: Arizona State University and National Science Foundation			
Total Award Amount: \$1,139,173		Total Award Period Covered: 10/1/10-9/30/15	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 1	Acad: Sumr:
Support: <input checked="" type="checkbox"/> Current	<input type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Credibility and Use of Scientific and Technical Information in Science Policy Making: An Analysis of the Information Basis of the National Research Council's Committee Reports			
Source of Support: National Science Foundation			
Total Award Amount: \$350,000		Total Award Period Covered: 9/1/2013 - 8/31/2015	
Location of Project: Arizona State University and Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 1	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> Transfer of Support
Project/Proposal Title: Connections: STEM Educational Research Communities and Knowledge Transfer			
Source of Support: National Science Foundation			
Total Award Amount: \$283,269		Total Award Period Covered: 05/01/2014 -4/30/2016	
Location of Project: Search Technology and Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 1	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Supplement to I-Corps: A Transformative National Research Commercialization Network (#1239590)			
Source of Support: National Science Foundation			
Total Award Amount: \$99,985.58		Total Award Period Covered: 11/1/2014-4/30/2015	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 1.3	Acad: Sumr:
Support: <input type="checkbox"/> Current	<input checked="" type="checkbox"/> Pending	<input type="checkbox"/> Submission Planned in Near Future	<input type="checkbox"/> *Transfer of Support
Project/Proposal Title: Forecasting Innovation Pathways of 'Big Data & Analytics'			
Source of Support: National Science Foundation			
Total Award Amount: \$49,992		Total Award Period Covered: 02/01/2015 – 10/31/2015	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 0.3	Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.			

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
Investigator: Jan Youtie	Other agencies (including NSF) to which this proposal has been/will be submitted. NSF		
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support			
Project/Proposal Title: Disruptive Innovation Systems: Bridging the Gap between Data Mining and Foresight			
Source of Support: National Science Foundation			
Total Award Amount: \$597,602		Total Award Period Covered: 1/01/2015 – 10/31/2018	
Location of Project: Georgia Tech			
Person-Months Per Year Committed to the Project.		Cal: 1	Acad: Sumr:
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support			
Project/Proposal Title:			
Source of Support:			
Total Award Amount:		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> Transfer of Support			
Project/Proposal Title:			
Source of Support:			
Total Award Amount: \$		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support			
Project/Proposal Title:			
Source of Support:			
Total Award Amount:		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support			
Project/Proposal Title:			
Source of Support:			
Total Award Amount:		Total Award Period Covered:	
Location of Project:			
Person-Months Per Year Committed to the Project.		Cal:	Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.			