

## Erich W. Schienke, Ph.D. – Curriculum Vitae

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Assistant Professor  
Science, Technology, and Society  
The Pennsylvania State University  
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University Park, PA 16802

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### APPOINTMENTS

- Assistant Professor – Science, Technology, Society  
The Pennsylvania State University (2008 - present)
- Project Director - Ecocities, Energy, and Urban Informatics  
The Dynamic City Foundation, Shanghai CN (2011 - present)
- Postdoctoral Fellow – Rock Ethics Institute  
The Pennsylvania State University (2006 - 2009)
- Graduate Research Assistant – Science and Technology Studies  
Rensselaer Polytechnic Institute (2002 - 2006)
- Teaching Assistant – Science and Technology Studies  
Rensselaer Polytechnic Institute (2000 - 2001, 2006)
- Programmer/Contractor – Web Development and Deployment  
Various Silicon Valley firms (1997 - 2000)
- General Manager – San Francisco Computer Museum Project  
Computer History Association of California (1996 - 2000)
- Research Assistant - Institute for Science and Interdisciplinary Studies  
Hampshire College, Amherst, MA. (1995 - 1996)

### EDUCATION

- Ph.D. – Rensselaer Polytechnic Institute – Science and Technology Studies (2006)
- M.S. – Rensselaer Polytechnic Institute – Science and Technology Studies (2003)
- B.A. – Hampshire College – Technology Studies, Physics (1995)
- Secondary – University School. Hunting Valley, OH. (1989)

### FURTHER STUDIES

- Certificate in UNIX system administration – U.C. Berkeley Extension (1998)

### RESEARCH INTERESTS

- Science, technology, and public policy.
- Environmental and urban informatics for ecological governance.
- Chinese urban development and environment (ecocities).
- Coupled natural and human systems (energy, environment, human health).
- Ethical dimensions of scientific research, engineering design, and innovation.
- *Geopolitical specialization in contemporary China (post-1949).*

REVIEW &  
COMMITTEES

1. Reviewer for Social Sciences Research Council, *International Dissertation Research Fellowships* (2010- 2012)
2. Reviewer for *Science* (policy forum) (2011)
3. Reviewer for National Science Foundation - SBES - STS (2005, 2006, 2011)
4. Reviewer for *Surveillance and Society* (2005 - 2006)

INVITED TALKS

1. "Environmental Issues and China's Innovation Priorities: Is the Chinese Model Sustainability Focused?" *Workshop on China's Emerging Technological Trajectory: Challenges and Opportunities* - University Park, PA. December 2011.
2. "Climate Change and Ecocities in China: Challenges and Opportunities to Building a Sustainable and Equitable Society" *Graduate University of the Chinese Academy of Sciences* - Beijing, China. June 2011.
3. "Improving Relevancy and Efficacy through Student-led Design Interventions" *Division of Undergraduate Studies 2010 Academic Advising Conference* Invited speaker. Penn State - University Park. October 2010.
4. "China and Climate Change: New Challenges and Opportunities" *China Forum - School of Law Penn State* - University Park. November 2009.
5. "Sustainability and International Environment Problems." *Launch Conference for the School of International Affairs at the Pennsylvania State University* University Park, PA. November 2009.
6. "The Chinese [Climate] Box: a Scalar Approach to Evaluating Ethical Obligations in Climate Strategies for China." *Forum on China and Global Climate Change*. Hong Kong, China. June 2009.
7. "A Scalar Approach to Climate Strategies for China." Chinese Academy of Science - Research Center for Eco-Environmental Sciences. Beijing, China. June 2009.
8. "Extending a Policy Analysis of the U.S. Toxic Release Inventory Mechanism to the Context of Environmental Evaluation Systems in China." *Professional Association for China's Environment (PACE) '05 Annual Conference: Public Access to Environmental Information in China*. Beijing, China. September 2005.
9. "Building a multi-interpretive decision support system for coherent regional carbon management" *Global Carbon Project 2005 International Conference on Networks and Regional Carbon Management*. Tsukuba, Japan. April 2005.
10. "Ethnographic Research into the Ethics of Cartographic Experimentalism." *SUNY Buffalo Geography IGERT Colloquium invited speaker*. Buffalo, NY. November 2003.
11. "Who's Mapping the Mappers? Ethnographic Research in the Production of Digital Cartography." *Transforming Spaces, The Topological Turn in Technology Studies*. Darmstadt, Germany. March 2003.

FUNDED  
GRANTS

IN PROGRESS

**External**

- Co-Principal Investigator. *Graduate Pedagogy for Ethical Dimensions of Coupled Natural and Human Systems Research*. U.S. National Science Foundation - Ethics Education in Science and Engineering. June 2011 - June 2014. \$296,736

**Internal**

- Principal Investigator. *A Symposium on China's Science and Technology Innovation Pathways (2006-2020)*. Penn State Confucius Institute and Center for Global Studies. 2011. \$12,000
- Principal Investigator. *The Ethical Dimensions of Climate Change and Energy: China and the United States*. Penn State Confucius Institute and Penn State Rock Ethics Institute. 2011-2012. \$1,500

COMPLETED

**External**

- Inter-American Institute for Global Change Research (IAI) Directorate travel award for Global Carbon Project conference on "Carbon Management at Urban and Regional Levels: Connecting Development Decisions to Global Issues" in Mexico City. September 2006. \$2,500
- National Science Foundation Dissertation Improvement Grant co-awarded grant from Science, Technology and Society and International Studies programs for conducting dissertation research in China. November 2004. \$10,000
- National Science Foundation East Asia Summer Studies Program award for conducting eight weeks of research in China. Awarded April 2003, postponed until June 2004. \$12,000
- Society for Social Studies of Science(4S) Graduate conference travel grant. Atlanta, GA. 2003. \$1,000
- Society for Social Studies of Science(4S) Graduate conference travel grant. 2002. Milwaukee, WI. \$1,000
- Society for Social Studies of Science(4S) Graduate conference travel grant. Cambridge, MA. 2001. \$1,000
- Lemelson Foundation Grant in Creativity. *Community GIS for Toxic Remediation*. November 1995. \$5,000
- Strnad Fellowship at University School: Researching Effects of Stress on Student Performance. 1988-1989. \$1,200

ARTICLES IN  
REFEREED  
JOURNALS

1. Schienke, Erich; Nancy Tuana; and Michelle Stickler. "Assessment of Principles and Attitudes towards Responsible Conduct of Research in the Training of Environmental Science Graduate Students" Forthcoming 2012. *Journal of Empirical Research on Human Research Ethics (JERHRE)*.
2. Schienke, Erich; Seth Baum; Nancy Tuana; Ken Davis; and Klaus Keller. "Intrinsic Ethics Regarding Integrated Assessment Models for Climate Management." *Science and Engineering Ethics*. DOI: 10.1007/s11948-010-9209-3. June 8, 2010.
3. Schienke, Erich; Nancy Tuana; Don Brown; Ken Davis; Klaus Keller; James Shortle; Michelle Stickler; Seth Baum "The Role of the NSF Broader Impacts Criterion in Enhancing Research Ethics Pedagogy." *Social Epistemology*. 23(3-4): 317-336. 2009.
4. Tschakert, Petra; Elisabeth Huber-Sannwald; Dennis Ojima; Michael Raupach; Erich Schienke. "Information needs for holistic and adaptive management of the carbon cycle." *Global Environmental Change*, (18:1), p. 128-141. February 2008.
5. Rongbo Xiao; Zhiyun Ouyang; Weifeng Li; Erich W. Schienke; Zhaoming Zhang. "Spatial pattern of impervious surfaces and their impacts on land surface temperature in Beijing, China." *Journal of Environmental Science (China)*. (19) 2007.
6. Canan, Penelope; Erich Schienke. "Responsibility, Opportunity, and Vision for Higher Education in Urban and Regional Carbon Management." *Carbon Balance and Management*, (1:13). 21 November 2006. (<http://cbmjournal.com>)
7. Schienke, Erich. "Streets into Stages: An Interview with Surveillance Camera Players' Bill Brown." *Surveillance & Society*. Vol. 1, Issue 3. (p. 356-374). 2003.
8. Schienke, Erich. "On the Outside Looking Out- an Interview with the Institute for Applied Autonomy." *Surveillance & Society*. Vol. 1, Issue 1. (p. 102-119). 2002.

CHAPTERS IN  
EDITED VOLUMES

1. Schienke, Erich. "*Ecocity China: an ethos under development.*" In the edited book, *Engineering, Development, and Philosophy: American, Chinese, and European Perspectives*. edited by Steen Christensen and Carl Mitcham. Springer Press. 2012.
2. Schienke, Erich. "Evaluating Ethical Obligations Across Scales of Governance." In the edited book, *China's Responsibility for Climate Change* edited by Paul Harris. Bristol: Policy Press. 2011.
3. Schienke, Erich. "Cinematics of Scientific Images: Ecological Movement-Images." In the edited book, *Deleuzian Intersections in Science, Technology, and Anthropology* edited by Casper Bruun Jensen and Kjetil Rodje. Oxford: Berghahn Books. 2010.
4. Schienke, Erich; Neville Mars. "The Green Edge." In the edited book, *The Chinese Dream - a Society under Construction* edited by Neville Mars. Beijing: TIMEZONE 8 Publishers. 2008.

DISSERTATION

- Schienke, Erich. "Greening the Dragon: Environmental Imaginaries in the Science, Technology, and Governance of Contemporary China." Dissertation, Science and Technology Studies, Rensselaer Polytechnic Institute, Troy. 2006.

MANUSCRIPTS IN PROGRESS

1. Schienke, Erich. *Greening the Dragon: The Design of Ecological Governance in Contemporary China*. University of Chicago Press, late 2012.
2. Schienke, Erich. *Design as Governance: How Design Studies can further Inform Policy Developments* submitting to: *Minerva: A Review of Science, Learning and Policy*. 2012.

PAPERS PRESENTED AT PROFESSIONAL CONFERENCES

1. "The Ethical Dimensions of Scientific Research - a user-centered approach to teaching research ethics" *Congress on Teaching Social and Ethical Implications of Research (ASU)*. Tempe, Arizona. November 2011.
2. "The Ethical Dimensions of Nano Science and Technology" *National Nanotechnology Infrastructure Network - Annual SEI Meeting (ASU)*. Tempe, Arizona. November 2011.
3. "Ecocities in Contemporary China: A Case Study in the Design of Ecological Governance" *Society for the Social Studies of Science (4S)*. Cleveland, Ohio. November 2011.
4. "Ethical Analysis across Scale of Climate Governance in China" *The First International Conference on Climate Change and Public Policy (in China)* Nanjing, China. October 2011.
5. "Reclaiming the Material Aspects of Cloud Computing" *Values in Design 2010 (VID2K10) Workshop*. New York University. New York, New York. May 2010.
6. "Environmental Information Systems and the Rise of Ecological Governance in the People's Republic of China." *Frontiers of New Media Symposium*. University of Utah. Salt Lake City, Utah. September 2009.
7. "The Chinese [Climate] Box: a Scalar Approach to Evaluating Ethical Obligations in Climate Strategies for China." *Ethics and Climate Change*. University of Delaware. October 2009.
8. "The Ethical Dimensions of Scientific Research" *Society for the Social Studies of Science (4S)*. Washington, D.C. October 2009.
9. Co-organizer and moderator for Penn State's "Focus the Nation" a nationally organized all-day climate change awareness event. University Park, PA. January, 2008.
10. "Recommendations on Chinese culture of innovation for Tianjin Economic and Technological Development Area (TEDA)" *RAND Corporation Experts meeting on "Promoting Science, Technology, and Innovation for Sustainable Economic Development in the Tianjin Binhai New Area (TBNA) and the Tianjin Economic and Technological Development Area (TEDA)"*. Arlington, VA. December 2007.
11. "Ethics, Stakeholder Determination, and Policy in Carbon Capture and Storage (CCS) Projects" *Workshop on Carbon Geological Storage and Ethics*. Rio De Janeiro, BZ. November 2007.

12. "Framing Science for Policy Processes in China's National Climate Change Program (CNCCP)" *Society for the Social Studies of Science (4S)*. Montreal, CA. October 2007.
13. "Collaborating to Generate New Environmental Knowledge" *New England Workshop on Science and Social Change*. Woods Hole, MA. April 2007.
14. "Greening the Dragon: environmental imaginaries at work in China's contemporary science, technology, and governance" *Society for the Social Studies of Science (4S)*. Vancouver, CA. November 2006.
15. "Knowledge networks and multi-interpretive frameworks for strategic carbon management" *Global Carbon Project – Carbon Management at Urban and Regional Levels: Connecting Development Decisions to Global Issues*. Mexico City, MX. September 2006.
16. "Greening the Dragon: the Construction of Information Systems for the Eco-Environmental Governance of China" *Values in Computer and Information System Design, an NSF Graduate Student Workshop*. Santa Clara, CA. August 2005.
17. "Developing a Multi-Interpretive Socio-ecological Systems Model (SES) for Managing Problems Across Scales in Eco-city Planning" *Complex Ecosystems and the Circular Economy - Ecological Society of China*. Hefei, China. June 2005.
18. "The Ecological Modernization of Environmental Information Systems in China" *30th Anniversary of the Research Center for Eco-Environmental Sciences - Chinese Academy of Sciences*. Beijing, China. May 2005.
19. "From Perfect Knowledge to Working Knowledge(s): Rethinking Scientific Output for Effective Public Participation in the Context of Carbon Budgets" *Global Carbon Project 2005 conference on Networks and Regional Carbon Management*. Tsukuba, Japan. April 2005.
20. "Mapping the Public / Mapping for the Public: Spatial Analysis of Environment and Health Interactions in the Case of Breast Cancer." *Society for Social Studies of Science (4S)*. Atlanta, GA. October 2003.
21. "Mapping Community Concerns—Breast Cancer, Toxic Releases, and GIS." *Society for Social Studies of Science (4S)*. Milwaukee, WI. November 2002.
22. "Mapping Community Concerns—Breast Cancer, Toxic Releases, and GIS." *PPGIS (Public Participation Geographic Information Systems) Annual Conference*. New Brunswick, NJ. July 2002.
23. Schienke, Erich; Halpirn, Orit. Three panels for 4S concerning Art in the Critical Engagement of Science and Technology. The three panels are organized into artists, curators, and STS scholars working through and around the subject of art and design the critique and public exhibition of science and technology. Paper presented: "What is Design" A Video on Design Pedagogy. (As well this is about the role of Video in the production of STS.) *Society for Social Studies of Science (4S)*. Cambridge, MA. November 2001.
24. Fortun, Kim; Schienke, Erich. "On history and context of the development Scorecard.org and other environmental information systems in the U.S." *"Bringing it all home" EPA EMPACT conference*. Philadelphia, PA. August 2001.

25. "Art as Exhibited Science Criticism: a Study of Michael Oatman's Long Shadows: Henry Perkins and the Eugenics Survey of Vermont as Exhibited in the Unnatural Science show at MASS MoCA. North Adams, MA." *American Ethnological Society*. Montreal, Canada. May 2000.
26. "Writing and Doing Technography... a Work in Progress" *Annual Northeast STS Graduate Conference*. Troy, NY. February 2001.
27. "Posthuman and Nostalgic Interfaces - towards a New Description of Information Experiences" *Society for Social Studies of Science (4S) and EASST*. Vienna, Austria. September 2000.

PARTICIPATION IN  
SEMINARS AND  
WORKSHOPS

1. Congress on Teaching Social and Ethical Implications of Research. Tempe, Arizona. Arizona State University. November 2011.
2. A Workshop on Values in the Design of Information Technology (NSF #0352644). New York, NY. New York University. May 2010.
3. New England Workshops on Science and Social Change (NSF #0551843): Where social theory meets critical engagement with the production of scientific knowledge. Spring 2010.
4. New England Workshops on Science and Social Change (NSF #0551843): "Science-in-society: Teaching and engaging across boundaries." Spring 2008.
5. New England Workshops on Science and Social Change (NSF #0551843): "Collaborative generation of environmental knowledge and inquiry". Woods Hole, MA. Spring 2007.
6. A Workshop on Values in the Design of Information Technology (NSF #0352644), Santa Clara, CA. August 2005.

ONLINE AND  
OCCASIONAL  
PUBLICATIONS

PEER-REVIEWED TEACHING MODULES

1. Schienke, Erich. "Ethical Dimensions of Nano Science and Technology: a primer." 2011. Developed for: *Nano Nano: Two courses on the social, human, and ethical impacts of nanotechnology*. (NSF #0836669)
2. Schienke, Erich. Ethics in the NSF Merit Review Criteria. 2007. Developed for: *Integrating Ethics into Graduate Training in the Environment Sciences Series*. Rock Ethics Institute, Penn State. (NSF #0529766)

PEER-REVIEWED BLOG ARTICLES

1. Schienke, Erich; Jigme Nidup. "Ethical Issues in Funding for Adaptation in Countries Vulnerable to Climate Change; the Example of Bhutan." *ClimateEthics.org* <http://climateethics.org/?p=41>. 20 July 2008.
2. Schienke, Erich. "Initial Ethical Evaluations of Alternative Energy Strategies: the Example of Biofuels" *ClimateEthics.org* <http://climateethics.org/?p=18>. 11 July 2007.
3. Schienke, Erich. "An Initial Ethical Evaluation of Alternative Energy Strategies: Introduction" *ClimateEthics.org* <http://climateethics.org/?p=17>. 11 July 2007.

## INTERVIEWS (STAND-ALONE)

1. "Theresa Kennedy / GIS Specialist and Staff Scientist for Silent Spring Institute / 2002" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. November 2002.
2. "Scott Carlin / Asst. Professor of Environmental Studies & Geography and GIS Consultant to Huntington Beach Breast Cancer Coalition / 2002" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. November 2002.
3. "David Guiliano / EPA realtime ozone monitoring system / 2001" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. November 2002.
4. "Janice Barlow / Director Marin Breast Cancer Watch and GIS / 2002" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. June 2002.
5. "Larry Orman / Director of GreenInfo Network and GIS Specialist / 2002" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. June 2002.
6. "Jane McElroy / GIS in researching breast cancer and atrazine correlations / 2002" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. June 2002.
7. "Bill Pease / An original developer of Scorecard.org / 2001" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. November 200.
8. "Dan Koch / GIS Specialist for Massachusetts Department of Fish and Wildlife / 2001" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. July 2001.
9. "Michael Meuser / Scorecard.org development, MapCruzin.com," CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. July 2001.
10. "Michael Stanley-Jones / Scorecard and Toxics Information / 2001" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. July 2001.
11. "Calle Haedberg / Open Source Health Informatics / 2001" CECS Working Interviews. Troy, NY: Center for Ethics in Complex Systems, RPI. March 2001.

## FILM, PHOTO, PERFORMANCE

1. T. Gordon, B. Caron, E. Schienke "Global Villages: The Globalization of Ethnic Display." Still photography and field sound recording. Produced by Tamar Gordon. Written by Tamar Gordon. Camera by Bruce Caron. Tourist Gaze Productions. Released 2005.
2. Schienke, Erich. "Photos of Windows on the World, China." *Kyoto Journal*. Issue 52. (p. 82-83) Winter 2002.
3. San Francisco Museum of Modern Art: (as blasthaus/bolt) Exhibited work and performed during the opening festivities (audience of 5000) to the 0101 Art in Technological Times exhibit. March 2001.



4. San Francisco Museum of Modern Art: (as blasthaus/bolt) Exhibited work and performed during the opening festivities (audience of 3000) to the Bill Viola Exhibit. May 2000.
5. San Francisco Museum of Modern Art: (as blasthaus/bolt) Exhibited work and performed during the opening festivities of (audience of 2500) to the Keith Haring exhibit. May 1999.
6. Schienke, Erich "Photographs of Omnimedia Performances for Electronic Musician Magazine." *Electronic Musician*. (p104 & p106) December 1998.
7. Executive Producer for CoMA '97: The Festival for Computer and New Media Art, an event celebrating art and computers, jointly sponsored by the San Francisco Multimedia Task Force, the San Francisco Computer Museum, blasthaus gallery, and computer companies within the San Francisco Bay Area. Held over the week of October 2nd 1997, this event was attended by over 3000 people in over 15 venues.

RESEARCH  
REPORTS TO  
SPONSORS

1. Integration of Ethics Education in the Environment Sciences. National Science Foundation. Yearly report. 2006-2009.
2. Dissertation Improvement Grant. National Science Foundation. Yearly report. 2004-2005.

WHITE PAPER

1. Union of Concerned Scientists (Contributing author) "Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State." UCS Publications. Cambridge, MA. 1 October 2008.
2. Brown, Donald A.; Rubens Born; Paulo Cunha; Ana Lcia Ortiz Diehl; John Lemons; Mark Lutes; Robert McKinstry; Jos Domingos Miguez; Maria Silvia Muylaert de Araujo; Carlos Nobre; Christiano Pires de Campos; Luiz Pinguelli Rosa; Erich W. Schienke; and Maria Rita Villela. "Ethical Issues Entailed by Geologic Carbon Sequestration." *ClimateEthics.org* <http://climateethics.org/?p=38>. 23 June 2008.

ACADEMIC  
SERVICE

- Researcher. Liberal Arts Digital Research Group - *College of Liberal Arts, Penn State* - AY 2010-2012. Use and development of technology for teaching and learning. On special iPad testing team.
- Designer and Administrator. Website for *Science, Technology, and Society Program, Penn State* <http://sts.psu.edu>. Developed and designed content, graphics, and implemented on a Plone open-source content management system.
- Chair of Technology Committee - *Science, Technology, and Society Program, Penn State* - AY 2010-2012. Development of technology systems for Program, including implementation of new website.
- Programming Committee - *Science, Technology, and Society Program, Penn State* - AY 2009-2012. Establish STS Workshop series of invited speakers and "brown bag" talks.

- Undergraduate Curriculum Committee - *Science, Technology, and Society Program, Penn State* - AY 2008-2011. Working on development of dual major with committee.

PROFESSIONAL  
AFFILIATIONS

- Society for the Social Studies of Science *4S* (2000-Present)
- American Anthropological Association *AAA* (2006-2008)
- American Association for the Advancement of Science *AAAS* (2007-Present)
- Ecological Society of America *ESA* (2003-2006)
- Ecological Society of China *ESC* (honorary member) (2005-Present)

RESEARCH  
POSITIONS  
(DETAIL)

- Postdoctoral Research Fellow. “Integration of Ethics Education in the Environment Sciences, and Collaborative Program in the Ethical Dimensions of Climate Change” *Rock Ethics Institute*, the Pennsylvania State University. September 2006 - present.
- Graduate Research Fellow. “Research Center for Eco-Environmental Sciences” *First East-Asia Pacific Summer Studies Institute in China*, US National Science Foundation. Summer 2004.
- Graduate Research Assistant. “NSF IGERT in Design Studies - III” *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Spring - Summer 2003.
- Graduate Research Assistant. “Film: On the Globalization of Ethnic Display” *Science, Technology, and Society Program*, the Pennsylvania State University. Summer - Fall 2002.
- Graduate Research Assistant. “NSF IGERT in Design Studies - II” *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Spring 2002.
- Graduate Research Assistant. “Center for Ethics and Complex Systems” *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Summer - Fall 2001.
- Graduate Research Assistant. “NSF IGERT in Design Studies - I” *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Spring 2001.

COURSES  
TAUGHT

- STS 101 *Science, Technology, and Human Values*
- STS 200 *Critical Issues in Science, Technology, and Society*
- STS 233 *Ethics in the Design of Technology*
- STS 245 *Globalization, Technology, and Ethics*
- STS 297 *Engineers/Engineering in US Culture*
- STS 300 *Research Methods in Science and Technology Studies*
- STS 327 *Society and Natural Resources: Understanding Urbanization in China*
- STS 433/GEOG493 *Greenhouse Gas Footprints and Climate Ethics*

## DESCRIPTION OF COURSES CREATED

- **BIOETH 297: Ethical Dimensions of Renewable Energy and Sustainability Systems.** Developer. *Overview:* The course will provide students with an understanding of the ethical dimensions of renewable energy and sustainability systems and provide them with skills to analyze related case studies. Case studies will be considered that are relevant to the topics of renewable energy sources, including wind, solar, and biofuels, sustainability, and environmental impacts. Students will study responsible conduct of research and professional ethics, in the context of research in the area of renewable energy and sustainability systems, as well as examining the ethical dimensions of broader public and environmental impacts, and embedded values in research and analysis in this field. The class will include ethical analysis of issues such as: selection of research questions; selection of datasets and parameters; determination of system boundaries; procedural considerations in decisions making processes; methods of analysis; risk assessments and communication; and influence of scientific research on policy outcomes. (To be taught beginning in Fall 2012.)
- **STS 300: Research Methods in Science and Technology Studies.** *Science, Technology, and Society Program*, the Pennsylvania State University. Developer/Instructor. Enrollment: 20. Taught: Fall 2010 (as independent study). *Overview:* Studies in science, technology and society often engage complex issues in the emergence of an intellectual trajectory or a technological artifact. A variety of methods are typically required to capture both historical trends and emerging issues of any given technoscientific enterprise. As such, novice researchers entering into the field of STS require a toolbox of methodological approaches that can help them plan a robust research project, collect data, analyze data, and prepare reports. The course will focus on working primarily with collecting and analyzing qualitative and quantitative data from sources such as textual and bibliographic materials; historical archives; surveys; and ethnographic methods such as interviewing and participant observations. Students will produce a final report based on research developed throughout the semester. The final report will provide students with a product that can be the foundation for longer research project, such as a capstone, or for graduate students, a thesis proposal.
- **ENGR/STS 118: Engineering Design and World Cultures.** *Department of Engineering*, the Pennsylvania State University. Developer. *Overview:* Introduction to basic concepts of engineering design and the manner in which they are affected by a local culture. The course will be delivered in a country other than the United States. Students will be exposed to and expected to learn those aspects of history, culture, society, politics, and environment of the host country that have impacted the design of structures, processes, manufacturing and transportation and how they were impacted. Local cultural influences on various aspects of engineering design will be demonstrated directly through visits to relevant engineering project sites. In addition to site visits and local cultural and transportation experiences, the course includes lectures, documentaries, class discussions, and projects. The sites and specific experiences will be selected to reflect the appropriate sections of the course. This course is designed to enhance the understanding of both the global and local nature of engineering design. (Co-developed with Xinli Wu.)

## DESCRIPTION OF SYLLABI DEVELOPED FOR EXISTING COURSES

- **STS 101: Science, Technology, and Human Values.** *Science, Technology, and Society Program*, the Pennsylvania State University. Instructor. Enrollment: 50. Taught: Fall 2007, Fall 2008, Fall 2009, Spring 2009, Fall 2010, Spring 2011, Fall 2011, Spring 2012. *Overview:* This course provides a foundation for learning how to think about and evaluate scientific and technological systems as they are experienced both by individuals and societies throughout the world. Grounded in the humanities, investigations across various scientific and technological domains are guided by five ethical dimensions of human experience, namely: quality (distinguishing good from bad); difference and otherness; suffering and oppression; justice and equity; and our obligations to the future. The readings for this course guide students through discussions and writings on ethics and values as they relate to: human-machine interface; genetics, race, and gender; access to technological systems; living with large-scale public works; and risky science & future welfare. Completed properly, this course will provide students with a literacy and sensitivity as to how we value the human condition and build those values into the material world around us.
- **STS 200: Critical Issues in Science, Technology, and Society.** *Science, Technology, and Society Program*, the Pennsylvania State University. Instructor. Enrollment: 40. Taught: Spring 2007, Spring 2008, Fall 2008, Spring 2009, Spring 2009, Fall 2010, Spring 2011, Summer 2011, Fall 2011, Spring 2012. *Overview:* Technology and science (technoscience) are amongst the most powerful forces operating in any contemporary society. It is impossible to avoid the influence of technological artifacts and scientific theories in our individual and collective perceptions of life, existence, well-being, justice, distribution, etc. Yet, for the most part, citizens of contemporary societies have little or no opportunity to learn how to question the power embedded in technoscientific systems, or claims made in the name of technological or scientific expertise. In this course, students are introduced to techniques of critical thinking. Throughout the course, these skills will be called upon by them (individually and collectively) in the development of analyses as to how the production, performance, and circulation of contemporary science and technology are shaping and being shaped by our continually shifting social worlds. Topical areas will mainly cover current issues in the science, technology and the state; information technology and globalization; and life and environment.
- **STS 233: Ethics and the Design of Technology.** *Science, Technology, and Society Program*, the Pennsylvania State University. Instructor. Enrollment: 20. Taught: Spring 2010, Spring 2011, Spring 2012. *Overview:* Embedded within every human fabricated object within our world is an instantiation of a series of choices, intentions, and valuations; along side acknowledgments of needs, desires, and expectations. What we refer to as technology is a rich and varied set of material conditions within a complex and varied set of social and physical arrangements... between objects, people, and their environments. Design, as will be understood and used in this course, encompasses the processes and theories of intentionally intervening within these material conditions and socio-environmental arrangements. That these instantiated processes and theories (designs) impact the

world as we live it, requires us to acknowledge that designs have consequences, and that different designs have different consequences and outcomes. That design choices impact human lives and that different choices impact lives differently, requires us to further acknowledge that there are ethical dimensions to how we approach design, and that values made in design processes become permanently embedded in the artifacts themselves. As such, this course will provide an overview of four crucial considerations in the ethics and design of technological artifacts, namely, 1) objects, 2) users, 3) society, 4) contexts/environments.

- **STS 245: Globalization, Technology, and Ethics.** *Science, Technology, and Society Program*, the Pennsylvania State University. Instructor. Enrollment: 40. Taught: Fall 2009. *Overview:* This course will look at the question of why is “Globalization” such a contested term, by taking a variety of analytical perspectives on the topic, particularly as it relates to technological production and the ethical dimensions of human development. Throughout the course, we will develop a foundation of basic definitions and conceptual categories concerning and/or pertaining to Globalization, Economy(ies), States, Institutions, Actors, Technology as Means of Production, Technology as Innovation, Technology as Competition, Technology as Development, Harms and Benefits, Distributive Justice, and the Role of Future Generations. Using these concepts and definitions, you will evaluate current events during the weekly Analysis Labs, and produce collective decisions or solutions to certain problem statements we encounter, such as how are the benefits and harms of globalization to be distributed justly? Ultimately, there is no right answer to the questions presented by Globalization, but we cannot pretend that certain solutions are not better and more just than others. This course will help you to develop your own sense for what a better answer is, in the case of Globalization and Technological Development.
- **STS 297. Engineers/Engineering in US Culture.** *Science, Technology, and Society Program*, the Pennsylvania State University. Instructor. Enrollment: 40. Taught: Summer 2009. *Overview:* This course introduces incoming students in the College of Engineering to the historical, institutional, political, ethical, and cultural dimensions of engineering in the United States. The course will explore the roles that engineers play both within the profession and within American society by looking at popular culture representations of the engineer (for example, the tensions between their perception as expert witnesses vs. nerds). We will also begin to investigate their societal status in terms of professionalization, legal and governmental activities, and as the image of genius-inventor vs. corporate team-member. Each week of the course will be devoted to a defined topical area. Drawing on a wide range of media – from history books, current news stories, and journal articles to short stories and popular film – students will engage in class discussions and write short responses (in conjunction with ENG 015) about becoming and being an engineer in (the best of) the “American tradition”. At the same time, students will also draw from their own experiences to communicate diverse perspectives on the growing global dimensions of engineering in the 21st century.
- **STS 327: Society and Natural Resources: Understanding Urbanization in China.** *Science, Technology, and Society Program*, the Pennsylvania State University. Instructor. Enrollment: 15. Taught: Spring 2010. *Overview:* In 2000,

50% of the global population lived in cities. By 2025, city dwellers are projected to reach 5 billion in number across the world. In countries such as in China, India, and Brazil we are seeing urbanization happening at an unprecedented rate in human history. Rural to urban migration, i.e. urbanization, is presenting rapidly developing societies with some of the greatest technological, material, logistical/planning, health care, infrastructural and organizational challenges never before encountered at this scale. This course will focus on the challenges facing global urbanization and what these challenges mean to ever growing resource constraints, one of the most pressing issues facing current and future relationships between environment and contemporary (developed/developing) societies. Cities in Asia, specifically urbanization in China, will be the central focus of study throughout the course. Analytically, we will focus on issues such as: rural to urban migration, infrastructure development, resource management, transportation, urban sprawl, food security, employment, and carbon footprints. The main objective for the course is for students to understand the pressing issues and challenges presented by urbanization, and to provide an analytical foundation for analyzing and addressing these problems either through design (from technology to policy) and/or through social-institutional development. Course work will be reading and project based. We will be reading through various texts and excerpts from literatures in urban studies, geography, architecture, and STS. Course projects will be research based papers focusing on an urbanization/resource topic of student interest

- **STS 433/GEOG493: Greenhouse Gas Footprints and Climate Ethics.** *Science, Technology, and Society Program*, the Pennsylvania State University. Co-instructor. Enrollment: 5 Taught: Fall 2008. *Overview:* The purpose of the cross-cultural course is to develop a deep awareness among the students of their individual impact on climate change and to understand that nearly all of their impacts result from personal decisions based on their cultural context. The Bhutanese will have very different carbon footprints, which also will be rooted in their culture. To appreciate the differences, a major focus of the course will be a series of ethics modules that explores the choices that people make in their relationship to one another and to the natural world. The research component of the course also will help students understand exactly how they personally contribute to climate change. Students will record and analyze their daily activities in detail, convert those activities to carbon equivalent emissions, and produce an individual carbon footprint. They will compare their footprints to those of students in Bhutan and write a report that documents and analyzes this process. Thus, through reading, discussion, research, and writing, students will discover the drivers of greenhouse gas emissions in our society. Instructors will evaluate the depth of that process of discovery and growing awareness by assessing each students participation in class, in the research activity, and in the report writing.

#### GRADUATE TEACHING AT RENSSELAER

- **Writing and Communicating in English for the International Scientific Community** *Research Center for Eco-Environmental Sciences* Chinese Academy of Sciences. Instructor. Enrollment: 25 Taught: Spring 2005. *Overview:* The

purpose of the course is: 1. To give you the best tools possible for publishing your paper in an international journal. 2. To improve sentence and paragraph composition. 3. To develop your ability to participate in the peer review process. Actively participating in critiquing papers and speeches will help you to become a better writer and speaker.

- **Introduction to Science and Technology Studies.** *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Teaching Assistant. Enrollment: 110 Taught: Spring 2006. *Overview:* With Professor Edward Woodhouse, we introduced students to various questions central to basic political, economic, and social understandings of how science and technology shape and are shaped by the world.
- **American History Since 1877.** *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Teaching Assistant. Enrollment: 60 Taught: Spring 2004. *Overview:* With Professor Harvey Strum, I was in charge of grading and guiding a recitation section of 30 students. Topics covered U.S. history post-reconstruction, with a specific focus on immigrant history at the turn of the 20th Century and post-WWII nuclear tensions.
- **Design, History and Society.** *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Teaching Assistant. Enrollment: 70 Taught: Fall 2003. *Overview:* With Clinical Professor Laura Kate Boyer, this course for first year architecture students explored a variety of questions about the history of social space with a strong focus on urban design. We covered questions such as, "how have the relationships between place and culture changed over time, and how does design mediate these two ideas? What role do boundaries play in today's world and what effect does globalization have on the distinctiveness of places? How do different groups lay claim to urban space? Does space have a politics?"
- **Information Technology Revolution.** *Science and Technology Studies Department*, Rensselaer Polytechnic Institute. Teaching Assistant. Enrollment: 150 Taught: Fall 2000. *Overview:* With Associate Professor Kim Fortun, I covered one of eight sections for this required course for all IT majors was a "Grand Exploration" of IT – from alphabets, the printing press and the first world maps to GIS and GPS; from telephones and radio to cybernetics, the gene chip and bioinformatics; and from the first computer to the Internet.

PROFESSIONAL  
EXPERIENCE

- **Vividyne Systems** - DBA for contract work in internet development and graphic design - San Francisco and Palo Alto, CA (1996-2011). At present, I take on occasional projects to keep up with new developments in Web 2.0 technologies. This can be observed in the design of the current STS departmental website <http://sts.psu.edu>. While in the Bay Area, my consulting business contracted with numerous companies during the rise of the online and multi-media industry to provide e-commerce solutions, robust code, and graphic designs for an effective web presence. Various clients included, IDG and PCWorld, Muller Studios, Fakespace Systems, George Coates Performance Works, World of Wonder, ABI-hosting, WebShopper.com, SonicBox, PlanetRx.com, and PlanetU.com.
- **Fakespace Systems** - Palo Alto, CA (1999-2000) Onsite Construction Specialist of Virtual Reality Systems. During the ongoing development and implementa-

tion of a prototypical cutting-edge high-end virtual reality system for the Blue Mountain supercomputer cluster, I worked closely with a small team of visualization specialists (Including Adam Savage before Mythbusters) onsite in Palo Alto, Alameda, University of New Mexico, and Los Alamos National Labs.

- ***blasthaus*** - San Francisco, CA (1997 - 2000). Worked as multimedia specialist with crew of highly talented artists and programmers working with emerging arts and technology. Helped to curate multiple gallery exhibits, multi-media festivals, and provided supporting visuals for performers such as Can, the Cure, Yellowman, Survival Research Labs, and countless DJs throughout SF's venues.
- ***San Francisco Computer Museum*** - San Francisco, CA (1996-2000). General Manager. The San Francisco Computer Museum was a website and proposed museum for presenting both the history of computing and an ongoing, interactive exchange between the public and programs developed by the software developers, artists, musicians, and designers. Here, I developed web site, managed office, organized board meetings, and created public awareness of the museum. In addition to duties with the museum development, I was also assistant editor and contributing writer for the *Analytical Engine*, a quarterly journal on the history of California computing published by the Computer History Association of California.
- ***Institute for Science and Interdisciplinary Studies (ISIS)*** - Amherst, MA. (1995-1996). At ISIS I worked on the Military Waste Cleanup Project of Westover Air Force Base (WAFB) where I served as part of a three-member team that acted as non-partial mediators between WAFB and the citizens in the form of a Restoration Advisory Board (RAB). I co-developed a rudimentary Geographic Information System for use by the RAB that mapped the groundwater test well data to their geographic locations on WAFB. To help support this project I obtained one of the earliest small research grants from the Lemelson Foundation for pursuing the concept of building online maps of toxic data on military bases being restored throughout the U.S.

#### TECHNICAL SKILLS

- Languages: intermediate Mandarin, and intermediate German
- Operating Systems: Mac OS X, Linux, UNIX, Windows
- Web: Plone, Drupal, XML, HTML, CSS, Javascript, DNS, BIND, CGI
- Technical: RepRap (3D Rapid Prototyping), Arduino, MapInfo, ArcView, SQL, GRASS GIS (Open Source), ATLAS-Ti, L<sup>A</sup>T<sub>E</sub>X, Adobe Creative Suite
- Strong technical writing, grammar, and linguistic skills.
- Professional graphic-design skills useful in presentations, publications, and diagrams.
- Expert working knowledge of photography, radio, and video production.
- Steadfastly acquired skills in multimedia event production and management.

#### POSTDOCTORAL ADVISOR

- Tuana, Nancy - DuPont/Class of 1949 Professor of Philosophy  
Director, Rock Ethics Institute *The Pennsylvania State University*



DISSERTATION  
COMMITTEE

- **Fortun, Kim - Chair;** (STS)
- Boyer, Laura Kate - Member; (STS)
- Campbell, Nancy - Member; (STS)
- Fortun, Mike - Member; (STS)
- Gordon, Tamar - Member; (Anthropology)
- Stern, David - Member. (Ecological Economics)  
*Note: all members faculty of Rensselaer Polytechnic Institute*

DISSERTATION  
ABSTRACT

- *Greening the Dragon: Environmental Imaginaries in the Science, Technology, and Governance of Contemporary China.*

This study is based on 16 months of participant observation and interviews within the Chinese Academy of Sciences, namely the State Key Lab of Systems Ecology at the Research Center for Eco-Environmental Sciences. Ethnographic methods were used to examine how environmental imaginaries – observed through engaging scientific, technological, and governmental mentalities – developed in step with the development of China’s local, regional, and national capacity to analyze and address ecological and environmental problems. This thesis develops three case studies, each at a different scale: 1) the local, where environmental imaginaries are at work in pressing forward with “eco-city” development in Beijing; 2) the regional, where the “cult of the giant panda” has driven changes in nature reserve management and habitat conservation; and 3) the national, where the Chinese Ecosystem Research Network (CERN) has been developed to identify and quantify the nation’s stock of “ecosystem services” and provide a picture, via “network ecology,” for sustainable development practices. This thesis contributes empirically across four major topics: the context and institutional structures of Chinese environmental governance; the array of players and imaginaries operating in Chinese environmental governance today; the modes of expertise developed and deployed by ecological scientists; and, the way environmental information moves, or not, from scientific to policy domains. Findings indicate that contemporary environmental imaginaries at work in China are discursively framing how science advisors and decision makers articulate problems and uncertainties (emergent interpretives) and strategize directions forward (strategic thresholds) in the “sustainable pursuit” of the nation’s economic development. The three cases exemplify how, even in the face of uncertainty or missing information, environmental imaginaries enable individuals within specific enunciatory communities to negotiate China’s local, regional, national, and global strategies for navigating through double-bind situations, such as “greening versus development” and “tradition versus modernity.” In sum, environmental imaginaries circulating in China are playing a significant and specific role in framing the relationships of ecological scientists in relation to the goals of furthering the nation’s ability to develop while still protecting the environment.