



## The Center for Nanotechnology in Society at Arizona State University

**NSF #0937591 September 1, 2010 – August 31, 2016**

**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, 2015 to August 31, 2016**

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 .....	4
List of Center Participants, Advisory Boards, and Participating Institutions .....	5
Mission, Significant Advances, and Broader Impacts .....	46
Highlights .....	62
Strategic Research Plan .....	71
Research Program, Accomplishments, and Plans .....	74
a. RTTA 1	
b. RTTA 3	
c. RTTA 4	
d. TRC 1	
e. TRC 2	
Center Diversity – Progress and Plans .....	102
Education .....	106
Outreach and Knowledge Transfer .....	125
Shared and Other Experimental Facilities .....	134
Personnel .....	136
Publications and Patents .....	140
Biographical Information .....	289
Honors and Awards .....	290
Fiscal Sections .....	291
Cost-Sharing .....	304
Leverage .....	305

**(2. Table of Contents continued)**

## Tables

Table 1 .....	45
Table 2 .....	101
Table 3A .....	123
Table 3B .....	124
Table 4A .....	138
Table 4B .....	139
Table 5 .....	308
Table 6 .....	309

### 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. 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 to create novel insights in studies of nanotechnology and the brain, equity and nanotechnology, and nanotechnology and urban sustainability; 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: extending bibliometric perspectives to other emerging technologies; mounting a third study of public opinion regarding nano and other emerging technologies; conducting a new round of scenario development workshops with ASU science and engineering colleagues; continuing to expand STIR into Eastern Europe; completed evaluation of workshops to train scientists and engineers to engage with the developing world; expanding NICE Database and exploring its use for synthetic biology.

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

<b>Elizabeth Adams</b>	<b>Faculty Associate</b>	<b>Engin. Academic &amp; Student Affairs</b>
<b>Braden Allenby</b>	<b>Professor</b>	<b>Civil &amp; Environmental Engineering</b>
<b>Jean Andino</b>	<b>Associate Professor</b>	<b>Engineering Matter, Transport &amp; Energy</b>
Moshe Apelas	Associate Professor	Engineering Computer Science
Andrew Askland	Director	Center for Law, Science & Innovation
<b>Denise Baker</b>	<b>Faculty Associate</b>	<b>Social &amp; Behavioral Sciences</b>
George Basile	Executive Director	Decision Theatre for a Desert City
<b>Ira Bennett</b>	<b>Assistant Research Professor</b>	<b>School for the Future of Innov. in Society</b>
Philip Bernick	Assistant Professor	English
<b>Mimmo Bonanni</b>	<b>Associate Librarian</b>	<b>Cyberinfrastructure Services</b>
Christopher Boone	Professor	Human Evolution & Social Change
<b>Prasad Boradkar</b>	<b>Associate Professor</b>	<b>Architecture &amp; Landscape Architecture</b>
Katja Brundiers	Academic Associate	Global Institute of Sustainability
Harvey Bryan	Professor	Architecture & Landscape Architecture
Marilyn P. Carlson	Professor	Mathematics & Statistics
<b>Darlene Cavalier</b>	<b>Adjunct Professor</b>	<b>School for the Future of Innov. in Society</b>
Matthew Chew	Faculty Associate	Global Institute of Sustainability
<b>Nalini Chhetri</b>	<b>Lecturer</b>	<b>School for the Future of Innov. in Society</b>
Netra Chhetri	Assistant Professor	<b>School for the Future of Innov. in Society</b>
<b>Jim Collins</b>	<b>Professor</b>	<b>School of Life Sciences</b>
David Conz	Lecturer	Letters & Sciences
<b>Elizabeth Corley</b>	<b>Associate Professor</b>	<b>Public Affairs</b>
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
<b>Mary Anne Duggan</b>	<b>Assistant Research Professor</b>	<b>Sanford Sch. of Social &amp; Family Dynamics</b>
Terrie Lee Ekin	Director	CLAS Research Administration
<b>Karin Ellison</b>	<b>Associate Director</b>	<b>Biology &amp; Society</b>
James Elser	Regents' Professor	Life Sciences
Scott Endsley	Vice President	System Design for Quality Improvement
Sandy Epstein	Sr. Mgr. Strategic Bus. Dev.	Decision Theatre
<b>Joseph Eschrich</b>	<b>Coordinator Sr., Res. &amp; Ops.</b>	<b>Center for Science &amp; the Imagination</b>
Timothy Eschrich	Process Engrg. Manager	Ctr. for Solid State Electronics Research
<b>Mahmud Farooque</b>	<b>Associate Director</b>	<b>School for the Future of Innov. in Society</b>
Tricia Farwell	Professor	Journalism & Mass Communication
<b>Edward Finn</b>	<b>Director/Assistant Professor</b>	<b>Arts, Media and Engineering</b>
<b>Adelheid Fischer</b>	<b>Staff</b>	<b>Innovation Space</b>
<b>Erik Fisher</b>	<b>Assistant Professor</b>	<b>School for the Future of Innov. in Society</b>

**Matthew Fraser****Emma Frow**

Sylvain Gallais

Joel Garreau

Alexandra Gino

Jay Golden

Aaron Golub

Deborah Gonzalez

Stephen Goodnick

Gisela Grant

Kimberly Grout

Subhro Guhathakurta

Devens Gust

**David H. Guston****Ed Hackett****Rolf Halden****Dehlia Hannah****Mark Hannah**

Jiping He

**Renata Hejduk**

Stephen Helms Tillery

Mark Henderson

Kirsten Hendrickson

**Joseph Herkert**

James Hershauer

William Heywood

**Lori Hidinger****Keith Hjelmstad**

Chong Ho Yu

Kiril Hristovski

**Ben Hurlbut****Mary Ingram-Water**

Minu Ipe

**Marco Janssen**

John Johnson

Paul Johnson

**Erik Johnston**

Stephen Johnston

Christopher Jones

Kamil Kaloush

Sayfe Kiaie

Yushkim Kim

William Kimbel

Gordon Knox

Anatoli Korkin

Joseph Kullman

Timothy Lant

Karen Leong

Nancy Levinson

**Rachael Levinson**

Merlyna Lim

**Associate Professor****Assistant Professor**

Clinical Professor

Lincoln Professor of Law

Faculty Associate

Assistant Professor

Assistant Professor

Chief Academic Officer

Professor

Internship Coordinator

Coordinator Senior

Professor

Professor

**Professor****Professor****Professor****Assistant Research Professor****Assistant Professor**

Professor

**Associate Professor**

Assistant Professor

Professor

Lecturer

**Lincoln Associate Professor**

Professor

Assistant Clinical Professor

**Managing Director****Professor**

Systems Analysis

Assistant Professor

**Assistant Professor****Lecturer**

Clinical Associate Professor

**Associate Professor**

Emeritus Professor

Dean

**Associate Professor**

Professor

Assistant Professor

Associate Professor

Associate Dean

Assistant Professor

Virginia M. Ullman Professor

Director

Director

Sr. Media Relations Officer

Assistant Research Professor

Associate Professor

Director

**Indus. & Gov. Rel. Liaison**

Assistant Professor

**Sustainable Engrg. & Built Environment****School of Biological & Health Systems**

Languages &amp; Cultures

Law

Consort. for Science, Policy &amp; Outcomes

Global Institute of Sustainability

Geographical Sciences &amp; Urban Planning

University Public Schools

Electrical Engineering

Politics &amp; Global Studies

Global institute of Sustainability

Geographical Sciences &amp; Urban Planning

Chemistry &amp; Biochemistry

**School for the Future of Innov. in Society****Human Evolution & Social Change****Biodesign Institute****School of Arts, Media & Engineering****English**

Bioengineering

**Architecture & Landscape Architecture**

Bioengineering

Engineering

Chemistry &amp; Biochemistry

**Humanities & Arts**

Management

Design

**School for the Future of Innov. in Society****Sustainable Engrg. & Built Environment**

ALTI Research &amp; Outreach

Technology &amp; Innovation

**Life Sciences****Barrett Honors College**

WPC Management

**Ctr. for Study of Institutional Diversity**

Social Transformation

Engineering

**Public Affairs**

Biodesign Institute

History

Sustainable Engrg. &amp; Built Environment

Engineering

Public Affairs

Human Evolution &amp; Social Change

University Art Museum

Research &amp; Economic Affairs

FSE Marketing &amp; Public Affairs

Decision Theatre for a Desert City

Social Transformation

Design

**Research & Economic Affairs**

Consort. for Science, Policy &amp; Outcomes

Mary Laura Lind	Assistant Professor	Engineering Matter, Transport & Energy
Stuart Lindsay	Regents' Professor	Biodesign Institute
<b>Jason Lloyd</b>	<b>Project Coordinator</b>	<b>School for the Future of Innov. in Society</b>
<b>Jose Lobo</b>	<b>Associate Professor</b>	<b>Global Institute of Sustainability</b>
George Maracas	Research Professor	Electrical Engineering & Sustainability
<b>Gary Marchant</b>	<b>Lincoln Professor of Law</b>	<b>Law</b>
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
<b>Clark A. Miller</b>	<b>Associate Professor</b>	<b>Political Science</b>
Tom Moore	Professor	Chemistry & Biochemistry
Torin Monahan	Assistant Professor	Justice & Social Inquiry
<b>Loren Olson</b>	<b>Clinical Assistant Professor</b>	<b>Arts Media &amp; Engineering</b>
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
<b>Darren Petrucci</b>	<b>Professor</b>	<b>Architecture &amp; Landscape Architecture</b>
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
<b>Subramanian Rajan</b>	<b>Professor</b>	<b>Sustainable Engrg. &amp; Built Environment</b>
B. Ramakrishna	Associate Professor	Materials
Charles Redman	Director	Global Institute of Sustainability
<b>Kristine Reich</b>	<b>Faculty</b>	<b>Social Work</b>
<b>Jennifer Richter</b>	<b>Assistant Professor</b>	<b>School for the Future of Innov. in Society</b>
Barry Ritchie	Professor	Physics
Bruce Rittman	Regents' Professor	Biodesign Institute
<b>Jason S. Robert</b>	<b>Associate Professor</b>	<b>Life Sciences</b>
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
<b>Daniel R. Sarewitz</b>	<b>Professor</b>	<b>School for the Future of Innov. in Society</b>
Anne Schneider	Professor	Justice & Social Inquiry
Dawn Schwenke	Research Professor	Health Management & Policy
Kimberly Scott	Associate Professor	Social Transformation
<b>Thomas Seager</b>	<b>Associate Professor</b>	<b>Sustainable Engrg. &amp; Built Environment</b>
<b>Cynthia Selin</b>	<b>Assistant Professor</b>	<b>School for the Future of Innov. in Society</b>
<b>Nancy Selover</b>	<b>Academic Associate</b>	<b>Global Institute of Sustainability</b>
Don Seo	Associate Professor	Chemistry & Biochemistry
RF (Rick) Shangraw	President	ASU Foundation

**Nisha Sherma**

Michael Sullivan

**Leandra Swanner**

Emily Talen

Colin Tetreault

**Jekan Thanga**

Trevor Thornton

**David Tinapple****Cesar Torres**

Michael Tracy

**Sander van der Leeuw****Warren Van Egmond**

Steven VanGinkel

Wim Vermass

Myla Vicenti Carpio

Ajay Vinze

Qiangbin Wang

Xiao Wang

**Andrew Webber****Paul Westerhoff****Jameson M. Wetmore**

Roxanne Wheelock

**Philip White****Arnim Wiek**

Joann Williams

**Neal Woodbury**

Chong Yu

Gregg Zachary

Frederick Zenhausern

**Research Technician**

Director

**Lecturer**

Professor

Faculty Associate

**Assistant Professor**

Professor

**Assistant Professor****Assistant Professor**

Director

**Dean and Professor****Adjunct Faculty**

Assistant Research Scientist

Professor

Assistant Professor

Professor

Professor

Assistant Professor

**Vice Provost & Professor****Professor****Associate Professor**

Web Administrator

**Professor****Assistant Professor**

Research Professor

**Professor**

Systems Analyst Principle

Professor

Professor

**Biodesign Institute**

Hispanic Research Center

**Barrett Honors College**

Geographical Sciences &amp; Urban Planning

Global Institute of Sustainability

**Earth & Space Exploration**

Electrical, Computer, &amp; Energy Engineering

**Arts Media & Engineering****Engineering Matter, Transport & Energy**

Center for Cancer Research

**Sustainability/Human Evol. & Soc. Change****Mathematics**

Environmental Biotechnology

School of Life Sciences

American Indian Studies

WPC Information Systems

Biodesign Institute

Biomedical Engineering

**Graduate Education****Sustainable Engrg. & Built Environment****Human Evolution & Social Change**

International Languages &amp; Cultures

**Industrial Design****Global Institute of Sustainability**

Chemistry &amp; Biochemistry

**Chemistry & Biochemistry**

ALTI Research &amp; Outreach

School for the Future of Innov. in Society

Biodesign Institute

*Collaborators*

Wendoly Abrego

Jessica Adamick

Greg Adamson

Perry Allen

Roger Angel

Richard Applebaum

Stathis Arapostathis

Simone Arnaldi

Peter Asaro

Geri Augusto

Davis Baird

Shawn Barcelona

**Richard Barke**

Ardeth Barnhart

Indrani Barpujari

Rob Barnett

Deborah Bassett

Ottavia Bassetti

Rebecca Bates

Shawn Beckman

Sust. Communities Prog. Mgr.

InterNano Project Mgr.

Honorary Fellow

Teacher

Univ. of AZ, Regents' Prof.

Univ. of California, Berkeley

Lecturer

University of Padua

Rutgers, Assistant Professor

Brown University

Clark University

Univ. of California, Berkeley

**Associate Professor**

Univ. of AZ, Co-Director

The Energy &amp; Resources Inst.

Dir. of Envir. Systems

Univ. of WA, Dir Social Stud.

Board Member

AAAS Sci. &amp; Tech Pol Fellow

Sr. V.P. Market. &amp; Strategy

Phoenix Revitalization Corporation

National Nanomanufacturing Network

University of Melbourne

Arizona School for the Arts

Astronomy

Global &amp; International Studies

University of Athens

CIGA

Philosophy

Public Policy

Academic Affairs

Center for Nanotechnology in Society

**Georgia Institute of Technology**

AZ Research Institute for Solar Energy

Science and Technology

PING Inc.

Workforce Development

The Bassetti Foundation

National Science Foundation

SDC Materials



**Larry Bell**

Michael Bennett  
 Frazier Benya  
 Kavita Berger  
 Robby Berloznik  
 Andrew R. Binder  
 David Bjornstad  
 Regina Blakely  
 John Bobalek  
 Larry Bock  
 Jason Boehm  
 Marianne Boenink  
 Cathy Boggs  
 Greg Book  
 Valerie Bonham  
 Line Bonneau  
 Jason Borenstein  
 Chris Bosso  
 Ann Bostrom  
 Daryl Boudreaux  
 Robert Bowman  
 Kevin Boyack  
 Timothy Boyd  
 Barry Bozeman  
 Suzanne Brainard  
 Donald Braman

**Russell Brandon**

Philip Brey  
 Susan Brienza  
 Sage Briggs  
 Simone Browne  
 Will Bruder  
 Karl Bryant  
 Ava Buchanan  
 Jill Buschbacher  
 Francesco Calabrese  
 Brian Calaway  
 Jane Calvert

**Jennifer Rei Cameron****Austin Campbell Myer****Luis Campos**

Heather Canary

**Stephanie Cantu****David Caudill**

Thomas Chermack  
 Parag Chitnis  
 Michael Chorost  
 Jennifer Cleary  
 Michael D. Cobb  
 Mary Beth Cochran  
 Christopher Coenen

**Sr. V.P. Strategic Initiatives**

Professor, Law  
 Natl. Acad. Engin., Prog. Offc.  
 AAAS, Project Director  
 Director  
 NC State Univ., Asst. Prof.  
 UT Battelle  
 Instructional Designer  
 Dept. of Treasury, Prog. Mgr.  
 Chairman  
 Director, Prog. Coord. Offc.  
 Univ. of Twente, Lecturer  
 Cal., Santa Barbara, Dir. Ed.  
 Georgia Tech, Asst. Dir.  
 Executive Director  
 Said Bus. School, Res. Fellow  
 Georgia Tech, Professor  
 Northeastern University  
 University of Washington  
 President  
 Queens Univ. Belfast, Dir.  
 President  
 Teacher  
 Georgia, Professor  
 Univ. of Washington, Ex. Dir.  
 George Washington, Prof.

**Participant**

Department Chair/Professor  
 Shareholder  
 Cal.-Santa Barbara, Fin. An.  
 Texas-Austin, Asst. Prof.  
 President  
 Cal., Santa Barbara, Asst. Pr.

**Macalester College, Teach Ast.**

City of Phoenix, Proj. Mgr.  
 Advisory Research  
 Program Director  
 Edinburgh, Academic Fellow

**Sr. Content Specialist****Participant****Associate Professor**

University of Utah, Asst. Prof.

**Project Coordinator****Villanova Univ., Prof. of Law**

Colorado, Asst. Professor  
 NSF, Deputy Div. Director  
 Author  
 Rutgers, Sr. Project Mgr.  
 NCSU, Associate Professor  
 Education Services Coord.  
 Scientific Staff

**Museum of Science**

Northeastern University  
 Engineering, Ethics, & Society  
 Science, Technology & Security Policy  
 Flemish Institute Society & Technology  
 Communication  
 Environmental Sciences  
 Regina Blakely Consulting  
 Bureau of Engraving & Printing  
 Luxe Ventures  
 Natl. Inst. of Standards & Technology  
 Philosophy  
 Center for Nanotechnology in Society  
 Nanotechnology Research Center  
 Pres. Comm. for Study of Bioethical Issues  
 Science, Innovation and Society  
 Graduate Research Ethics Program  
 Public Policy and Urban Affairs  
 Public Affairs  
 Boudreaux and Associates  
 Center for Nanostructured Media  
 SciTech Strategies, Inc.  
 Bioscience High School  
 Public Administration & Policy  
 Center for Workforce Development  
 Law

University of Twente

Ryley, Carlock & Applewhite Attorneys

Physics

Sociology

Will Bruder & Partners Ltd.

Sociology and Women's Studies

**Environmental Studies**

Community & Economic Development

MIT SENSEable City Lab

Odysee of the Mind

Social & Political Science

**Arizona Science Center****University of New Mexico**

Communication

**Kolbe Corp.****Law**

Organizational Performance & Change

Molecular & Cellular Biosciences

Planning & Public Policy

Political Science

Arizona Science Center

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
<b>Harry Collins</b>	<b>Cardiff University, Professor</b>	<b>Social Sciences</b>
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.
<b>Bridget Costello</b>	<b>Children's Museum of Phoenix</b>	<b>Director of Development</b>
<b>Susan Cozzens</b>	<b>Georgia Tech, Asst. Dean</b>	<b>Public Policy</b>
Kurt Creager	President & CEO	Urbanist Solutions
Wendy C. Crone	Wisconsin, Professor	Engineering Physics
<b>Stephen Crowley</b>	<b>Boise State Univ., Assoc. Prof.</b>	<b>Philosophy</b>
<b>Angelica Cruz</b>	<b>Co-Founder &amp; COO</b>	<b>SySTEM Schools, Inc.</b>
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
<b>Jason Delborne</b>	<b>Associate Professor</b>	<b>North Carolina State University</b>
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
<b>Heather Douglas</b>	<b>Univ. of Waterloo, Assoc. Prof.</b>	<b>Philosophy</b>
Robin Downey	Genomics & Society Advisor	Genome British Columbia
Fanie Duvenghugue	Manager	Microchip
Jake Dunagan	Research Director	Institute for the Future
Sharon Dunwoody	Wisconsin, Professor	Journalism & Mass Communication
<b>Darrin Durant</b>	<b>York University, Asst. Prof.</b>	<b>Science and Technology Studies</b>
Kevin Dwyer	Sundt Construction, Inc.	Senior Paralegal
<b>Grace Eden</b>	<b>Univ. of Oxford, Sr. Res. Assoc.</b>	<b>Computer Science</b>
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
<b>Robert Evans</b>	<b>Cardiff Univ., Reader</b>	<b>Social Sciences</b>
Jose Faria	Unicamp, Professor	Medicine
Elizabeth Farrell	New Hampshire, Coord.	Culture & Sustainability, Food & Society
<b>Leili Fatehi</b>	<b>Minnestoa, Adj. Assoc. Prof.</b>	<b>Law</b>
James Faubion	Rice, Professor	Anthropology
Art Felsing	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**

John Fortner  
Sharon Friedman

**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****William Hallman**

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

**Assistant Professor**

Wash. Univ, Asst. Professor

Lehigh University, Professor

**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

**University of Virginia**

Engineering

Journalism & Communication

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

Jennifer Iriye	Guest Exper. Prog. Interpret.	Arizona Science Center
Alan Irwin	Copenhagen Business School	Research
Deborah Jackson	Program Manager, ERC	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
<b>Kevin Jones</b>	<b>Univ. of Alberta, Acting Dir.</b>	<b>Resource Economics/Environ. Sociology</b>
<b>Arlena Jung</b>	<b>Research Fellow</b>	<b>Research Center Berlin</b>
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
<b>Chernor Kantora</b>	<b>Participant</b>	
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 Khushf	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
<b>Kathy Kolbe</b>	<b>Chairman, Chief Creative Ofc.</b>	<b>Kolbe Corp.</b>
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 Kulinowski	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
<b>Jennifer Kuzma</b>	<b>Minnesota, Assoc. Professor</b>	<b>Public Affairs</b>
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
<b>Stephanie Long</b>	<b>Mgr., Public Prog. &amp; Science</b>	<b>Science Museum of Minnesota</b>
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
<b>Farzad Mahootian</b>	<b>New York Univ., Professor</b>	<b>Global Liberal Studies</b>
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
<b>Andrew Maynard</b>	<b>Univ. of Michigan, Director</b>	<b>Risk Science Center</b>
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.
<b>Patrick McCray</b>	<b>UC Santa Barbara, Professor</b>	<b>History</b>
<b>Jamie McEvoy</b>	<b>Montana State, Asst. Prof.</b>	<b>Geography</b>
Robert McGinn	Stanford, Professor	Science, Technology, & Society
Alan McGowan	Eugene Lang, Adjunct. Fac.	New School for Liberal Arts
Sheila McNamee	New Hampshire, Professor	Communication
<b>James McShea</b>	<b>Osher Lifelong Learning</b>	
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
<b>Colin Milburn</b>	<b>Cal.-Davis., Assoc. Professor</b>	<b>English and Science &amp; Technology Studies</b>
<b>Thaddeus Miller</b>	<b>Portland State Univ, Asst Prof.</b>	<b>Urban Studies &amp; Planning</b>
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
<b>Sharon Montgomery</b>	<b>Osher Lifelong Learning</b>	
<b>Sarah Moratto</b>	<b>Gallery Interpreter</b>	<b>Arizona Science Center</b>
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
<b>Dan Nagle</b>	<b>Participant</b>	
<b>Sari Nagle</b>	<b>Participant</b>	
Kenneth Nealson	Southern California, Prof.	Environmental Studies
Alan Nelson	Director	Biodesign Institute
Richard Nelson	Columbia University, Professor	Economics
Chris Newfield	Cal., Santa Barbara, Prof.	English
Dean Nieusma	Rensselaer Poly. Inst., Prof.	Science & Technology Studies
Alfred Nordmann	Darmstadt Tech. Univ., Prof.	Philosophy
<b>Rune Nydal</b>	<b>Norwegian Univ., Associate</b>	<b>Science &amp; Technology</b>
Eva Olivas	CEO	Phoenix Revitalization Corporation
Rosemary Ommer	Adjunct Professor	University of Victoria

Rae Ostman	National Collab., Director	Sciencenter
<b>Michael O'Rourke</b>	<b>Michigan State Univ., Prof.</b>	<b>Philosophy</b>
<b>Kelli O'Toole</b>	<b>Vice President of Operations</b>	<b>Children's Museum of Phoenix</b>
<b>Gwen Ottinger</b>	<b>Assistant Professor</b>	<b>Drexel University</b>
Richard Owen	University of Exeter, Prof.	Business
Lynn Palacios	Teacher	Bioscience High School
<b>Krsto Pandza</b>	<b>Leeds Univ., Senior Lecturer</b>	<b>Business</b>
<b>Joey Parks</b>	<b>Participant</b>	
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
<b>James Petzel</b>	<b>Osher Lifelong Learning</b>	
Sarah Pfatteicher	Assistant Dean	Wisconsin, Madison
Simon Pfersdorf	Karlsruhe, Researcher	Instit. Tech. Assessment & Sys. Analysis
<b>Roopali Phadke</b>	<b>Macalester College, Assoc Prof</b>	<b>Environmental Studies</b>
<b>Robin Phelps</b>	<b>University of Central Florida</b>	<b>Research and Commercialization</b>
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
<b>Kathryn Plaisance</b>	<b>Univ. of Waterloo, Asst. Prof.</b>	<b>Center for Knowledge Integration</b>
Sylvia Planer	Test Engineer	Medtronic
Anne Plant	Grp. Ldr., Biochem. Sci. Div.	Natl. Inst. for Standards & Technology
<b>Alan Porter</b>	<b>Georgia Tech, Professor</b>	<b>ISYE &amp; Public Policy</b>
<b>Channel Powe</b>	<b>Participant</b>	
<b>Scott Powell</b>	<b>Participant</b>	
<b>Nicolette Priaulx</b>	<b>Cardiff University, Reader</b>	<b>Law</b>
Susanna Priest	George Mason Univ., Prof.	Communication
R. Queraltó 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
<b>Sally Randles</b>	<b>Manchester, Sr. Res. Fellow</b>	<b>Manchester Business School</b>
<b>Carolyn Raper</b>	<b>Participant</b>	
<b>Ted Raper</b>	<b>Participant</b>	
Jerome Ravetz	Said Bus. Sch., Assoc. Fellow	Science, Innovation & Society
<b>Kelly Rawlings</b>	<b>Univ. of South Calif, Asst Prof</b>	<b>Sol Price School of Public Policy</b>
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
<b>Mark Robinson</b>	<b>Assistant Professor</b>	<b>DePaul University</b>

**Hannot Rodriguez**

David Roessner  
 Juan Rogers  
 J. Rogers-Brown  
 Laura Rogers  
 Louise Roman  
 Kjetil Rommetveit  
 Dale Rothman  
 Alan Rubel  
 Daniele Ruggiu  
 Chuck Runyan

**Terry Ryan****Ana Salazar**

Tina Sanford

**Dietram Scheufele**

Erich Schienke

**Phil Schmidt**

Jennifer Schneider  
 Ronald J. Schott  
 Gerd Scholl  
 Ronald J. Schott

**Daan Schuurbiers**

Astrid Schwarz  
 Claudia Schwarz  
 Dane Scott  
 Franz Seifert  
 Stefanie Seitz  
 John Selsky  
 Meena Selvakumar  
 Chris Sequeira

**Philip Shapira**

Mark Shapiro  
 Gwyneth Shaw  
 Bret Shaw

Joshua Sheehan

Brian Sherman

Tania Shibata

Katherine Shilton

**Sharon Shindel****Veekas Shrivastava**

Elena Simakova  
 David Sittenfeld  
 Rasmus Slaattelid  
 Mitchell Small  
 Alex Smith  
 Laurel Smith-Doerr  
 James Soudriette  
 Ahmad Soueid  
 Kayte Spector-Bagdady  
 Joe Spencer  
 James Stack

**Assistant Professor**

Associate Director  
 Georgia Tech, Assoc. Prof.  
 Long Island Univ., Asst. Prof.  
 Participant  
 Assistant to President  
 Univ. of Bergen, Researcher  
 Denver, Assoc. Prof.  
 Greenwall Fellow  
 Univ. of Padua, Res. Fellow  
 Head, Patent Prosecution

**Participant****Participant**

Educational Researcher

**Wisconsin, Professor**

Penn State, Asst. Professor

**Participant**

CO Schl. of Mines, Asst. Prof.  
 Executive Emeritus  
 Economist  
 Executive Emeritus

**Radboud Univ., Project Mgr.**

Univ. of Basel, Assoc. Res.  
 Univ. of Vienna, Researcher  
 Montana, Director  
 Univ. of Vienna, Professor  
 Karlsruhe, Research Fellow  
 Univ. South Fl., Assoc. Prof.  
 Director

FAA, Envir. Program Mgr.

**Georgia Tech, Professor**

Ctr for Investigative Journalism  
 Writer

UW-Madison, Asst. Prof.

Sr. Mgr. Guest Experience

Managing Dir./VP Bus. Dev.

Product Application Manager

Maryland, Assistant Professor

**Participant****Participant**

University of Exeter, Lecturer  
 Program Manager, Forum  
 Univ. of Bergen, Assoc. Prof.  
 Carnegie Mellon, Professor  
 Tech. Development Specialist  
 Program Director  
 Cert. Mgmt. Consul./Partner  
 Principal & Sr. Vice Pres.  
 Associate Director  
 Production Manager  
 Senior Switch Tech

**University of Basque Country**

SRI International  
 Public Policy  
 Sociology & Anthropology  
 Will Bruder & Partners Ltd.  
 Centre for Science  
 International Futures  
 Georgetown Univ. Law Ctr.  
 CIGA  
 Gallagher & Kennedy

SRI International

**Life Sciences Communication**

Science, Technology & Society

Liberal Arts & International Studies

Arizona Technology Council

Inst. for Ecological Economy Research

Arizona Technology Council

**Center for Society & Genomics**

Science Research

Social Studies of Science

Ethics & Public Affairs

Anthropology

Instit. Tech. Assessment & Sys. Analysis

Management

Pacific Science Center

Environment & Energy

**Public Policy**

New Haven Independent

Life Sciences Communication

Arizona Science Center

Arizona Commerce Authority

BrasEq

Information Studies

Innovation

Museum of Science

Sciences and Humanities

Public Policy

Tempe City Government

National Science Foundation

The Galaxy Organization

HDR Architecture

Pres. Comm. Study Bioethical Issues

ALD NanoSolutions

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
<b>Jack Stilgoe</b>	<b>Univ. Exeter, Sr. Res. Fellow</b>	<b>Business</b>
Roger Stout	Senior Research Scientist	ON Semiconductor
Roger Strand	Bergen, Professor	Science Theory
Michael Sullivan	Director	Hispanic Research Center
Arho Suominen	University Teacher	University of Turku
Steve Suppan	Senior Policy Analyst	Inst. Agriculture & Trade Policy
John Sweeney	Envir. Health & Safety Offc.	Harvard
Tsjalling Swiersta	Twente, Professor	Philosophy
<b>Albert Teich</b>	<b>George Wash., Res. Prof.</b>	<b>International Science &amp; Technology Policy</b>
Frank Theys	Visual Artist and Filmmaker	Savage Film
Brian Thibeault	Project Scientist	California, Santa Barbara
<b>Kamlynn Thomas</b>	<b>Manager Guest Experience</b>	<b>Arizona Science Center</b>
Paul Thompson	Michigan State Univ., Prof.	Philosophy
<b>David Tomblin</b>	<b>STS Director</b>	<b>University of Maryland</b>
Joanna Tornow	Office of the Director	National Science Foundation
Julia Trosman	Director	Center for Business Models
Elizabeth Tran	Associate Program Officer	National Science Foundation
Paul Turgeon	Georgia Tech, Proj. Coord.	Nanotechnology Research Center
<b>Christina Tzavellas</b>	<b>Participant</b>	
Jeff Ubois	Archivist	The Bassetti Foundation
Simone Van der Burg	Radboud Univ. Med., Sr. Res.	Scientific Inst. Quality Healthcare
Rinie van Est	Coordinator	Rathenau Institute
Carl Van Horn	Rutgers, Professor	Planning & Public Policy
Harro Van Lente	Utrecht Univ., Assoc. Prof.	Emerging Technologies
Thomas Van Valey	Professor Emeritus	Western Michigan University
<b>Stephanie Vasko</b>	<b>Pennsylvania, Sen. Res. Asst.</b>	<b>Rock Ethics Institute</b>
Rene Von Schomberg	Directorate General Research	European Commission
Catherine Vrentas	Mol. Biologist/Sci. Out. Spec.	U.S. Department of Agriculture
Jonce Walker	Sustainability Manager	Maricopa County Assoc. of Governments
Julie Walker	Project Manager	Windmill Ranch, LLC.
Jue Wang	Florida Intl., Asst. Prof.	Religious Studies
Stephanie Wang	UT-Battelle, Behavioral Res.	Oak Ridge National Laboratory
Vivian Weil	Illinois Inst. Tech., Prof./Dir.	Ethics / CSEP
<b>Martin Weinell</b>	<b>Cardiff Univ., Research Assoc.</b>	<b>Social Sciences</b>
Peter Weingart	University of Bielefeld, Prof.	Institute for Science & Technology Studies
Jianying Wen	Professor	University of Jiangsu, China
Kyle Powys Whyte	Assistant Professor, Philosophy	Michigan State University
Fern Wickson	GenØk, Associate Professor	Center for Biosafety
Matthias Wienroth	Edinburgh, Acad. Res. Fellow	Genomics Forum
Terence Wilkins	University of Leeds, Professor	Inst. of Particle Science & Engineering
James Wilsdon	Director	The Royal Society
<b>Robert Wilson</b>	<b>Adjunct Instruct. of Law</b>	<b>Rio Salado College</b>
David Winickoff	California, Berkeley, Prof.	Bioethics & Society
Gregor Wolbring	Univ. of Calgary, Asst. Prof.	Bioethics, Culture, and Disabilities
Amy Wolfe	UT-Battelle, Group Leader	Environmental Sciences
Edward Woodhouse	Rensselaer Poly. Inst., Prof.	Science & Technology Studies
John Wooding	Massachusetts, Lowell, Prof.	Economic & Social Development
Joan Woolfrey	West Chester, Assoc. Prof.	Philosophy



**Anthony Wrigley**  
**Michael Xenos**

Charyl Yarbrough  
 Go Yoshizawa  
 Peter Yeadon  
 Edward You  
 Paul Youngman

**Jan Youtie**

G. Zenner Petersen

**Basile Zimmermann**

**Chakanaka Zinyemba**

Lee Zwanziger

Steven Zylstra

**Keele University, Lecturer**  
**Wisconsin, Assoc. Professor**

Rutgers, Project Director  
 Project Lecturer

Associate Professor/Architect

Supv. Special Agent

UNC-Charlotte, Assoc. Prof.

**Georgia Tech, Sr. Research.**

Wisconsin-Madison, Dir. Ed.

**Univ. of Geneva, Asst. Prof.**

**Mapping & Planning Support**

Designated Federal Official

Pres. & Chief Exec. Officer

**Centre for Professional Ethics**

**Communication Arts**

Workforce Development

Tokyo University

RISD/Decker Yeadon LLC

FBI Weapons of Mass Destruction

Humanities, Technology & Science

**Enterprise Innovation Institute**

Materials Research Science & Engineering

**Chinese Studies**

**Social Geographer**

Food & Drug Administration

Arizona Technology Council

#### *ASU*

##### *Post-Doctoral Scholars*

Troy Benn

Doe Daughtrey

**Hsiang-Kai D. Dong**

**Michael Fisher**

**Rider Foley**

**Megan Halpern**

Daniel Higgins

Punarvasu Joshi

Anastasios Panaretos

**Kiera Reifschneider**

Michael Reinsborough

Cathy Slade

**Olgica Trenchevska**

Walter Valdivia

**Kathryn Vignone**

Berea Williams

Post-doctoral Fellow

Post-doctoral Fellow

**Post-doctoral Fellow**

**Post-doctoral Fellow**

**Post-doctoral Fellow**

**Post-doctoral Scholar**

Post-doctoral Fellow

Post-doctoral Fellow

Post-doctoral Fellow

**Post-doctoral Fellow**

Post-doctoral Fellow

Post-doctoral Fellow

**Post-doctoral Fellow**

Post-doctoral Fellow

**Post-doctoral Fellow**

Post-doctoral Fellow

Civil & Environmental Engineering

Religious Studies

**Organizational Research & Design**

**Biodesign Institute**

**Sustainability**

**Center for Nanotechnology in Society**

Center for Nanotechnology in Society

Elect. Compr. & Energy Engineering

Electrical Engineering

**National Nano. Infrastructure Network**

Center for Nanotechnology in Society

Public Policy

**Biodesign Institute**

Public Administration

**Center for Nanotechnology in Society**

Chemistry & Biochemistry

#### *ASU*

##### *Graduate Researchers*

**Alexis Abboud**

Dulce Perez Aguilera

Parul Agrawal

Rebecca Allen

**Carlo Altamirano-Allende**

Judd Anderman

Caroline Appleton

**Deron Ash**

**Piyush Awasthi**

Ebraheem Azhar

Marci Baranski

Ceyhan Beckham

**Michael Bernstein**

Monamie Bhadra

Shreya Bhattacharyya

Bradley Brennan

**Biology and Society**

Social Justice

Materials Science & Engineering

Biodesign Institute

**Human and Social Dimen. of Sci. & Tech.**

Science & Technology Policy

Biology & Society

**Science and Technology Policy**

**Computer Science & Engineering**

Electrical Engineering

Biology & Society

Electrical Engineering

**Sustainability**

Human & Social Dimen. of Sci. & Tech.

Chemistry & Biochemistry

Chemistry & Biochemistry

Jennifer Brian  
**Miles Brundage**  
**Miguel Bueno**  
**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 Doezeema**  
 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**

Biology & Society  
**Human & Social Dimen. of Sci. & Tech.**  
 Nanoscience  
**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**

Douglas Huron  
**Sebastian Husein**  
**Energy**  
 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 McGurrian**  
 John C. McKnight  
 Chris Mercer  
**Jacob Messner**  
 Emily Molfino  
 Chad Monfreda  
**Tanmay Monga**  
 Sharlissa Moore

Global Technology Development  
**Engineering of Matter, Transport, and**  
 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.

Vicki Moore  
 Romarie Morales  
 Jeffrey Moran  
 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**

Chemistry & Biochemistry  
 Applied Mathematics  
 Mechanical Engineering  
 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. Comptr. & 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.**

Muharrem Yildirim  
Jinglei Zhang

Media Arts & Sciences  
Chemistry & Biochemistry

*Affiliated*

*Post-Doctoral Scholars*

Ashley Anderson

**Ravtosh Bal**

**Christian Beaudrie**

**Laura Cabrera**

**Silvia Casini**

Jason Delborne

Pierre Delvenne

Matthew Eisler

Arianna Ferrari

Domingo Ferrer

Sonia Gatchair

Cecilie Glerup

**Sharon Ku**

Padraig Murphy

Megan Palmer

Laxmi Pant

Debasmita Patra

Ramya Rajagopalan

**Luis Reyes-Galindo**

**Sujatha Raman**

Christine Shearer

Elena Simakova

**Li Tang**

Jue Wang

George Mason University

**North Carolina State Univ.**

**Univ. of British Columbia**

**University of Basel**

**Universita Ca' Foscari Venezia**

Wisconsin

University of Liege

California, Santa Barbara

Karlsruhe Inst. Technology

University of Texas

Georgia Tech

Copenhagen Business School

**Southern Indiana**

Dublin City University

Stanford

Guelph

Cornell

Wisconsin

**Cardiff University**

**University of Nottingham**

California, Santa Barbara

Cornell

**Georgia Tech**

Georgia Tech

Climate Change Communication

**Public Policy**

**Resources, Environment & Sustainability**

**Biomedical Ethics**

**Visual Studies & Image Science**

Rural Sociology

Political Science

Center for Nanotechnology in Society

Technology Assessment & Systems Analysis

Microelectronics Research Center

Public Policy

Social Responsibility of Science

**Sociology**

Communication

Synthetic Biology

Envir. Design & Rural Develop.

Communication

Sociology

**Social Science**

**Science & Technology Studies**

Social Science

Science & Technology Studies

**Public Policy**

Public Policy

*Affiliated Graduate Researchers*

**Heather Akin**

C. Alvial Palavicino

**Ashley Anderson**

Derrick Anderson

**Sanjay Arora**

Andrea Bandelli

Javiera Barandiaran

Amy Barr

**Kimberly Beachell**

Christian Beaudrie

Sean Becker

**Gennady Belyakov**

Noel Benedetti

Gaymon Bennett

**Meagan Betke**

Gayle Beyah

Ajay Bhaskarabhatla

Sonja Billerbeck

Anwesha Borthakur

Colette Bos

**Wisconsin**

University of Twente

**Wisconsin**

Georgia

**Georgia Tech**

Vu University Amsterdam

California, Berkeley

New Hampshire

**Massachusetts Amherst**

Univ. of British Columbia

Univ. of Wisconsin-Madison

**Georgia Tech**

Wisconsin

California, Berkeley

**Massachusetts Amherst**

Georgia Tech

Georgia Tech

ETH Zurich

Jawaharlal Nehru University

Utrecht University, NL

**Life Science Communication**

Science, Technology, and Policy Studies

**Life Sciences Communication**

Public Administration

**Public Policy**

Communication Sciences

Environmental Sciences

Sociology

**Public Policy**

Resource Management Envir.Studies

Sociology

**Public Policy**

Life Sciences Communication

Systematic Theology

**Antropology**

Public Policy

Public Policy

Synthetic Biology

Science Policy

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
<b>Antonio Calleja-Lopez</b>	<b>University of Seville</b>	<b>Ethics &amp; Political Philosophy</b>
<b>Stephen Carley</b>	<b>Georgia Tech</b>	<b>Public Policy</b>
<b>Rafael Castillo</b>	<b>Georgia Tech</b>	<b>Public Policy</b>
Gong Chao	Dalian Univ. of Technology	Humanities
<b>Shih-Hsin Chen</b>	<b>National Chiao Tung University</b>	<b>Science &amp; Technology Studies</b>
<b>Doo-Hun Choi</b>	<b>Wisconsin-Madison</b>	<b>Life Sciences Communication</b>
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
<b>Wendy Dagle</b>	<b>Massachusetts Amherst</b>	<b>Public Policy</b>
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
<b>Ann Delaney</b>	<b>Boise State University</b>	<b>Public Policy</b>
Ana Delgado	University of Bergen	Sciences and the Humanities
<b>L. Del Toro-Mejias</b>	<b>Massachusetts Amherst</b>	<b>Public Health</b>
Julie Dillemoth	California, Santa Barbara	Geography
Larisa Doroshenko	Wisconsin	Communication Arts
Anthony Dudo	Wisconsin	Journalism & Mass Communication
Roger Eardley-Pryor	California, Santa Barbara	History
<b>Philip Egert</b>	<b>Virginia Tech</b>	<b>Science &amp; Technology Studies</b>
<b>Paul Ellwood</b>	<b>Leeds Univ. Business School</b>	<b>Business</b>
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
<b>Steven Flipse</b>	<b>Technical University of Delft</b>	<b>Responsible Innovation</b>
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
<b>Harmeet Gandhi</b>	<b>Georgia Tech</b>	<b>Quantitative &amp; Computational Finance</b>
Cecilie Glerup	Copenhagen Business School	Public Policy
Kyle Gracey	University of Chicago	Public Policy
Ted Greenhalgh	Nevada, Las Vegas	Environmental Studies
<b>Ying Guo</b>	<b>Beijing Institute of Tech.</b>	<b>Management</b>
Shirley Han	California, Santa Barbara	Science & Engineering
Courtney Hanna	Univ. of British Columbia	Integrated Sciences
Shannon Hanna	California, Santa Barbara	Science & Engineering
<b>John Harlow</b>	<b>Arizona State University</b>	<b>Policy Informatics</b>
<b>M. Hartzog Stormont</b>	<b>North Carolina State Univ.</b>	<b>Communication, Rhetoric &amp; Digital Media</b>
Rachel Hauser	Colorado	Environmental Studies
Leela Hebbar	Rutgers	Public Policy

**Elizabeth Hennessy**  
**Chris Hesselbein**  
 Elliott Hillback  
 Raffael Himmelsbach  
**Shirley Ho**  
 Travis Horsley  
 Zach Horton  
 Zhengyin Hu  
 Can Huang  
 Jonathan Huang  
**Lu Huang**  
**Andreas Huber**  
 Jennifer Jensch  
 Ronak Kamdar  
**Maria Karaulova**  
**Megan Kierstead**  
 Byoungyoon Kim  
 Enukyung Kim  
**Jiyoun Kim**  
 Sojung Kim  
**Sheron King**  
 Ashley Kirby  
 Lotte Krabbenborg  
**Nick Kushner**  
 Jeanne Marie Kusina  
 Pete Ladwig  
 Erin Lamos  
**Asheley Landrum**  
 Brice Laurent  
**Ricky Leung**  
**Anthony Levenda**  
**Nan Li**  
 Yin Li  
**Xuan Liang**  
 Miao Liao  
 Monica List  
 Chien-Chun Liu  
 Yan Liu  
 Maria Sonsire Lopez  
**Marc Lorec**  
**Sean Low**  
 Beate-Josefine Lubert  
**Federica Lucivero**  
**TingTing Ma**  
 Indrani Mahapatra  
 Pratik Mehta  
**Vanessa Messina**  
  
 Patrick E.T. McKeon  
 Yu Meng  
**Brian Milchak**

**North Carolina, Chapel Hill**  
**Cornell University**  
 Wisconsin  
 University of Lausanne  
**Wisconsin**  
 Georgia Tech  
 California, Santa Barbara  
 Chinese Academy of Science  
 Georgia Tech  
 Georgia Tech  
**Beijing Institute of Tech.**  
**University of Vienna**  
 Wisconsin  
 Georgia Tech  
**University of Manchester**  
**Massachusetts Amherst**  
 Rensselaer Poly. Institute  
 Wisconsin  
**Wisconsin**  
 Wisconsin  
**North Carolina State Univ.**  
 Georgia Tech  
 Groningen  
**Virginia Tech**  
 Bowling Green State Univ.  
 Wisconsin  
 Georgia Tech  
**University of Pennsylvania**  
 Ecole des Mines  
**Wisconsin**  
**Portland State University**  
**Wisconsin**  
 Georgia Tech  
**Wisconsin**  
 Tsinghua University  
 Michigan State University  
 Georgia Tech  
 Wisconsin  
 Venezuelan Ins. Sci. Research  
**Massachusetts Amherst**  
**Inst. for Adv. Sustain. Studies**  
 University of Bielefeld  
**University of Twente**  
**Beijing Institute of Tech.**  
 Birmingham, U.K.  
 Georgia Tech  
**Univ. Federal do Estado do**  
**Rio de Janeiro**  
 Georgia Tech  
 Georgia Tech  
**Virginia Tech**

**Geography**  
**Science & Technology Studies**  
 Journalism & Mass Communication  
 Politics and International Studies  
**Journalism & Mass Communication**  
 Public Policy  
 English  
 Information Science  
 Industrial Management  
 International Affairs, Science & Tech.  
**Management**  
**Economics and Social Science**  
 Public Policy  
 Quantitative Finance & ISYE  
**Innovation Research**  
**Environmental Conservation**  
 Science & Technology  
 Journalism & Mass Communication  
**Life Sciences Communication**  
 Journalism & Mass Communication  
**Public Administration**  
 Public Policy  
 Science & Society  
**Urban Planning**  
 Applied Philosophy  
 Life Sciences Communication  
 Public Policy  
**Psychology**  
 Public Policy  
**Sociology**  
**Urban Studies & Planning**  
**Life Sciences Communication**  
 Public Policy  
**Life Sciences Communication**  
 Science, Technology & Society  
 Philosophy  
 Management  
 Life Sciences Communication  
 Studies of Science  
**Anthropology and Archeology**  
**Emerging Tech. & Social Transformations**  
 Science and Technology Studies  
**Philosophy**  
**Management**  
 Geog., Earth and Envir. Sciences  
 Industrial & Systems Engineering  
  
**Education**  
 Public Policy  
 Public Policy  
**Natural Resources Policy**

Daniel Miller	Virginia Polytechnic Inst.	Science & Technology Studies
<b>Georgia Miller</b>	<b>Univ. of New South Wales</b>	<b>Humanities</b>
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
<b>Gustavo Oliveira</b>	<b>Univ. of Illinois, Chicago</b>	<b>Public Administration</b>
Tanner Osman	Georgia Tech	Public Policy
<b>Christopher Palmer</b>	<b>Massachusetts Amherst</b>	<b>Public Policy</b>
<b>Poonam Pandey</b>	<b>Jawaharlal Nehru University</b>	<b>Science Policy</b>
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
<b>Vasiliki Rahimzadeh</b>	<b>McGill University</b>	<b>Bioethics</b>
Sofia Randhawa	Georgia Tech	Quantitative Finance & ISYE
<b>Jie Ren</b>	<b>Beijing Institute of Tech.</b>	<b>Management Science &amp; Engineering</b>
Gernot Rieder	Vienna	Science, Technology & Society
<b>Kristin Runge</b>	<b>Wisconsin</b>	<b>Life Sciences Communication</b>
Martin Sand	Karlsruhe Institute of Tech.	Humanities & Social Science
<b>Stefan Schäfer</b>	<b>Inst. for Adv. Sustain. Studies</b>	<b>Emerging Tech. &amp; Social Transformations</b>
<b>Hannah Rose Schonwald</b>	<b>Arizona State University</b>	<b>Sustainability Engineering</b>
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
<b>Tsung-Jen Shih</b>	<b>Wisconsin</b>	<b>Journalism &amp; Mass Communication</b>
<b>Molly Simis</b>	<b>Wisconsin</b>	<b>Life Sciences Communication</b>
Harmeet Singh	Georgia Tech	Quantitative Finance & ISYE
John Slanina	Georgia Tech	Public Policy
<b>Robert Smith</b>	<b>University of Nottingham</b>	<b>Bioethics</b>
<b>Diran Soumonni</b>	<b>Georgia Tech</b>	<b>Public Policy</b>
James Spartz	Wisconsin	Life Sciences Communication
<b>Shannon Spruit</b>	<b>Delft University of Technology</b>	<b>Philosophy of Technology</b>
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
<b>Roberto Toledo</b>	<b>Stony Brook University</b>	<b>Philosophy</b>
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
<b>Sara Yeo</b>	<b>Wisconsin</b>	<b>Life Science Communication</b>
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
<b>Qin Zhu</b>	<b>Purdue University</b>	<b>Engineering Education</b>

*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****Graphic Design**

Molecular Biotechnology

Sustainability

Political Science

Biomedical Engineering

Sustainability

Materials Science &amp; Engineering

Geography

Management

**Electrical Engineering**

Supply Chain Management

**Business Tourism/Management**

Molecular Bioscience &amp; Biotechnology

**Marketing/Management****Marketing**

Chemistry

Biomedical Engineering &amp; Economics

Psychology

Biomedical Engineering

Sustainability

Biology

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

English &amp; Creative Writing

Public Policy

**Film and Media Production**

Management, Political Science, Spanish

Global Studies

Industrial Engineering

Film &amp; Media Studies

**Business**

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  
**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

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  
**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

Charles Luke McCloud	Georgia Tech	Public Policy
JJ O'Brien	Georgia Tech	Public Policy
Laura Rodriguez	Georgia Tech	International Affairs
Dave Schoeneck	Georgia Tech	Physics
Shawn Skolky	Georgia Tech	Public Policy
Charles Walsh	Wisconsin	Business

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

Melissa Cornish

Elizabeth Curran

Corrine Dillon

Daniel Hooker

Michelle Iafrat

**Patricia Ryan**

Regina Sanborn

**Nisha Sherma****Anton Spevacek**

Joy Trottier

**Program Manager****Program Coordinator**

Biodesign Institute Liaison

Program Coordinator

Program Manager

Program Coordinator

Program Coordinator

**Program Coordinator**

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	Web Designer/Developer	Foundation
<b>Anna Barker</b>	<b>Director</b>	<b>Transformative Healthcare Networks</b>
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
<b>Thomas Bleasdale</b>	<b>Graduate Student</b>	<b>Environmental Social Sciences</b>
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
<b>Dan Collins</b>	<b>Professor</b>	<b>School of Art</b>
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
<b>Peter de Marneffe</b>	<b>Professor</b>	<b>Historical, Philosophical &amp; Religious Stud.</b>
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
<b>Greg Esser</b>	<b>Director</b>	<b>Art Museum</b>
<b>Faye Farmer</b>	<b>Associate Director</b>	<b>OKED Research Strategy Group</b>
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**

Ralph Gabbard  
 Brian Ganter  
 Antonio Garcia  
 Justin Gauger  
 Alan Gershfeld  
 Lance Gharvi  
 Joshua Gigantino  
 Gina Gillies  
 Maureen Goggin  
**Peter Goggin**  
 George Goh  
 Nicola Goldberg  
 J. Gonzalez-Sanchez  
 Gisela Grant  
 Nancy Gray  
 Joel Greene  
 Priscilla Greenwood  
 Jason Griffiths  
 Diane Gruber  
 Andrey Gunawan  
 Daniil Gunitskiy  
 Jennifer Gunther  
 Lee Gutkind  
 Jodi Guyot  
 Stuart Hadley  
 Joshua Hammer  
 Hilary Harp  
 Thomas Hartman  
 Lee Hartwell  
 Elisabeth Hayes  
 Stephen Hermens  
 Colin Ho  
 Jenna Hoban  
 Kim Holsclaw  
 Janet Holston

**Christiana Honsberg**

Timothy Horn  
 Afzal Hossain  
 Sarah Hough  
 Oscar Huerta  
**Amelia Huggins**  
 A Magdalena Hurtado  
 Zahra Hussaini  
 Joanna Iacovelli  
 Jeffrey Ignaszewski  
 Todd Ingalls  
 Aziza Ismael  
 Courtney Jackson  
 Jane Jackson  
 Jennifer Jaeckals

**Graduate Student**

Librarian  
 Student  
 Associate Director  
 Student  
 Consultant  
 Associate Professor  
 Graduate Student  
 Assistant to Director  
 Chair & Professor  
**Associate Professor**  
 Student  
 Sr. Healthcare Tech. Manager  
 Graduate Student  
 Internship Coordinator  
 Graduate Teaching Assistant  
 Professor  
 Research Professor  
 Assistant Professor  
 Senior Lecturer  
 Graduate Teaching Assistant  
 United Way Univ. Innov. Fel.  
 Student  
 Professor  
 Dir. Res. Advance. & Comm.  
 Vice President  
 Student  
 Assistant Professor  
 Associate Professor  
 Professor  
 Professor  
 Student  
 Student  
 Student  
 Graduate Student  
 Dir. of Programs-Solutions  
**Professor**  
 Graphic Designer Principal  
 Graduate Teaching Assistant  
 Manager Creative Services  
 Graduate Student  
**Mgr, Marketing & Comm.**  
 Professor  
 Student  
 Prospect Research  
 Graphic Design Specialist  
 Associate Professor Research  
 Student  
 Student  
 Retired Faculty  
 Communications Coordinator

**Environmental Social Sciences**

Hayden Library  
 Art  
 Hispanic Research Center  
 History  
 Mary Lou Fulton External Projects  
 Theatre & Film  
 Design  
 LightWorks  
 English  
**English**  
 Intl. Student Exchange Partner  
 Engin. & Phys. Sci. Research Council  
 Computer Science  
 Politics and Global Studies  
 Design  
 Public Policy  
 Ins. for Strengthening Math & Science  
 Arch. & Landscape Arch.  
 Social and Behavioral Sciences  
 Elect. Comptr. & Energy Eng.  
 Office of University Initiatives  
 Design Studies  
 School for the Future of Innov. in Society  
 Human Evolution & Social Change  
 Public Affairs & Foreign Relations  
 Biomedical Engineering  
 Art  
 Design  
 EVPP Consultant Group  
 English  
 Chemical Engineering  
 Mechanical Engineering  
 Biomedical Engineering  
 Mass Communication  
 Offc of Knowledge Enterprise Dev.  
**Engineering**  
 Education Outreach & Student Svcs.  
 Arch. & Landscape Arch.  
 Design & Arts  
 Design  
**LightWorks**  
 Human Evolution & Social Change  
 Materials Science & Engineering  
 Foundation  
 Design & Arts  
 Arts Media & Engineering  
 Design Studies  
 Design & Production  
 Physics  
 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
<b>Braden Kay</b>	<b>Project Manager</b>	<b>Global Institute of Sustainability</b>
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
<b>Sheri Klug Boonstra</b>	<b>Associate Research Profess.</b>	<b>Earth and Space Exploration</b>
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
<b>Carolyn Mattick</b>	<b>Graduate Student</b>	<b>Sustainable Engrg. &amp; Built Environment</b>
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
<b>Kostalena Michelaki</b>	<b>Associate Professor</b>	<b>Anthropology</b>
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
<b>Nils Newman</b>	<b>STIP Associate</b>	<b>Intelligent Info. Services Group</b>
Judy Nichols	Dir. Dig. Comm. & Soc. Med.	Law
<b>Cun-Zheng Ning</b>	<b>Professor</b>	<b>Electrical Engineering</b>
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
<b>Linda Raish</b>	<b>Assistant Director</b>	<b>Development</b>
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
<b>Richard Rushforth</b>	<b>Graduate Student</b>	<b>Sustainability</b>
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.
<b>Steve Semkin</b>	<b>Associate Professor</b>	<b>School of Earth &amp; Space Exploration</b>

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**

Clement Adebamowo

Zeeshan Ahmad

Maria S M Alencar

Ida Andersen

Iris Andrade

Adelaide M. Antunes

Timothy Apenzeller

Peter Ashton

David Attis

**Daniel Barben**

Kelly Bauer

**Fletcher Beaudoin**

David Beck

Amy Becker

David Beltran-del-Rio

Francois Berger

Rosalyn Berne

Jill Bernstein

Roberta M. Berry

David Berube

Rachel Bess

Gary Bild

**Jenn Bildersee**

Anne Bilsbarrow

Craig Boardman

Marianne Boenink

Christopher Bosso

Kevin Boyack

Elizabeth Boyd

Eileen Brill Wagner

**Dominique Brossard**

Garrett Brown

**Mark Brown**

Sebastien Brunet

**Holly Buck**

James Buizer

Regula Burri

Hilary Burton

Dale Buskirk

**Michael Cacciatore**

Alexander Calderon

Heather Campbell

Phillip Campbell

Rick Canady

**Heather Canary**

Amy Carroll

**Kenneth Carter****Emeritus Professor**

Associate Professor

Professor

Researcher

Director

Participant

Adjunct Professor

Editor

Aquatic Ecologist

Senior Director

**Professor**

FIIDA Principal

**Assistant Director**

Staff

Assistant Professor

Author

Head, Brain Nanomedicine

Professor

Communications Manager

Professor

Professor

Artist / Painter

Member

**Brownsfields Program Mgr.**

Principal

Assistant Professor

Assistant Professor

Professor

President

Participant

President

**Wisconsin, Professor**

Editor

**Cal. State Univ., Assoc. Prof.**

Professor

**Cornell University**

Dir. Climate Adapt. Intl. Dev.

Professor

Director

Transp. Plan. Div. Director

**Assistant Professor**

Help Desk Support

Associate Professor

Editor

Staff

**Assistant Professor**

Staff

**Professor****Portland State University**

University of Maryland

University College London

Federal University of Rio de Janeiro

Danish Board of Technology

State University of Campinas

National Geographic

Council of Scientific &amp; Indus. Res.

Policy Studies

**RWTH Aachen University**

Richard + Bauer Architecture

**Portland State University**

NISEnet

Towson University

INSERM

University of Virginia

Downtown Phoenix Journal

Georgia Institute of Technology

North Carolina State University

Nanotech. Industry Liaison

**Portland Bureau of Environmental Svs.**

SmithGroup

Ohio State University

University of Twente

Northeastern University

SciTech Strategies, Inc.

Brilliant Concepts LLC.

**Journalism & Mass Communication**

National Geographic

**Government**

University of Liege

**Development Sociology**

University of Arizona

HafenCity University

Found. Genomics &amp; Population Health

Department of Transportation

**University of Georgia**

Nothing but NET

Claremont Graduate University

Nature.com

Food &amp; Drug Administration

**The University of Utah**

House Committee

**Massachusetts Amherst**

**Darlene Cavalier**

Lorenzo Cena  
Jan Cervený  
Joshua Chamot  
Max Chandler  
Diego Chavarro  
**Vanessa Chenel**

Soon Cheon Byeon  
Denise Chiavetta  
Stephanie Chism  
William Clark  
Maria Coccia  
**Cassie Cohen**  
Mathilde Colin  
James Collins  
Matthew Cooper

**Biu Cope**

David Crowley  
Stacey Crumbaker  
Scott Cunningham  
William Cyrs  
Collet Dandara  
**Sarah Davies**  
**de Saille, Stevienna**  
Luke Denmon  
Michael Dennis  
Richard Diehl  
Robert Diehl  
Johnathan Dillon  
Ira Domskey  
Edward Dove  
**Gary Downey**  
Kate Duckworth  
Megan Dyer  
Douglas Edgelow  
Daniel Erasmus  
Chris Ewald  
Vicki Ewald

**Iwona Faferek**

Dee Dee Falls  
Francesca Farioli  
Elizabeth Farrell  
Ellen Feigal  
Martha Feldman  
Todd Fernandez  
Arianna Ferrari  
**Aimee Fifarek**  
Leonard Fine  
Jonathan Fink  
**Baruch Fischhoff**

**Founder**

Graduate Student  
Staff  
Staff  
Artist  
Student

**University of Sherbrooke  
(Quebec)**

Senior Researcher  
Program Chair  
Prog Mgr, Ctr Creat & Innov.  
Professor  
Senior Researcher  
**Executive Director**  
Research Assistant  
Head of Biological Sciences  
Faculty, Phil. & Rel. Studies

**Participant**

Artist  
Designer  
Professor  
Graduate Student  
Assoc. Prof., Health Sciences  
**Marie Curie Research Fellow**  
**University of Sheffield**  
Critical Envir., Data Ctr Adv.  
Staff  
Senior Systems Engineer  
Senior Professor  
Senior Applications Engineer  
Principal  
Res. Assoc., Human Genomics  
**Alumni Disting. Professor**  
Staff  
Research Technologist  
Owner  
Scenario Facilitator  
Staff  
Staff

**Graphic Designer/Prod. Ed.**

Principal  
Research Fellow  
Staff  
Staff  
Chair, Civic Gov. & Pub. Mgt.  
Participant  
Post-doctoral Fellow  
**Deputy Director, IT**  
Science Officer / Prog. Officer  
V.P. Res. & Strategic Part.  
**Professor**

**Science Cheerleader**

University of Iowa  
Department of Energy  
Legislative & Public Affairs  
Max Chandler Robot Art  
University of Sussex

**Clinical Sciences**

Korea Inst. of Science & Technology  
Search Technology  
Boise State University  
Harvard University  
Italian National Research Council  
**Ground Work Portland**  
Wisconsin-Madison  
National Science Foundation  
South Mountain Community College

David Crowley Gallery  
Richard + Bauer  
Technical University of Delft  
University of Iowa  
University of Cape Town  
**University of Copenhagen**

**Sociology**

CB Richard Ellis  
Society & Technology  
General Dynamics  
DeVry University  
Microchip Technology Inc.  
Ira Domskey Environmental  
McGill University  
**Virginia Tech**  
NISEnet  
Mayo Clinic  
Equus Development Corporation  
Digital Thinking Network  
Buckeye Express  
Buckeye Express

**University of Alberta**

Bioscience High School  
Sapienza University of Rome  
University of New Hampshire  
TGen  
University of California, Irvine

Karlsruhe Institute of Technology

**Phoenix Public Library**

Science Foundation Arizona  
Portland State University  
**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
<b>Mark Fuji</b>	<b>Assistant Director</b>	<b>Portland State University</b>
Ken Galluppi	Senior Scientist	University of North Carolina
<b>Lidan Gao</b>	<b>Chinese Academy of Sciences</b>	<b>Patent Analysis</b>
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
<b>Yun-Csang Ghimn</b>	<b>Postdoctoral Fellow</b>	<b>University of Alberta</b>
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
<b>Laura Graham</b>	<b>Graduate Research Assistant</b>	<b>University of Alberta</b>
<b>Michael Granzow</b>	<b>Graduate Research Assistant</b>	<b>University of Alberta</b>
Henry Greely	Director, Stanford Univ.	Law and Biosciences
<b>Dan Gruber</b>	<b>Participant</b>	
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	
<b>Carolyn Hart-Lucien</b>	<b>Director, Information Tech.</b>	<b>Pioneer Valley Transit Authority</b>
<b>Sean Hays</b>	<b>Postdoctoral Fellow</b>	<b>University of Bergen</b>
Aaron Heinzmann	Hardware Engineer	Intel
Aaron Herring	Designer	Gould Evans
<b>Brad Herring</b>	<b>Mus. of Life Science, Director</b>	<b>Nanoscale Informal Science Education</b>
<b>Katie Herzog</b>	<b>Graduate Research Assistant</b>	<b>University of Alberta</b>
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
<b>Linda Holman Bentley</b>	<b>Manager, Adult Services Dept.</b>	<b>Burton Barr Central Library</b>
<b>Liz Hormann</b>	<b>Program Manager</b>	<b>South of Market EcoDistrict</b>
Prathma Howe	Participant	
<b>Wan-Ling Huang</b>	<b>Assistant Professor</b>	<b>Tamkang University</b>

John Hughes	Member	Nanotech. Industry Liaison
Kent Hughes	Director	Teach America
<b>Noela Invernizzi</b>	<b>Federal University of Parana</b>	<b>Development Studies</b>
<b>Ali Jackson</b>	<b>Director, Natl. Collab. Proj.</b>	<b>Sciencenter</b>
Sol Jaffe	Indep. Mgmt. Consultant	Michigan State University
Anil Jain	Computer Science & Engin.	Glendale Community College
Ann Jarmusch	Writer / Editor	City of Phoenix
Charles Jeffery	Dean, Institutional Planning	
Carol Johnson	Planning Department	
Eric Juarez	Participant	
<b>Nikki Julien</b>	<b>Participant</b>	
Eli Kawam	President and CTO	EKLATEK Engineering
<b>Luciano Kay</b>	<b>Postdoctoral Scholar</b>	<b>California, Santa Barbara</b>
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
<b>Daniel LaDuke</b>	<b>Energy Engineer</b>	<b>Western Mass. Electric Company</b>
<b>Nancy LaPlaca</b>	<b>Former Policy Advisor</b>	<b>Arizona Corporation Commission</b>
<b>Claudia Leon</b>	<b>Project Manager</b>	<b>Eureka</b>
<b>Loet Leydesdorff</b>	<b>Professor</b>	<b>University of Amsterdam</b>
Dirk Libaers	Public Policy	Georgia Institute of Tech.
Jiayong Li	Participant	
<b>Leslie Lindon</b>	<b>Founder</b>	<b>Ikologi/Phoenix Rising</b>
Troy Livingston	Staff	NISEnet
<b>Jim Lodge</b>	<b>Vice President</b>	<b>NRG Energy, Inc.</b>
<b>Paul Loomans</b>	<b>Member</b>	<b>Phoenix Spokes People</b>
<b>Juan Lucena</b>	<b>Associate Professor</b>	<b>Colorado School of Mines</b>
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
<b>Nikhil Malvankar</b>	<b>Postdoctoral Research Assoc.</b>	<b>Massachusetts Amherst</b>
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
<b>Carol Mayer-Reed</b>	<b>Landscape Architect</b>	<b>Mayer-Reed Architects</b>
<b>Kimberlie McCue</b>	<b>Asst. Dir, Research, Conserv.</b>	<b>Desert Botanical Garden</b>
John McGarity	Member	Nanotech. Industry Liaison
Chris McKibben	Estimator	Underwood Bros., Inc.
<b>Guy McLain</b>	<b>Director</b>	<b>Lyman &amp; Merrie Wood Museum</b>
Maxwell J. Mehlman	Professor	Case Western Reserve Univ.
<b>Denise Meridith</b>	<b>CEO/President</b>	<b>Denise Meridith Consultants, Inc.</b>
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
<b>Mark Muro</b>	<b>Fellow &amp; Policy Director</b>	<b>Brookings Institute</b>
<b>Richard Neal</b>	<b>Congressman</b>	<b>U.S. Congress</b>
<b>Paul Nealey</b>	<b>Professor</b>	<b>University of Chicago</b>
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
<b>Christina Nulle</b>	<b>Strategic Mgmt of Afford.</b>	<b>Kaiser Permanente</b>
Thomas Ormston	Product Support Manager	Apriva ISS
James Paul	Staff	House Committee
Jim Paisley	Director, Assess. Services	Leathers Milligan & Associates
<b>Lisa Parks</b>	<b>Member</b>	<b>Phoenix Spokes People</b>
Spencer Pearce	Participant	
<b>Angela G. Pereira</b>	<b>Eur. Comm., Scientific Offc.</b>	<b>Joint Research Centre</b>
<b>Nils Petersen</b>	<b>Adjunct Professor</b>	<b>University of Alberta</b>
Pat Petriai	Participant	
Maggie Pingolt	Writer	The Embryo Project
<b>Zachary Piso</b>	<b>Michigan State University</b>	<b>Philosophy</b>
Diane Planidin	Real Estate Agent	Re/Max Fine Properties
Melissa Pulsifer	Marketing Coordinator	Richard + Bauer Architecture
<b>Allison Pyrch</b>	<b>Geotechnical Engineer</b>	<b>Shannon and Wilson, Inc.</b>
Kristin Raffaele	Executive Director / CEO	PACeHR
<b>Ismael Rafols</b>	<b>Sr. Lecturer, Univ. of Sussex</b>	<b>Science &amp; Technology Policy Research</b>
<b>Jud Ready</b>	<b>Adjunct Professor</b>	<b>Georgia Tech</b>
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
<b>Douglas Robinson</b>	<b>Profess, Cell Biology</b>	<b>Johns Hopkins University</b>
Michael Roco	Senior Advisor	National Science Foundation
Jacob Rosenthal	Maker	Heatsync Labs
<b>Eric Rosewall</b>	<b>Program Director</b>	<b>Depave</b>
Donald Roth	Participant	
Marc Rothenberg	Staff	Legislative & Public Affairs
Sean Rothman	Professional	University of Manchester
<b>Jonathan Rothwell</b>	<b>Senior Research Associate</b>	<b>Brookings Institute</b>
Leslie Rycroft	Vice President	Scottsdale League for the Arts
Dana Sadler	District Human Resources	Home Depot
Tind Shepper Ryen	Staff	House Committee on Science
<b>Nick Sauvie</b>	<b>Executive Director</b>	<b>Rose Community Development Corp.</b>
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
<b>Clare Shelley-Egan</b>	<b>Post-doc Researcher</b>	<b>University of Twente</b>
<b>Rob Shields</b>	<b>Chair and Professor</b>	<b>University of Alberta</b>
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
<b>Deborah Strumsky</b>	<b>Assistant Professor</b>	<b>UNC Charlotte</b>
<b>Matthew Sullivan</b>	<b>University of Michigan</b>	<b>Sociology</b>
<b>Lorraine Szarka</b>	<b>Participant</b>	
Karen Tanenbaum	Graduate Student	Simon Fraser University
<b>Carlos Tarin</b>	<b>Graduate Student</b>	<b>University of Utah</b>
<b>Julie Taylor</b>	<b>Graduate Student</b>	<b>University of Utah</b>
Samantha Taylor	Participant	
Jason Teske	Buyer / Planner	Lasertel, Inc.
Judith Testani	Owner/President	Testani Design Troupe, Inc.
D.A. Therrien	Artist	
Gerald Thurman	Instructor	Scottsdale Community College
Raoul Tibes	Assoc. Dir, Leukemias Prog.	Mayo Clinic
Mike Trier	Senior Budget Analyst	Maricopa Community Colleges
Rebecca Toor	Associate Editor	Research Media Ltd.
Joanne Tornow	Program Manager	National Science Foundation
Cassandra Valdez	Participant	
Steve Valev	Associate	Gould Evans
Ian Vandeventer	Owner	Ivy Consulting, Inc.
Dawn Visser	President	MJS Designs, Inc.
Simone van der Burg	UMC St. Radboud, Sr. Res.	Scientific Inst., Quality of Healthcare
Anna Waldron	Professor	Cornell University
<b>Jacob Warr</b>	<b>Policy Advisor</b>	<b>Trimet</b>
Fred Weber	Member	Nanotech. Industry Liaison
Fan Wei	Student	Beijing Institute of Technology
<b>Sarah Weingarz</b>	<b>Maastricht University</b>	<b>Philosophy</b>
<b>Eric Welch</b>	<b>Associate Professor</b>	<b>University of Illinois, Chicago</b>
Marshall Whitmire	Owner & Managing Director	RCI Surveys, Inc.
Thalia Williams	Participant	
Kristine Wilcox	Principal	Kristine Wilcox Consulting
Jeff Williamson	CEO/Pres. & Exec. Director	Phoenix Zoo
James Wilsdon	Director	The Royal Society
Carly Wobig	Graduate Student	University of Illinois
<b>Doug Wolens</b>	<b>Filmmaker</b>	<b>Independent</b>
Gregory Woodhead	Director of Support Services	Corinthian Colleges
<b>Chen Xu</b>	<b>Graduate Student</b>	<b>Georgia Tech</b>
<b>Anita Yap</b>	<b>Community Advocate</b>	

Donghua Zhu	Professor	Beijing Institute of Technology
Ranu Zunjarwad	Product Designer/Writer	

*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

*Workshop on Research Agendas in the Societal Aspects of Synthetic Biology Participants*

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	Ginkgo 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 Doezenia	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 - Pasadena
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  
Jan Youtie

Supervisory Special Agent  
Dir, Policy Research Services

U.S. Federal Bureau of Investigation  
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  
 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  
 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

**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	Reporting Year 6	Total
Outputs	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	
Publications resulted from NSEC Support							
in Peer Reviewed Journal	18	42	45	39	32	42	218
in Peer Reviewed Conference Proceedings	0	0	0	0	0	0	0
in Peer Reviewed Book Chapters	10	20	15	20	2	7	74
Technical Reports	7	7	3	1	2	2	22
Working Papers	7	2	2	3	1	1	16
Books	4	2	1	1	1	2	11
Theses	10	8	3	3	6	0	30
in Trade Journals	3	0	1	1	0	0	5
Other Journal Publications	2	6	5	2	17	2	34
Internet	23	9	15	12	6	2	67
With Multiple Authors	29	43	53	54	33	45	257
Co-authored with NSEC faculty	29	43	51	49	31	44	247
NSEC Technology Transfer							
Inventions Disclosed	0	3	3	3	3	0	12
Patents Filed	0	0	0	0	0	0	0
Patents Awarded	0	0	0	0	1	0	1
Software Licensed	0	0	0	0	0	0	0
Spin-off Companies Started	0	0	0	0	0	0	0
Degrees to NSEC Students							
Bachelors Degrees Granted	14	8	12	12	10	0	56
Masters Degrees Granted	12	11	9	10	6	1	49
Doctoral Degrees Granted	14	10	5	5	4	1	39
NSEC Graduates Hired by							
Industry	12	15	3	10	8		48
NSEC participating Firms	0	0	0	0	0	0	0
Other US Firms	12	15	3	0	0		30
Government	3	2	2	0	2	1	10
Academic Institutions	15	12	3	4	4	1	39
Other	0	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	0	15
Courses Modified to Include NSEC Research	0	0	0	2	0	0	2
New Textbooks Based on NSEC Research	0	0	0	0	0	0	0
Free-standing Course Modules or Instructional CDs	0	0	0	0	0	0	0
New Full Degree Programs	1	0	0	0	0	0	1
New Certificate	0	0	2	1	0	0	3
Information Dissemination/Educational Outreach							
Workshops, Short Courses to Industry	0	3	8	0	4	0	15
Workshops, Short Courses to Others	5	9	3	5	4	0	26
Seminars, Colloquia, Presentations, etc.	91	137	98	88	75	53	542
World Wide Web courses	1	0	0	1	0	0	2

## 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 recent years, [Guston](#) has spoke to colleagues at Kyung Hee University, Korea, 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 Ambato (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. Our leadership has been recognized by our designation as the lead institution for social and ethical implications of nanotechnology under the new National Nanotechnology Coordinated Infrastructure (via a subcontract from overall lead, GA Tech).

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* 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 13 books published, under review or under contract around Center-related material, seven of which are primary CNS publications.

The Center's researchers have published, had accepted or submitted for review 269 peer-reviewed journal articles (219 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*),
- politics, policy and innovation studies (e.g., *Science and Public Policy*; *Politics and the Life Sciences*; *Research Policy*; *Journal of Technology Transfer*; *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*),
- foresight (*Technological Forecasting & Social Change*; *Futures*; *Foresight*; *International Journal of Foresight and Innovation Policy*),
- communication (*Science Communication*; *Journal of Mass Communication Quarterly*; *Public Understanding of Science*; *New Media and Society*; *International Journal of Public Opinion Research*; *Environmental Communication*),
- urban sustainability issues (*Cities*; *Journal of Urban Technology*; *Sustainability Science*; *Journal of Environmental Planning and Management*),
- 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*; *PLoS ONE*; *Environmental Science and Technology*), and
- specific, NSE-related audiences for
  - scientists (*Journal of Nanoparticle Research*; *Nanotoxicology*; *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* 70(June) “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, serving for the first two volumes, and he has now been followed by Fisher, who had been 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 59 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 96 book chapters (79 of which are primary CNS-supported publications), including three contributions to the field-defining *Handbook of Science and Technology Studies*, 3<sup>rd</sup> edition (2008) and four contributions to the 4<sup>th</sup> edition (forthcoming 2017), 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 8600 citations as documented in Google Scholar (as of Apr 16), up from 7100 citations in the previous year and 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 50 from 47 last year, from 38 the previous year, 28 in 2013, 21 in 2012 and 19 in 2011 (indicating precisely 50 publications with 50 or more citations each). (This total does not include the more than 90% of the 531 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 6000, or about 70% of the Center’s citations.<sup>1</sup>

CNS-ASU has also attempted to make its research and other products available in other formats, including 39 reports of various types available on the Internet and numerous video and audio clips

<sup>1</sup> In 2014, 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).



available through the CNS website, YouTube, and other organized blogs. The occasional speaker series is available at [vimeo.com/album/1542414](https://vimeo.com/album/1542414) and the Science Café series at [vimeo.com/album/1662457](https://vimeo.com/album/1662457).

As evidence of its impact on education, the Center has primarily contributed to the completion of 49 student theses, including 22 doctoral theses, 4 master's theses, and 22 undergraduate honors theses, across a variety of disciplines. CNS has contributed to the completion of an additional 25 student theses, including undergraduate honors students, STIR collaborators, CNS-Biodesign and CNS-FSE 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 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 proceeding with a plan to archive the Center's work with ASU Libraries.

Center activities have also helped generate additional research projects, including more than \$9M 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;
- Fisher et al., NSF, \$313K, STIR City, Aug 15 – Jul 18; and
- Guston, Ostman, co-PI (Finn, PI), NSF, \$3M, "Increasing Learning and Efficacy About Emerging Technologies through Transmedia Engagement by the Public in Science-in-Society Activities;" Aug 15 – Jul 19.

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:

- seeded the creation at ASU of the new School for the Future of Innovation in Society and the Institute for the Future of Innovation in Society;
- 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, as well as other connections between the CNS group and NSE at GA Tech that led to the inclusion of research totaling more than \$400K to the successful GA Tech NNCI bid;
- 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 \$37M 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.
- Thornton, with Wetmore co-PI, NSF NNCI node, \$4M, Sept 15 – Aug 2020.

In addition, CNS-ASU researchers have the following associated or collaborative proposals that incorporate CNS ideas under review or in preparation:

- A \$137K proposal to NSF on anticipatory governance of self-driving cars, by Foley at UVA with Bennett at ASU.
- A \$4M proposal to NSF on infrastructure and hazard mitigation, with Wetmore receiving approximately \$1M as co-PI;
- A \$750K proposal to NSF by Fisher on collaborative socio-technical learning; and

- CENTSS is preparing to lead the Education and Outreach aspect of ASU's MRSEC proposal in preparation.

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: that the framing of social science research around “big data” has shifted from general sociological considerations to targeted application areas and privacy concerns; and
  - RTTA 1/1: a rising share of active nanotechnology in publications, inciting engagement with the next generation of R&D.
- 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 researches have found:
  - The importance of capacity building as a valid outcome of public engagement activities (Selin et al. 2016);
  - The importance – through rehabilitating the concept of “obduracy” in the context of public engagement, of the diverse temporalities at play in deliberations about the societal implications of emerging technologies.
- 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 lack of cross-linkages among innovation actors in Phoenix area limits the opportunities for collaboration, coordination and joint-learning.
  - 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 created a biometric search strategy for defining “big data analytics.”
- They have tested new methods for defining synthetic biology bibliometrically, and have included patent citations in this new set of boundary definitions.
- They have advanced methodologies to map and visualize patent data and developed an indicator to represent the extent of diversity and similarity in a patent portfolio.
- 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:
  - RTTA 3 researchers have codified a new mode of public deliberation that makes use of analog and digital tools to build up the capacity of diverse stakeholders to explore socio-technical change.
- RTTA 4 Reflexivity and Integration:
  - RTTA 4 researchers have determined that all four aspects of CNS-ASU’s mission (to research, train, reach out and engage) have been served, and that the Center has “rippling” impacts across a variety of institutions and opportunities for impact.
  - STIR has been adopted by new colleagues in tidal energy at University of Washington and in neuro-tech and technology transfer at the University of Szeged, Hungary.
- 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 more than 14,000 unique visitors during the reporting year. 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 post-doc Megan Halpern has taken a tenure-track position at Michigan State University, and current post-doc Lauren Keeler will be moved to a visiting assistant professor position at ASU’s School for the Future of Innovation in Society.
- 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 fourth Winter School in early 2016. 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 still coordinated by Center senior personnel Miller

during the reporting year and both now located in the new School for the Future of Innovation in Society. CNS-FSE fellow Ben Wender received a Mirzayan Fellowship at the NAS and a follow-on full-time position there, and Michael Bernstein will be starting a post-doc with a large participatory technology assessment project run by CENTSS for DOE.

- 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 extended its strategic and highly generative partnership with NISE Net into a set of informal and/or participatory engagement activities for NSF, NOAA and DOE.
- In training for scientists and engineers, CNS-ASU continues its relationship with local NSE researchers through collaborating on the successful NNCI node proposal both at ASU and at GA Tech, and by contributing to GA Tech’s bid to lead the NNCI as the subaward for the SEI lead.

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

- Publication of the complete volume 2 of the *Journal of Responsible Innovation*, with Taylor & Francis;
- RTTA 4 continued a dialogue with the Association of Innovation Managers around responsible innovation.

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.

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.

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, and using supplementary resources, the Center implemented its program to recruit and mentor undergraduate students from 9 of 12 participating universities 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 and its STIR Project hosted the first Communities of Integration workshop in 2013; a subsequent workshop was held in Canada at the University of Waterloo and the third will be held in Cardiff in Summer 16. 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 119 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 900 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. 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 geoengineering, 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; and
- CNS-ASU has created activities through its ISE collaborations that travel very well, e.g., the Nano Around the World card game developed by TRC 2 not only serves as an activity for our own purposes at Winter School, but it has been adapted by a large NSF-sponsored ISE project on synthetic biology to inform two card games it has developed, and researchers from McGill University (Canada) are adapting the game to foster communication between children with terminal brain cancer and their parents.
- *“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
  - 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 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 119 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 fourth 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;
    - TRC 2 trained more than 50 students at four universities in three countries through its Community Engagement Workshops on international collaborations and pro-poor technologies; and
    - The associated VIRI has expanded its participation to 20 centers of excellence in thirteen countries, including some smaller counties and those closer to the periphery, e.g., Hungary, Korea 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 School of Molecular Sciences;
    - 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;
    - CNS collaborative research and teaching activities are included on virtually every large NSF proposal (IGERT, ERC, SRN, STC) submitted by ASU; and
    - CNS forming the core of the new School for the Future of Innovation in Society.
  - 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;
  - CNS-ASU has served as the nucleus for the creation of an entirely new School for the Future of Innovation in Society at ASU.
- *“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 more than 900 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 – e.g., use of FCT techniques by former post-doc de Ridder-Vignone to support local innovation and entrepreneurship Harsville, SC;
  - 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 Guston and Brian in conversation with 30-40 science policy makers in the reporting year on societal research topics in synbio.
    - Scheufele’s ongoing participation in the Sackler Colloquium at the National Academy of Sciences on “the science of science communication,” and as co-chair of the NAS panel on the same topic.
    - TRC 2’s interaction with the Institute for Technology Assessment and Systems Analysis (ITAS), the chief technology assessment agency in Germany.



# Coordination of Nanotechnology Social and Ethical Issues and Commercialization at Georgia Tech

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.

As part of SENIC, Youtie and colleagues will update the publication and patent datasets associated with two of these tools—a two-stage bibliometric search method and a patent-mapping system—to create information on nanotechnology research citations and patent documents covering 1990-2016 (mid-year).

These datasets will be used to examine innovation pathways of nano-related applications.

Youtie, Shapira, and colleagues were selected by the Southeastern Nanotechnology Infrastructure Corridor (SENIC), which is partnership under the National Nanotechnology Coordinated Infrastructure program between Georgia Tech and the Joint School of Nanoscience and Engineering in North Carolina, to lead the social and ethical implications (SEI) component. A key element of their work involves developing an I-Corps-plus pilot to encourage researchers involved in SENIC to anticipate commercial applications as well as societal implications. Youtie will serve as the SEI Coordinator for SENIC.



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

**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.



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





# The Art & Science of Foresight

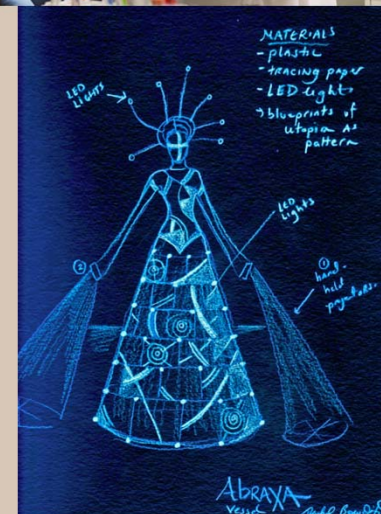
RTTA 3 explores the role of anticipation in the development of emerging science and technology. Our research studies and invents new methodologies for investigating the future and strives to incorporate a more nuanced understanding of the social dimensions of technical change into future projections and analyses. The new future-oriented methods invented are geared toward 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 2015, the RTTA 3 team produced two scenario development research workshops with collaborators from engineering. The first drew together scientists and engineers, legal experts, medical professionals and patient advocates to explore the social, political and economic dimensions of new medical diagnostic technologies. The second workshop investigated alternative futures for waste-water sensing technologies by exploring the variety of ways that different stakeholders might use and interpret data.

Emerge 2015 focused thematically on “the Future of Choices and Values” drawing attention to the relationship between emerging technology, freedom and responsibility. Partnering scientists and engineers with arts and designers lead to inventive thinking and tinkering in a design studios, and public events.

2016 marked the initiation of a new curatorial research project called A Year Without Winter that aims to generate new visions and narratives about living in the Anthropocene.



**Cynthia Selin** | Arizona State University  
Assistant Professor,  
School for the Future of Innovation in Society  
The School of Sustainability



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



# Taking Socio-Technical Integration Research (STIR) in New Directions

The new, associated **STIR Cities** project engages broadly with technical experts working with the electric grid in Phoenix, Arizona and Portland, Oregon. It compares how “smart” energy systems are being developed and deployed, how they are being imagined to support desirable forms of social and technological order, and to what extent social science integration with diverse technical experts foster creative reflection and socially responsive innovation.

The **Hungarian STIR Pilot** study explores whether and to what extent approaches associated with Responsible Innovation function similarly in an Eastern European setting.

The **Tidal Energy** project adapted STIR to make engineering design more sustainable by integrating the socio-environmental dimensions of the system into tidal renewable energy research on tidal turbine devices. What sets this STIR study apart is that the engineering team applied the STIR method primarily on their own.

The **STIR Project** established proof of concept for the integrative components of Anticipatory Governance and Real-Time Technology through partnering with over 30 laboratories around the world. Through a number of new projects, and as part of the legacy of CNS-ASU, the STIR approach is being refined, adapted, and extended into new contexts of science and innovation. New projects (described at left) adapt STIR engagement methods as well as the settings of engagement.



- Positive language reframed problems as opportunities, issues as considerations
- Slowing down and deepening details of the conversation to enhance thought process and bring the team's thoughts into alignment
- Circling back to topics over time and reflecting to assess subtle shifts
- Expanding considerations and alternatives to open up options rather than narrowing to one solution
- Opening up creative space to discuss research from new perspectives and think 'outside the box'

Associate Professor **Erik Fisher** leads RTTA 4, which aims to understand the dynamics of nanoscale science and engineering laboratories through ethnographic and other methods. He is PI on the STIR Cities project (NSF #1535120) and was PI on the STIR project (NSF #0849101).

STIR investigators Kaylie McTiernan (upper right photo) and Miklos Lukovics (above, on right)



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 created a cohort of 25 students—the Policy, Science, Technology & Society (POSTS) Scholars—from 9 universities across the US. The program targeted 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.



**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



The program attracted nearly twice as many applications as there was open slots. The students participated in programming across Washington DC. In Summer of 2016 the students will come back to Washington DC for a two week program that will focus on careers.



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

The science museum work originally fostered through collaborations between CNS-ASU and the Nanoscale Informal Science Education Network (NISE Net) has grown significantly. The experience gained developing posters, displays, games, tabletop demonstrations, and nation-wide training programs with NISE Net to further public reflection on and conversations about emerging technologies has led to an expansion of efforts not only at NISE Net, but at ASU as well.

In the fall of 2014 a number of these efforts were repackaged CENTSS, led by **Ira Bennett** and **Jameson Wetmore**. The center has secured over \$2.5 million in the past year and a half to further develop museum programs and other public engagement exercises from a number of organizations including the NSF, NASA, NOAA, and the DOE and has strong partnerships with the nation's leading science museums including the Museum of Science, Boston, Science Museum Minnesota, and the Exploratorium as well as an MOU with our local Arizona Science Center.

## Redesigning Informal Science Education



The Center for Engagement & Training in Science & Society (CENTSS) efforts in informal education have received a significant boost by new hires Associate Research Professor **Rae Ostman** (left) and Jeannie Colton. Ostman leads the Content and Audience Planning of the Space and Earth Informal STEM Education (SEISE) project and is co-PI of the



"Increasing Learning and Efficacy about Emerging Technologies through Transmedia Engagement by the Public in Science-in-Society Activities" award from Advances in Informal STEM Learning at NSF. Colton is managing the day to day development of projects.

NISE Net has recently rebranded itself the National Informal STEM Education Network to pursue activities beyond Nano. A major grant from NASA helps to fund much of the infrastructure, but CENTSS also collaborates with the network in areas of synthetic biology and the Frankenstein Bicentennial.

**NISE**  
NATIONAL INFORMAL  
STEM EDUCATION  
NETWORK



CENTSS is leading the development of a series of tabletop demo kits for the Sustainability in Science Museums kits project of the Walton Sustainability Solutions Initiative.

<https://sustainabilitysolutions.asu.edu/sciencemuseums/>

**Ira Bennett** | Arizona State University  
Clinical Associate Professor, SFIS

**Jameson Wetmore** | Arizona State University  
Associate Professor, School for the Future of Innovation in Society



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





# Improving Cross-disciplinary Communication on Social & Ethical Aspects of Nanotechnology

Two primary goals of CNS are to help develop a language for discussing applications and implications of emerging nanotechnologies, and to develop strategies for engaging multiple disciplines in these discussions for a holistic problem-framing and solution space.

To these ends, CNS provides financial support to PhD candidate Camilla Nørgaard Jensen, who also received funding through a NSF-NUE grant to develop a cross-disciplinary curriculum that addresses these challenges.

Jensen leads the development and delivery of the Nano Ethics At Play (NEAP) course, a series of four, 3-hour classes in which students from eleven different disciplines use LEGO® Serious Play® to engage in discussions of ethical, environmental, social, and economical implications of emerging nanotechnologies.

The problem that the NanoEthics At Play project addresses is two fold: 1) Language about nanoethics exists within different disciplines, creating barriers to communication; and 2) Learning about nanoethics is dominated by abstraction and reflection, but it contains little experience and experimentation. This curriculum addresses these problems by introducing material deliberation in the form of LEGO® Serious Play® (LSP), expanding the bandwidth of communication and overcoming linguistic barriers. The LSP process encourages reflection and improves attentiveness in small group discussions and teamwork through hands-on minds-on engagement and shared experiences.



CNS Fellow **Camilla Nørgaard Jensen** is a PhD candidate in ASU's School of Design. She collaborates with **Dr. Cynthia Selin** who leads the CNS-ASU research program on Anticipation and Deliberation.



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



# Helping Graduate Students in Science and Engineering Understand the Complexities of Science Policy

Researchers and government policymakers are key players in the world of science policy – but though both are crucial for societal process, they may not understand how best to work together. And that can be a big obstacle to success.

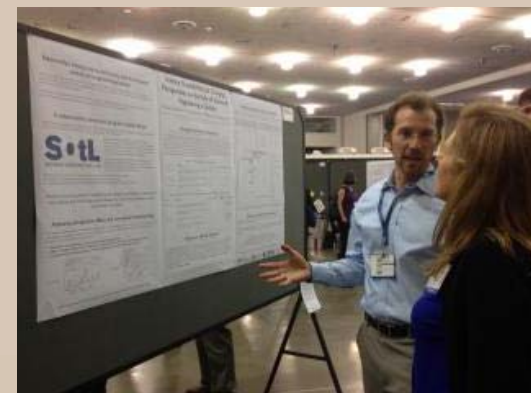
Fighting this disconnect is the aim of the consortium's Science Outside the Lab (SOTL) program. The two-week program, held in Washington, D.C., for the past 10 summers, exposes graduate science and engineering to policy analysts, lobbyists, business people, decision makers and program managers – the key players in the science policy process.

The goal is to give the students a better understanding of their role in the very complex world of research funding and science policy.

But does the program really work? Do the students leave with a better grasp of science policy relationships? Have their minds been opened?

**Kiera Reifschneider**, a senior physical scientist with the U.S. Government Accountability Office in Washington, D.C., and former post-doctoral researcher at CNS-ASU, and **Michael Bernstein**, a research associate with the CNS-ASU and a doctoral candidate in the School of Sustainability, used a novel research approach to understand the impact of the SOTL program on participants.

The researchers used a combination of pre- and post- surveys, concept mapping, and “burst reflections”, where students quickly wrote down 5 words they free-associated with each discussion. The words were then scored along emotional dimensions. Results indicate that students leave SOTL with greater humility about the role of scientific expertise in science and engineering policy; greater skepticism toward linear notions of progress from scientific advances; and a deeper, more nuanced understanding of the actors involved in shaping science policy.



Bernstein presented results of the novel assessment approach at the 2015 American Association for the Advancement of Science student poster competition, where the poster won the social sciences category. The achievement was announced in the April 3 issue of *Science*.

On this project, Reifschneider and Bernstein collaborated with **Dr. Ira Bennett** and **Dr. Jameson Wetmore**, who lead the CNS-ASU education and outreach efforts.



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





“We are planning now for the kinds of futures that we will want to inhabit,” says David Guston, director of the School for the Future of Innovation in Society (SFIS), launched in the fall semester of 2015, when he is asked about the goal of ASU’s new academic unit. He sees the school, in part, as the academic culmination of project activities pursued by the Center for Nanotechnology in Society and its associated faculty over the past decade. With the addition of eight new faculty, multiple research centers and a new undergraduate program – as well as the adoption of affiliated graduate programs including a doctoral program, three master’s programs and a certificate – the school is tackling novel challenges as it is helping birth a new field of research and pedagogy focused on societal aspects of knowledge-based innovation.

**David Guston** | Arizona State University  
 Director, School for the Future of Innovation in Society  
 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)

## Launch of new

**ASU** SCHOOL FOR THE **FUTURE**  
 of Innovation in Society



The school uses a transdisciplinary approach in examining the role of innovation in shaping society, and vice versa, including the interplay of both technical and social elements,



science communication, responsible innovation, and the formation of effective science and innovation policies. Faculty, many who have pursued research in the societal aspects of nanotechnology with CNS-ASU, have backgrounds in social sciences, law and policy, renewable energy, biology and conservation, engineering, journalism, chemistry, global development, physics, and more. Students at the new school study ways of making and studying futures, the processes and politics of innovation, systems of knowledge and technologies, etc.

For more information about the School for the Future of Innovation in Society, visit [sfis.asu.edu](http://sfis.asu.edu).



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



# Expanding CNS-ASU Lessons Learned to an International Community

The Virtual Institute of Responsible Innovation (VIRI) was created to accelerate the formation of a community of scholars and practitioners who, despite divides in geography and political culture, will create a common concept of responsible innovation for research, training and outreach - and in doing so contribute to the governance of emerging technologies under conditions dominated by high uncertainty, high stakes, and challenging questions of novelty.

The Institute's mission is to develop and disseminate a sophisticated conceptual and operational understanding of RI by facilitating collaborative research, training and outreach activities among a broad partnership of academic and non-academic institutions.

The first annual meeting of VIRI was held July 14 to 16, 2015 in Sussex, UK organized by ASU and hosted by SPRU, the Science and Policy research Unit at the University of Sussex. The meeting featured overviews of projects by current institute members and then focused on presentations by early career researchers from institutions in Brazil, Spain (Basque Country), Sweden, the Netherlands, Norway, the U.K. and the U.S.

Discussion sessions followed, led by doctoral student **Brenda Trinidad** of ASU, around the creation of a virtual library of teaching materials for Responsible Innovation, one of the major goals of the VIRI project.

VIRI also funded 2015 summer research for a number of early career scholars, allowing **Seokbeom Kwon** of Georgia Tech to visit SPRU, **Beverley Gibbs** of the University of Nottingham to visit UVA, and **Megan Halpern** of ASU to visit the University of Copenhagen.



VIRI PI **David Guston** and co-PI **Erik Fisher** have been included as collaborators on several European-level project proposals on responsible innovation.



**David Guston** | Arizona State University  
Professor, School of Politics and Global Studies  
Director, The Center for Nanotechnology in Society (CNS-ASU)  
Director, School for the Future of Innovation in Society (SFIS)  
Director, Virtual Institute for Responsible Innovation



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 have been 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 eleven 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 \$7M in associated and spin-off funds, making the share of such awards approximately 50% of the total amount of the 10-year CNS-ASU award plus supplements 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 have added additional faculty capacity in the societal aspects of emerging technologies, including Andrew Maynard, Diana Bowman, and Michael Bennett, who joined the new School for the Future of Innovation in Society (see below) in August 2015. Among the associated awards, the Virtual Institute for Responsible Innovation (VIRI) provides an excellent opportunity to continue international collaborations into the near future, and the awarding of an NNCI node to ASU, as well as the SEI coordinating role for NNCI as a subcontract from GA Tech (see below).
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 to the VPR). CNS earned 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. The new Center for Engagement and Training in Science and Society, which is significantly a spin-off of CNS-ASU, is also coordinating the education and outreach aspects of ASU’s upcoming MRSEC bid.
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 Sp14, 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.” The School officially launched in July 2015 with Guston as its founding director, reporting to (new) Provost Mark Searle. The Institute is also founded under the joint, interim leadership of Guston and Sarewitz.

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. IF/IS will comprise an array of centers, each roughly equivalent in size or scope to CNS. Its current array includes CNS-ASU (Guston, director), the Center for Engagement and Training in Science and Society (CENTSS; Bennett and Wetmore, co-directors), the Risk Innovation Laboratory (RIL; Maynard, director), the Center for Energy and Society (Miller, director), and the CSPO DC Center (Sarewitz, director). In the new ASU fiscal year (1 July 2016), we will add the Center for Science and the Imagination (CSI; Ed Finn, director) and the Center for Biopolitics, Bioeconomics and Biosociety (CB3; Robert Cook-Deegan, director), and centers for innovation and development (Netra Chhetri, director) and the study of the future (Selin, director), will be founded imminently. In the coming academic year, we plan to search for a director for a Center for Engineering, Policy and Society (CEPS). In addition to these core centers, the Institute will engage allied centers from elsewhere at ASU, including the Center for Law, Science and Innovation, the Center for Biology and Society, the Center for the Future of War, PlanetWorks, and the Center for Biodiversity Outcomes. It will also engage affiliated non-ASU (and non-US) centers such as those that are part of VIRI plans to take on remaining CNS-ASU staff.

SFIS houses 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. The School has also developed an



undergraduate curriculum in Innovation in Society, including a BS, a BA, a minor and a certificate – all to be launched in Fall 2016 under the leadership of Wetmore, undergraduate director.

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 the academic home of non-track faculty such as Bennett, Ostman, and Cavalier. The administration has invested approximately \$1.2M in salary + benefits for faculty in the School arriving in Fall 2016, and we expect a similar investment in the coming year – especially if the plan to allow SFIS to hire two faculty members to be shared with each of ASU’s six schools of engineering persists. 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 (VIRI partners) 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.

While most of the School and Institute are currently housed within the same building in which CNS-ASU has been located, ASU plans to provide newly constructed, contiguous space with a single School/Institute identity for Fall 2018.

## 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)  
 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: Joshua Jacobs (International Affairs, April 1, 2015-April 30, 2016)  
 Visiting Scholars: Ying Wang (Beijing Institute of Technology, Management), Xuefeng Wang Beijing Institute of Technology, Management), (Daniele Rotolo (Science Policy Research Unit, University of Sussex), Jianhua Liu (Chinese Academy of Science), Haoshu Peng (Chinese Academy of Science), Jannik Schuehle (Karlsruhe Institute of Technology)

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 is emerging as a public tool that other research groups are using or adapting. The former article describing the database has attracted 299 citations in Google Scholar (as of March 15, 2016) and 145 citations in the Web of Science.

In this closing period of the center, RTTA 1/RISA has focused on seeding efforts in other emerging technologies. We have conducted analyses of Big Data Analytics which has begun from a systematic effort to create a bibliometric search strategy for defining the field, which was published in Zhang, Schuehle, Porter, Youtie (2015). We also have applied the method for understanding issues raised

in articles written by social scientists about emerging technologies in Shapira, Porter, Youtie (2010) to obtain similar insights about Big Data Analytics. The resulting article from Youtie, Porter, Huang (to appear) finds that eight sub-literatures are important in framing social science research about Big Data and that these literatures have evolved from general sociological considerations toward applications issues and privacy concerns. This work is being co-supported through a grant from NSF (award number 1527370) and being performed in parallel and with an objective of sharing information with the US Government Accountability Office, which is performing a technology assessment of the topic. Additional work in this area includes:

1. Cybersecurity and the Internet of Things are among the fastest growing subtopics in the Big Data Analytics domain (Zhang, Chen, Zhang, Porter, Zhu, Lu, J., Online, 2016)
2. NSF relies to a greater extent on multi-program funding from different fields than does the National Natural Science Foundation of China to ramp up funding for Big Data Analytics (Huang, Youtie, Porter, Wang X., under submission with PLoSOne)

We also have seeded efforts to bibliometrically define the synthetic biology domain. We have improved upon existing methods, which have either been too narrow or too broad, by extracting keywords, performing noise ratio tests, and applying exclusion terms. For patents in the domain, we conducted an additional set of boundary definition tests based on several rounds of patent citations (Kwon, Youtie, Shapira, in process). The resulting search term identified 7,700 papers worldwide, of which nearly 3,000 had US authors. These papers involved more than 1,800 US reprint authors and another 253 authors who were principal investigators on grants indexed through the Star Metrics system. We provided these records to RTTA 2 colleagues in support of their synthetic biology survey.

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

- 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).

## 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).

Much of our work has focused on tracking and analyzing R&D strategies of small and medium-sized enterprises (SMEs). In prior years, we found evidence of two different strategic approaches pursued by SMEs to enter the domain of nanotechnology: an 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). We also observed that 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). A study published in that past year found that for 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).

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) and patents and publications are not significant predictors of product development ([Shapira](#), Gök, Yazdi, 2015). Nano-enabled drug delivery analysis shows that even though breast cancer and Alzheimer's disease have different pathologies, they hold some developmental pathways in common (Ma, [Porter](#), Aminabhavi, Zhu 2015). Likewise, Dye Sensitized Solar Cells offer unique advantages but compare less favorably with incumbent technologies on conversion efficiency and long-term stability (Wang, Qui, Zhu, Mitkova, Lei, Porter 2015).

In prior years, we reported on development of a 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. This year saw the development of an indicator to represent the extent of diversity and similarity in a patent portfolio (Kwon, [Porter](#), [Youtie](#), 2016). The indicator quantitatively demonstrates that graphene is a field with a research orientation that is focused on a cluster of disciplines but has many applications, while nano-enabled drug delivery follows the reverse pattern.

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](#), Horsley 2012; Arora, [Youtie](#), [Shapira](#), Gao, and Ma 2013; Arora, [Youtie](#), Li and [Shapira](#) 2015). 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 (Li, Arora, [Youtie](#), [Shapira](#) 2016). We find that it is the mix of partners from different sectors, rather than the depth of partnerships, that matters in SME performance.

#### Contributions to "ensemble-ization" or other center-wide activities.

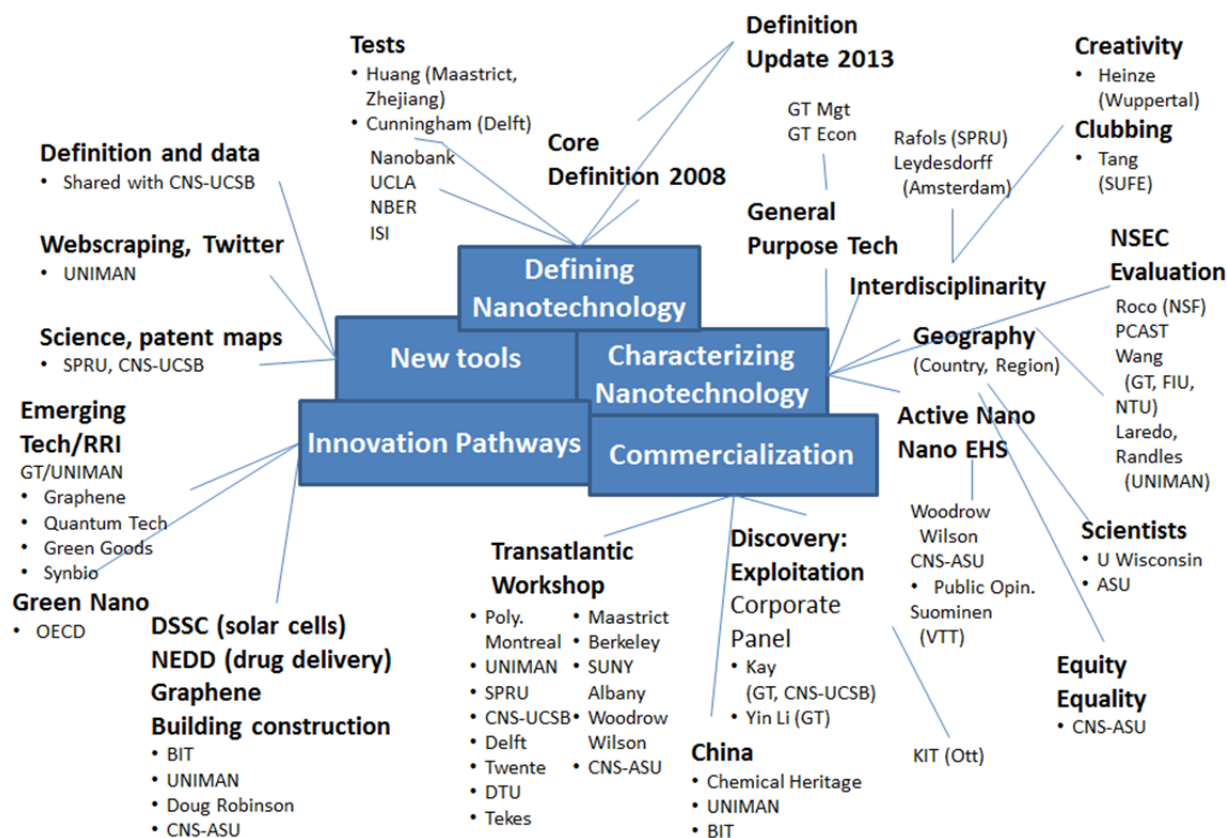
RTTA 1/1's co-authored publications with TRC 2 on drivers of adoption of manufactured nanotechnology products in the building construction industry began through a collaboration between doctoral students in RTTA 1/1 (Arora) and TRC 2 (Foley) at an CNS-ASU All Hands meeting in 2010. A presentation at 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 provided listings of reprint authors for surveys performed by RTTA 2, including the most recent synthetic biology survey
- 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 3: Anticipation and Deliberation**

#### **Personnel: Faculty and senior participants**

Cynthia Selin, RTTA 3 leader (ASU, assistant professor, School for the Future of Innovation in Society, School of Sustainability)

Lauren Withycombe Keeler (ASU, Postdoctoral Scholar, CNS)

Dehlia Hannah (ASU, Assistant Research Professor, SFIS and Arts, Media and Engineering)

Hannah Star Rogers (ASU, Postdoctoral Scholar, CNS, since Aug '15)

Megan Halpern (ASU, Postdoctoral Scholar, CNS, through June '15 now Assistant Professor, Lyman Briggs College and the Residential College of Arts and Humanities, Michigan State University)

**Goals.** As a whole, RTTA 3 problematizes conventional deliberative approaches to anticipation that unreflexively predict technological outcomes. Instead, this research pursues anticipatory governance by honing in 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. This program has not been active in this reporting year. 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 and implemented a large-scale citizen engagement activity that included 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 futures of technology in society. Two main research and curatorial programs were the focus of YR 11 activity: the art/science collaboration of *Emerge*, and a new project entitled "A Year Without Winter".

#### **Emerge: Artists And Scientists Redesign The Future**

This art-science event and research project gathers artists, designers, researchers, scientists, engineers, and audiences to imagine possible futures and explore the ways those futures are devised. Since its co-founding by Selin in 2012, Emerge has, each year and with different themes, explored the intersections of art, science, technology, and design by asking challenging questions about our choices about where our lives are headed by building, sharing, and experimenting with visceral experiences with the future. Part performance, part hands-on interactive experience, the now annual town-gown event explores the ways we are already creating the future and asks us to think about how we ensure it is the future one we have chosen. In doing so, Emerge has pushed the envelope in experimenting with deliberative methods and convening moments for critical thinking through workshops, research, and public events.

In YR 11, RTTA 3 has continued to play a lead in the design and implementation of Emerge. The Future Design Studio (FDS), a visitation at Emerge 2015, has proven to be a rich source of continued research and inspiration for future work. The project guided visitors through a brief design process to help them create prototypes of artifacts from the future. Improvisational actors from The Torch Theatre then created a performance that explored the world in which some of those artifacts might exist.

Currently, YR 11 postdoctoral scholar Megan Halpern (now at University of Michigan) is in the middle of

the revise and resubmit process with an article about the FDS for the Participatory Design Conference (PDC 2016). Like many design-based conferences, PDC is peer reviewed and highly selective. Proceedings are published by the ACM (Association for Computing Machinery) and are on par with, or cited more often, than most design journals.

Additionally, Halpern and co-authors has submitted a NSF proposal to turn FDS into a first year orientation activity to get STEM students thinking about the social and ethical implications of science and technology. This is an EAGER proposal with the potential to grow to a full IUSE (Improving Undergraduate STEM Education) project to develop ways of using making and performance to teach values, ethics, and social/cultural implications as part of a STEM education.

Halpern is also first author on a manuscript recently accepted for a special issue of BSTS on Science Fiction. The article, "Stitching Together Creativity and Responsibility: Interpreting Frankenstein Across Disciplines", is currently in the hands of copy editors for the journal. Halpern is also actively drafting a short book on *Frankenstein* for CSPO's Rightful Place of Science series with an expected submission date summer '16.

Emerge '16, scheduled for April 29<sup>th</sup>, raises questions about possible futures around the theme of sports. CNS-ASU post-doctoral researcher Hannah Rogers has acted as Director of Research and Collaboration, leading efforts to create five research projects with interactive components. These activities are an extension of her dissertation research "The Practices of Art and Science" (Cornell, 2012). For example, artist Adam Flynn's team of artist and designers will use climate change data about the warming and drying effects in much of the southwestern US as a basis for the design of an imagined climate change sport called Cistern, which involves "stealing" water from other players. Members of the public will have a chance to talk with Adam about climate change and the sports it might produce, as well as having a chance to play the game.

The 2016 Emerge event is expected to attract 5,000+ members of the public to experience collaborations by more than 18 groups of artists and scientists. Eight social science researchers will be involved in gathering data for four distinct projects through the event. In addition, Rogers' research team will collect data on interactions between artists/scientist collaborators and from participants about their Emerge experiences. Rogers and her team will participate in each of these aspects of Emerge to 1) create cutting edge research protocols to simultaneously investigate questions about the roles of artists, scientists, and hybrid practitioners, 2) produce new knowledge and present it through novel methods, and 3) provide the Emerge team with evaluative information to understand public engagement and improve future events.

At present, five research experiences have been planned for the 2016 event. Research protocols have been developed for each and publication plans are underway. Each research experience uses a novel approach for collecting data and offering participants an interactive experience. A post-survey for audience members to receive following the event has been designed, with IRB approval pending. Possible publication venues include NordiChi's Future Scenarios panel, *Leonardo*, and *Configurations*; additional popular press publications will also be covering visitations including Slate's Future Tense and Arts Daily.

#### Cross-fertilizations: Art & Science in STS

Inspired by Emerge 2012, Selin published in YR 11 a co-edited special issue derived from the scholarly dialogue at the Oxford Futures Forum (held at University of Oxford in 2014), focused on the intersections between scenario thinking and design thinking, building on the work on mediated

scenarios initiated within RTTA 3. Included in this special issue is an article led by Selin called “Scenarios and Design: Scoping the Dialogue Space.”

Halpern co-organized a three panel stream at the Society for the Social Studies of Science (4S) conference with Rogers, Hannah, and past CNS postdoctoral scholar Kathryn de Ridder Vignone. The panels invited submissions that focused on art and science studies. Panelists included noteworthy scholars Hanna Rose Shell (MIT) and Trevor Pinch (Cornell University). The panelists are currently working on a book proposal inspired by this panel. The aim is to develop an edited volume that would function as a kind of handbook for the fledgling field of art/science studies, and features chapters from some of these scholars.

#### A Year Without a Winter

Dehlia Hannah, an Assistant Research Professor jointly appointed in ASU’s School of Arts, Media and Engineering and the School for the Future of Innovation in Society, joined CNS in July 15 to extend CNS work on with a broad array of “scenaric devices” like designed objects, images and experiences. She brings her training in philosophy of science, aesthetic theory, and curation of art/science research and exhibitions to bear on a set of research, outreach and education offerings that create new paths in the future of foresight. Over the years, CNS-ASU has been on this vanguard of a “material turn” in public engagement activities and has been active in pursuing novel ways to produce new future-facing narratives. With Selin, Hannah’s primary activity during this period was the initiation of a new project called *A Year Without a Winter*, an international collaborative project aimed at cultivating imaginative comprehension of climate change through a collective thought experiment. Staged as part of ASU’s *Frankenstein* Bicentennial Project, *A Year Without a Winter* considers the profound creative, scientific and political consequences of the global climate crisis remembered as the ‘year without a summer,’ a cooling episode set into motion by the eruption of Mount Tambora in 1815. If, as the story goes, Mary Shelley was inspired by the atmosphere of sublime horror occasioned by this profound environmental disturbance, what visions, stories and insights might be forged in response to imminent climate futures?

Over the past nine months Hannah and Selin have set in place the architecture of a radically transdisciplinary project by articulating the central research questions at the core of the project and establishing a network of scholars and artists with whom we will collaborate over the next three years to produce workshops, publications, exhibitions and pedagogical activities. Our focus is at once thematic and epistemological: How do we viscerally and imaginatively inhabit the worlds described to us by the best available climate models and the trajectories of change that they predict? And how can we use our hindsight into the aftermaths of a historical climate crisis in order to reorganize our understanding of the situation in which we are immersed today?

In YR 11, Selin and Hannah have presented the project at multiple venues worldwide and have planned several events and publications for the coming months. In Jan ’16 we launched a website ([www.ayearwithoutawinter](http://www.ayearwithoutawinter)) that hosts scholarly essays, artwork and literature and serves as a platform for our growing research network. We have also contributed to several transdisciplinary collaborations, that each help to crystallize a distinct aspect of the research and its practical outcomes. For instance, in order to explore how scientific data become not only intellectually comprehensible, but personally resonant, Hannah and Selin collaborated with an artist, Adrienne Jenik (Director of the School of Art, ASU), and an environmental social scientist, Dave White (Director of the Decision Center for a Desert City, ASU), to explore epistemologies of anticipation through practices ranging from divination to prediction at the Carnegie Desert Cities Symposium, ASU, November 19-21, 2015. Another project launched in YR 11, working with meteorologist Melissa Bukovsky (NCAR), we explored the question of how *A Year Without a Winter* could be defined scientifically and when it could be projected to occur based on current climate model intercomparison data. This research forms the basis of an online



interactive map that we are developing to enable users to learn about how specific geographical locations will be affected by climate change as well as to input qualitative reflections about the varied cultural indicators and significance of seasonal change around the globe.

A third project in YR 11, with Ariel Anbar, Hilairy Hartnett and Stephen Romaniello of the School of Earth and Space Exploration at ASU, we designed a workshop for 100 members of the ASU community called “Planetary Design: Climate 3.0.” The event engaged participants in envisioning more desirable climate futures through transdisciplinary dialogue. We sought to reframe the discussion in terms of a design philosophy that emphasizes the need to bring about *both* different conditions in Earth systems and new social norms and practices of interacting with those physical systems. The narrative force of *A Year Without a Winter* offered one exemplary case through which participants were invited to think about Anthropocene futures.

During the last nine months, several events have been planned that will take place later this year. In collaboration with the Center for Science and the Imagination, Hannah and Selin will design and host a writer’s retreat that takes the form of a re-enactment of the “The Dare”—as the competition that led to the publication of *Frankenstein* was called. The outcome will be a literary anthology, *A Year Without a Winter*, for which we will write a prologue. To explore the implications of narratives and the arts, we will hold a workshop for policy makers with Angela Periera at the European Commission-Joint Research Council in Italy in November 2016. In YR 11, we have also begun planning an exhibition of “A Year Without a Winter” at the ASU Art Museum for 2018.

#### 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. Since 2006, CNS-ASU has supported the work of three transdisciplinary teams (a total of 12 students) annually. This program is no longer active. However, Selin and Boradkar are collaborating on developing a piece for an exhibition as part of the CNS event “Advancing the Legacy of Anticipatory Governance” slated for early May.

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

Probing Future-Oriented Deliberation puts anticipatory governance and responsible innovation into practice utilizing tools of foresight to explore the future of emerging technologies under development at ASU. In Yr 11, CNS-ASU has partnered with the Biodesign Institute’s Center for Innovations in Medicine, including lead researchers Stephen Johnston and Neal Woodbury, to revisit “Doc-in-a-Box.” The future of Doc-in-a-Box was first explored by Selin in 2008 (AY 08-09) in a scenario development workshop. In 2015, new and existing collaborators were brought together to explore the future of presymptomatic medicine and health monitoring in light of the maturing of Doc-in-a-Box and the technology’s impending commercialization. Graduate and undergraduate students were recruited and trained to act as note takers and facilitators during the workshop. For the research team it was an opportunity, once again, to inform the research trajectory of our biotech partners and also to study longitudinally the impact of participatory scenario construction on responsible research and innovation. Results of the second workshop and insights from the longitudinal study of scenario planning as a tool for anticipatory governance are being detailed in a publication under preparation which is planned for submission to *Science, Technology, and Human Values* later this year.

The need for this type of foresight work and innovative approaches to future oriented deliberation applied to new technologies (beyond nanotechnology) was the focus of an article by RTTA 3 researcher

Lauren Withycombe Keeler and former CNS graduate student and post-doc Rider Foley (now at University of Virginia) in the *Journal of Responsible Innovation*. “The Monster and the Polar Bears: Constructing the future knowledge landscape of synthetic biology to inform responsible innovation” details the emerging discourse around the future of synthetic biology. The article makes the case for future-oriented deliberation around synthetic biology that goes beyond consideration of the societal implications of each technology or innovation “to one of finding evidence-based solutions for pressing sustainability challenges in which synthetic biology may be among many high- and low-tech options (Wiek et al. 2012).” This work was also presented by Withycombe Keeler at the Assembling Cities conference in Zurich, Switzerland in 2015. The extension of anticipatory governance methods, particularly participatory scenario construction, to new communities and new technologies – here, autonomous vehicles – was also the focus of Withycombe Keeler’s presentation at the 2015 S. NET conference in Montreal.

Building on CNS’s YR 11 mission to extend insights on anticipatory governance and responsible innovation of nanotechnology to other areas of research and development in science and engineering, a scenario workshop was held with partners from ASU’s Center for Environmental Security. The two-day workshop probed development in the field of wastewater sensing to explore plausible future applications of the technology and its societal implications. Experts from ASU’s School for Sustainable Engineering and the Built Environment were joined by wastewater management professionals, policy experts, regulators (EPA), potential users (US Army and DTRA), and STS scholars who were challenged to consider how wastewater sensing technology might develop in the future and with what implications for the sustainability of communities and the privacy of individuals. The workshop directly intended to impact the development of wastewater sensing technology at ASU and initial post-interviews indicate that researchers found the conversations and resulting scenarios surprising and informative to their research. In addition, though, the conversation engaged new communities in future-oriented deliberation around the responsible innovation of wastewater sensing technology, a technology new to CNS. Like the Doc-in-a-box workshop, graduate and undergraduate students were recruited and trained to act as facilitators and note-takers during the workshop.

Results of the workshop, including the scenarios and the empirical evidence the workshop provided for the utility of anticipatory governance activities for sustainable water management, are detailed in an article in preparation by Withycombe Keeler, Selin, Halden, White, and Guston entitled “Anticipatory governance of water resources in practice: Participatory construction of future scenarios for wastewater sensing technology.” This paper follows two papers published in 2015 by Withycombe Keeler and colleagues on how novel forms of future-oriented deliberation can help shape and inform sustainable water management, including: “Linking stakeholder survey, scenario analysis, and simulation modeling to explore the long-term impacts of regional water governance regimes” in *Environmental Science and Policy* (Withycombe Keeler et al. 2015) and “Envisioning the future of water governance: A survey of central Arizona water decision makers” in *Environmental Practice* (White, Withycombe Keeler et al. 2015).

Engaging in future-oriented deliberation is particularly relevant for technologies aimed at addressing sustainability challenges. Planning is underway for the third participatory scenario workshop, which explicitly engages with sustainability, with ASU physics professor and director of the Center for Negative Carbon Emissions (CNCE) Dr. Klaus Lackner. CNCE is developing technology to capture and store carbon dioxide from the atmosphere as a mechanism to combat climate change. CNS will conduct a scenario workshop with CNCE researchers and other experts in carbon capture and storage, climate communication, economics, and marketing to explore future challenges to the adoption and efficacy of carbon capture technology. This builds on ongoing work within CNS to explicitly engage with, create, and assess sustainable futures.

CNS has a number of partners at ASU and other universities working in the field of sustainability science. There are ongoing efforts to share research and educational opportunities between departments and universities. CNS researcher Withycombe Keeler published an article, currently in press, in *Sustainability Science* on these partnerships and presents a typology of research and teaching partnerships that can advance efforts to address sustainability challenges. This research was part of ongoing work by Withycombe Keeler to bridge foresight and sustainability science to inform anticipatory governance in practice. An article published by Withycombe Keeler in 2015, “How much sustainability substance is in urban visions?” analyzes how often and how well cities plan for their own sustainability. In addition, Withycombe Keeler was part of the team at the Hartwell Education Initiative awarded the 2015 ASU President’s Award for Sustainability for their work to spread sustainability education across ASU and to other universities through the Sustainability Science for Teachers Course.

#### 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 YR 9, a novel public engagement method – the Futurescape City Tours – was implemented in six cities in North America. 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. Three major peer-reviewed articles and two peer-reviewed book chapters were submitted in YR 10, and have seen publication in YR 11. Of note is “Experiments in Engagement: Designing PEST for Capacity Building” in *Public Understanding of Science*. This article establishes the conceptual styling of and design principles behind the FCTs and lays out a novel conception of the import of public engagement: *capacity building*. In that article, we articulate public engagement design principles that (1) lead with citizen-led interests, giving primacy to the concerns and curiosities of publics; (2) critically engage with technology, setting attention on the social and political dimensions of emerging technologies (3) use material deliberation, moving beyond discourse to incorporate material, visual, and affective elements; and (4) approach the future in a tempered fashion, evoking anticipations grounded in the appreciation of obduracy, with imaginations unleashed with the ballast of historical reflection. The article delineates the import of capacity building as a worthwhile outcome of future-oriented public engagement exercises, which should vie for prominence alongside of the traditional, though nevertheless elusive, outcomes of policy impact or integration in decision-making. These capacities are explained as important enablers for laypeople and other stakeholders to contribute productively—in a distributed and diverse fashion—to the democratization of science and technology and in the construction of better futures.

Other findings derived from the YR 9 national implementation of the FCTs are being explored analytically through the empirical data collected on the tour. In YR 11, papers under development or in review include:

- Phadke has submitted “Place, Space and Hope in the Interstitial City,” to *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*.
- Gano has submitted “Participatory Technology Assessment as Urban Technological Wayfinding,” under review *Journal of Urban Technology*.

Finally, Selin, along with others from the FCT research team, developed and presented an exhibition entitled “The Futurescape City Tours” at the Society for the Social Studies of Science’s *Making and Doing* Program in Denver, CO, USA.

## **RTTA 4: Reflexivity and Integration**

### **Personnel – faculty and senior participants**

Erik Fisher RTTA 4 leader (ASU, associate professor, School for the Future of Innovation in Society, CSPO)

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

Ira Bennett (ASU, clinical research professor, CSPO)

Shannon Conley (assistant professor, James Madison University)

David H. Guston (ASU, professor, School for the Future of Innovation in Society, CSPO)

Other Personnel: graduate students (24), 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; additional STIR studies including the associated STIR Cities 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**

As reported on earlier, 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. The bulk of the interview work was initially conducted by the late Dave Conz. As reported last year, it was revisited by Fisher, Guston and ASU doctoral student Brenda Trinidad in light of distinct conceptual, policy and pedagogical features of responsible innovation and this material is presently being incorporated in a chapter for the edited volume *Can Innovators be Made?* intended for MIT Press.

### **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.

As previously reported, 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. 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. As reported in detail last year, survey results indicate that all four components of the mission were served. Additionally, Center impacts were found to have had rippling effects, with CNS-ASU activities and initiatives resulting 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 have changed 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. From Sp 09 to Fa 14, 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). STIR provided proof of concept for the integrative portion of the Center's mission of anticipatory governance.

(See **Education** section for a list of the 24 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. Previously, 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, and the development of a comparative framework for socio-technical integration. Major activities in YR 11 include launching the STIR Cities project, other adaptations of the STIR approach, and international events and trainings regarding socio-technical integration scholarship.

### Individual STIR studies

In past years we reported on individual STIR project studies conducted by, e.g., assistant professor Shannon Conley (James Madison University), assistant professor Steven Flipse (TU Delft), postdoc Cecilie Glerup (Copenhagen University), Presidential Management Fellow Cameron Keys, and others. This year, we report on individual studies that adapt and apply the STIR approach in new settings.

The *Tidal Energy* project adapted STIR for the sake of enhancing the sustainability of engineering design activities by integrating the socio-environmental dimensions of the system into tidal renewable energy research on tidal turbine devices. Design convergence has not yet been reached for tidal turbine devices, so incorporating social and environmental considerations with technical and economic parameters may be effective in influencing design. This project used STIR as one way to reach this goal, exploring the flexibility of the semi-structured protocol as a basis for situated dialogue and reflection. What sets this STIR study apart is that the STIRer, Kaylie McTiernan, a masters student in the School of Marine and Environmental Affairs at the University of Washington, was more than an 'embedded humanist,' as she became part of the future visioning component of the tidal energy research project. McTiernan collaborated as a member of the team with a Mechanical Engineering professor who directed the future visioning research project. Both the STIR and the future visioning projects began at the same time and were initially kept separate, as it was assumed they would influence each other indirectly. During use of the STIR decision protocol, McTiernan asked the professor about any decisions he was making - a broad scope, highly technical, and influenced by many other people's decision making. More than half way through the study, however, and after some frustrations with the process, the pair decided to exclusively focus their STIR discussions on the joint future visioning research. Once STIR and future visioning were combined, both areas of research improved as a result. The STIR conversations became less rigid, more natural, and more applicable to expanding values. Not only did the STIR study improve, but the future visioning research became much bigger in scope and more influential than initially conceived. STIR allowed the conversation to slow down, deepen, and evolve over time. Expanding considerations was beneficial for content and perspective, expanding alternatives opened up options rather than narrowing down to one design, and the research plan became more inclusive of diverse stakeholder perspectives. Initially

compartmentalizing STIR and future visioning limited both, and only by integrating them could their full potential be realized.

Also in YR 11, associate professor Miklos Lukovics of the University of Szeged, Hungary conducted two STIR studies as part of a *Hungarian STIR Pilot* that sought to explore whether and to what extent approaches associated with Responsible (Research and) Innovation (RRI) function in an Eastern European setting similar to the way they have been deployed in developed countries. While science-based technological innovation is a core element of efforts to improve the competitiveness of a company or a territorial unit and, as a consequence, to increase welfare, innovators are rarely trained to reflect on the societal and environmental dimensions of innovation in a systematic and multi-disciplinary manner. In order to address this challenge, the notion of RRI has emerged within policy discourses worldwide. Implementing RRI concepts and practices in daily innovation decision-making, however, has received less attention in the scientific community and requires addressing the multidisciplinary nature of the innovation process. While STIR is one such established means of such implementation at the laboratory level, it has only been tested in developed countries (for purposes of comparison this study considers China, where several STIR studies were conducted, as a developed country), raising questions about how well the method works in other settings. Since there is a relatively low knowledge of RRI in South-East European (SEE) countries, this project was motivated by the question of whether and how RRI could be institutionalized in South-East European countries. As a first step, the project team focused on whether and how the STIR method could be adapted to research and innovation decision-making in these countries. In order to answer these questions, we tested STIR in two natural science research groups at the University of Szeged. The results show that STIR can be adapted for use in SEE countries, but that certain preparatory steps would help modify the approach in accordance with the unique innovation features of these countries.

#### STIR Trainings

In addition to the CNS Winter School sessions on Integration, Fisher conducted STIR training workshops and methods seminars at ASU and at the University of Twente, both for social science researchers who are part of the Science, Technology, and Policy Studies (STePS) unit and for NSE and other natural science and engineering researchers at the MESA+/MIRA research institutes, during YR 11.

#### STIR and Communities of Integration Workshops

In past years, we described the first two “Communities of Integration” workshop, which brought together an international network of research communities studying various aspects of socio-technical integration and led to follow-up research and presentation activities, including a comparative framework that identifies four idealized modes of socio-technical integration. A third such meeting is planned for May 2016 at Cardiff University. During YR 11, Fisher co-organized the *What’s Next in Socio-technical Intervention Approaches?* workshop at the University of Twente, which brought together STIR and Constructive Technology Assessment (CTA) researchers from about half a dozen countries in order to compare and contrast integrative approaches. He also co-organized a roundtable at the 2015 Society for the Study of Nanotechnology and Emerging Technology (S.NET) conference entitled “Building an agenda for socio-technical integration approaches” in Montreal that featured an international cast of science studies participants who reflected critically on the normative and methodological variations of socio-technical integration.



### **STIR Cities Project**

The STIR Cities project (NSF #1535120) is a collaboration among Fisher (PI), ASU assistant professor Jen Richter (Co-PI), and Portland State assistant professor Thaddeus Miller). It adapts and applies STIR techniques and methodology beyond the laboratory and from the standpoint of broader socio-political landscapes. Whereas the STIR project coordinated a series of *laboratory engagement studies*, STIR Cities explores the possibility and utility of social science engagements with emerging technological orders in the context of two urban settings. To do so, it comparatively investigates the development of smart energy systems, how they are imagined to create social and technological order, and whether engagements with diverse technical experts foster reflexive learning and deliberation over broader emerging contexts. The project thus explores the relationship between sociotechnical imaginaries - collectively imagined forms of social life that are “almost always imbued with implicit understandings of what is good or desirable in the social world writ large”; technological system design, understood as situated performance of these imaginaries; and *expert engagement studies* within a distributed network of technical experts constructing smart energy systems in the two culturally and geographically different urban centers of Phoenix, Arizona and Portland, Oregon. The three-year project seeks to engage a diversity of expert energy sites, beginning with laboratories and extending to include a handful of non-lab sites that could be drawn from government offices, utility companies, private companies, and/or civil and professional associations.

### **STIR Cities: Phoenix Energy System**

Fa 2016 activities for STIR Cities in Phoenix have focused on identifying and characterizing key actors and institutions relevant to the management and transformation of the regional electricity grid. As part of these activities, and the overall goal of the STIR Cities project, the Phoenix team has collected documentation relevant to the operating cultures and practices of identified key actors through various media and technical publication sources, as well as identified salient moments of contestation between technical expert institutions (e.g., utilities, city agencies) and the larger Phoenix social body. Data has been collected from secondary and grey literature for content and discourse analysis. The results of this data collection has been a database of international, national, state, and local documents across a variety of sectors including government, NGOs, utilities, knowledge corporations, and media outlets. Our database is constantly being updated to reflect new developments in smart energy systems in both Portland and Phoenix. Analyzing these documents will provide points of comparison to the practices and forms of knowledge making employed by expert actors in Phoenix. In addition, these documents will form the basis for a study that will explicate how performances of sociotechnical imaginaries, through modes of authorization (capital, licensing, etc.), explicate how imaginaries are operationalized into active exercises of local, regional, or national power. This analysis will serve to address one objective of STIR Cities: to explore the question of linkages between expert activities (as explored in the STIR exercises) and local, regional, and sociotechnical imaginaries.

### **Phoenix STIR Cities Sites**

Currently, ASU doctoral student Abraham Tidwell in Phoenix is finishing his first site engagement in a “sustainability” focused energy system research laboratory at a local university. This laboratory, with its focus on addressing the “socio-technical” dimensions of interconnected water-energy-transportation systems, represents a highly reflexive group of technical experts currently intervening in developing visualization and modeling techniques

for addressing system disruptions. For this study, Tidwell employed the STIR protocol exercise with a participating doctoral student in the laboratory. This participant, a highly reflexive individual explicitly concerned with linking the technical dimensions of electricity grid operations during emergencies with the social/organizational networks that operate the larger interlinked systems surrounding grid management, primarily experienced the interaction as an opportunity to articulate clearly what the important elements of the research was for the participant's overall goals and objectives. Over the course of the interactions via the STIR protocol and other formal and informal interactions, the participant began to clearly articulate that operating within the constraints of the academy meant that requirements to meet milestones towards graduation superseded, at least for the moment, the overall intent to produce research that would effectively integrate the social and technical dimensions of electricity grid management during crises. These results indicate a need to explore further the influence of structural concerns on how experts integrate the social dimensions of energy systems with their technical work, as well as attend to the specific politics of each industrial sector actors are situated within.

The next phase of the STIR Cities project in Phoenix will, pending final approvals by each organization, at the following sites: an engineering design unit with a major local utility, a university research laboratory focused on small-scale power distribution systems, and nuclear engineering reactor design firm.

#### Portland STIR Cities Site 1: PSU Power Engineering Laboratory

Over the last 6 months, PSU doctoral candidate Anthony Levenda has conducted field research in the Portland State University Power Engineering Laboratory. The Lab has several applied research projects that involve smart grid technologies. Specifically, Levenda has worked with a team of engineers and engineering students designing and conducting a field demonstration of a residential battery energy storage system (ResBESS) for the project partner, the local utility, Portland General Electric. STIR engaged research activities have included interviews, observation, and STIR protocol exercises with key team members. This initial STIR study has revealed several areas in which integration research could be utilized to more effectively manage the development of smart grid innovations and their implementation into society. One key finding of this study points to the complexity of standardizing smart grid technologies. This has several dimensions including, but not limited to, standards for communications between devices on the electricity networks, standardization of size and siting of ResBESS technologies in different contexts of deployment, and management of the electrical flows with ever-increasing decentralized energy generation and storage technologies from a variety of companies with differing, un-standardized product specifications. Another key finding relates to the integration research itself. This initial STIR Cities study has found that although engineering research is applied to "real-world" settings, there seems to be a division between engineering work focused on technological development and social scientists' work on how to deploy these technological developments in the real-world. This points towards an epistemological divide in which engineers take into account societal "context" but not as an integral part of their work, which for example, might shape outcomes of technical design.

#### **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 and Responsible Innovation Policy Studies

In previous years, we reported on the increasing role that socio-technical integration has played in European R&D system; 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; international efforts aimed at responsible innovation in terms of multi-level dynamics; and ASU initiatives related to Responsible Innovation, including the Virtual Institute for Responsible Innovation (VIRI; # 1257246; [Guston](#), PI; [Fisher](#), Co-PI), the *Journal for Responsible Innovation*, and the NSF-funded, associated Workshop on Research Agendas for Societal Aspects of Synthetic Biology.

### VIRI Workshops

In YR11, VIRI held its first two of three planned annual workshops, at member institutions Science Policy Research Unit (SPRU) at the University of Sussex, UK, and also at San Sebastian, Spain.

### Governing Emerging Technoscience

In Fa 2015, [Fisher](#) presented an invited paper on the governance of emerging technoscience at the Munich Center for Technology in Society at the University of Munich. Based in part on work under review elsewhere, this paper argues that, as seen in the case of evolving nanotechnology policy in the US, state policy makers are reimagining the relations between science, technology and society, in the process creating both practical and symbolic shifts in governance models and mechanisms. These shifts—including possibilities for more deliberative and interactive roles for scientists, social scientists, and public citizens—are themselves situated within a technoscientific frame, meaning that they potentially open up more distributed, situated and diverse opportunities for participation in the social processes that shape technological emergence, while at the same time organizing these very roles within more broadly coordinated attempts at governmental control and frame them in terms of a imaginary of collectivized innovation and sociability. The paper, which has been submitted to the *Yearbook Sociology of the Sciences*, considers the potency and limitation of governing emerging technoscience in society as well as political implications for state legitimacy, scientific autonomy, and democratic values.

### *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 [Fisher's](#) participation at two meetings of the Association for Managers of Innovation, and on collaborations between [Fisher](#) and Woodbury, [Fisher](#) and Seager, and other RTTA 4 ongoing

collaborations. In YR11, Fisher, Woodbury and ASU associate professor Diana Bowman wrote an article on precision medicine that is currently under review.

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 in past years included public engagement events organized in the Netherlands that combined elements of RTTA 4 and 3 and Fisher’s work with Seager at the Sonoran SciComm workshop in Arizona that explored the interplay of empathy and creativity in collaborative teamwork. In YR11, Fisher continued working with Reinsborough and Radatz on the Center impact assessment that combines efforts of RTTA 2 and 4.



Photo: Hungarian STIR Pilot project.

## **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, TRC 1 created and hosted 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 three times – at the 2014, 2015, and 2016 CNS Winter Schools – and run four full workshops in three countries. The workshops were held at Georgia Tech in March 2014, the University of the Western Cape, South Africa in April 2014, Concordia University in October 2014, and November 2014 at ASU. Over 50 students have successfully completed the program.

The program was assessed through a questionnaire and concept mapping exercise filled out by the participants. Participants were assessed on whether their approach to engaging communities would involve “analyzing the context” “listening to the local people,” and “empower the communities.” Based on a pre and post survey we found that students recognized the importance of each of those concepts more strongly after the program,

especially the importance of analyzing context. This, coupled with the enthusiasm of the students who participated in the program demonstrates that the community Engagement Workshops are an effective way to advance key lessons in technology for development. An article based on this research, written by Matthew Harsh, Michael Bernstein, and Jameson Wetmore, will be submitted to a journal in the next two months.

### *Graduate Student Updates*

The last two graduate students affiliated with TRC 1 have successfully defended their PhDs. Rafael Castillo, who was instrumental in organizing several of the workshops, will complete his dissertation on the impact of nanotechnology on employment later this year at the Georgia Institute of Technology. Michael Bernstein, who did much of the analysis of the workshops as well as the Science Outside the Lab program pioneered by CNS-ASU in 2007 and 2009, successfully defended his dissertation in April and will be awarded a PhD in Sustainability in May. Bernstein will begin a post-doctoral fellowship with a DOE-funded project with CENTSS.

### *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. There is also an effort from researchers at McGill University to develop a variation of the game to foster communications between children with terminal brain cancer and their parents.

### *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 (plus one year extension) 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 field trips to Kenya and Uganda in the summers of 2014 and 2015, presented their work at S.NET in 2015, and has produced a short film on the topic. This summer the full research team will present their work at a briefing in Washington, DC, and returns to host 1-2 day workshops in both countries.

## **Peer reviewed journal articles**

**Woodson, Thomas** (Accepted for Publication). "Public Private Partnerships and Emerging Technologies: A Look at Nanomedicine for Diseases of Poverty." *Research Policy*.

### **Peer reviewed book chapters**

**Harsh, M., and Woodson, T.** (2016 – in press) Governing Nanotechnology in Africa: Moving from Regulation to Technology Assessment. Peer reviewed chapter in H. Demissie (Ed.), *Harnessing Nanotechnology for Inclusive Sustainable Development in Africa*. Nairobi: African Centre for Technology Studies.

**Woodson, Thomas.** (Forthcoming). Book Chapter: "Disease of Poverty Nanomedicine research in South Africa". *Beyond the Imagination: Genetics, Nano and Biotechnologies and their Applications*.

Chen, Shih-Hsin, **Thomas Woodson.** (Forthcoming). Book Chapter: "Building a Bioeconomy in South Africa: Lessons from Biotechnology Innovation Networks in Taiwan". *Beyond the Imagination: Genetics, Nano and Biotechnologies and their Applications*.

### **Presentations**

**Woodson, T., and Harsh, M.** (2015) "Addressing the Community Engagement Gap in Engineering Education: A Short-Course Approach." Presented at the Atlanta Conference on Science and Innovation Policy, Atlanta, GA, USA.

**Woodson, Thomas,** Jacky Xie. (2015). "Are Nanomedicine Clinical Trials Address Diseases of Poverty." Presented at the *Society for Nanotechnology and Emerging Technologies*. October. Montreal, Canada.

## **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:

Graduate students: Michael Bernstein (School of Sustainability)  
 Undergraduates: Abigail Howell, Brooke LaBranche (UVA), Emma Price (UVA), Zihan Ni (UVA), Evan Taylor

## **Goals**

The TRC2 research team addresses the question: How can nanotechnology be innovated and governed in responsible ways and with sustainable outcomes? Our studies employ system analysis, scenario construction, sustainability 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. In the final two years of CNS-ASU, TRC2 expanded its research activities to include other national (Washington DC) and international (Montreal, Canada) sites through partnerships with other CNS-ASU research themes.

## **Key Findings**

Sustainability science offers a theoretical and methodological framing for engaging urban stakeholders with the issues and implications of emerging technologies. TRC2 worked on integrating sustainability science and responsible innovation through the advancement of concepts and methods that can be shared beyond the sunset of CNS-ASU. Wiek, Foley, Bernstein, and Guston (2016) argue that describing and analyzing business-as-usual governance is insufficient to advance responsible innovation and achieve sustainable outcomes from technology investments. This perspective is supported by our research conducted in 2011–2014. The work is further supported by an intervention research approach to design, execute and evaluate how to “move the needle” on responsible innovation. Experiments in intervention research were first launched by graduate student Bernstein. He conducted a series of studies that analyzed and assessed outcomes from: the Science Outside The Lab program (designed by Bennett as part of CNS-ASU education and outreach program), and the Community Engagement Workshop series (designed by TRC-1 co-leaders Wetmore and Cozzens and employed in Johannesburg, South Africa, Montreal, Canada, and Phoenix, Arizona). The approach taken by TRC2 demonstrates how those research programs impacted participants and built their capacity for responsible innovation. TRC2 expanded the scope of sustainability science to consider science and technology studies, bringing the explicitly normative values and systematic approach from sustainability into science and technology studies. Further, TRC2’s work on the Science Outside the Lab program and the Community Engagement Workshop series demonstrates the ways CNS-ASU contributes not only to knowledge generation but also education and training of scientists and engineers for responsible innovation.





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.

## Detailed Findings

Detailed research questions of TRC-2 included: *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?*

### *Current State Analysis – Governance of Nanotechnology in Phoenix*

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.

### *Nanotechnology in City Environments (NICE) Database*

Continuing work begun in previous years, five 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 was used by Foley two UVA courses (*Societal Dimensions of Nanotechnology* and *Science and Technology Policy*). Students contributed to the database and used the existing information in a modeled simulation of how science policy decisions are made with the National Nanotechnology Initiative. The NICE database has been used as a resource for other 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 14,631 unique visitors accessed the website from March 16, 2015 to March 16, 2016. 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**).

### *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 6<sup>th</sup> 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 published workshop report and book chapter in 2015.

### *Scenario Study – The Future of the Nano-Enhanced City*

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.

Co-leader Wiek guided a design studio that explored the scenarios constructed by TRC2 in partnership with director Guston and senior participant Petrucci from the ASU 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*, 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.

### *Experiments in Intervention Research*

TRC2 identified approximately 50 potential interventions, focusing on nanotechnology innovation and governance in metropolitan Phoenix, partnership with colleagues in CNS and across the U.S. TRC2 selected exemplary interventions to pilot in participatory, real-world experiments. Our selection criteria included, among others: a link to at least one specific normative responsibility; an accessible partnership is available; the transformation potential is high. For example, as part of a collaboration with ASU's Consortium for Science, Policy and Outcomes (CSPO), where CNS-ASU is based, we evaluated the effects of an immersive educational program, Science Outside the Lab (SOTL). The SOTL program takes PhD students and candidates from across the physical and natural sciences and engineering to Washington, DC to meet with science policy advisors, lobbyists, decision-makers, business persons, and nongovernmental organization representatives. The program introduces the participants to the pluralism of interests shaping science policy related to nanotechnology and other national interests. Assessment of SOTL entailed a pre-, post-, and follow-up surveys of student beliefs about science and society interactions, as well as a pre-post concept map exercise to elicit student understanding of science policy. Students leave SOTL questioning the exclusive hold of scientific expertise in science and engineering policy; skepticism toward reductionist ideas of how scientific advances benefit society; and a deeper, more nuanced understanding of the social implications of and forces affecting the development of emerging technologies.

### **Ongoing project goals and avenues for further investigation**

Members of TRC2 are currently working to connect the fields of sustainability science and science and technology studies and publish theoretical, methodological and empirical studies from their years of research. Further projects are being considered for further investigation including continued partnerships between TRC1 and TRC2 to conduct research on water decontamination technologies that use nanosilver, developed at UVA, and field trails in South Africa (the selected study site for TRC1). Other partnerships include the assistance the undergraduate researcher Abigail Howell and graduate student Bernstein offered to RTTA3 as part of a series of scenario workshops conducted in 2015 and 2016. Also, the early collaborations between TRC2 and RTTA4 ultimately yielded a successful grant by Fisher, STIR Cities. Co-leader Foley and Youtie (RTTA1) are discussing further investigations into geoengineering and how bibliometrics and sustainability science can be used in another emerging technology context. The design studio with Petrucci is being considered as a model for exploring intersections of science, technology, engineering, and mathematics (STEM) and design as part of a workshop led by Guston, Petrucci and others.

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

<b>Projects</b>	<b>(1) Current Year 9/1/15 - 9/1/16 Budget (NSF)</b>	<b>(2) Current Year 9/1/15 - 9/1/16 Budget (Cost-share)</b>	<b>(3) Current Year 9/1/15 - 9/1/16 Budget (Other Support)</b>	<b>(4) Summary 1-3 Current Year Total Budget (Combined)</b>	<b>(5) Next Year 9/1/16 - 9/1/17 Budget (NSF)</b>
RTTA 1	\$219,481	\$0	\$495,788	\$715,269	\$0
RTTA 2	\$111,472	\$0	\$218,454	\$329,926	\$0
RTTA 3	\$42,581	\$0	\$50,653	\$93,234	\$0
RTTA 4	\$27,481	\$0	\$58,416	\$85,897	\$0
TRC 1	\$30,808	\$0	\$265,584	\$296,392	\$0
TRC 2	\$95,723	\$0	\$18,925	\$114,648	\$0
Seed Projects	\$0	\$0	\$0	\$0	\$0
TOTAL Projects	\$527,546	\$0	\$1,107,820	\$1,635,366	\$0
Education	\$148,602	\$0	\$68,385	\$216,987	\$0
Administration	\$45,611	\$0	\$158,000	\$203,611	\$0
Equipment	\$0	\$0	\$0	\$0	\$0
Knowledge Transfer	\$0	\$0	\$11,220	\$11,220	\$0
Indirect Costs	\$176,761	\$0	\$706,348	\$883,109	\$0
Subtotals	\$898,520	\$0	\$2,051,772	\$2,950,292	\$0
Total Budget	\$898,520	\$0	\$2,051,772	\$2,950,292	\$0
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, 2016

## 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%) 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 11, participation of faculty and professional participants was 230 total individuals, with 92 women (40%)

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 11, 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. During the reporting period of YR 11, 3 out of 3 postdoctoral researchers at the Center were women and, over the entire course of the Center, 12 were women (of 18, 66%). 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 10; 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 11 report (**Table 4A**), 8 of 25 current graduate students were Asian (32%). In total, 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 YR11, Center degree programs and certificate / training programs (**Table 3A**) involved 34 women (of 55, 62%), 2 African American (of 55, 4%), 19 Asians (55, 34%), and 1 Hispanic (of 55, 2%) 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, 8 and 11, CNS taught a course on technology 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, after each instance several of the students following up and participating in Science Outside the Lab, Chemistry 501, led by Bennett and Wetmore, and other Center activities.

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. She has since joined the faculty as a tenure-track assistant professor in SFIS.

**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 created a cohort of 25 students—the Policy, Science, Technology & Society (POSTS) Scholars—from 9 universities across the US. We targeted 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.

In the first summer participants spent 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 following academic year students took two courses, picked with guidance from their on campus mentor, in the science studies area. This upcoming 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 Eggleson (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 scholars in the reporting year Lauren Withycombe Keeler (PhD, ASU) and Hannah Rodgers (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), Halpern (Cornell, STS), 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 begun 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, and has now become the director of the Duke Energy Center for Innovation in South Carolina.
- Foley began a tenure-track position at University of Virginia in the Department of Science, Technology and Society.
- Eight others 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 for the Future of Innovation in Society; Fisher is tenured in the School for the Future of Innovation in Society; 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 for the Future of Innovation in Society and the School of Sustainability; and Harsh in a track position at the Center for Engineering and Society at Concordia University.
- Bennett has been promoted as an associate clinical professor at the School for the Future of Innovation in Society.
- 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 research associate at King's College, London (UK); Sarah Davies is an assistant professor and Marie Curie Research Fellow 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 two socio-technical integration research (STIR) awards, one that extends the Center's integration agenda that Fisher pioneered as a CNS-funded doctoral student at Colorado and another that focuses on implementing the STIR protocol within the city to study smart grid technologies. Fisher was also PI on a National Nanotechnology Infrastructure Network (NNIN) award that sought 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 (ESEE) 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 ESEE 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. He is co-PI/Deputy Director on the NNCI-SW grant awarded to ASU in Sept, 2015 and is also co-PI (focusing on Social and Ethical Implications for the network) for the NNCI Coordination award based at Georgia Tech.
  - 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. During the reporting year, she finished a Marie Curie Fellowship (\$400K) at the Danish Technical University.

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, six 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 - VIRI; HSD), who has been assisting Guston with VIRI activities, particularly curriculum development;
- Kim (Public Affairs), who is working on his dissertation 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), previously funded by VIRI and by the SUN-IGERT and who serves as an editorial assistant for the *Journal for Responsible Innovation*; and
- Altamirano-Allende (HSD), who worked closely with FCT in its implementation and its follow-on research and who assisted Halpern with *Emerge* and is leading one of its publications.
- 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. Seven 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
- Leona Yi-Fan Su will defend her diss based partly on CNS data this summer and has accepted a tenure track position at U of Utah.

Other doctoral students trained at Wisconsin include: Li and Akin began 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, 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. Using grants from the Holtz Center for Science and Technology Studies and the Division of Continuing Studies at WU totaling about \$100,000, Scheufele developed two versions of this course, that currently enrolls students from five different colleges at UW and serves more than 220 students annually, including 90 in an online-only summer version offered for the first time in July/August 2015.

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 (24) doctoral students (13 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; Anthony Levenda, Portland State University; Miao Liao, Tsinghua University; Federica Lucivero, University of Twente; Christine Luk, ASU; Bastien Miorin, Grenoble; Robin Phelps, University of Colorado; Daan Schuurbeirs, Delft Technical University; Anthony Stavrianakis, UC Berkeley; Frank Theys, Katholieke Universiteit Leuven; Abraham Tidwell, ASU; 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 Schuurbiens. 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 and graduated with a PhD in Fall 15. 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. In the current year, Wender competed successfully for a Mirzayan Fellowship at the National Academy of Sciences. New CNS-Biodesign and CNS-FSE Fellows for this year include Kaitlin Vorthers (Civil and Environmental Engineering Seager lab), Camilla Jensen (Civil and Environmental Engineering Seager lab) and Alizee Jenck (Biodesign; Halden lab). Vorthers 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 one engineering PhD student.

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 (EASE) 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. 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 then moved to 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.

Developed and taught by Wetmore and Bennett and held in Washington, DC, "Science Outside the Lab: A Policy Dis-Orientation" for graduate students 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 conducted 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 was one session dedicated to each of them. The first session focused on solar energy policy. The second session was tailored to the needs of the PSM in Science and Technology Policy and included natural scientists and engineers. The third session was populated with science and engineering students. The forth and fifth sessions were 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 last summer was targeting Latin American science and engineering graduate students and focuses on Science and Diplomacy. Summer 16 will have a similar set of programs with the exception of the two Program to Increase Diversity in Science and Technology Studies and Science Policy fields will be combined into one giant 25 person cohort as well as a new program focusing on nanotechnology policy with funding from the National Nanotechnology Coordinated Infrastructure. In Summer 16 we will pilot the first franchise model of Science Outside the Lab with previous faculty Harsh leading a program in Ottawa and Montreal on Canadian Science Policy.

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 21<sup>st</sup> 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 \$200K that started November 2013 and continued through October 2015. It 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 Selin, Wetmore, Bernstein, 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 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 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. NISE Net is currently transitioning from a nanotechnology



focus to become the National Informal STEM Education Network, this newly conceived entity will be managed as a partnership between Museum of Science Boston, Science Museum of Minnesota and Arizona State University. 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 Winter 16, CNS-ASU hosted the fourth Anticipatory Governance of Emerging Technologies Winter School at the Saguaro Lake Ranch in Mesa Ariz. It was attended by 13 early career 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 and director. The student participants represented 11 institutions from 9 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 feedback from this session and other comments CNS will conduct another Winter School in Jan 17. Highlights for the participants included their interactions with Board of Visitors attendees, as well as participants of a workshop on potential connections between STS scholars and science museum professionals led by Wetmore.

**Table 3A: Education Program Participants, Irrespective of Citizenship**

Student Type	Gender		Race				Mixed-incl. Mixed		Not		Other		*Ethnicity	
	Total	M	F	NA	PI	AA	C	A	NA,PI,AA	C,A	Provided	Non-US	Hispanic	Disabled
<b>Enrolled in full degree programs</b>														
Undergraduate	25	6	19	1	1	6	13	3	1	1	0	0	7	0
Masters	9	6	3	0	0	0	6	3	0	0	0	0	1	0
Doctoral	46	15	31	0	0	2	28	16	0	0	0	0	0	0
<b>Enrolled in NSEC Degree Minors</b>														
Undergraduate														
Masters														
Doctoral														
<b>Enrolled in NSEC Certificate Programs</b>														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
<b>Enrolled in NSEC Programs</b>														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
<b>K-12 (Pre-college) Education</b>														
Teachers														
Students														
<b>Total</b>	<b>80</b>	<b>27</b>	<b>53</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>47</b>	<b>22</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>

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

	Gender			Race				Mixed-incl. Mixed		Not		Other	*Ethnicity	
Student Type	Total	M	F	NA	PI	AA	C	A	NA,PI,AA	C,A	Provided	Non-US	Hispanic	Disabled
Enrolled in full degree programs														
Undergraduate	25	6	19	1	1	6	13	3	1	1	0	0	7	0
Masters	8	5	3	0	0	0	6	2	0	0	0	0	1	0
Doctoral	26	9	17	0	0	2	21	3	0	0	0	0	0	0
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	59	20	39	1	1	8	40	8	1	1	0	0	8	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. 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 2015, we accelerated the transition to post-CNS, which began in 2014 with the hiring on state funds of informal science education and citizen science personnel and the creation of a new Center for Engagement and Training in Science and Society (CENTSS) 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 has proven extremely successful so far. In the year and a half since its founding, it has secured over \$2.5 million in new grants to carry out a wide array of programs, including the following:

**Sustainability in Museums** – This project, funded by the Walton Sustainability Solutions Initiative, draws on the skills developed through the CNS-ASU NISE Net partnership. The Center is developing, prototyping, and testing a series of table top demonstrations to facilitate conversations about sustainability for science museums and other informal science education venues.

**Participatory Technology Assessment of NASA's Asteroid Initiative** – NASA funded this recently completed effort to get public input into its decision on which plan the asteroid initiative should pursue. With the help of ECAST, the Center facilitated two workshops – one at the Arizona Science Center and one at the Museum of Science, Boston. When the director of NASA proposed a “mission downselect,” he cited the data gathered in the CENTSS efforts. President Obama's 2016 budget request highlights the project as a milestone for NASA.

**Community Engagement for Environmental Literacy** – This project, another participatory technology assessment project, is being funded by NOAA to improve resilience and decision making. CENTSS will be organizing a series of 8 workshops at science museums across the country over the next year.

**Participatory Engagement for Energy Policy Planning and Decision Making** – After hearing about the success of the Asteroid Initiative project, a few officials at the Department of Energy became interested in receiving similar public input into policy decision. This

project will involve another series of workshops to get public input into consent-based siting of high level nuclear waste.

**Space and Earth Informal STEM Education (SEISE) project** – NASA recently completed a call for proposals to radically revamp its STEM education programs. CENTSS applied as a subcontract with NISE Net and was awarded a major grant to develop space-related K-12 informal educational materials to be distributed across the country. CENTSS faculty member Rae Ostman is leading the Content and Audience Planning of SEISE. Wetmore and Bennett serve on its advisory committee.

**National Nanotechnology Coordinated Infrastructure** – The activities and relationships built up under the CNS-ASU grant has put CENTSS in an excellent position to coordinate “Societal and Ethical Implications” work in association with NISE labs. ASU has been awarded one of the NNCI sites (called Nanotechnology Coordinated Infrastructure-Southwest, or NCI-SW). As part of its SEI activities, CENTSS will run a yearly, one week Science Outside the Lab on nanotechnology, as well as create a user facility for visiting SEI researchers. 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. Wetmore has also recently been asked to serve as Deputy Director of NCI-SW. CENTSS was also invited by Georgia Tech to join its proposal to serve as coordinator of the entire network. In March 2016 that proposal was accepted and Wetmore also serves as Associate Director for SEI for the NNCI Coordinator’s office. RTTA1 coordinator Jan Youtie serves as head of SEI at Georgia Tech.

### ***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.

In April 15 CNS and NISE Net collaborated on two workshops in Tempe. The first aimed to expand the number of social science scholars at ASU that partner with museum professionals to give their research a wider audience. This workshop took 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. Ten museum professionals from 6 museums and 7 scholars spent a day brainstorming ways for their research to be packaged into informal science education programming. Thanks to a supplement to CNS-ASU, a second meeting was held in January 2016 – interacting with the CNS Winter School – with participation from the Exploratorium, Museum of Science, Boston, Science Museum Minnesota, and the Lawrence Hall of Science.

The success of those two meetings has led to additional developments. First, the team is developing a new proposal for a creating a series of partnerships between STS scholars and science centers. The idea would be to provide funding for teams to travel between their respective museums and

universities to foster new collaborations. In March 2016 Wetmore, Ostman, and Bennett spent two days on the floor of the Exploratorium working with a number of their staff to develop new programs around “science and society.” The collaborative team will next be developing a new pedagogy around the learning goals in this area and is currently working on a grant proposal to fund these efforts.

### ***Collaborations with the Arizona Science Center***

#### **Continuing partnership**

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. Last year CENTSS sponsored “Science and Society” prizes for the Arizona Science and Engineering Fair that the Arizona Science Center runs. Wetmore and Trinidad served as judges and chose 4 winners out of the 1000+ entries.

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. This partnership has led to the development of an internship program where undergrads and graduates from schools across the ASU campus are given a chance to work at the Science Center for a semester to learn concepts and practices behind informal science education. In the first two semesters we have sponsored three participants.

### ***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 creation of a monster-themed fellowship program at ASU’s Institute for Humanities Research (IHR), which Guston addressed in March 2016; the planned development of a monster-themed exhibition in ASU’s library space derived in part from work produced by the IHR fellows; the contract for and submission for review of a new edition of *Frankenstein*, targeted at science and engineering

students, by Guston, Finn, and Robert for MIT Press; 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 peer-reviewed journal article in press with a 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, as was Rae Ostman, formerly of NISE Net and recently hired by CENTSS.

### ***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 11 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. In October, Bennett and his colleagues presented their recent participatory technology assessment work in a talk entitled: "From Asteroids to Oceans: Using Public Engagement to Inform Policy Decisions." In April 2016 the TRC 1 Spin off Computer Science Project will be presented.

#### *CHM 501*

Bennett and Wetmore continue to teach a Chemistry 501 course every spring to train PhD level chemists in how to engage with broader publics. Over the course of the spring 2016 semester students were challenged to develop plans for new citizen science projects that could simultaneously address environmental injustice concerns and empower the communities that suffer from them. Students looked for ways to remediate nitrate pollution, noise pollution near airports, and radioactive materials on the Navajo reservation.

#### *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](http://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), the WWV on Biodiversity held in September 2012 (which also had some overlap), and the WWV on Climate and Energy, which took place in June 2015. ECAST has also been heavily involved in the NASA, DOE, and NOAA projects described in the CENTSS section above.

#### *Emerge: Artists and Scientists Design the Future*

In Spring 2015, 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 Future 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 a manuscript for under revision for the 2016 Participatory Design Conference, run by the Association for Computing. Halpern has also turned the Future Design Studio into a new NSF proposal from and her and colleagues at Michigan State University, where she is now faculty.

CNS will help support the 5th annual *Emerge* festival, focused on the future of sport, at ASU on April 29. The CNS team is led by post-doc Rogers, who is heading up the effort to reach and analyze the outcomes of the project. At present, five research experiences (Climate Sports, AI Cheerleader, Biofeedback Game, Future Sports with Girls, and Draft Part 2040) have been planned for the event. Research protocols have been developed for each and publication plans are underway. Each research experience uses a novel approach for collecting data and offering participants an interactive experience. A post-survey for audience members to receive following the event has been designed.

### Presentations to Public Audiences

Beyond those mentioned above, highlights in YR 11 include:

### Presentations to Policy and Professional Audiences

Beyond those mentioned above, highlights in YR 11 include:

## ***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.

### Research Integration Presentations

Beyond those mentioned above, highlights in YR 11 include:

## ***Collaborations with Academic Colleagues***

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

In the recent academic year, the new School for the Future of Innovation in Society hired Michael Bennett as a research associate professor. In October, he was elected president of S.NET. Along with Co-PI Diana Bowman, Bennett received NSF funding in early 2016 on a project entitled "Workshop: Building Better Futures-Junior Scholar Support for the 2015 Annual Meeting of The Society for the Study of Nanoscience and Emerging Technologies (October 18-21, 2015)." The funds will be used to enable participation of students, postdoctoral researchers, junior scholars and independent scholars who have minimal travel and lodging funds to attend, and fully participate in, the 2015 S.NET meeting in Montréal. The award will support the professional development of junior science and technology studies scholars, as well as students and researchers from underrepresented groups.

### *Gene Drive Workshop*

CNS-ASU board of visitors member Jennifer Kuzma is the principal investigator for an NSF workshop grant that funded Roadmap to Gene Drives: A Deliberative Workshop to Develop Frameworks for Research and Governance. Hosted and organized by a committee based at NC State's Center for Genetics and Society, CNS-ASU and the Synthetic Biology Engineering Research Center (SynBERC) also provided personnel to the committee and some support. CNS sponsored the participation of Jim Collins and Emma Frow as members of the workshop organizing committee, Jenny Brian in her role as an organizing committee member of a related workshop held at ASU in November 2014 (<http://cns.asu.edu/synbio>); and David Gillum as an ASU PhD student with research and professional interests in gene drives. All four participants from ASU participated in the full 2.5-day workshop.

The motivation for this workshop was to begin an interdisciplinary conversation around gene drives that might help guide the development of a research and policy agenda for the field.

Approximately 75 participants, including about 20 graduate students, attended, bringing with them perspectives representing different disciplines (including molecular biology and genetics, ecology, agricultural science, modeling, political economy, STS, ethics) as well as different institutional settings (including academia, industry, federal agencies, non-profit organizations).

The workshop format comprised plenary presentations and discussions, as well as several smaller breakout sessions. The breakout discussions revolved around four case studies addressing different key application areas for gene drives (agricultural pest management; invasive rodent eradication; mosquito engineering for human health; molecular technology types). Groups worked to develop systems maps that started to draw out connections across policy, economic, sociocultural and ecological dimensions of the technological application areas outlined in the case studies. The focus then turned to identifying key gaps in our current knowledge and in governance frameworks applicable to gene drives.

The meeting deliberations made clear that gene drives are not a single, straightforwardly defined technology, but that they can be configured in a variety of ways, with different levels of precision and robustness. Much of the discussion focused on the tricky issue of containment – how to limit the scope of action of gene drives to only the desired range, particularly when gene drives are by definition a technology intended to spread. A parallel concern revolved around identifying appropriate stakeholder groups for gene drive technologies, again under conditions when the possible unintended spread of gene drives is a key concern. By starting to spell out different technical approaches to gene drives, and considering a range of sociotechnical systems in which they might be deployed, this workshop paved the way for further discussions about responsible innovation around gene drives – in particular, making explicit a variety of values and motivations for pursuing this technology, and helping to map out scenarios that might see gene drives develop along quite different paths.

The workshop provided a great catalyst for building an interdisciplinary community of researchers and practitioners around gene drives. Workshop outputs in preparation include:

- 1) A set of short, online videos from participants at the workshop, identifying key questions and viewpoints regarding gene drives for a more public audience.
- 2) A proposed special issue of the Journal of Responsible Innovation, to be co-edited by colleagues at NC State and Emma Frow at ASU. Ten working papers were prepared in advance of the workshop, and are currently being revised as prospective journal submissions; a further three articles have been invited by the special issue co-editors in response to a call for additional abstracts.

### *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 and commenting on a plenary lecture on inter-generational justice with Carolyn Raffensperger; doctoral student and VIRI supported student Denise Baker presenting a talk on the need for public discourse around the Internet of Things, VIRI supported visiting faculty Sujatha Raman presenting on governance of emerging anti-microbial technologies, RTTA 3 doctoral student Jathan Sadowski presenting on smart cities, and an entire concurrent panel dedicated to “anticipatory governance” with no CNS presenters on it. In the reporting year, Selin served on the planning committee. 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 11 include:

J. Wetmore. 2015, August. "Social and Ethical Implications of Nanotechnology." NNIN Research Experience for Undergraduates Convocation. Ithaca, NY

### ***Collaborations/Interactions with Industry and Other Sectors***

#### *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#.U0ID915tiCU>); 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 three issues in each of its first two volume years. Because of his intensive service duties with the new School for the Future of Innovation in Society, Guston is stepping down and Erik Fisher is taking on the role of editor-in-chief for volume 3 and beyond.

#### Presentations to private sector/industrial audiences

Beyond those mentioned above, highlights in YR 11 include:

### ***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 2<sup>nd</sup> 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. In 2015, the film successfully ran on PBS via American Public Television, with over 1,600 telecasts on over 400 channels and stations in 45 states, potentially reaching 90% of U.S. households.

### NSF Science Nation

In the fall of 2015, the National Science Foundation's *Science Nation* online magazine produced and released an episode entitled "How will nanotechnology impact you?" focused on CNS-ASU research and engagement efforts aimed at incorporating responsible innovation practices into the development of nanotechnology and other emerging technologies. "Science Nation" is a video series commissioned by the NSF Office of Legislative and Public Affairs. The series is distributed throughout the world, including to LiveScience.com and other media outlets on the Internet, local community TV stations in the U.S. via TelVue Connect Media Exchange, Voice of America for international broadcast distribution, the NSF STEM video portal Science360, the Knowledge Network video stream and Roku channel, and K-12 content distributors in the U.S. and abroad.

### 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), now the School for the Future of Innovation in Society (SFIS) – 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 nineteen (119) 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 1-10, CNS-ASU was visited by one hundred and twelve (112) 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 11, the following eleven CNS-ASU visitors fit the three criteria specified above:

1. Andreas Huber, University of Natural Resource and life Sciences, Austria
2. Sean Low, Institute for Advanced Sustainability Studies, Germany (Canadian citizen)
3. Stefan Schäfer, Institute for Advanced Sustainability Studies, Germany
4. Poonam Pandey, Jawaharlal Nehru University, India
5. Shannon Spruit, Delft Institute of Technology, Netherlands
6. Shih-Hsin Chen, National Chiao Tung University, Taiwan
7. Robert Smith, University of Nottingham, United Kingdom

YR 11 CNS-ASU visitors consisted of seven students/researchers from seven countries, all of

whom 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. Several YR 11 visitors are developing research plans that grow out of their interactions with the Center.

In addition, during YR 11, several international visitors returned to CNS-ASU in Tempe, including Sally Randles (University of Manchester, U.K.) and Miklos Lukovics (University of Szeged, Hungary). Since they were counted in figures from previous years, these scholars have not been added to the overall count.

Sample publications or publishing activity in YR 11 by previous international visitors to the Center that stemmed from or were shaped by their interactions with CNS-ASU include the following articles and book chapters:

1. Miklós Lukovics, Erik Fisher, Gabriella Molnár. 2016, in preparation. "Midstream Modulation in Eastern-Europe: Special Features, Challenges and Possible Solutions."
2. Konrad, Kornelia, Haro van Lente, Christopher Groves, and Cynthia Selin. In press. "The Future in STS: Performativity & Temporality." In Ulrike Felt, Rayvon Fouché, Clark A. Miller, and Laurel Smith-Doerr (eds.) *The Handbook for Science and Technology Studies*. MIT Press.
3. Stilgoe, Jack and David H. Guston. In press. "Responsible Research and Innovation and STS." In Ulrike Felt, Rayvon Fouché, Clark A. Miller, and Laurel Smith-Doerr (eds). *Handbook of Science and Technology Studies*. Cambridge: MIT Press.

During YR 11, 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 currently comprises Deron Ash, Program Manager starting in September, 2013 and Audra Tiffany, who replaced Patty Ryan, coordinator of administrative and event functions as of January, 2016. Jennifer Banks, 75% coordinator for communication for both CNS-ASU and VIRI, left in January, 2016.

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

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

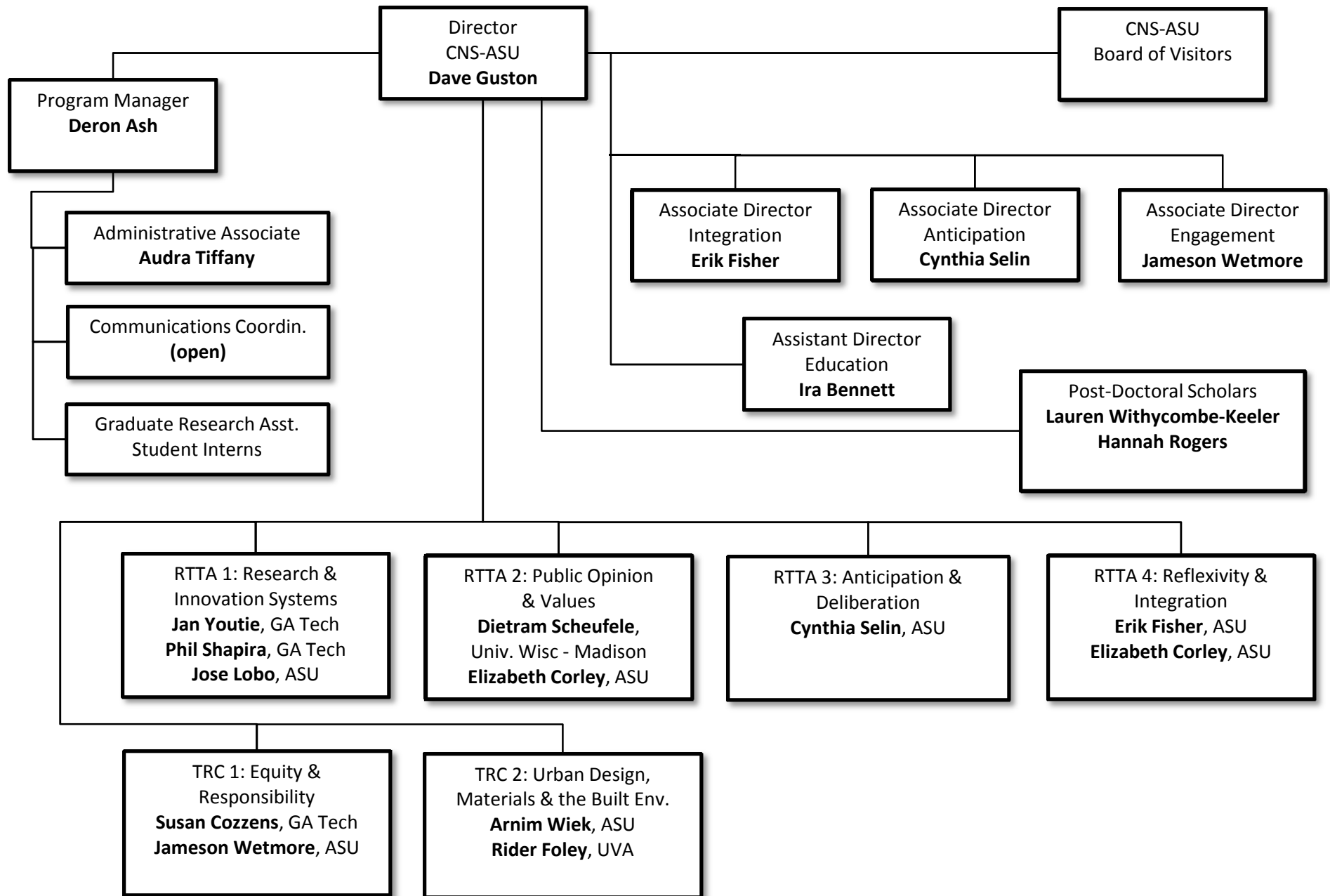
This group convenes monthly in a telephone call as the Executive Committee. CNS-ASU also communicates internally through a regular lab meeting, held every other week, for personnel at ASU, and regular lab meetings held at similar intervals among the Wisconsin and GA Tech groups, as well as between GA 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 2016, these meetings included our annual Board of Visitors meeting and a workshop on science in society for informal education.

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.

Our planned “Advancing the Legacy of Anticipatory Governance GALA” – our final all-hands meeting – will attract more than 100 attendees in May 2016.





**Table 4A: NSEC Personnel, Irrespective of Citizenship**

Table 4A: NSEC Personnel, Irrespective of Citizenship																			
							Citizenship Status												
							Irrespective of Citizenship												
						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									
Team Leaders				11	7	4				11						1			
Admin & Staff				7	2	5				5	2								
Collaborators				214	127	87	0	1	1	186	22					7			
Research																			
Senior Faculty				14	10	4				14						1			
Junior Faculty				2	1	1				2									
Research Staff																			
Visiting Faculty																			
Industry Researchers																			
Post Docs				3		3				3									
Doctoral Students				24	17	7				17	7					3			
Masters Students				1	1						1								
Undergraduate Students (non-REU)				5	2	3				4	1								
High School Students																			
Curriculum Development and Outreach																			
Senior Faculty																			
Junior Faculty																			
Research Staff																			
Visiting Faculty																			
Industry Researchers																			
Post Docs																			
Doctoral Students																			
Masters Students																			
Undergraduate Students (non REU)																			
High School Students																			
SubTotals																			
REU Student																			
REU students participating in NSEC research																			
NSEC Funded REU students																			
Pre-college (K-12)																			
Students (Total column only, no gender or race data collected for minors)																			
Teachers – RET																			
Teachers – non-RET																			
Totals				282	168	114	0	1	1	243	33	0	0	0	0	12	0	0	

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

Table 1: NSEC Personnel, Citizenship Status																		
Personnel Type	Total	Gender		Citizenship Status										Other Non-US	*Ethnicity Hispanic	Disabled	% NSEC Dollars	
		Male	Female	U.S. Citizen or Permanent Resident						Mixed-incl.	Mixed	Not Provided						
				NA	PI	AA	C	A	NA,PI,AA				C,A					
Director	1	1						1										
Team Leaders	11	7	4	0	0	0	11							1				
Admin & Staff	7	2	5				5	2										
Collaborators	160	85	74				154	6						2				
Research																		
Senior Faculty	14	10	4				14							1				
Junior Faculty	2	1	1				2											
Research Staff																		
Visiting Faculty																		
Industry Researchers																		
Post Docs	3		3				3											
Doctoral Students	24	10	5				15							3				
Masters Students	1	1						1										
Undergraduate Students (non-REU)	5	2	3				4	1										
High School Students																		
Curriculum Development and Outreach																		
Senior Faculty																		
Junior Faculty																		
Research Staff																		
Visiting Faculty																		
Industry Researchers																		
Post Docs																		
Doctoral Students																		
Masters Students																		
Undergraduate Students (non REU)																		
High School Students																		
SubTotals																		
REU Student																		
REU students participating in NSEC research																		
NSEC Funded REU students																		
Pre-college (K-12)																		
Students (Total column only, no gender or race data collected for minors)																		
Teachers – RET																		
Teachers – non-RET																		
Totals	228	119	99	0	0	0	209	10	0	0	0	0	7	0				

## 15. 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. §Hilgartner, Stephen, Clark Miller, and Rob Hagendijk, eds. 2015. *Science and democracy: making knowledge and making power in the biosciences and beyond*. Routledge.
11. §Robert, Jason S., Ed Finn, and David H. Guston, eds. Under review 2017. *Frankenstein: A New Edition for Scientists and Engineers*. Cambridge: MIT Press.
12. Smits, Ruud, Stefan Kuhlmann and Philip Shapira (eds.). 2010. *The Theory and Practice of Innovation Policy: An International Research Handbook*. Cheltenham, UK: Edward Elgar.
13. 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 Raczyńska, 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**. 2016 in review. "Governing Emerging Technosciences," In S. Maasen S. Dickel, C. Schneider (Eds.), *Yearbook Sociology of the Sciences*.
  18. ‡**Fisher, Erik**. 2016 in review. "Enhancing Micro-foundations of Responsible Innovation: Integration of Social Sciences and Humanities with Research and Innovation Practices." In Von Schomberg, ed. *Handbook of Responsible Innovation*. Edward Elgar.
  19. ‡**Fisher, Erik**. 2009. "Legislative and Regulatory Framework." *Nanotechnology and FDA-Regulated Products: The Essential Guide*, Washington, DC: Food and Drug Law Library.
  20. ‡**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.
  21. ‡**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.
  22. ‡**Fisher, Erik**, **Carl Mitcham** and **Roop Mahajan**. 2010-2011. "Jì shù de zhōng yǒu 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.

23. ‡**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.
24. ‡**Fisher, Erik** and **Daan Schuurbijs**. 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. Schuurbijs, 16:97-110. Wiley-Blackwell.
25. **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.
26. ‡**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.
27. ‡**Foley, Rider W., David H. Guston** and **Daniel Sarewitz**. 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.
28. ‡**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, Kornelia K., H. van Lente, & S. Woll. (eds.) *Studies of New and Emerging Technologies*, 6<sup>th</sup> Edition. IOS Press.
29. ‡**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.
30. ‡**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.
31. ‡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.
32. ‡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.
33. ‡**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. Schuurbiers and M. E. Gorman, 16:157-173. Wiley-Blackwell.
34. 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.
  35. ‡**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.
  36. ‡**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.
  37. **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.
  38. ‡**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.
  39. ‡**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.
  40. ‡**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.
  41. ‡**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.
  42. ‡**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.
  43. ‡**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.
44. **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.
  45. **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.
  46. ‡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.
  47. ‡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.
  48. ‡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.
  49. ‡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.
  50. Konrad, Kornelia, Haro van Lente, Christopher Groves, and **Cynthia Selin.** In press. "The Future in STS: Performativity & Temporality." In Ulrike Felt, Rayvon Fouché, Clark A. Miller, and Laurel Smith-Doerr (eds.) *The Handbook for Science and Technology Studies*. MIT Press.
  51. ‡**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.
  52. ‡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.
  53. **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.
  54. ‡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.

55. ‡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.
56. ‡**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.
57. ‡**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.
58. ‡**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.
59. ‡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.
60. ‡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.
61. ‡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.
62. **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.
63. **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.
64. ‡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.

65. **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.
66. ‡**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.
67. ‡**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.
68. ‡**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.
69. ‡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.
70. ‡**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.
71. ‡**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.
72. ‡**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.
73. ‡**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.
74. ‡**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.
75. Schuurbiers, 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.

76. ‡**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.
77. ‡**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.
78. ‡**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.
79. ‡**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. p. 87-100. Left Coast Press.
80. ‡**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. p. 218-237. Routledge.
81. ‡**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.
82. ‡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.
83. ‡**Slade, Catherine**. 2011. "Exploring Societal Impact of Nanomedicine using Public 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.
84. ‡**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.
85. ‡**Stilgoe, Jack** and **David H. Guston**. In press. "Responsible Research and Innovation and STS." In Ulrike Felt, Rayvon Fouché, Clark A. Miller, and Laurel Smith-Doerr (eds). *Handbook of Science and Technology Studies*. Cambridge: MIT Press.
86. ‡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.
87. ‡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.
  88. **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.
  89. ‡Wender, Benjamin A. and **Thomas P. Seager**. 2014. "Anticipatory Life Cycle Assessment of SWCNT-enabled Lithium Ion Batteries." *Nanotechnology for Sustainable Manufacturing*, ed(s). David Rickerby, Springer.
  90. ‡**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.
  91. ‡**Wicksen, Fern, Michael D. Cobb** and **Patrick Hamlett**. 2011. "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.
  92. ‡**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.
  93. **Wolbring, Gregor**. 2008. "The Unenhanced Underclass." *Building Everyday Democracy*, ed(s). P. Miller and J. Wilsdon, p. 122-128. London: Demos.
  94. ‡**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
  95. ‡**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.

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.** 2015. "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*. 1-10.
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., Jiyou 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, **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*.
20. ‡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>
21. ‡**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.
22. **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.
23. ‡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.
24. Bernstein, Michael, Kiera Reifschneider, Ira Bennett, and Jameson Wetmore. In preparation. "Science Outside the Lab: Helping Graduate Students in Science and Engineering Understand the Complexities of Science Policy." *Science and Engineering Ethics*.
25. Bernstein, Michael J., Rider W. Foley, Arnim Wiek, John Marty Anderies. In revision. "Intervention Research Framework for Responsible Innovation." *Technology Analysis & Strategic Management*.

26. ‡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
27. ‡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.
28. ‡Bhatti, Yasser, Lucy Kimbell, Rafael Ramirez and **Selin, Cynthia**. 2015. "Scenarios and Design: Scoping the dialogue space." *Futures*. 74, 4-17.
29. ‡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.
30. ‡**Bozeman, Barry** and **Daniel Sarewitz**. 2011. "Public Value Mapping and Science Policy Evaluation." *Minerva*. 49(1):1-23.
31. ‡**Brossard, Dominique E.** and **Dietram A. Scheufele**. 2013. "Science, New Media, and the Public." *Science*. 339(40):40-41. doi: 10.1126/science.1232329
32. ‡**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
33. **Brown, Mark.** and **David H. Guston**. 2009. "Science, Democracy, and the Right to Research." *Science and Engineering Ethics*. 15(3):351-366.
34. ‡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
35. ‡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
36. ‡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
37. ‡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*.
38. ‡Calleja Lopez, Antonio. December December 2009. "Ciencia, tecnología e integracion social: el proyecto STIR (Socio-Technical Integration Research)." *Argumentos de Razón Técnica*. 12:157-165.



39. ‡**Calvert, Jane** and **Joan H. Fujimura**. 2009. "Calculating Life? A Sociological Perspective on Systems Biology." *European Molecular Biology Organization EMBO Reports*. 10:S46-S49.
40. **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.
41. ‡Carley, Stephen and **Alan L. Porter**. 2012. "A Forward Diversity Index." *Scientometrics*. 90(2):407-427. doi: 10.1007/s11192-011-0528-1
42. ‡Carley, Stephen and **Alan L. Porter**. 2011. "Measuring the Influence of Nanotechnology Environmental Health & Safety Research." *Research Evaluation*. 20(5):389-395.
43. ‡**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
44. ‡**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*.
45. ‡**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.
46. ‡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
47. ‡**Corley, Elizabeth A.**, Youngjae Kim, and **Dietram A. Scheufele**. 2016. "Scientists' Ethical Obligations and Social Responsibility for Nanotechnology Research." *Science and Engineering Ethics*. 22(1):111-132.
48. 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.
49. ‡**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.
50. ‡ **Corley, Elizabeth A.**, Kim, Youngjae, and **Dietram A. Scheufele**. 2016. "Scientists' Ethical Obligations and Social Responsibility for Nanotechnology Research." *Science and Engineering Ethics*, 22(1):111-132.

51. ‡ **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>
52. ‡ **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.
53. ‡ **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
54. ‡ 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
55. ‡ **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.
56. **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.
57. ‡ 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
58. ‡ 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
59. ‡ 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*.
60. ‡ 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
61. ‡ 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
62. Davies, Sarah R., **Cynthia Selin**, Sandra Rodegher, Carlo Altamirano Allende, Michael Burnam-Fink, Corinne DiVittorio, Cecilie Glerup et al. 2015. "Studying Emerge: Findings from an event ethnography." *Futures* 70: 75-85.

63. ‡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
64. **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
65. ‡**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
66. ‡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
67. ‡de Ridder-Vignone, Kathryn. 2012. "Public Engagement and the Art of Nanotechnology." *Leonardo*. 45(5):433-438. doi: 10.1162/LEON\_a\_00440
68. ‡de Ridder-Vignone, Kathryn. 2012. "The Images and Art of Nanotechnologies." *Leonardo*. 45(5):431-432. doi: 10.1162/LEON\_a\_00439
69. ‡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.
70. ‡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.
71. **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.
72. ‡**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.
73. ‡**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.
74. ‡**Fischhoff, Baruch** and **Dietram A. Scheufele**. 2013. "The Science of Science Communication." *Proceedings of the National Academy of Sciences*. 110:14031-14032.
75. ‡**Fisher, Erik**. 2007. "Ethnographic Invention: Probing the Capacity of Laboratory Decisions." *NanoEthics*. 1(2):155-165.
76. ‡**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.

77. ‡**Fisher, Erik, Catherine Slade**, Derrick Anderson and **Barry Bozeman**. 2011. "The Public Value of Nanotechnology." *Scientometrics*. 85(1):29-39.
78. ‡**Fisher, Erik, Marianne Boenink, Simone van der Burg** and **Neal Woodbury**. 2012. "Responsible Healthcare Innovation: Anticipatory Governance of Nanodiagnostics for Theranostics Medicine." *Expert Review of Molecular Diagnostics*. 12(8):857-870.
79. ‡**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.
80. ‡**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.
81. ‡**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
82. ‡**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>
83. **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
84. ‡**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*
85. ‡**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
86. ‡**Foley, Rider W.** and **Arnim Wiek**. 2013. "Patterns of Nanotechnology Innovation and Governance within a Metropolitan Area." *Technology in Science*. 35(4):233-247.
87. ‡**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*.
88. ‡**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
89. **Foley, Rider W., Michael Bernstein** and **Arnim Wiek**. Under review. Towards an alignment of activities, aspirations and stakeholders for responsible innovation. *Journal of Responsible Innovation*.

90. ‡**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
91. ‡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.
92. 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
93. **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.
94. ‡**Graham, Stuart** and **Maurizio Iacopetta**. 2009. "Nanotechnology and the Emergence of a General Purpose Technology." *Les Annales d'Economie et de Statistique*.
95. 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
96. ‡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.
97. ‡**Guston, David H.** 2014. "Understanding 'Anticipatory Governance'." *Social Studies of Science*. 44(2):219-243.
98. ‡**Guston, David H.** 2014. "Building the Capacity for Public Engagement with Science in the United States." *Public Understanding of Science*. 23:53-59.
99. ‡**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
100. ‡**Guston, David H.** 2010. "The Anticipatory Governance of Emerging Technologies." *Journal of the Korean Vacuum Society*. 19(6):432-441.
101. ‡Halpern, Meagan, Jathan Sadowski, Joseph Eschrich, Edward Finn and **David H. Guston**. In press. "Stitching Together Creativity and Responsibility: Interpreting Frankenstein Across Disciplines." *Bulletin of Science, Technology and Society*.
102. ‡**Harsh, Matthew**, Michael J. Bernstein, **Jameson Wetmore**, **Susan Cozzens**, **Thomas Woodson**, and Rafael Castillo. "Preparing Engineers for the Challenges of Community Engagement." *Engineering Studies*.
103. ‡**Harsh, Matthew** and Thomas Woodson. 2013. "Pro-Poor Nanotechnology Applications for Water: Characterizing Private Sector Research." *Nanotechnology, Law & Business*. 9(3):232-252.

104. 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.
105. ‡**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
106. ‡**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
107. ‡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
108. ‡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>
109. ‡Hogle, Linda F. 2005. "Enhancement Technologies and the Body." *Annual Reviews of Anthropology and Neuroscience*. 34:695-716.
110. 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
111. ‡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
112. ‡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.
113. ‡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.
114. ‡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.
115. 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.

116. ‡Huang, Ying, Jannik Schuehle, **Alan L. Porter**, and **Jan Youtie**. 2015. "A systematic method to create search strategies for emerging technologies based on the Web of Science: illustrated for 'Big Data'." *Scientometrics* 105(3): 2005-2022.
117. 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
118. John, Beatrice, Lauren Withycombe Keeler, **Arnim Wiek** and Daniel J. Lang. 2015. "How much sustainability substance is in urban visions?—An analysis of visioning projects in urban planning." *Cities* 48: 86-98.
119. ‡Kay, Luciano, Alan L. Porter, **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.
120. ‡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>
121. ‡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.
122. ‡Kay, Luciano and **Philip Shapira**. 2009. "Developing Nanotechnology in Latin America." *Journal of Nanoparticle Research*. 11(2):259-278.
123. ‡Kim, Eun-Sung. 2008. "Directed Evolution: A Historical Exploration into an Evolutionary Experimental System of Nanobiotechnology, 1965-2006." *Minerva*. 46(4):463-484
124. ‡Kim, Jiyoung, Sara K. Yeo, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. 2014. "Disentangling the Influence of Value Predispositions and Risk/Benefit Perceptions on Support for Nanotechnology among the American Public." *Risk Analysis*. 34(5):965-980 doi: <http://dx.doi.org/10.1111/risa.12141>
125. ‡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
126. Kirksey, Eben, **Dehli Hannah**, Charlie Lotterman and Lisa Jean Moore. 2016 forthcoming. "The Xenopus Test: A Performative Experiment." *Environmental Humanities* 8(2).
127. **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

128. ‡**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.
129. ‡**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
130. ‡Kwon, Seokbeom, **Alan Porter**, and **Jan Youtie**. "Navigating the innovation trajectories of technology by combining specialization score analyses for publications and patents: graphene and nano-enabled drug delivery." *Scientometrics* (2016): 1-15.
131. ‡La Berge, Leigh Claire, and **Dehlia Hannah**. 2015. "Debt Aesthetics: Medium Specificity and Social Practice in the Work of Cassie Thornton." *Postmodern Culture* 25(2).
132. 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
133. 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
134. ‡Laurent, Brice. 2007. "Diverging Convergences." *Innovation: The European Journal of Social Science Research*. 20(4):343-357. doi: 10.1080/13511610701760804
135. 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.
136. ‡**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*.
137. ‡**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
138. ‡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
139. 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
140. ‡Li, Nan, **Ashley A. Anderson, Dominique E. Brossard** and **Dietram A. Scheufele**. 2014. "Channeling Science Information Seekers' attention? A Content Analysis of Top-Ranked vs. Lower-Ranked Sites in Google." *Journal of Computer-Mediated Communication*. 19(3):562-575.



141. ‡Li, Yin, Sanjay Arora, **Jan Youtie**, and **Philip Shapira**. 2016. "Using web mining to explore Triple Helix influences on growth in small and mid-size firms." *Technovation* doi:10.1016/j.technovation.2016.01.002
142. ‡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*. 40(6), 1016-1011.
143. ‡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.
144. ‡Liang, Xuan, Shirley S. Ho, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**, X. Hao, et al. 2015. "Value Predispositions as Perceptual Filters: a Cross-Cultural Comparison of Public Attitudes toward Nanotechnology in the United States and Singapore." *Public Understanding of Science*. 24(5):582-600.
145. Miklós Lukovics, **Erik Fisher**, Gabriella Molnár. 2016, in preparation. "Midstream Modulation in Eastern-Europe: Special Features, Challenges and Possible Solutions."
146. Ma, Jing, **Alan L. Porter**, Tejraj M. Aminabhavi, and **Donghua Zhu**. 2015. "Nano-enabled drug delivery systems for brain cancer and Alzheimer's disease: research patterns and opportunities." *Nanomedicine: Nanotechnology, Biology and Medicine* 11(7): 1763-1771.
147. ‡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>
148. **Marchant, Gary E.** and **Douglas J. Sylvester**. 2006. "Transnational Models for Regulation of Nanotechnology." *Journal of Law, Medicine, and Ethics*. 34(4):714-725.
149. 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
150. ‡**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.
151. ‡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.
152. ‡**Miller, Clark A.** 2015. "Modeling Risk in Complex Bioeconomics." *Journal of Responsible Innovation*. 2(1):124-27.

153. ‡**Miller, Clark A.**, Heather M. Ross, Gaymon Bennett, and J. Benjamin Hurlbut. 2016, in press. "The Ethics of Ubiquitous Computing in Healthcare." M. Eshaghian-Wilner, ed. *Wireless Computing in Medicine: From Nano to Cloud with Ethical and Legal Implications*. New York: Wiley & Sons.
154. ‡**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.
155. **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
156. Molin, Mans J. and **Cynthia Selin**. In review. "Institutionalizing Innovation: Instances of Changes in the Danish System of Innovation." *Research Policy*.
157. ‡**Monahan, Torin** and Tyler Wall. 2007. "Somatic Surveillance: Corporeal Control through Information Networks." *Surveillance and Society*. 4(4-Mar).
158. 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.
159. ‡Ostman, Rae, Brad Herring, Ali Jackson, **Ira Bennett** and **Jameson Wetmore**. 2013. "Making Meaning Through Conversations about Science and Society." *Exhibitionist*. p. 42-47.
160. **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.
161. ‡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
162. 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*.
163. ‡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.
164. ‡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.
165. ‡Philbrick, Mark and Javiera Barandiaran. 2009. "The National Citizens Technology Forum: Lessons for the Future." *Science and Public Policy*. 36(5):335-347.
166. **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.

167. ‡**Porter, Alan L.** and **Jan Youtie**. 2009. "How Interdisciplinary is Nanotechnology." *Journal of Nanoparticle Research*. 11(5):1023-1041.
168. ‡**Porter, Alan L.** and **Jan Youtie**. 2009. "Where does Nanotechnology belong in the Map of Science?" *Nature Nanotechnology*. 4:534-536.
169. ‡**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
170. ‡**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
171. ‡**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.
172. ‡**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.
173. **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
174. 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.
175. ‡Ramirez, R. and **Cynthia Selin**. 2014. "Plausibility and Probability in Scenario Planning." *Foresight*. 16(1):54-74.
176. ‡ **Richter, Jennifer A.**, Abraham Tidwell, **Erik Fisher**, and Thaddeus R. Miller. 2016 revise and resubmit. "STIR cities: Engaging energy systems design and planning in the context of urban sociotechnical imaginaries." *Innovation: The European Journal of Social Science Research*.
177. **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
178. ‡ Rodríguez, Hannot, **Erik Fisher** and Daan Schuurbiers. 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
179. ‡**Rogers, Juan D.** 2010. "Citation Analysis of Nanotechnology at the Field Level: Implications of R and D Evaluation." *Research Evaluation*. 19(4):281-290.

180. ‡**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
181. ‡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
182. **Sabharwal, Meghna and Elizabeth A. Corley.** 2009. "Faculty Job Satisfaction across Gender and Discipline." *Social Science Journal*. 46:539-556.
183. ‡Sadowski, Jathan and **David H. Guston.** Accepted pending minor revisions. "“You Caught Me Off Guard”: Probing the Futures of Complex Engineered Nanomaterials.” *Journal of Nanoparticle Research*.
184. ‡**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>
185. ‡**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.
186. ‡**Scheufele, Dietram A., Elizabeth A. Corley**, Tsung-Jen Shih, Kajsia 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.
187. Schuurbiers, 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
188. ‡Schuurbiers, Daan and **Erik Fisher.** 2009. "Lab-scale intervention." *EMBO Reports. Science & Society Series on Convergence Research*. 10(5):424-427.
189. Schuurbiers, 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.
190. ‡**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>
191. ‡**Selin, Cynthia.** In review. "Diagnosing Futures: Producing Scenarios to Support Reflexive Governance of Technology." *Social Studies of Science, special issue*.
192. ‡**Selin, Cynthia.** 2015. "Merging art and design in foresight: Making sense of emerge." *Futures* 70: 24-35.

193. ‡**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
194. ‡**Selin, Cynthia**. 2008. "The Sociology of the Future: Tracing Stories of Technology and Time." *Sociology Compass*. 2(60):1875-1895.
195. ‡**Selin, Cynthia**. 2007. "Expectations and the Emergence of Nanotechnology." *Science, Technology and Human Values*. 32(2):196-220. doi: 10.1177/0162243906296918
196. ‡**Selin, Cynthia**. 2006. "Time Matters: Temporal Harmony and Dissonance in Nanotechnology Networks." *Time and Society*. 15(1):121-139.
197. ‡**Selin, Cynthia**. 2006. "Trust and the Illusive Force of Scenarios." *Futures*. 38(1):1-14.
198. ‡**Selin, Cynthia**, and **Angela Pereira**. 2013. "Pursuing plausibility." *International Journal of Foresight and Innovation Policy* 9(2-3-4): 93-109.
199. ‡**Selin, Cynthia**, **Kelly Campbell Rawlings**, Kathryn de Ridder-Vignone, Jathan Sadowski, Carlo Altamirano Allende, Gretchen Gano, Sarah R. Davies, and **David H. Guston**. 2016. "Experiments in engagement: Designing public engagement with science and technology for capacity building." *Public Understanding of Science*: 0963662515620970.
200. ‡**Selin, Cynthia**, Lucy Kimbell, Rafael Ramirez, and Yasser Bhatti. 2015. "Scenarios and design: Scoping the dialogue space." *Futures* 74: 4-17.
201. ‡**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
202. ‡**Selin, Cynthia** and Rebecca Hudson. 2010. "Envisioning nanotechnology: New media and future-oriented stakeholder dialogue." *Technology in Society*. 32(3):173-182.
203. ‡**Shapira, Philip, Jan Youtie** and Yin Li. 2015. "Social Science contributions compared in synthetic biology and nanotechnology." *Journal of Responsible Innovation*. 2(1):143-148.
204. ‡**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.
205. ‡**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.
206. ‡**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
207. ‡**Shapira, Philip, Jan Youtie** and **Alan L. Porter**. 2010. "The Emergence of Social Science Research in Nanotechnology." *Scientometrics*. 85(2):595-611.

208. ‡**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
209. ‡**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*.
210. ‡**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.
211. ‡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>
212. ‡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>
213. ‡**Slade, Catherine**. 2011. "Public Value Mapping of Equity in Emerging Nanomedicine." *Minerva*. 49(1):71-86. doi: 10.1007/s11024-011-9163-5
214. **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
215. ‡Su, Leona Yi-Fan, **Heather E. Akin, Dominique E. Brossard**, Ashley A. Anderson and **Dietram A. Scheufele**. 2015. "Science Audience Tectonics: News Consumption Pattern and its Implication for Public Understanding of Science." *Journalism and Mass Communication Quarterly*.
216. ‡ Su, Leona Yi-Fan, Michael A. Cacciatore, Dietram A. Scheufele, Dominique Brossard, and Michael A. Xenos. 2014. "Inequalities in Scientific Understanding Differentiating Between Factual and Perceived Knowledge Gaps." *Science Communication* 36(3): 352-378.
217. ‡Su, Leona Yi-Fan, **Michael A. Cacciatore, Dominique Brossard, Elizabeth A. Corley, Dietram A. Scheufele**, and Michael A. Xenos. 2016, in press. "Attitudinal Gap: How Experts and Lay Audiences Form Policy Attitudes toward Controversial Science." *Science and Public Policy*.
218. ‡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.
219. ‡**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.
220. ‡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>.

221. ‡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.
222. ‡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
223. ‡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.
224. ‡Tang, Li and **Philip Shapira**. 2011. "Regional Development and Interregional Collaboration in the Growth of Nanotechnology Research in China." *Scientometrics*. 86(2):299-315.
225. ‡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
226. 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
227. ‡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
228. 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
229. 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
230. 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
231. ‡**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>.
232. ‡**Wang, Jue** and **Philip Shapira**. 2012. "Partnering with Universities: A Good Choice for Nanotechnology Start-up Firm." *Small Business Economics*. 38(2):197-215.

233. ‡**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
234. ‡Wang, Qian, Qin Zhu and Li Yi Yun. 2010. "Philosophical Reflections on the Management of Nanotechnological Risks." *Chinese Science Bulletin*. 55:0-8.
235. ‡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
236. ‡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.
237. ‡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.
238. ‡Wender, Benjamin A., Rider W. Foley, Valentina Prado, Daniel A. Eisenberg, Troy A. Hottle, Jathan Sadowski and **Thomas P. Seager**. 2014. "Anticipatory Life Cycle Assessment for Responsible Research and Innovation." *Journal of Responsible Innovation*. 1(2):200-207.
239. ‡**Wetmore, Jameson**. 2012. "A Place for Religion in Nanotechnology Debates." *Covalence, special issue on Faith, Ethics and Nanotechnology*. Chris Toumey (ed.), June.
240. ‡White, Dave D., Lauren Withycombe Keeler, **Arnim Wiek**, and Kelli L. Larson. 2015. "Envisioning the future of water governance: A survey of central Arizona water decision makers." *Environmental Practice* 17(1): 25-35.
241. **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
242. ‡**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.
243. ‡**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.
244. ‡**Wiek, Arnim**, Michael Bernstein, **Rider W. Foley**, **Matthew Cohen**, N. Forrest, C. Kuzdas, B. Kay, and Lauren Withycombe Keeler. 2015. "Operationalising competencies in higher education for sustainable development." *Handbook of higher education for sustainable development*. Routledge. London.



245. ‡**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
246. ‡**Wiek, Arnim**, Rider W. Foley, **David H. Guston** and Michael J. Bernstein. 2016. "Broken Promises and Breaking Ground for Responsible Innovation – Intervention Research to Transform Business-as-Usual in Nanotechnology Innovation." *Technology Analysis & Strategic Management*. doi. 10.1080/09537325.2015.1129399
247. William, Logan, **Thomas Woodson**. 2012. "The Future of Innovation Studies: Investigating Innovation in Less Economically Developed Countries." *Minerva*. 50(2).
248. ‡Withycombe Keeler, Lauren, **Arnim Wiek**, Daniel Lang, et al. 2016. "Utilizing international networks for accelerating research and learning in transformational sustainability science". *Sustainability Science*.
249. ‡Withycombe Keeler, Lauren, **Arnim Wiek**, Dave White and David Sampson. 2015. "Linking stakeholder survey, scenario analysis, and simulation modeling to explore the long-term impacts of regional water governance regimes." *Environmental Science and Policy* 48, pp. 237-249.
250. ‡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
251. **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)
252. ‡Woodson, Thomas. 2012. "Inequality in Nanomedicine." *Journal of Business Chemistry*. 9(3):133-146.
253. **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
254. ‡**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.
255. ‡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
256. ‡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>

257. ‡Yeo, Sara K., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. 2015. "Selecting our own Science: How Communication Contexts and Individual Traits Shape Information Seeking." *The ANNALS of the American Academy of Political and Social Science*. 658(1):172-191.
258. ‡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*.
259. ‡**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.
260. **Youtie, Jan, Alan L. Porter**, and Y. Huang. 2016. "Early Social Science Research About Big Data." *Science and Public Policy*.
261. ‡**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
262. ‡**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.
263. ‡**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>
264. ‡**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.
265. ‡**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.
266. ‡**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.
267. ‡**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.
268. ‡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>.

269. Zhang, Yi, Douglas KR Robinson, **Alan L. Porter**, **Donghua Zhu**, **Guangquan Zhang**, and **Jie Lu**. 2015. "Technology roadmapping for competitive technical intelligence." *Technological Forecasting and Social Change*. doi: 10.1016/j.techfore.2015.11.029
270. ‡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
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. 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.
2. **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.
3. **Fisher, Erik**. 2011. "Editorial Overview: Public Science and Technology Scholars: Engaging Whom." *Special Issue of Science and Engineering Ethics*. 17(4):607-620.
4. **Fisher, Erik**. 2006. "Embedded Nanotechnology Policy Research." *Ogmios*. 14:3-4.
5. **Fisher, Erik**. 2008. "Review of Evan Selinger; Robert P. Crease (eds.). The Philosophy of Expertise." *Isis*. 99(1):232-233. doi: 10.1086/589405
6. **Fisher, Erik**, **Simon Biggs**, **Stuart Lindsay** and **Jie Zhao**. 2010. "Correspondence: Research Thrives on Integration of Natural and Social Sciences." *Nature*. 463(7284):1018.
7. **Foley, Rider W.**, **Darren Petrucci**, **Arnim Wiek**. 2014. "Imagining the Future City." *Issues in Science and Technology XXXI(Fall)*: 80-90.
8. 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.
9. **Guston, David H**. 2015. "People, Persons, and Publics." *Journal of Responsible Innovation* 2(3).
10. **Guston, David H**. 2015. "Want, Settle, Get." *Journal of Responsible Innovation* 2(2):149-51.
11. **Guston, David H**. 2014. "Who Could Be Against That?" *Journal of Responsible Innovation*. 2(1):1-4.
12. **Guston, David H**. 2014. "Giving Content to Responsible Innovation." *Journal of Responsible Innovation*. 1(3): 251-53.
13. **Guston, David H**. 2014. "Responsible Innovation: A Going Concern. *Journal of Responsible Innovation*. 1(2): 147-50.
14. **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>
15. **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

16. ‡**Guston, David H.** 2009. "Deliberating Nanotechnology in the U.S." *British Science Association's People & Science*. p. 22.
17. ‡**Guston, David H.** 2008. "Innovation Policy: Not Just a Jumbo Shrimp." *Nature*. 454:940-941.
18. ‡**Guston, David H.** 2006. "Responsible Knowledge-Based Innovation." *Society*. 43(4):19-21. doi: 10.1007/BF02687530
19. ‡**Guston, David H., Daniel Sarewitz and Clark A. Miller.** 2009. *Correspondence: Scientists Not Immune to Partisanship*. *Science*, 323:582.
20. ‡**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.
21. ‡**Invernizzi, Noela** and Sarah R. Davies. 2012. "Editorial: Special Issue." *Nanotechnology Law & Business*. 9(3):196-200.
22. Kim, Byoungyoon. 2009. "Socio-Technical Integration Research." *NanoWeekly*. 313:10-11.
23. **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
24. ‡**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.
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. ‡**Wetmore, Jameson**. 2014. "Inspiring Students and Teachers around the Globe: NanoDays in South Africa." *Nanoscale Informal Science Education Network Newsletter*. August 5, 2014.
37. ‡**Wetmore, Jameson**. 2012. "The Value of the Social Sciences for Maximizing the Public Benefits of Engineering." *The Bridge*. 42(3):40-45.
38. ‡**Wetmore, Jameson**. 2007. "Introduction to special issue on science, policy and social inequity." *Science and Public Policy*. 34(2):83-84.
39. ‡**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.
40. ‡**Wetmore, Jameson, Ira Bennett**, William H. Hooke and Tim Miller. 2009. *Correspondence: Scientists: Listen Up! - Letter*. *Science*, 324: 334.
41. ‡**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
42. ‡**Wiek, Arnim** and **Rider W. Foley**. 2013. "The Shiny City and its Dark Secrets: Nanotechnology and Urban Development." *Curb Magazine*. 4(3):26-27.
43. **Woodson, Thomas**. 2014. "Book Review: Nanotechnology and Development-What's in it for Emerging Countries". *The Journal of Development Studies*. 50 (11).
44. **Woodson, Thomas**. 2014. "Technology Diffusion and Its Impact on Children". *UNICEF- The State of the World's Children 2014*. <http://sowc2015.unicef.org/stories/>
45. **Woodson, Thomas**. Forthcoming. "Book Review: Managing Global Innovation- Framework for integrating capabilities around the world". *International Public Management Journal*.

46. 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#!](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](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](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](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](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](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](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](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." KPFFK Radio. <http://www.armoudian.com/log/scholars-circle/the-scholars-circle-insighters-radio-mar-3rd-2013/>
27. **Guston, David H.** December 5, 2011. "Michael Crichtons 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](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](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](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](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](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](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](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](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](https://asunews.asu.edu/20120229_video_emerge)
64. **Sommerfield, Milton R., Mark Edwards and David Konz.** 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](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](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. Withycombe Keeler Lauren. September 7, 2015. "What options does Phoenix, Arizona, USA have for averting a California-like water crisis?" Global Water Forum. Available at <http://www.globalwaterforum.org/2015/09/07/what-options-does-phoenix-arizona-usa-have-for-averting-a-california-like-water-crisis/>
85. 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/>
86. **Youtie, Jan and Philip Shapira.** June 2007. "US Nanodistrict Development: 1990-2006." Post on YouTube. <http://www.youtube.com/watch?v=tpBxLGcFjug>

### **Report**

1. Anbar, A. et al. 2016. *Planetary Design Climate Design Workshop Report*. Arizona State University.
2. ‡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.
3. ‡Davies, Sarah R. 2011. *Nanotechnology, Business, and Anticipatory Governance*. CNS-ASU Report #R11-0004 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
4. ‡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.
5. ‡**Fisher, Erik.** 2012. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 3*. Tempe, AZ.
6. ‡**Fisher, Erik.** 2011. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 2*. Tempe, AZ.

7. ‡**Fisher, Erik**. 2010. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 1*. Tempe, AZ.
8. **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
9. ‡**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.
10. ‡**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.
11. ‡**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.
12. ‡**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.
13. ‡**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.
14. ‡**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.
15. ‡**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.
16. ‡**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.
17. ‡**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.
18. ‡**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.

19. ‡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.
20. ‡**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.
21. ‡**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.
22. ‡**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.
23. 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.
24. ‡**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.
25. **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.
26. ‡**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.
27. ‡**Selin, Cynthia.** 2011. *Gaming the Future*. CNS-ASU Report #R11-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.
28. ‡**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.
29. ‡**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.
30. ‡**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.

31. ‡**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.
32. ‡Valdivia, W. and **David H. Guston**. 2015. *Responsible Innovation: A Primer for Policymakers*. Center for Technology Innovation, The Brookings Institution, Washington, DC.
33. ‡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.
34. ‡**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.
35. ‡**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.
36. ‡**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.
37. **Von Schomberg, Rene** and Sarah Davies. 2010. *Understanding Public Debate on Nanotechnologies: Options for Framing Public Policy*. European Commission.
38. ‡**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.
39. ‡**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 Conz**. 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**, Abdullah Gök, and Fatemeh Salehi Yazdi. 2015. *Graphene Research and Enterprise: Mapping Innovation and Business Growth in a Strategic Emerging Technology*. No. 15/14. Nesta Working Paper.
24. ‡**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.
25. ‡**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.
26. ‡**Shapira, Philip**, **Jan Youtie** and Luciano Kay. 2010. "Corporate Entry into Nanotechnology through Patents and Publications: 1990 to 200." Working Paper. White Paper.
27. ‡**Shapira, Philip** and Jue Wang. 2008. "Case Study: Nanotechnology in the USA." Working Paper.
28. **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.
29. ‡Subramanian, Vrishali. 2009. "Active Nanotechnology: What Can We Expect? A Perspective for Policy from Bibliographical and Bibliometric Analysis." Working Paper.
30. ‡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.
31. 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.
32. **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).

33. **Wiek, Arnim** and **Cynthia Selin**. "Sustainable Anticipatory Governance." Working Paper. Under development.
34. 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.
35. 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.
36. 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.
37. **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.
38. ‡**Youtie, Jan, Philip Shapira** and **Juan D. Rogers**. 2009. "Nanotechnology-Enhanced Thin-Film Solar Cells: Analysis of Global Research Activities with Future Prospects."
39. Zhou, X. and **Alan L. Porter**. 2013. "Patent and Publication Comparison for a Promising Emerging Industry Nano-Enabled Drug Delivery." Working Paper.
40. 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. Bernstein, Michael J. 2016. "Responsible Innovation and Sustainability: Interventions in Education and Training of Scientists and Engineers." Doctoral Dissertation. School of Sustainability. Arizona State University. Tempe, AZ.
6. ‡Brants, Tanner. 2009. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
7. ‡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.
8. 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.
9. Choi, Joshua. 2007. "miRNA Expression Analysis in Aligadendroliama with and without 1p/19e Deletions." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
10. Conley, Shannon. N. 2014. "Negotiating Socio-Technical Contracts: Anticipatory Governance and Reproductive Technologies." Doctoral Dissertation. Political Science. Arizona State University. Tempe, AZ.
11. 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.
12. ‡Davis, Robert W. 2007. "Nanotechnology in Society: Stakeholder Analysis and Nanotechnology Stakeholders." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
13. Edwards, David. 2011. "Elderly and the E-Health Barrier." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
14. Egnatios, Tara. 2008. "Myspace: Ultimate Authorship of the Youniverse." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
15. ‡Finney, Sharyn. 2007. "Multinational Comparative Analysis of Nanotechnology Research: 1990 to 2005 Knowledge Flow Assessment." Undergraduate Thesis. Georgia Institute of Technology. Atlanta, GA.
16. ‡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.
17. ‡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.

18. ‡Foley, Rider W. 2013. "Toward Sustainable Anticipatory Governance: Analyzing and Assessing Nanotechnology Innovation Processes." Doctoral Dissertation. School of Sustainability. Arizona State University. Tempe, AZ.
19. ‡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.
20. Fu, Jinglin. 2010. "Exploring Peptide Space for Enzyme Modulation." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
21. 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.
22. ‡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.
23. Hall, Hannah. 2011. "Nanotechnology Applications in Urban Sustainability: An Innovative Solution to Electronic Waste Management." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
24. ‡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.
25. ‡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.
26. ‡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.
27. Jolley, Craig C. 2007. "Structure and Dynamics in Photosystem I." Doctoral Dissertation. Physics. Arizona State University. Tempe, AZ.
28. Kibel, Ashley A. 2010. "Instrumentation for Molecular Electronics Device Research." Doctoral Dissertation. Physics. Arizona State University. Tempe, AZ.
29. Lappe, Jason. 2009. "Photoreactivation and Positive Cell Selection for the Directed Evolution of Proteins." Doctoral Dissertation. Chemistry and Biochemistry. Arizona State University. Tempe, AZ.
30. ‡Lee, Caroline. 2009. "Innovation in Nanotechnology Services and Products: Strategic Marketing Plan." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

31. 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.
32. ‡Leung, Ricky. 2007. "Doing Nanotechnology in 21 Century China." Doctoral Dissertation. Sociology. University of Wisconsin. Madison, WI.
33. ‡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.
34. ‡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.
35. ‡Lohmeier, Stephanie. 2008. "Innovation Space: Nanotechnology for Human Health." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
36. ‡Lougee, Michelle. 2009. "Bridging Technology and Environment to Provide Shelter for Natural Disaster Victims." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
37. ‡Lowder, Jessica. 2008. "Creating Sustainable Solutions with Nanotechnology, Energy, and Equity for Natural Disaster Victims." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
38. ‡Lucivero, Federica. 2012. "Too Good to be True? Appraising Expectations for Ethical Technology Assessment." Doctoral Dissertation. Technical University of Delft. Delft, The Netherlands.
39. ‡Lull, Madeline. 2008. "Innovation Space Strategic Marketing Plan for Braille PDA." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
40. Maricle, Genevieve. 2008. "Shaping Science: How to Turn Science Studies into Science Action." Doctoral Dissertation. Environmental Studies. University of Colorado. Boulder, CO.
41. ‡McIntosh, Daniel. 2008. "Integrated New Product Development for Nanotechnology." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
42. ‡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.
43. ‡Milford, Richard. 2008. "A Dialog on Nanotechnology and Religion: New Methods in Public Engagement." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
44. Panaretos, Anastasios. 2007. "A Discrete Time-Domain Electromagnetics Formulation with Minimized Numerical Artifacts." Doctoral Dissertation. Electrical Engineering. Arizona State University. Tempe, AZ.

45. ‡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.
46. Philbrick, Mark. 2010. "Operationalizing Anticipatory Governance: Steering Emerging Technologies Towards Sustainability." Doctoral Dissertation. Graduate Division. University of California, Berkeley. Berkeley, CA.
47. Pirtle, Zach. 2007. "Democratizing Nanotechnology: Intersecting the Philosophy of Science with Science Policy." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
48. ‡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.
49. ‡Rogers, Lucas. 2010. "Fire Into Ice: Refrigeration Through Waste Heat in Ghana." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.
50. ‡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.
51. ‡Sandler, Shane. 2011. "Nano-piezoelectrics for Energy Generation." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
52. ‡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.
53. Schuurbiers, Daan. 2009. "Social Responsibility in Scientific Practice." Doctoral Dissertation. Department of Biotechnology. Delft Technical University. Delft, The Netherlands.
54. ‡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.
55. ‡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.
56. ‡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.
57. Spadola, Quinn Acelia. 2008. "Novel Approaches to DNA Sequencing." Doctoral Dissertation. Department of Physics. Arizona State University. Tempe, AZ.
58. Stubbings, Maria. 2012. "Media Portrayal of Gene Patents: Overall and Thematic Coverage." Master's Thesis. Life Sciences Communication. University of Wisconsin - Madison. Madison, WI.

59. ‡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.
60. ‡Tassiello, Lauren. 2009. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
61. Tosi, Justin. 2007. "Hobbe's Reply to the Foole: Obligation and Personal Identity." Graduate Thesis. Political Science. Arizona State University. Tempe, AZ.
62. Tufail, Yusuf Z. 2011. "Development of a Neurostimulation Method Using Pulsed Ultrasound." Doctoral Dissertation. Biology. Arizona State University. Tempe, AZ.
63. ‡Valdivia, Walter. 2011. "Equity Considerations in the Assessment of the Bayh-Dole Act." Doctoral Dissertation. Public Administration. Arizona State University. Tempe, AZ.
64. 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.
65. ‡Verdiani, Jennifer. 2008. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.
66. ‡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.
67. ‡Watkins, Jennifer. 2008. "Altruism in Community Healthcare by Medical Professionals." Graduate Thesis. Biochemistry. Arizona State University. Tempe, AZ.
68. Williams, Berea. 2010. "Designing Recognition Elements Based on DNA Scaffolds." Doctoral Dissertation. Chemistry. Arizona State University. Tempe, AZ.
69. 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.
70. ‡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.
71. Zhang, Jinglei. 2010. "Evolving Functional Peptides by mRNA Display." Doctoral Dissertation. Biochemistry. Arizona State University. Tempe, AZ.
72. Zhu, Win. 2011. "Engineerng 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'incivilité "En Ligne" Peut Miner Les Perceptions de la Crédibilité des Médias." Texte Présenté au Colloque International "Com. L'Information et la Communication dans Les Enjeux Contemporains de la "Mondialisation, Co-Organisé 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 and 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. **Beaute, 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**. November 12, 2015 Engaging the public in STS: Exploring values, relationships, and systems with museum visitors, Making and Doing, 4S, Denver CO. With Rae Ostman and Jamey Wetmore
25. **Bennett, Ira**. November 8, 2015 "The Center for Nanotechnology in Society: A decade of experimentation with graduate education, Sustainable Nanotechnology Organization, Portland OR.
26. **Bennett, Ira**. September 18, 2015 Responsible Innovation, Atlanta Conference on Science and Innovation Policy, Atlanta GA. Session Chair
27. **Bennett, Ira**. August 26, 2015 "Strategic Issues: New Graduate Training for Scientists and Engineers" The Dean's Forum, Ecole des Mines, Paris, France.
28. **Bennett, Ira**. October 15, 2014. "Introduction to Publicly Funded Science." Invited Presentation. Appalacian State University, Boone, NC.
29. **Bennett, Ira**. September 27, 2014. "Careers in Science Policy." Invited Presentation. University of Florida, Gainesville, FL.
30. **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.
31. **Bennett, Ira** and Kiera Reifshneider. April 10, 2014. "Nanotechnology Around the World." Invited Presentation. *Nanohub Users Meeting*, Phoenix, AZ.
32. **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*.
33. **Bennett, Ira**. May 10, 2014. "An Unbelievable Roadmap." Invited Presentation. Unbelievable Biomed, Arizona Science Center, Phoenix, AZ.
34. **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.
35. **Bennett, Ira**. March, 2010. "Visions for Future Innovation and Implications." Presentation. Atlanta Transatlantic Workshop on Nanotechnology Innovation and Policy. Georgia Tech, Atlanta, GA.

36. **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.
37. **Bennett, Ira.** March, 2009. "Anticipatory Governance of Emerging Nanotechnologies." American Chemical Society, Salt Lake City, UT.
38. **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.
39. **Bennett, Ira.** 2007. "Frozen in Time: A Tour of Alcor Life Extension Foundation." Tour. Spirit of the Senses, Scottsdale, AZ.
40. **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.
41. **Bennett, Ira.** 2006. "Emerging Technologies." Talk. Spirit of the Senses, Phoenix, AZ.
42. **Bennett, Ira** and **Jameson Wetmore.** December 18, 2012. "Exploring Nanotechnology around the World." Presentation. Books and Beakers, Yard Gnome Bookstore, Phoenix, AZ.
43. **Bennett, Ira** and **Jameson Wetmore.** September 12, 2011. "Science and Regulatory Challenges of Commercial Nanoparticles." Presentation. Science Cafe', Berkeley, CA.
44. **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
45. **Bernstein, Michael J.** and **Ira Bennett.** September 17-19, 2015. "Responsible Innovation and Science Policy: The Case for an Intervention Research Approach." Panel. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
46. **Bernstein, Michael J.** September 17-19, 2015. "An Intervention Research Approach to Responsible Innovation." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
47. **Bernstein Michael J.** and **Rider W. Foley.** 2015. "Assessing the Public Value of Science Policies: Lessons from the US Global Change Research Program and the US National Nanotechnology Initiative." *Society for the Study of Nanoscience and Emerging Technologies*. Montreal, Quebec, Canada. 18-21 October.
48. **Bernstein Michael J.** and **Rider W. Foley.** April 10-11, 2015. Intervention Research for Responsible Innovation: A Pragmatic Approach. Presentation. STGlobal Consortium. Washington, DC.
49. **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.

50. 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.
51. 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.
52. **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.
53. **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.
54. **Brune, Daniel C.** and **David Konz**. 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.
55. **Cacciatore, 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.
56. 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.
57. 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.
58. 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.
59. 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.
60. 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.

61. 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.
62. 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.
63. 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.
64. 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.
65. 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.
66. 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.
67. 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.
68. 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.
69. 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.

70. 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.
71. 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.
72. 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.
73. 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.
74. 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.
75. 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.
76. 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.
77. 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.
78. 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.
79. **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.
80. 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.

81. Cavalier, Darlene. January 16, 2014. "Citizen Science! New Technologies, New Audiences." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
82. 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.
83. 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.
84. 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.
85. 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.
86. 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.
87. 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.
88. 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.
89. 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.
90. **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.



91. **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.
92. **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.
93. 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.
94. Conley, Shannon. April, 2009. "Nanotechnology Policy in Cambridge, Massachusetts: Local Reflexive Governance." Presentation. Midwest Political Science Association Conference, Chicago, IL.
95. 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.
96. **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.
97. **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.
98. **Corley, Elizabeth A.** April, 2011. "Soft Law Mechanisms for Nanotechnology Governance." Paper Presentation. Workshop on Soft Law Oversight Mechanisms for Nanotechnology, Scottsdale, AZ.
99. **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.
100. **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.
101. **Corley, Elizabeth A.** 2010. "Expert and Public Perceptions about Nanotechnology Risks, Benefits and Regulations." Paper Presentation. David Lincoln Lecture Series, Paradise Valley, AZ.
102. **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.

103. **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.
104. **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.
105. 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.
106. 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.
107. 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.
108. 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.
109. 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.
110. 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.
111. 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.
112. 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.
113. 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.
114. 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.

115. 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.
116. 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.
117. **Cozzens, Susan**. March, 2013. "Invited Lecture." Tshwane University of Technology, South Africa.
118. **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.
119. **Cozzens, Susan**. April 03, 2012. "Keynote Lecture." NanoAfrica Conference, Bleoemfontein, South Africa.
120. **Cozzens, Susan**. April, 2012. "Environmental Health and Safety in Nanotechnology: A Critical Interface with the Public." Presentation. NanoAfrica 2012, University of Freestate, South Africa.
121. **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.
122. **Cozzens, Susan**. July, 2011. "Equity, Equality, and Nanotechnology." Presentation. Tshwane University of Technology, Pretoria, South Africa.
123. **Cozzens, Susan**. January, 2011. "TRC 1 - Equity and Responsibility Program Assessment." Presentation. Center for Nanotechnology in Society at ASU, Tempe, AZ.
124. **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.
125. **Cozzens, Susan**. July, 2010. "Nanotechnology and Society." Presentation. REU students at GA Tech NNIN Node, Atlanta, GA.
126. **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.
127. 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.
128. **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.

129. **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.
130. Davies, Sarah R. November, 2011. "Knowing and Loving: Pleasure in Public Engagement." Presentation. 4S Annual Meeting, Cleveland, OH.
131. Davies, Sarah R. September, 2011. "Invited Discussant." Inaugural Conference of the Belgian Science, Technology and Society (BSTS) Network, Brussels.
132. Davies, Sarah R. September, 2011. "Deliberating Futures: Pathways, Locales, and Imagery in the Imagination of Technoscientific Change." Paper Presentation. Governing Futures Conference, Vienna.
133. Davies, Sarah R. May 16, 2011. "NanoEthics: Responsibility, Risk, and Responsible Innovation." Presentation to Private Sector audience. Training Session, SSHA (ESH for High Technology) Annual Symposium, Scottsdale, AZ.
134. Davies, Sarah R. December, 2010. "Deliberation beyond Discourse: Experimenting with Science-Society Engagement." Presentation. CSPO Enlightening Lunch, Arizona State University, Tempe, AZ.
135. Davies, Sarah R. November, 2010. "Public Engagement: Genealogies and Reflections." Presentation. Practices of Anticipatory Governance Workshop, Arizona State University, Tempe, AZ.
136. 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.
137. 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.
138. Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira.** May, 2011. "Finding Futures." Presentation. Science in a Digital Society, EC-JRC Workshop, Lisbon.
139. 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.
140. 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.

141. de Ridder-Vignone, Kathryn. August 2014. "Images as Authoritative Knowledge in Public Engagement with Emerging Technologies." Presentation. Social Studies of Science. Buenos Aires.
142. 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.
143. 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.
144. 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.
145. 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.
146. 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.
147. 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.
148. 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.
149. 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.
150. 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.
151. 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.

152. 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.
153. 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.
154. Falls, Dee Dee and **Adriene Jenik**. January 18, 2013. "Learning in the Nano City." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
155. **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.
156. **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.
157. **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.
158. **Fichtner, Aaron**. 2007. "Preliminary Results: The Workforce Needs of Companies Using Nanotechnology in Arizona." Presentation. Nanotechnology 2007 Conference, San Jose, CA.
159. 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.
160. **Erik Fisher**. April 11, 2016. "Measure with Care: Coping with the Contradictions of Socio-Technical Collaborations." ELSA Norway Conference, Hurtigruten.
161. **Erik Fisher**. March 11, 2016. "Midstream Modulation in Eastern-Europe: Special Features, Challenges and Possible Solutions." (With Miklos Lukovics and Gabriella Molnár). VIRI: Second Annual Meeting. University of Basque Country Donostia-San Sebastian, Spain.
162. **Erik Fisher**. March 10, 2016. "Integration, Expertise, and Ambivalence." Responsible Research and Innovation (RRI): The Problematic Quest for "Right" Impacts. Donostia-San Sebastian, Spain.
163. **Erik Fisher**. March 7, 2016. "Responsible Innovation from Lab to Legislature." University of Sheffield.
164. **Erik Fisher**. December 17, 2015. "Anticipatory Governance and Socio-Technical Integration Research." Faculty of Technology, Policy & Management seminar. Technical University of Delft, The Netherlands.
165. **Erik Fisher**. December 16, 2015. "Socio-Technical Integration Research: What is it? Why do it?" Ethics/Philosophy of Technology section colloquium, Technical University of Delft.

166. **Erik Fisher.** December 14-15, 2015. "Socio-Technical Integration Research: Probing the Decision Capacities of Technical Practices." Engaging in Responsible Research and Innovation: The hows and whys. Norwegian University of Science and Technology. Trondheim, Norway.
167. **Erik Fisher.** November 23-25, 2015. "Governing Emerging Technosciences." TechnoScienceSociety: Technological Reconfigurations of Science and Society. Munich Center for Technology in Society. Technical University of Munich. Munich, Germany.
168. **Erik Fisher.** October 20, 2015. "Roundtable: Building an agenda for socio-technical integration approaches." With Kornelia Konrad and Marianne Boenink. Seventh Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies. Montreal, Canada.
169. **Erik Fisher.** July 17, 2015. "Linking Dialogue to Decision: Engaging capacities for responsible innovation in the laboratory." Manchester Institute of Innovation Research Seminar Series. University of Manchester. Manchester, United Kingdom.
170. **Erik Fisher.** July 9, 2015. "Practical Demonstration: Implementing the STIR protocol" MESA+ / MIRA Workshop, University of Twente. The Netherlands.
171. **Erik Fisher.** June 22-23, 2015. "Socio-Technical Integration Research (STIR)." With Paul Ellwood. What's Next in Socio-technical Intervention Approaches? University of Twente. The Netherlands.
172. **Erik Fisher.** August 12, 2015. "Doing STIR: Brief Overview of STIR Methodology." STePS Methods Seminar, University of Twente. The Netherlands.
173. **Erik Fisher.** July 7, 2015. "High-Impact Reflection in Research." MESA+ / MIRA Symposium, University of Twente.
174. **Erik Fisher.** June 30, 2015. "Mapping the Micro-capacities of Responsible Innovation." Eindhoven University of Technology.
175. **Erik Fisher.** June 26, 2015. "Responsible Innovation: Integrating Social Sciences in Technology Development." (With Abraham Tidwell.) Belgian Nuclear Research Center SCK/CEN. Mol, Belgium.
176. **Erik Fisher.** June 10, 2015. "Redesigning Research in the Lab, the University, and Beyond." Faculty of Behavioural, Management and Social Sciences Colloquium. University of Twente. The Netherlands.
177. **Erik Fisher.** June 4, 2015. "Mapping the Micro-capacities of Responsible Innovation." 3TU Centre for Ethics and Technology Annual Research Day. Utrecht, The Netherlands.
178. **Erik Fisher.** May 21, 2015. "Socio-Technical Integration and the Micro-foundations of Responsible Innovation." Watershed Metagenomics Project Stakeholder Workshop and Closeout Meeting. University of British Columbia. Vancouver, Canada.

179. **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.
180. **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.
181. **Fisher, Erik.** May 28, 2014. "Socio-Technical Communication for Integration." Invited Presentation. Technical University of Delft, The Netherlands.
182. **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.
183. **Fisher, Erik.** June 9, 2014. "STIR Overview." Academic Presentation. Communities of Integration 2<sup>nd</sup> Annual Meeting, University of Waterloo, Kitchener, Ontario, Canada.
184. **Fisher, Erik** and Michael O'Rourke. June 9, 2014. "Mapping Socio-Technical Integration." Academic Presentation. University of Waterloo, Kitchener, Ontario, Canada.
185. **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.
186. **Fisher, Erik.** February 15, 2014. "Responsible Collaborations in Interdisciplinary Research." Presentation. American Association for the Advancement of Science. Chicago, IL.
187. **Fisher, Erik.** February 11, 2014. "Invited Testimony." Presentation. The Presidential Commission for the Study of Bioethical Issues. Sixteenth meeting. Washington, DC.
188. **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.
189. **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.
190. **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.
191. **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.
192. **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.



193. **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.
194. **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.
195. **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.
196. **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.
197. **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.
198. **Fisher, Erik.** May, 2011. "STIR Spin-offs: Beyond the Laboratory Engagement Study." Presentation. Institute for Innovation and Governance Studies. University of Twente.
199. **Fisher, Erik.** February 16, 2011. "Workshop Public Agenda: International Network for Responsible Innovation." Workshop organizer and principal investigator. STIR Project Workshop 4, Washington, DC.
200. **Fisher, Erik.** February, 2011. "STIR Project Overview." Presentation. International Network for Responsible Innovation. STIR Project Workshop. Woodrow Wilson International Center for Scholars, Washington, DC.
201. **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.
202. **Fisher, Erik.** October 28, 2010. "Science, Democracy and the Reinvention of the Liberal Arts." Presentation. Lowdenslager Annual Lecture. Western State College, Gunnison, CO.
203. **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.
204. **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.
205. **Fisher, Erik.** August, 2010. "Integration Outcomes." Presentation. Integration Study Comparisons. STIR Project Workshop. University of Tokyo, Tokyo, Japan.

206. **Fisher, Erik.** June 09, 2010. "Lab-level Socio-technical Integration." Presentation. Genome British Columbia, GSEAC Retreat, Vancouver, Canada.
207. **Fisher, Erik.** June 02, 2010. "Midstream Modulation of Emerging Technology: Probing the Capacity of Research Decisions." Presentation. Research Council of Norway, Oslo, Norway.
208. **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.
209. **Fisher, Erik.** February 27, 2010. "What is Midstream Modulation?" Presentation. Reflexive Systems Biology Kick-Off Meeting. University of Bergen, Bergen, Norway.
210. **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.
211. **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.
212. **Fisher, Erik.** July, 2009. "Inquiry as Intervention." STIR Workshop 2: Inquiry as Intervention, Vatnahalsen, Norway. July 4-7, 2009.
213. **Fisher, Erik.** June, 2009. "Laboratory Engagement, STIR: Initial Project Results." Presentation. TA NanoNed Annual Meeting, Utrecht, the Netherlands.
214. **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.
215. **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.
216. **Fisher, Erik.** June, 2009. "Integrating Science and Society in Nanotechnology Laboratories." Presentation. The Nano Renewable Energy Summit, Denver, CO.
217. **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.
218. **Fisher, Erik.** May 18, 2009. "Inquiry and Nanotechnology." Presentation. Human Practices Workshop. University of California at Berkeley, Berkeley, CA.
219. **Fisher, Erik.** May, 2009. "The "Two Cultures" in Science Policy Today." Presentation. University of Colorado-Denver, School of Public Affairs, Denver, CO.
220. **Fisher, Erik.** March, 2009. "Socio-Technical Integration Research." Presentation. Research Funding and the Good Life, University of Twente, the Netherlands.

221. **Fisher, Erik.** January, 2009. "STIR Project Overview." STIR Workshop 1: Constructing Foundations. Arizona State University, Tempe, AZ.
222. **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.
223. **Fisher, Erik.** November, 2008. "Nanotechnology: Environment, Health and Safety." Presentation. Environmental Professionals of Arizona / Academy of Certified Hazardous Materials Managers, Tempe, AZ.
224. **Fisher, Erik.** October, 2008. "Laboratory Engagements: Risky Discourse and Research Decisions." Presentation. Networks, Risk and Knowledge Sharing, University of Massachusetts, Amherst, MA.
225. **Fisher, Erik.** July, 2008. "Collaborations for Financial Success: Universities Collaborating with Government and the Private Sector." Panelist. The Nano Renewable Energy Summit, Denver, CO.
226. **Fisher, Erik.** July, 2008. "Midstream Modulation: Embedding the Humanities in Engineering Practice and Education." Presentation. Kluyver Colloquium, Delft Technical University, Delft, the Netherlands.
227. **Fisher, Erik.** April, 2008. "Embedded Humanists." Presentation. Engineering in Context, Colorado School of Mines, Golden, CO.
228. **Fisher, Erik.** March, 2008. "Midstream Modulation and the Politics of Engagement." Presentation. STS in Action, Claremont, CA.
229. **Fisher, Erik.** December, 2007. "Inventing the Socially Conscious Laboratory." Presentation. Consortium for Science, Policy & Outcomes, Arizona State University, Tempe, AZ.
230. **Fisher, Erik.** September, 2007. "Integrating Social Considerations into Nanotechnology Research." Presentation. 1st Rocky Mountain Nanotechnology Showcase, Denver, CO.
231. **Fisher, Erik.** August, 2007. "Broader Impacts and the Embedded Humanist." Presentation. Making Sense of the Broader Impacts of Science and Technology, Golden, CO.
232. **Fisher, Erik.** July, 2007. "Integrating Societal Considerations and Nanotechnology in the Four Corners Region." Presentation. Colorado Nanotechnology Alliance, Denver, CO.
233. **Fisher, Erik.** June 27, 2007. "Integrating Science and Society in the Laboratory." Presentation. Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM.
234. **Fisher, Erik.** June, 2007. "Drilling Down on U.S. Ethics Policy for Nanotechnology." Presentation. Center for Interdisciplinary Research (ZiF), Bielefeld University, Bielefeld, Germany.
235. **Fisher, Erik.** June, 2007. "Socio-technical Integration and the Nanotechnology Laboratory." Presentation. Visions about Nanoscience and Technology Workshop, Leuven, Belgium.

236. **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.
237. **Fisher, Erik**. June, 2007. "Engaging the Reflexive Capacity of Nanotechnology Researchers." Presentation. Nanotechnology, Ethics & Sustainability; NANOMAT Conference, Bergen, Norway.
238. **Fisher, Erik**. June, 2007. "Socio-technical Integration at Macro and Micro Levels." Presentation. Rathenau Institute, Den Haag, The Netherlands.
239. **Fisher, Erik**. January, 2007. "Social and Policy Issues in Nanotechnology." Presentation. 5th CINT Users Workshop, Center for Integrated Nanotechnologies, Albuquerque, NM.
240. **Fisher, Erik**. November 20, 2006. "Current Societal Considerations in Nanotechnology." Presentation. Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM.
241. **Fisher, Erik**. November, 2006. "Reflecting on the Shape of Nanotechnology Research from Within." Presentation. 4S Conference (Society for Social Studies of Science), Vancouver, Canada.
242. **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.
243. **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.
244. **Fisher, Erik**. July, 2006. "Midstream Modulation: U.S. Federal Nanotechnology Policy Implementation." Presentation. TA NanoNed Day, Utrecht University, the Netherlands.
245. **Fisher, Erik**. May, 2006. "Midstream Modulation of Technological Trajectories." Trading Zones and Interactional Expertise Workshop, Arizona State University, Tempe, AZ.
246. **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.
247. **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.
248. **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.

249. **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.
250. **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.
251. **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.
252. **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.
253. **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.
254. **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.
255. **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.
256. **Fisher, Erik** and **Roop L. Mahajan**. November, 2006. "Midstream Modulation." Presentation. International Mechanical Engineering Conference, Chicago, IL.
257. **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.
258. **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.
259. **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.

260. **Foley, Rider W.** August 18-19, 2015 accepted. "Accounting for community knowledge in environmental policy at the Motorola 52<sup>nd</sup> Street Superfund Site." The Knowledge from the Margins: Social Justice and Sustainability Conference. East Lansing, Michigan.
261. **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>
262. **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.
263. **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." 3<sup>rd</sup> Sustainable Nanotechnology Organization (SNO) Conference. Boston, MA.
264. **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.
265. **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". 6<sup>th</sup> Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Karlsruhe, GER.
266. **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.
267. **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.
268. **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.
269. **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.
270. **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.
271. **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.

272. 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.
273. 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.
274. 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.
275. 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.
276. Foley, Rider W., **Ira Bennett**, **Jameson Wetmore**, **David H. Guston** and **Arnim Wiek**. October, 2012. "Applied Nanoethics: Who is Responsible for what." Paper Presentation. 4th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Enschede, the Netherlands.
277. 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.
278. 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.
279. 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.
280. 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.
281. 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.
282. Gano, Gretchen. 2011. "Local Deliberation and Imagined Transition Epistemologies." Presentation. Annual Meeting of the Society for the Social Studies of Science, Cleveland, OH.
283. Gano, Gretchen. 2011. "Finding Futures." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

284. 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.
285. 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.
286. 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.
287. 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.
288. Gano, Gretchen and Krista Harper. April 2014. "Futurescape Springfield." Presentation. Museums à la Carte Lecture. Springfield Museums.
289. 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.
290. 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.
291. **Garcia, Antonio** and **Joan McGregor**. October 17, 2008. "Will Genetic Discrimination Replace Racial Discrimination?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
292. 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.
293. Glerup, Cecilie. 2012. "Scientific Social Responsibility as a Mode of Ordering." Presentation. Arizona State University, Tempe, AZ.
294. **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.
295. **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.
296. 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".



297. 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.
298. 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.
299. 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.
300. 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.
301. 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.
302. 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.
303. **Guston, David H.** September, 2014. "The Case for Responsible Innovation." Schlinger Symposium Plenary Address, Innovation Day, Chemical Heritage Foundation, Philadelphia, PA.
304. **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.
305. **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.
306. **Guston, David H.** July, 2014. "Understanding Anticipatory Governance." Presentation. Science Policy Research Unit, University of Sussex, Brighton, UK.
307. **Guston, David H.** July, 2014. "Understanding Anticipatory Governance." Presentation. Science, Technology, Engineering and Public Policy Department, University College, London, London, UK.
308. **Guston, David H.** November 21, 2014. "Understanding Anticipatory Governance." Presentation. National Academy of Sciences Board on Life Sciences, Tempe, AZ.
309. **Guston, David H.** May 2013. "Responsible Innovation." Presentation. Video presentation at Society of Environmental Toxicology and Chemistry annual meeting. Glasgow, United Kingdom.

310. **Guston, David H.** May 2013. "Rethinking Responsibility in Innovation." Presentation. The Brookings Institution. Washington, DC.
311. **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.
312. **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.
313. **Guston, David H.** October, 2012. "Back to the Future: Why Should We Promote Public Engagement with Science?" Presentation. Annual Meeting of the Society for Social Studies of Science, Copenhagen, Denmark.
314. **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.
315. **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.
316. **Guston, David H.** March 01, 2012. "EMERGE: From Technology to Democracy." Presentation. Emerge: Artists + Scientists Redesign the Future, Tempe, AZ.
317. **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.
318. **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.
319. **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.
320. **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,
321. **Guston, David H.** June, 2011. "Shaping Science and Nanotechnology Future." Presentation. 2011 "Environmental Nanotechnology" Gordon Research Conference, Waterville Valley, NH.
322. **Guston, David H.** May 22, 2011. "The Role of Nanotechnologies in our Future." Presentation. Humanist Society of Greater Phoenix.

- 323. **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.
- 324. **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.
- 325. **Guston, David H.** March 11, 2011. "CNS-ASU and its Strategic Vision of Anticipatory Governance." Talk. Service Academy Alumni of Arizona.
- 326. **Guston, David H.** March 02, 2011. "Anticipatory Governance of Emerging Technologies." Presentation. Technology and Ethics Working Group, Yale University, New Haven, CT.
- 327. **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.
- 328. **Guston, David H.** November 17, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. ESRC Genomics Forum, University of Edinburgh, Edinburgh, United Kingdom.
- 329. **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.
- 330. **Guston, David H.** November 10, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. Institute of Systems and Synthetic Biology, Imperial College, London, United Kingdom.
- 331. **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.
- 332. **Guston, David H.** July, 2010. "Anticipatory Governance of Emerging Technologies: Foresight, Engagement and Integration." Presentation. Euroscience Open Forum 2010, Torino, Italy.
- 333. **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.
- 334. **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.
- 335. **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.

- 336. **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.
- 337. **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.
- 338. **Guston, David H.** December, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society." Lecture. ESRC Critical Public Engagement Seminar. Durham University, Durham, UK.
- 339. **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.
- 340. **Guston, David H.** October, 2009. "Genealogies of Anticipatory Governance." Presentation. Annual Meeting of the Society for Social Studies of Science, Washington, DC.
- 341. **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.
- 342. **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.
- 343. **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.
- 344. **Guston, David H.** June, 2009. "Anticipatory Governance of Emerging Technologies." Presentation. NINE Summer Students Program. Sandia National Laboratory, Sandia, NM.
- 345. **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.
- 346. **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.
- 347. **Guston, David H., et al.** March 09, 2009. "Nanotechnology and the Public: Data for Decision Makers." Briefing. U.S. Congressional Nanotechnology Caucus, Washington, DC.
- 348. **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.

349. **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.
350. **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.
351. **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.
352. **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.
353. **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.
354. **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.
355. **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.
356. **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.
357. **Guston, David H.** April 04, 2008. "Governing Emerging Technologies." Presentation. Arizona Institute of Nanoelectronics opening ceremonies, Tempe, AZ.
358. **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.
359. **Guston, David H.** November, 2007. "Toward Anticipatory Governance of Emerging Technologies." Presentation. Special Series on Science and Public Policy, Brown University, Providence, RI.
360. **Guston, David H.** November, 2007. "Governing Emerging Technologies." Presentation. Spirit of the Senses Salon, Phoenix, AZ.
361. **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.

362. **Guston, David H.** December, 2006. "Anticipatory Governance of Emerging Technologies." Presentation. Monthly meeting of the Arizona Nanotechnology Cluster, Tempe, AZ.
363. **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.
364. **Guston, David H.** August, 2006. "Anticipatory Governance of Emerging Technologies." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
365. **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.
366. **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.
367. **Guston, David H.** April, 2006. "Social Science Engages Nanotechnology." Invited talk. Virginia Tech, Blacksburg, VA.
368. **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.
369. **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.
370. **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.
371. **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.
372. **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.
373. **Guston, David H., Erik Fisher** and **Daniel Sarewitz.** April 27, 2012. "Introduction to Responsible Innovation." Presentation. International Collaboration Working Group Seminar.
374. **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.

375. **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.
376. **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.
377. **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.
378. **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.
379. **Hannah, Dehlia.** March 3-4, 2016. "A Year Without a Winter: The Role of Narrative in the Comprehension of Climate Change". New Currents in Science: The Challenges of Quality, European Commission-Joint Research Council, Ispra, Italy.
380. **Hannah, Dehlia.** January 30-31, 2016. "Aspirational Politics and Exemplary Experiments: The Environmental Art of Amy Balkin and Natalie Jeremijenko". Research workshop. "Artistic Visions and Strategies for Urban Space" Flussbad Berlin Project.
381. **Hannah, Dehlia.** January 13th, 2016. "Design Philosophy and the Challenge of Envisioning Climate 3.0". Planetary Design: Climate 3.0, School of Sustainability, Arizona State University.
382. **Hannah, Dehlia.** December 7, 2015. "A Year Without a Winter: A Performative Experiment in Scenario Planning". ELINAS (Center for Literature and Natural Science), Friedrich Alexander Universität Erlangen, Nürnberg.
383. **Hannah, Dehlia.** November 19-21, 2015. "A Tarot Reading of the Weather: Reflections on the Epistemology of Anticipation," Phoenix 2050, Carnegie Desert Cities Symposium, Arizona State University.
384. **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
385. **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.

386. **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.
387. **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.
388. **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.
389. **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.
390. Harsh, Matthew. April, 2012. "Biotechnology and Nanotechnology in Sub-Saharan Africa: Who Decides?" Paper Presentation. Centre for Engineering and Society, Concordia University, Montreal, Canada.
391. 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.
392. 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.
393. **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.
394. 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.
395. 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.
396. 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.
397. Hays, Sean A. March, 2009. "Transhumanism, Anti-humanism, and Nietzsche's Overman." Presentation. Human Enhancement & Nanotechnology, Western Michigan University, Kalamazoo, MI.



398. **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.
399. **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.
400. **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.
401. **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.
402. **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.
403. **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.
404. **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, Boston, MA.
405. **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.
406. **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.
407. **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.

408. **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.
409. **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.
410. **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.
411. 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.
412. 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.
413. 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.
414. 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.
415. 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".
416. **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.
417. **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.
418. Jensen, Camilla. May 26-28<sup>th</sup>, 2015. "Serious Play for Cross-disciplinary Communication on Social and Ethical Aspects of Nanotechnology" Poster Presentation. Governing Emerging Technologies: Law, Policy and Ethics Conference, Scottsdale, AZ.

419. Jenson, Camilla. March 7, 2015. "Future Fairy Tales." Panel presentation. Staging the Future Conference, Emerge2015, Arizona State University-Skysong, Scottsdale, AZ.
420. Jensen, Camilla. July 20, 2014. "Cross-disciplinary Education in Social & Ethical Aspects of Nanotechnology." Poster presentation. SciRanch, Oracle, AZ.
421. Jensen, Camilla. November 2, 2014. "Cross-disciplinary Education in Social & ethical Aspects of Nanotechnology." NEAP Project, Sustainable Nanotechnology Organization (SNO) Conference, Boston, MA.
422. Jenson, Camilla and Tamara Christensen. March 6, 2015. "Future Fairy Tales." Visitation. Emerge 2015, Arizona State University-Skysong, Scottsdale, AZ.
423. **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.
424. 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.
425. **Johnston, Stephen and Joan McGregor**. September, 2006. "Predicting Your Medical Future (Doc-in-a-Box)." CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.
426. **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.
427. **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.
428. **Kavazanjian, Edward and Tim Lant**. April 15, 2011. "Disasters in Arizona: Are We Prepared." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
429. 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.
430. Kay, Luciano. October, 2009. "The Emergence of Nanotechnology Enterprise in Brazil." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
431. Kay, Luciano. October, 2009. "Nanotecnologia en America Latina. Brasil y la Emergencia de Nano-empresas." Presentation. VI Seminario Internacional Nanotecnologia, Sociedade e Meio Ambiente - VI Seminariosoma, Manaus, Brazil.

432. Kay, Luciano. May, 2009. "Developing Nanotechnology in Latin America." Poster presentation. NSF Site Visit for CNS Renewal, Tempe, AZ.
433. 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.
434. Kay, Luciano. January, 2009. "Nanotechnology Research Networks in Brazil." Poster presentation. CNS All Hands Meeting, Tempe, AZ.
435. 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.
436. 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.
437. 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.
438. **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.
439. 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.
440. 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.
441. 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.
442. 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.
443. Kimbell, Lucy and **Cynthia Selin**. May 30-31, 2014. "Future Things." Exhibition. Oxford Futures Forum. University of Oxford. Oxford, England.

444. 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.
445. Klug Boonstra, Sherri. February 20, 2014. "Citizen Science! Goes to Mars!" Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.
446. 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.
447. 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.
448. 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.
449. 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.
450. 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.
451. 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.
452. 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.
453. 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.
454. **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.

455. 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.
456. 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.
457. Lidberg, Shannon. March, 2008. "Examining Potential Futures: A Designer's Toolbox for Identifying Potential Social and Cultural Implications." Presentation. ST Global Conference, Washington, DC.
458. **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.
459. **Lobo, Jose**. November 09, 2011. "How Green is Nano." Presentation. Society for the study of Nanoscience and Emerging Technologies 2011 Conference, Tempe, AZ.
460. **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.
461. **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.
462. **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.
463. 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".
464. **Mahootian, Farzad**. October, 2012. "Innovation by Disequilibrium." Presentation. Society for the Study of Nanoscience and Emerging Technologies, University of Twente, Twente, the Netherlands.
465. **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.
466. **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.
467. **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.

468. **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.
469. Maricle, Genevieve. January, 2008. "The State of Policy and Socio-Economic Research." Presentation. American Meteorological Society Annual Meeting, New Orleans, LA.
470. 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.
471. 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.
472. **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.
473. **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.
474. **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.
475. McKeon, Patrick. September 23, 2008. "State-Level Nanotechnology Policy Initiatives and Implications for Georgia." Presentation. Nano@Tech, Georgia Institute of Technology, Atlanta, GA.
476. McKeon, Patrick. 2008. "State-Level Nanotechnology Policy Initiatives and Implications for Georgia." Presentation. Fresh Perspectives on Economic Development, Atlanta, GA.
477. McTiernan, Kaylie, **Brian Polagye, Erik Fisher, and Lekilia Jenkins.** 2016, accepted conference paper. "Integrating Socio-Technical Research with Future Visions for Tidal Energy." 2016 Council of Engineering Systems Universities (CESUN) Symposium. George Washington University.
478. **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.
479. 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.
480. 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.

- 481. 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.
- 482. Miao, Liao. 2012. "Humanistic Cultivation in the Sciences: Why Do Laboratory Engagements Matter." Presentation. Arizona State University, Tempe, AZ.
- 483. **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.
- 484. **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.
- 485. **Miller, Clark A.** September, 2010. "Readying Citizens for Anticipatory Governance: A Challenge for Science Museums." Presentation. NISE Network Meeting, San Francisco, CA.
- 486. **Miller, Clark A.** March, 2010. "Innovation: Thoughts on Science, Technology, Transformation, and Valuation." Talk. Manifolds-A Social Innovation Symposium, Fergus, Canada.
- 487. **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.
- 488. **Miller, Clark A.** 2009. "Themes in Nanotechnology in Society Research." Talk. Nanoscale Informal Science Education Annual Meeting, San Francisco, CA.
- 489. **Miller, Clark A.** 2009. "Nanotechnology: Environment, Health, and Safety." Talk. Semiconductor Environment, Safety, and Health Association, Scottsdale, AZ.
- 490. **Miller, Clark A.** April, 2007. "Commentary: The Law and the Future Brain." Presentation. U.S. District Court and Sandra Day O'Connor College of Law, Arizona State University, Tempe, AZ.
- 491. **Miller, Clark A.** December 09, 2006. "Boundary Organizations: Strategies for Linking Knowledge to Action." Presentation. Workshop on Boundary Organizations, Tempe, AZ.
- 492. **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).
- 493. **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.
- 494. **Miller, Clark A.** June, 2006. "Think Differently! Strategies for Success in Nano." Presentation. Food Research Institute, University of Wisconsin-Madison, Madison, WI.



495. **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.
496. **Miller, Clark A.** March, 2006. "Nanotechnology in Society." Presentation. Ohio State University, Columbus, OH.
497. **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.
498. **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.
499. **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.
500. **Miller, Thaddeus R.** February 26, 2014. "Futurescape City Tours: Public Engagement in the City." Presentation. President's Umbrella Tours. PSU.
501. **Moore, Ana L.** September 27, 2006. "Renewable Energy Through Photosynthesis." Talk. CNS-ASU Science Cafe, Friendly House, Phoenix, AZ.
502. **Newman, Nils.** November, 2006. "Nanotechnology Research Mapping and Assessment." Presentation. STI Indicators Conference, Leuven, Belgium.
503. **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.
504. **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.
505. **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.
506. **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.
507. **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.

508. **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.
509. 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.
510. 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.
511. **Porter, Alan L.** December, 2010. "Profiling and Knowledge Tracking." Presentation. Chinese Academy of Sciences Library, Beijing.
512. **Porter, Alan L.** November, 2009. "Assessing Nanotechnology: Research Metrics and Maps." Presentation. American Evaluation Association Annual Conference, Orlando, FL.
513. **Porter, Alan L.** August, 2009. "Locating Nanotechnology among the Disciplines, Nano @ Tech."
514. **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.
515. **Porter, Alan L.** October, 2007. "Public Lecture." Institute for S&T Information, Beijing, China.
516. **Porter, Alan L.** November 15, 2006. "Mining Patents and Research Publications to Improve Technology Management: Nano Illustrations." Presentation. 2nd PATINEX Conference, Seoul, South Korea.
517. **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.
518. **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.
519. **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.
520. **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.
521. **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.
522. **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.
523. **Porter, Alan L. and Jayesh Patil**. March, 2007. "Where Is Nano Going?" Presentation. Nano-Giga Challenges, Phoenix, AZ.
524. **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.
525. **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.
526. **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.
527. **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.
528. **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.
529. **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.
530. **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.
531. **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.
532. **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.

533. **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.
534. **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.
535. **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.
536. **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.
537. **Rafols, Ismael** and **Alan L. Porter**. October, 2009. "Interdisciplinary in Nanoscience: What is the Nano Field and how does it Share its Knowledg." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.
538. **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.
539. **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.
540. **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.
541. **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.
542. **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.
543. Raman, Sujatha. March 24, 2015. "What would it take to Materialize Energy? The Role of Responsible Innovation. Energy & Society Brown Bag Talk. Tempe, AZ.
544. 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.

545. Raman, Sujatha. October 8-9, 2014. "Making Green Growth Public, Imagining Responsible Innovation." Presentation. Unpacking Green Growth, Global Systems Science Transnational Conference. Phoenix, AZ.
546. **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.
547. **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.
548. 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.
549. **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.
550. **Robert, Jason S.** January, 2009. "Technology and Human Enhancement: Whats the Connectio." Presentation. Midwestern University, Glendale, AZ.
551. **Robert, Jason S.** June, 2007. "Braving the Brain." Presentation. Canadian Bioethics Society, Toronto, Canada.
552. **Robert, Jason S.** May, 2007. "Cyborgs, Ratbots, and Bionic Humans: Wiring Brains to Machines." Presentation. Discovery Center, Halifax, Nova Scotia, Canada.
553. **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.
554. **Robert, Jason S.** April, 2007. "Problematizing Enhancement." Presentation. Dartmouth College, , N, Hanover, NH.
555. **Robert, Jason S.** February, 2007. "Braving the World of Neurotechnology." Presentation. Health Law Institute Seminar Series, Dalhousie University, Nova Scotia, Canada.
556. **Robert, Jason S.** October, 2006. "Brain Repair and Neural Enhancement." 4S Conference (Society for Social Studies of Science), Vancouver, Canada.
557. **Robert, Jason S.** October, 2006. "Nanotechnology, Neurotechnology, and Society." Presentation. Institute of Nanotechnology Symposium, Northwestern University, Evanston, IL.
558. **Robert, Jason S.** October, 2006. "Forbidden Science Boundaries on New Emerging Science and Technology." Presentation. Jewish Women's Symposium, Tempe, AZ.

559. **Robert, Jason S.** August, 2006. "Controversial Science, Controversial Scientist." Presentation. NABIS Conference, Chicago, IL.
560. **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.
561. **Rogers, Juan D.** December, 2010. "Publication Patterns and Collaborative Work at NSECs." Presentation. 2010 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
562. **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.
563. **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.
564. **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.
565. **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.
566. **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.
567. 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.
568. 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.
569. **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.
570. **Sarewitz, Daniel.** October, 2008. "Paths to Outcomes Based Innovation Policy." Presentation. National Institutes of Health Science of Science Management Meeting, Bethesda, MD.

571. **Sarewitz, Daniel.** September, 2008. "Science Policy and Innovation." Presentation. Presidential Council of Advisors on Science and Technology, Washington, DC.
572. **Sarewitz, Daniel.** November 26, 2007. "New Tools for Science Policy Making." Presentation. Harvard University, Science, Technology, and Society Circle, Cambridge, MA.
573. **Sarewitz, Daniel.** October, 2007. "Anticipatory Governance of Emerging Technologies: Competing Values, Irreducible Uncertainties, and Transformation Innovation." Presentation. University of Oviedo, Oviedo, Spain.
574. **Sarewitz, Daniel.** October, 2007. "Technology and Effectiveness in Contested Political Settings, Center for Research on Energy, Environment, and Transportation." Presentation. CIEMAT, Madrid, Spain.
575. **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.
576. **Sarewitz, Daniel.** March, 2007. "Connecting Research to Social Outcomes." Presentation. Presentation to the University of Nebraska Board of Regents, Lincoln, NE.
577. **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.
578. **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.
579. **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 Right, St. Louis, MO.
580. **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.
581. **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.
582. **Scheufele, Dietram A.** February 1, 2014. "Communicating Science in New Information Environments: Challenges at the Interface of Science, Politics and Media." Presentation. Keynote at DGPK/Universität Zürich Conference. Zürich, Switzerland.
583. **Scheufele, Dietram A.** January 17, 2014. "Why Polarized Debates used to be Good for us." Presentation. TEDxUWMadison. Madison, WI.

584. **Scheufele, Dietram A.** December 5, 2013. "The Science of Communicating Nanoscience." Presentation. Keynote Presentation at NSF Nanoscale Science and Engineering Grantees Conference. Arlington, VA.
585. **Scheufele, Dietram A.** November 26, 2013. "Trollish Behavior and the Future of Online Comments." Presentation. Panelist at Society of Professional Journalists. Madison, WI.
586. **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.
587. **Scheufele, Dietram A.** October 7, 2013. "From Behavior Change Research to Program Design." Presentation. Association of Energy Services Professionals. Madison, WI.
588. **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.
589. **Scheufele, Dietram A.** July 9, 2013. "Public Engagement with Science." Presentation. Webinar for Association of Science-Technology Centers (ASTC). Washington, DC.
590. **Scheufele, Dietram A.** June 20, 2013. "The Future of (Environmental) Communication as a Discipline." Presentation. Panelist at International Communication Association Annual Conference. London, England.
591. **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.
592. **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.
593. **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.
594. **Scheufele, Dietram A.** 2013. "Communicating Science in Social Settings." Presentation. Proceedings of the National Academy of Sciences.
595. **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.
596. **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.



597. **Scheufele, Dietram A.** February, 2008. "Engaging Religious Audiences on Nanotechnology." Presentation. Annual Convention of the American Association for the Advancement of Science, Boston, MA.
598. **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.
599. **Scheufele, Dietram A.** March 16, 2007. "Public Perceptions and Understandings of Nanotechnology." Presentation. Nano and Giga Challenges in Electronics and Photonics conference, Tempe, AZ.
600. **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.
601. **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.
602. **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.
603. **Scheufele, Dietram A.** 2006. "Influences on Public Opinion about Nanotechnology." Presentation. Public Participation in Nanotechnology & Nanoscale Science workshop, National Nanotechnology Coordination Office, Washington, DC.
604. **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.
605. **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.
606. **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.
607. **Scheufele, Dietram A.** 2006. "Successful Public Communication about Nanotechnology." Talk. Integration of Societal Implications into Science workshop, U.S. Department of Energy, Washington, DC.
608. **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.

609. **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.
610. **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.
611. Schuurbiers, Daan. May 04, 2009. "In and Out of the Lab." Lab Meeting. Center for Bioenergy and Photosynthesis, Arizona State University, Tempe, AZ.
612. Schuurbiers, 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.
613. Schuurbiers, Daan. January 17, 2009. "Can Shadows Shed Light." Presentation. STIR Workshop 1: Constructing Foundations, Tempe, AZ.
614. Schuurbiers, Daan. January 15, 2009. "Midstream Modulation as Part of a PhD on Social Responsibility in Science." Presentation. CNS All Hands Meeting, Tempe, AZ.
615. Schuurbiers, 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.
616. **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.
617. **Selin, Cynthia**. 2015. "Design Fiction and Imaginary Futures." Invited lecture, School of Design, Carnegie Mellon University.
618. **Selin, Cynthia**. 2015. "Public Engagement through Material Deliberation." Invited lecture, Department of Media, Cognition and Communication, University of Copenhagen.
619. **Selin, Cynthia**. 2013. "Mediating Urban Imaginaries: Designing and Doing the Futurescape City Tours." Presentation. Society for the Social Studies of Science. San Diego, CA.
620. **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.
621. **Selin, Cynthia**. December, 2011. "Climate of Uncertainty: Civic Scenarios for Decision Making." Presentation. New Tools for Science Policy, CSPO, Washington, DC.

622. **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.
623. **Selin, Cynthia.** July, 2011. "Urban Foresight: Rethinking Technology in Complex Systems." Invited Talk. Joint Research Centre, European Commission, Ispra, Italy.
624. **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.
625. **Selin, Cynthia.** May, 2011. "Futuring and Foresight in Nanotechnology." Presentation. CNS Private Sector Engagement Workshop, Tempe, AZ.
626. **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.
627. **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.
628. **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.
629. **Selin, Cynthia.** December, 2010. "Plausibility Reasoning and Nanotechnology Futures." Presentation. Society for Risk Analysis Annual Conference, Salt Lake City, UT.
630. **Selin, Cynthia.** November, 2010. "Foresight and Innovation." Presentation. Practices of Anticipatory Governance Workshop, Arizona State University, Tempe, AZ.
631. **Selin, Cynthia.** October, 2010. "Foresight and Scenarios." Presentation. Nanoscale Informal Science Education Network Annual Meeting, San Francisco, CA.
632. **Selin, Cynthia.** September, 2010. "Plausibilistic Reasoning in Nanotechnology Futures." Presentation. Society for the Study of Nanotechnology and Emerging Technologies, Darmstadt, Germany.
633. **Selin, Cynthia.** August, 2010. "Nanotechnology & Plausibility." Presentation. Society for the Social Studies of Science, Tokyo, Japan.
634. **Selin, Cynthia.** July, 2010. "The Future of Sustainable Phoenix." Presentation. Institute for the Future, Palo Alto, CA.
635. **Selin, Cynthia.** May, 2010. "The Future of Organizing." Presentation. Organization Design Forum Annual Meeting, Denver, CO.

636. **Selin, Cynthia.** April, 2010. "The Future of Nanotechnology." Presentation. Nanotechnology Law and Policy Course, Arizona State University, Tempe, AZ.
637. **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.
638. **Selin, Cynthia.** March, 2010. "Envisioning Solar To Fuels." Workshop on Energy Futures, Policy and Society. Arizona State University, Tempe, AZ.
639. **Selin, Cynthia.** November, 2009. "Plausibility." ASU Plausibility Workshop, Tempe, AZ.
640. **Selin, Cynthia.** October, 2009. "Diagnosing Futures." Presentation. Society for the Social Studies of Science, Washington, DC.
641. **Selin, Cynthia.** September, 2009. "Deliberation and Anticipation." Presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.
642. **Selin, Cynthia.** June, 2009. "Anticipation and Deliberation on the Nano City." Risoe National Laboratory, Denmark.
643. **Selin, Cynthia.** April, 2009. "Using Scenarios and Foresight to Manage Turbulence." Presentation. Organizational Design Forum, Tacoma, WA.
644. **Selin, Cynthia.** May, 2008. "Managing the Uncertainty of Nanotechnologies." Panel. Challenges to Law, Ethics, and Policy Making Conference at University of Padua, Padua, Italy.
645. **Selin, Cynthia.** February, 2008. "Evidencing the Future and other Dilemmas Working in the Future Tense." Presentation. Anthropology Department, Rice University, Houston, TX.
646. **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.
647. **Selin, Cynthia.** October, 2007. "The Future Tense: The Ways and Means of Anticipation." Presentation. CSPO Enlightening Lunch, Tempe, AZ.
648. **Selin, Cynthia.** September, 2007. "The Future of Nano & Bio Technologies." Panel. CRN conference on Challenges & Opportunities, Tucson, AZ.
649. **Selin, Cynthia.** July, 2007. "Real Time Technology Assessment: Anticipation, Integration, & Engagement." Presentation. Program on Technology Scenarios, Risoe, National Laboratory, Roskilde, Denmark.
650. **Selin, Cynthia.** April, 2007. "Hope and Prudence: Experiments in Scenaric Learning." Presentation. Futures of Life: Acquiring and Creating Anticipatory Knowledge, Cornell University, Ithaca, NY.

651. 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.
652. Selin, Cynthia. September, 2006. "The Center for Nanotechnology in Society." Presentation. NanoTX Conference, Dallas, TX.
653. Selin, Cynthia and Ira Bennett. November 19, 2006. "Visions of Nanotechnology." Talk. CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.
654. **Selin, Cynthia**, Angela Pereira and Gretchen Gano. 2015. "Mediation and Scenarios: Unpacking Power, Politics and Persuasion in Future-Oriented Inquiry". International Conference on Anticipation. Trento, Italy.
655. **Selin, Cynthia** et al. November 11-14, 2015. "Futurescape City Tours". Exhibition. Making and Doing, Society for the Social Studies of Science. Denver, CO.
656. **Selin, Cynthia**, Dave White, **Dehli Hannah** and **Adriene Jenik**. 2015. "What Will the Desert City of 2050 Look Like?" "The Future We Want: A Research Symposium on Desert Cities." Tempe, AZ.
657. **Selin, Cynthia** and Sandra Rodegher. 2015. "Parity and Participation: The Role of Social Influence in Scenario Planning" International Conference on Anticipation. Trento, Italy.
658. **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.
659. **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.
660. **Selin, Cynthia** and **Prasad Boradkar**. 2013. "Prototyping Nanotechnology: Experiences with Design Education." Presentation. Invited talk, Technology and Innovation Management Research Seminar. Danish Technological University.
661. **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.
662. **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.
663. **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.
664. 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.

665. 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.
666. 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.
667. **Shapira, Philip**. November 21, 2012. "Nanotechnology: Trajectories and Policies, Challenges in Science, Technology and Innovation Policy." Presentation. Executive Program, University of Manchester, United Kingdom.
668. **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.
669. **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.
670. **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.
671. **Shapira, Philip**. March 29, 2011. "Trajectories of Nanotechnology Research and Innovation." Presentation. Grenoble Ecole de Management's Winter School on Emerging Nanotechnologies, Autrans, France.
672. **Shapira, Philip**. December, 2010. "Trajectories of Nanotechnology Research and Innovation." Presentation. 2010 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
673. **Shapira, Philip**. October 01, 2010. "Innovation System Dynamics and the Globalization of Nanotechnology Innovation." Presentation. S.NET Conference 2010, Darmstadt, Germany.
674. **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.
675. **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.
676. **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.

677. **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.
678. **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.
679. **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.
680. **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.
681. **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.
682. **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.
683. **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.
684. **Shapira, Philip** and **Alan L. Porter**. September, 2005. "Mapping the Nanotechnology Enterprise." Presentation. American Political Science Association Annual Meeting, Washington, DC.
685. **Shapira, Philip**, **Alan L. Porter** and **Jan Youtie**. August, 2006. "Refining Search Terms for Nanotechnology." Presentation. Presented at the National Science Foundation, Arlington, VA.
686. **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.
687. **Shapira, Philip** and **David H. Guston**. March, 2007. "Societal Assessment of Nanotechnology US Experience." Presentation. Ministry of Research, Science and Technology, Wellington, New Zealand.
688. **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.

689. **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.
690. **Shapira, Philip** and **Jan Youtie**. January, 2011. "RTTA 1 - Research Program Assessment." Presentation. Center for Nanotechnology in Society at ASU, Tempe, AZ.
691. **Shapira, Philip** and **Jan Youtie**. March, 2010. "Transatlantic Workshop on Nanotechnology Innovation and Policy." Presentation. Transatlantic Workshop on Nanotechnology Innovation and Policy, Atlanta, GA.
692. **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.
693. **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.
694. **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.
695. **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.
696. **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.
697. 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.
698. 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.
699. 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.
700. **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, Carnegie, Washington, DC.

701. **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.
702. **Sommerfield, Milton R.**, **Mark Edwards** and **David Konz**. January 15, 2010. "Bugs for Fuels: Microbes in our Energy Future." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
703. 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.
704. 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.
705. 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.
706. 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.
707. **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.
708. **Strumsky, Deborah**. November 16, 2011. "How Green is Nano." Presentation. The Institute for Operations Research and the Management Sciences (INFORMS) Annual Conference, Charlotte, NC.
709. 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.
710. 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.
711. 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.

712. 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.
713. 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.
714. 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.
715. **Suchman, Mark C.** 2007. "The Implications of Nanotechnology for Social Science and Social Policy." Presentation. Cornell CNF Public Interest Talk Series, Ithaca, NY.
716. **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.
717. **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.
718. **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.
719. 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.
720. Tang, Li. February, 2008. "Nanotechnology Knowledge Networks in China." Presentation. PRIME Nanotechnology Winter School, Grenoble, France.
721. 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.
722. Tang, Li. October, 2007. "New Argonauts & Scientific Networks: Evidence from Chinas Nanotech Publication." Presentation. Atlanta Science and Technology Policy Conference, Atlanta, GA.

723. 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.
724. **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.
725. **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.
726. **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.
727. **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.
728. 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.
729. Valdivia, Walter. August, 2008. "Technology, Growth, and Inequality." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
730. Valdivia, Walter. June, 2008. "Inequality and Nanotechnology." Presentation. Workshop on Inequality and Emerging Technologies, Valleta, Malta.
731. Valdivia, Walter. January, 2008. "Science Policy and Inequality." Presentation. First Indo-American Institute of Nano-scale Science and Engineering, Chennai, India.
732. Valdivia, Walter. January, 2008. "Science Policy and Inequality: A Research Program." Presentation. NISTADS, New Delhi, India.
733. Valdivia, Walter. October, 2007. "Non-Cooperative Games in Science Policy." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
734. Valdivia, Walter. March, 2007. "Anticipatory Governance of Emerging Technologies." Presentation. Science-Society Interface at Universite de Lausanne, Lausanne, Switzerland.
735. **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.
736. Vortherms, Kaitlin. March 28, 2014. "Engineering Empathy". Poster presentation. Living Compassion Conference. Northern Arizona University, Flagstaff, AZ.

737. Vortherms, Kaitlin. April 7 & 9, 2014. "Empathy, Awareness and Perspective." Presentation. CEE300 Engineering Business Practices, Arizona State University, Tempe, AZ.
738. Vortherms, Kaitlin. March 5, 2014. "Engineering Empathy." Sustainable Engineering & Built Environment, Graduate Symposium, Arizona State University, Tempe, AZ.
739. Vortherms, Kaitlin and **Thomas Seager**. November 8th 2015. "Social & Ethical Implications of Nanotechnology". Conference Presentation. Sustainable Nanotechnology Organization Conference, Portland, Oregon.
740. Vortherms, Kaitlin, Alex Arveson, Alex Cano, Alyson Hendrix, Payson Seager, Maxwell Smith, Jason Stauffer and Neil Tugaoen. April 10-14, 2015. "Building Integrated Solar Thermal Electric Generation (BISTEG)" Environmental Protection Agency P3 Sustainable Design Expo.
741. 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.
742. 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.
743. 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.
744. 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.
745. 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.
746. Wender, Benjamin A., **Thomas P. Seager**, **Rider W. Foley**. November 4-6, 2014. "Anticipatory LCA for Responsible Innovation of Nanotechnology." Presentation. 3<sup>rd</sup> Sustainable Nanotechnology Organization (SNO) Conference. Boston, MA.
747. Wender, Benjamin A. September 2014. "Advancing Life Cycle Assessment for Emerging technologies." Presentation. Institute for Technology Assessment and Systems Analysis (ITAS). Karlsruhe, Germany.
748. Wender, Benjamin A. April 2014. "LCA 101 for QESST Scholars." Presentation. Quantum Energy and Sustainable Solar Technologies (QESST) Scholar Symposium. Tempe, AZ.

749. 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.
750. 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.
751. Wender, Benjamin A. and Dwarakanath R. Triplican. 2013. "Anticipatory Life Cycle Assessment of Photovoltaics." Presentation. Arizona Student Energy Conference (AzSEC). Tucson, AZ.
752. 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.
753. Wender, Benjamin A. June 2014. "Anticipatory LCA of Photovoltaics." Presentation. Palo Alto Research Center (PARC). Palo Alto, CA.
754. Wender, Benjamin A. May 2014. "Life Cycle Assessment: Beyond Compliance." Presentation. Intel Corp. Chandler, AZ.
755. Wender, Benjamin A. April 2014. "LCA 101 for PV Engineers." Presentation. EEE 498. Solar Energy. Tempe, AZ.
756. Wender, Benjamin A. December 2012. "Anticipatory Life Cycle Assessment of PV Technologies." Presentation. First Solar Inc. Tempe, AZ.
757. Wender, Benjamin A. June 2012. "Life Cycle Assessment for Risk Analysts." Presentation. US Army Corps of Engineers. Concord, MA.
758. Wender, Benjamin A. December 2010. "Closing the Anthropogenic Carbon Cycle." Presentation. SOS 324. Sustainable Energy, Materials, and Technology. Tempe, AZ.
759. 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.
760. 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.
761. 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.
762. 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.

- 763. 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.
- 764. Wender, Benjamin A. November 2014. "Anticipatory LCA of Emerging PV Technologies." Presentation at the Society of Environmental Toxicology and Chemistry. Long Beach, CA.
- 765. 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.
- 766. 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.
- 767. Wender, Benjamin A. June 2011. "LCA, Nanotech, and Scale: Assessing the Promise of Photocatalytic Reduction of CO<sub>2</sub>." Presentation. International Society for Industrial Ecology. Berkeley, CA.
- 768. 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.
- 769. 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.
- 770. **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.
- 771. **Wetmore, Jameson**. December 1, 2014. "Tools for Sustainable Development of Impoverished Areas." Presentation. Materials Research Society Annual Meeting. Boston, MA.
- 772. **Wetmore, Jameson**. December 1, 2014. "Engaging the Public in Constructive Conversation about the Future of Technology." Presentation. Materials Research Society Annual Meeting. Boston, MA.
- 773. Wetmore, Jameson. August 12, 2014. "Social and Ethical Implications of Nanotechnology." Presentation. NNIN Research Experience for Undergraduates Convocation. Atlanta, GA.
- 774. **Wetmore, Jameson**. December 12, 2012. "Engaging the Public in Conversations about Nano and Society." Presentation. NISE Net Network Wide Meeting, Cambridge, MA.
- 775. **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.

776. **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.
777. **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.
778. **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.
779. **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.
780. **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.
781. **Wetmore, Jameson.** September 25, 2012. "Social Studies of Technology and Religion." Presentation. Nano Impacts Group, University of Notre Dame, Notre Dame, IN.
782. **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.
783. **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.
784. **Wetmore, Jameson.** September 15, 2012. "World Wide Views on Biodiversity." Facilitator. Arizona State University, Tempe, AZ.
785. **Wetmore, Jameson.** August 08, 2012. "Inclusive Innovation for Inclusion Development." Discussion Leader. Gordon Research Conference on Science and Technology Policy, Waterville Valley, NH.
786. **Wetmore, Jameson.** August 05, 2012. "Ecology Governance Challenges Presented by Emerging Technologies." Moderator. Science Beyond the Field: a Policy (dis)Orientation Workshop, Portland, OR.
787. **Wetmore, Jameson.** March 09, 2012. "A Users Guide to Everyday Technology." Keynote Speech. Issue Day, Maumee Valley Country Day School, Toledo, OH.
788. **Wetmore, Jameson.** March 09, 2012. "Amish Technology." Workshop. Issue Day, Maumee Valley Country Day School, Toledo, OH.

789. **Wetmore, Jameson.** March 09, 2012. "Nano Equity Game: Whose Nano is it?" Workshop. Issue Day, Maumee Valley Country Day School, Toledo, OH.
790. **Wetmore, Jameson.** March, 2012. "Nano Equity Game: Whose Nano is it?" Presentation. Nano and Society training program, Arizona Science Center, Phoenix, AZ.
791. **Wetmore, Jameson.** January, 2012. "Nano Equity Game: Whose Nano is it?" Presentation. NISENet Program committee meeting, Oregon Museum of Science & Industry.
792. **Wetmore, Jameson.** December, 2011. "Nano Equity Game: Whose Nano is it?" Presentation. Adult Night, Arizona Science Center, Phoenix, AZ.
793. **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.
794. **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.
795. **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.
796. **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.
797. **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.
798. **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.
799. **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.
800. **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.
801. **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.



802. **Wetmore, Jameson.** April 03, 2010. "Nanodays-Student Presentations of Basic Science and Nanotechnology Applications." Arizona Science Center, Phoenix, AZ.
803. **Wetmore, Jameson.** March 25, 2010. "Opportunities for Engaging with the Public." Asilomar International Conference on Climate Intervention Technologies, Pacific Grove, CA.
804. **Wetmore, Jameson.** March, 2010. "Nanodays-Student Presentations of Basic Science and Nanotechnology Applications." Tempe Festival of the Arts. March 26-28, 2010, Tempe, AZ.
805. **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.
806. **Wetmore, Jameson.** December 09, 2009. "'Overview of CNS-ASU" with David H. Guston." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.
807. **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.
808. **Wetmore, Jameson.** November 08, 2009. "Technology and the City." Presentation. On the Cutting Edge...Today's Jewish Women Symposium, Scottsdale, AZ.
809. **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.
810. **Wetmore, Jameson.** July 22, 2009. "Anticipatory Governance of Emerging Technologies." Presentation. National Institute for Nano-Engineering Summer Student Program, Sandia National Labs. Invited.
811. **Wetmore, Jameson.** July 08, 2009. "Nanotechnology and Society." Presentation with Troy Benn. Arizona Science Center's Junior Science Correspondents Program, Phoenix, AZ.
812. **Wetmore, Jameson.** June 16, 2009. "What Should Everyone Know about Technology?" Panel discussion. American Society for Engineering Education Annual Conference, Austin, TX.
813. **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.
814. **Wetmore, Jameson.** March, 2009. "Innovation and Graduate Education." Presentation. Presented at Centers, Universities, and the Scient, Arlington, VA.
815. **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.

816. **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.
817. **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.
818. **Wetmore, Jameson.** June, 2008. "The Challenge of Path Dependence." Presentation. IEEE Symposium on Technology & Society, Fredericton, New Brunswick, Canada.
819. **Wetmore, Jameson.** April, 2008. "What Do You Think About a Technology You Can't Even See." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
820. **Wetmore, Jameson.** December, 2007. "Amish Technology." Presentation. Spirit of the Senses Salon, Phoenix, AZ.
821. **Wetmore, Jameson.** November, 2007. "ASB 591: Seminar on Professionalism, on the Academic job search." Presentation. Seminar on Professionalism.
822. **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.
823. **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.
824. **Wetmore, Jameson.** August, 2007. "Cats Cradle, by Kurt Vonnegut." Presentation. Spirit of the Senses Salon, Scottsdale, AZ.
825. **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.
826. **Wetmore, Jameson.** March, 2007. "Transferring Western Technology to Developing Countries: Good Intentions, Unexpected Outcomes." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
827. **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.
828. **Wetmore, Jameson.** February, 2007. "Nanotech and Religion: Ambitions, Influence, and Policy." Presentation. CNS-UCSB, Santa Barbara, CA.

829. Wetmore, Jameson. August, 2006. "Religious Forays into Nanotechnology Policy." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.
830. **Wetmore, Jameson** and **Andrea Lewis**. January 20, 2012. "What's in our Skincare?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
831. **Wetmore, Jameson** and **Ira Bennett**. August 14, 2013. "Social and Ethical Implications of Nanotechnology." Presentation. NNIN REU Convocation. Atlanta, GA.
832. **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.
833. **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.
834. **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.
835. **Wetmore, Jameson, Shobita Parthsarathy** 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.
836. **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.
837. **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.
838. **Wiek, Arnim**. March 14, 2011. "Resilience, Sustainability, and Anticipatory Governance - Pieces of the Puzzle." Presentation. Resilience 2011, Arizona State University, Tempe, AZ.
839. **Wiek, Arnim** and **Cynthia Selin**. 2009. "The Future of Phoenix - Crafting Sustainable Development Strategies for Phoenix." Presentation. School of Sustainability. Arizona State University.
840. **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.
841. **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.

842. **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.
843. **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.
844. Withycombe Keeler Lauren and Harlow JC. October 18-22, 2015. "Anticipatory Governance of Autonomous Vehicles." Presentation. Society for the Study of Nano and Emerging Technologies Conference, Montreal, Quebec, CA.
845. Withycombe Keeler Lauren. March 24-25, 2015. "City-Region Sustainability Transition Labs. Workshop of the International Network of Programs in Sustainability." Workshop Coordination and Lead. Leuphana University Lüneburg, Lüneburg, Germany.
846. Withycombe Keeler Lauren and Rider W. Foley. January 21-22, 2015. "Cities, innovation, and the future of health." Presentation. Assembling Cities Conference, Zürich, Switzerland.
847. **Wolbring, Gregor**. August, 2006. "Governance of Nano-bio-info-cogno-synbio." Presentation. NABIS Conference, Chicago, IL.
848. **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.
849. **Woodbury, Neal**. April, 2006. "Evolution on a Chip: Making Molecules Work for U." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.
850. **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.
851. 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.
852. Woodson, Thomas. February, 2014. "Nanotechnology for the poor: A look at water, energy, food and health technologies". Lecture presentation. Oregon State University, Corvallis, Oregon.
853. 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.

854. Woodson Thomas. November, 2014. "Private Public Partnerships and Disease of Poverty Research". Poster presentation. Democratizing Technologies, Santa Barbara, CA.
855. Woodson, Thomas. November 6-9, 2013. "Inequality in Nanomedicine." Presentation. Association for Public Policy Analysis and Management.
856. Woodson, Thomas. October, 2104. "Private Public Partnerships and Disease of Poverty Research". Presentation. Globelics, Addis Ababa, Ethiopia.
857. 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.
858. Woodson, Thomas. September, 2013. "Inequality and Public Private Partnerships in Nanomedicine." Presentation. The Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
859. 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.
860. Woodson, Thomas. April, 2011. "Pro-Poor Nanotechnology: A Bibliometric Analysis of Water Nanotechnology." Presentation. *ST Global*, Washington D.C.
861. 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.
862. Woodson, Thomas. June 3-5, 2013. "Inequality in Nanomedicine." Presentation. Universidade Federal do Paraná.
863. Woodson, Thomas. May 17-31, 2013. "Inequality in Nanomedicine." Presentation. Globelics Academy.
864. Woodson, Thomas. March, 2013. "Research Inequality in Nanomedicine." Poster Presentation. Georgia Tech Graduate Student Conference, Atlanta, GA.
865. Woodson, Thomas. August, 2012. "Research Inequality in Nanomedicine." Poster Presentation. Gordon Research Conference: Science and Technology Policy, Waterville Valley Resort, Waterville Valley, NH.
866. 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.

867. Woodson, Thomas. September, 2011. "The 10/90 Gap in Health Related Nanotechnology Research." Presentation. The Atlanta Conference on Science and Innovation Policy, Atlanta, GA.
868. 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.
869. 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.
870. **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.
871. **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.
872. 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.
873. 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.
874. 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.
875. 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.
876. 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.

877. 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.
878. 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.
879. 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.
880. **Youtie, Jan**. January 7-8, 2016. "Exploring Public Values Implications of the I-Corps Program." Paper prepared for the Public Values Consortium. Phoenix, Arizona.
881. **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.
882. **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.
883. **Youtie, Jan**. October 26, 2010. "Silos or Systems in Emerging Science Domains." Presentation. Nano@Tech, Atlanta, GA.
884. **Youtie, Jan**. October 23, 2010. "Silos or Systems in Emerging Science Domains." Presentation. National Organization of Black Chemists and Chemical Engineers, Atlanta, GA.
885. **Youtie, Jan**. October 02, 2010. "Silos or Systems in Emerging Science Domains." Keynote. S.NET Conference 2010, Darmstadt, Germany.
886. **Youtie, Jan**. December, 2009. "Anticipating Developments in Nanotechnology Commercialization." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference December 7-9, 2009, Arlington, VA.
887. **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.
888. **Youtie, Jan**. August, 2009. "Center for Nanotechnology in Society." Presentation. Georgia Tech President, Dr. G.P. (Bud) Peterson, Atlanta, GA.
889. **Youtie, Jan**. January, 2009. "Center for Nanotechnology in Society." Presentation. Biotechnology and Public Forum, Georgia Tech, Atlanta, GA.

890. **Youtie, Jan.** November, 2007. "Nanotechnology Workshop: Definitions, Directions, Debate." Presentation. National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Atlanta, GA.
891. **Youtie, Jan.** October, 2007. "Nanodistricts in the United States: Metropolitan Trajectories and Clustering." Presentation. Atlanta Conference on Science, Technology, and Innovation Policy, Atlanta, GA.
892. **Youtie, Jan.** October, 2006. "Nano Research Enterprise Assessment." Presentation. Workshop on Next Generation Metrics, SRI, Arlington, VA.
893. **Youtie, Jan.** September, 2006. "Searching for Nanotechnology: Explorations in Research and Innovation Systems." Presentation. Technology Transfer Society Annual Meeting, Atlanta, GA.
894. **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.
895. **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.
896. **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.
897. **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.
898. **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.
899. **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.
900. **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.
901. **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.



902. **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.
903. **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, Washington, DC.
904. **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.
905. **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.
906. **Youtie, Jan, Philip Shapira and Luciano Kay.** September, 2011. "Nanotechnology Firms from Discovery to Commercialization." Presentation. Technology Transfer Society Conference, Augsburg, Germany.
907. **Youtie, Jan, Philip Shapira and Luciano Kay.** July, 2011. "Anticipating Developments in Nanotechnology Commercialization." Presentation. Workshop on Nanotechnologies: Economic and Societal Perspectives, Karlsruhe, Germany.
908. **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.
909. **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.
910. **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. **Bennett, Ira**. 2012. "Course Overview: Energy and Energy Policy (CHM 501)."
15. **Bennett, Ira**. 2011. "DC schedule 2011."
16. **Bennett, Ira**. 2011. "Syllabus: Nanoscience and Society."
17. **Bennett, Ira**. 2011. "Syllabus: Responsible Innovation and Research (HSD 540)."
18. **Bennett, Ira**. 2011. "Syllabus: Social Implications of Research (Center for Nanotechnology in Society Short Course)."

19. **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.
20. ‡Calleja-Lopez, Antonio. 2010. "Reflexive Modulation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 655-656. Thousand Oaks, CA: Sage Publications.
21. ‡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.
22. ‡**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.
23. ‡**Cozzens, Susan.** 2010. "Equity." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 214-215. Thousand Oaks, CA: Sage Publications.
24. ‡Dalrymple, Kajsa 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.
25. ‡Davies, Sarah R. 2010. "Democs." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 145-146. Thousand Oaks, CA: Sage Publications.
26. ‡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.
27. Domareski, J. Spring 2011. "Responsible Innovation Network." *Genomics and Society: Social Science and Humanities Research in Genomics (Newsletter of Genome BC)*, 4:13.
28. **Fiedeler, Ulrich, Christopher Coenen, Sarah R. Davies and Arianna Ferrari.** 2010. *Understanding Nanoscience and Emerging Technologies*. Heidelberg: Akademische Verlagsgesellschaft.
29. ‡**Fisher, Erik**, et al. 2010. *Correspondence: Research Thrives on Integration of Natural and Social Sciences*. Nature. 463(7284): 1018.
30. ‡**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.
31. ‡**Fisher, Erik.** 2010. "Integration." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 343-344. Thousand Oaks, CA: Sage Publications.
32. ‡**Hamlett, Patrick.** 2010. "National Citizens Technology Forum." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 215. Thousand Oaks, CA: Sage Publications.
33. ‡**Harsh, Matthew.** 2013. "South African Nanotechnology Public Engagement Program: NanoNews Writing Workshop for Postgraduate Students." Cape Town, South Africa.

34. ‡Harsh, Matthew. 2010. "International Development." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 353-356. Thousand Oaks, CA: Sage Publications.
35. ‡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.
36. ‡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.
37. ‡Hays, Sean. 2010. "Foresight Institute." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 249-253. Thousand Oaks, CA: Sage Publications.
38. ‡Hays, Sean. 2010. "Human Enhancement." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 317-318. Thousand Oaks, CA: Sage Publications.
39. ‡Hays, Sean. 2010. "Transhumanism." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 769-770. Thousand Oaks, CA: Sage Publications.
40. ‡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.
41. ‡Ho, Shirley. 2010. "Risk Communication." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 674-676. Thousand Oaks, CA: Sage Publications.
42. ‡Ho, Shirley. 2010. "Singapore." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 714-716. Thousand Oaks, CA: Sage Publications.
43. ‡Ho, Shirley. 2010. "The Nanotech Chronicles." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 537-538. Thousand Oaks, CA: Sage Publications.
44. Hogle, Linda F. 2007. "Sentinel Beings: The Biopolitics of Human Biosensors." *Invited paper submitted to BioSocieties, theme issue on Biopower, Biotechnology and Globalization*.
45. ‡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.
46. ‡Marchant, Gary. 2010. "Law." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 394-398. Thousand Oaks, CA: Sage Publications.
47. ‡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.
48. ‡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.

49. **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.
50. ‡**Philbrick, Mark**. 2010. "Environmental Protection Agency." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 207-209. Thousand Oaks, CA: Sage Publications.
51. ‡**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.
52. ‡**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.
53. ‡**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.
54. ‡**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.
55. ‡**Porter, Alan L.** 2010. "Bibliometrics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 47-48. Thousand Oaks, CA: Sage Publications.
56. ‡**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.
57. **Queraltá, Ramón**. March 11, 2009. "[Note on first STIR project workshop]." *Boletín Interno de Noticias de la Universidad de Sevilla (BINUS)*.
58. **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*.
59. ‡Reifschneider, Kiera. April 11, 2012. "'Speed Date a Scientist' Event Recap."
60. ‡**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.
61. Schuurbiers, Daan. November 3, 2010. "Maatschappelijke verantwoordelijkheid." *Delta*, 42(31).
62. Schuurbiers, Daan. 2010. "Midstream Modulation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 425-426. Thousand Oaks, CA: Sage Publications.
63. ‡Schuurbiers, Daan. 2009. *In Amerika. A Tryptic on Daily Life at ASU for TU Delta*. Published in the weekly magazine of Delft University of Technology.
64. Schuurbiers, Daan. 2008. "Ethics in Action." Winning essay of the Mekelprize 2008 for PhD students, Platform for Ethics.

65. ‡**Selin, Cynthia**. 2010. "Anticipation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 13-16. Thousand Oaks, CA: Sage Publications.
66. ‡**Selin, Cynthia**. 2010. "Foresight." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 249-253. Thousand Oaks, CA: Sage Publications.
67. ‡**Shapira, Philip**. 2010. "Active Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 7-8. Thousand Oaks, CA: Sage Publications.
68. ‡**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.
69. ‡**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.
70. ‡**Slade, Catherine**. 2010. "Public Value Mapping." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 642-644. Thousand Oaks, CA: Sage Publications.
71. ‡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.
72. ‡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.
73. Thoreau, Francois. 2011. "On Reflection and Reflexivity: Unpacking Research Despositifs." *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Proceedings*
74. 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.
75. Vortherms, Kaitlin. June 22-26, 2015. "Promoting social and emotional intelligence in STEM education". Miss Arizona Pageant, Phoenix, AZ.
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**. August 2014. "Inspiring Students and Teachers around the Globe: Nano Days in South Africa." Nanoscale Informal Science Education Network Newsletter.
78. **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.
79. ‡**Wetmore, Jameson**. 2010. "Benny the Bear." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 45-47. Thousand Oaks, CA: Sage Publications.
80. ‡**Wetmore, Jameson**. 2010. "Religion." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 665-667. Thousand Oaks, CA: Sage Publications.

81. ‡**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.
82. ‡**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.
83. ‡**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.
84. **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.
85. ‡**Wolbring, Gregor**. 2010. "Abel-Isms." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 2-3. Thousand Oaks, CA: Sage Publications.
86. ‡**Wolbring, Gregor**. 2010. "Cancer Treatment, Nanoenabled." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 72-74. Thousand Oaks, CA: Sage Publications.
87. ‡**Wolbring, Gregor**. 2010. "Design and Construction." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 157-160. Thousand Oaks, CA: Sage Publications.
88. ‡**Wolbring, Gregor**. 2010. "Disability and Nanoscience." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 165-166. Thousand Oaks, CA: Sage Publications.
89. ‡**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.
90. ‡**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.
91. ‡**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.
92. ‡**Wolbring, Gregor**. 2010. "Nanophotovoltaics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 516-518. Thousand Oaks, CA: Sage Publications.
93. ‡**Wolbring, Gregor**. "Zinc Oxide." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 801-802. Thousand Oaks, CA: Sage Publications.
94. **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*.

95. ‡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](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](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](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](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](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](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](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](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](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](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](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](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](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](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/nnc0-nrf072011.php](http://www.eurekalert.org/pub_releases/2011-07/nnc0-nrf072011.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](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](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](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.rxpgnews.com/research/Study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science\\_465206.shtml](http://www.rxpgnews.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](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](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](http://asunews.asu.edu/20101118_cnsyearbook2)
- a) November 18, 2010 – Nanotechnology Now. [http://www.nanotech-now.com/news.cgi?story\\_id=40859](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](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](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](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](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](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](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](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 founds 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](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](http://www.fondazionebassetti.org/en/focus/2010/07/preventative_governance.html)
48. **Guston, David H.** July 17, 2010. Reinventing Technology Assessment for the 21<sup>st</sup> 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\\_csipoecast](http://asunews.asu.edu/20100428_csipoecast)
  - 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](http://asunews.asu.edu/20100805_nanoencyclopedia)
- a) August 5, 2010 – EurekAlert. [http://www.eurekalert.org/pub\\_releases/2010-08/asu-nre080510.php](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](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](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](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](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](http://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#](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](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](http://radio.seti.org/episodes/Nano_Nano)
  - a) February 23, 2011 – Arizona State University News.  
[http://asunews.asu.edu/20110223\\_nanonanoshow](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/](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](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](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](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](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%2Bda%2Bregulacao%26hl%3Den](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%2Bda%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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](http://nanotech-now.com/news.cgi?story_id=33616)
  - f) June 24, 2009 – Arizona State University News. [http://asunews.asu.edu/20090622\\_nanotechnologystudy](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](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](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](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](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](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](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](https://asunews.asu.edu/20120604_UNchampionlaureate)
- a) June 4, 2012 – Eureka Alert!. [http://www.eurekaalert.org/pub\\_releases/2012-06/asu-uns060412.php](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](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](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](http://asunews.asu.edu/20101012_cnsgraphenestudy)
- a) October 12, 2010 – EurekAlert. [http://www.eurekalert.org/pub\\_releases/2010-10/asu-btn101210.php](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](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://www.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](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](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**

There are no new investigators for this grant requiring biosketches.

## 17. Honors and Awards

Bernstein, Michael. Awarded ASU Graduate Education Dissertation Fellowship for 2015-16.

Corley, Elizabeth. Promoted to Professor, May, 2015.

Corley, Elizabeth. Chosen for Cohort III of the ASU Leadership Academy for 2015-2016.

Fisher, Erik. Promoted to Associate Professor, August, 2015.

Guston, David, named director, School for the Future of Innovation in Society and acting co-director of the Institute for the Future of Innovation in Society, July, 2015.

Halpern, Megan. Appointed Assistant Professor in the History, Philosophy, and Sociology of Science at Lyman Briggs College, Michigan State University

Li, Yin. Received a second place award in the 2016 Career Research Innovation Development Conference (CRIDC) paper competition, February, 2016.

Li, Yin. Won Best Doctoral Student award from the Georgia Tech School of Public Policy, April, 2015

Porter, Alan. Awarded the Medal of Excellence by the Portland International Center for Management of Engineering & Technology (PICMET), April, 2015.

Shapira, Philip. Elected American Association for the Advancement of Science (AAAS) Fellow, 2016.

## 18. Fiscal Sections

### a. Statement of Unobligated Funds

CNS-ASU is projected to expend all \$6,669,900 grant funds received (including one supplement of \$172,900) by August 31, 2016, the end of the CNS-ASU grant for NSF Grant Award #0937591. There will be no projected residual.

In addition, CNS-ASU also received a supplement in 2014 for “Broadening Participation in the Social Studies of Emerging Technologies” in the amount of \$237,498. The remainder of these funds will be also expended out by August 31, 2016. A final supplement received in 2015 in the amount of \$250,000 for “Community-building Around Anticipation, Integration and Informal Education” was expended out by March 1, 2016 per agreement with the program officer.

### 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, 2015 through February 29, 2016.
- ii. Projected budget expenses from March 1, 2016 through August 31, 2016.

### c. Subaward Grant Budgets

Subaward budget reports and budget justifications are reported in this section as follows:

Georgia Tech

- iii. Actual budget expenses from September 1, 2015 through February 29, 2016.
- iv. Projected budget expenses from March 1, 2016 through August 31, 2016.

University of Virginia

- v. Actual budget expenses from September 1, 2015 through February 29, 2016.
- vi. Projected budget expenses from March 1, 2016 through August 31, 2016.

**19. Cost-Sharing**

The Arizona State University cost-sharing commitment for this grant were fully completed by August 31, 2015 in the total amount of \$1,031,405.44.

Other financial commitments to CNS-ASU come from the ASU Biodesign Institute, the College of Liberal Arts and Sciences, the Ira A. Fulton Schools of Engineering, the School of Human Evolution and Social Change, the School of Sustainability, the W.P. Carey School of Business, the College of Public Programs, the Herberger Institute of Design and the Arts, and the School of Social Transformation, which provide funds for faculty, graduate students, and undergraduate students to work with CNS-ASU on its research projects. These commitments are reflected in Table 2 and Table 5 of this report.

## 20. Leverage

The Center for Nanotechnology in Society at Arizona State University (CNS-ASU) has developed over its ten-plus years in operation relationships/partnerships with two hundred eighty-three (283) 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, 2015 and August 31, 2016.

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, the Global Institute of Sustainability, the W.P. Carey School of Business and others.
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. Interactions beyond the NSF-funded lifetime of CNS will continue with FSE as one of the major hiring initiatives for SFIS will be lines shared with each of the schools of engineering.
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. CSI is also working with CSPO and CNS-ASU on the Frankenstein Bicentennial Project.

9. University of Notre Dame – and CNS-ASU collaborated on the “Anticipatory Governance of Complex Engineered Nanomaterials” project, including a Washington, DC workshop held in conjunction with the American Chemical Society, and a planned special section of the *Journal of Nanoparticle Research* with papers from that workshop, currently under review.
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)**

<b>Designation</b>	<b>Year 1 9/15/10-9/14/11</b>	<b>Year 2 9/15/11-9/14/12</b>	<b>Year 3 9/15/12-9/14/13</b>	<b>Year 4 9/15/13-9/14/14</b>	<b>Year 5 9/15/14-9/14/15</b>	<b>Year 6 9/15/15-9/14/16</b>
Other NSF	\$0	\$0	\$172,500	\$0	\$237,498	\$250,000
Other Federal	\$0	\$0	\$0	\$0	\$0	\$0
State	\$0	\$0	\$0	\$0	\$0	\$0
Industry	\$0	\$0	\$0	\$0	\$0	\$0
University	\$1,025,128	\$1,723,232	\$2,640,847	\$2,775,665	\$2,051,772	\$1,957,272
Foreign	\$0	\$0	\$0	\$0	\$0	\$0
Other Total	\$1,025,128	\$1,723,232	\$2,813,347	\$2,775,665	\$2,289,270	\$2,207,272



Table 6: Partnering Institutions (cumulative)											
			Receives Financial Support from Center	Contributes 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										
<b>I.a. Academic Partnering Institutions (ASU)</b>											
	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
	Center for Innovations in Medicine										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								
	Center for the Study of Religion and Conflict										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							
	CRESMET										x
	Decision Theater for a Desert City										x
	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 University Initiatives										x
	Office of Vice President and Provost										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
	Walter Cronkite School of Journalism and Mass Communication										x
	W.P. Carey School of Business		x								
<b>I.b. Academic Partnering Institutions</b>											
	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

		Receives Financial Support from Center	Contributes 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									
	Cardiff University	x								
	Carnegie Mellon University								x	
	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							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
	Kings College, London								x	
	Korea Institute of Science and Technology, Seoul, Korea								x	
	Kyoto University								x	
	Kyung Hee University								x	
	Lancaster University								x	
	Leeds University Business School, UK	x							x	
	Lehigh University									x
	Litchfield Elementary School District									x
	Long Island University									x
	Maastricht 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	
	Oslo Research Group								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 Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
		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
		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 Cambridge								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	

Table 6: Partnering Institutions (cumulative)

Table 6: Partnering Institutions (cumulative)											
					</						



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
		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				
		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 Building 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 Propoerties									x
		Research Media Ltd.									x
		Richard + Bauer Architecture									x
		Rockefeller Foundation		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
		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								
		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)					x				
		SySTEM Schools, Inc.									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						x			
		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:										