

# Current Directions in the Social and Historical Study of Science and Technology

Winter Quarter 2009

Tuesdays 9-12am

History 197/201  
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SocGen 188  
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## Introduction

This is an advanced class investigating current trends in social and historical studies of science and technology in society. The course covers a wide array of topics, fields and periods but the thread that ties them all together is a focus on method. How does one approach complex scientific and technical objects, fields and processes with the tools of the interpretive human sciences? Some questions include?

- How is the concept of an archive changing?
- How does one develop interpretive methods for very large amounts of material?
- What new kinds of archives have appeared in the last 15 years with the advent of the internet and what new kinds of tools are available to exploit them?
- Can historical, sociological and anthropological methods be combined in the study of science and technology? To what end?
- What kind of fieldsites (in and beyond laboratories) are best for understanding science and technology?
- What is the status of scientific explanation today? How are models, experiments, new kinds of objects, new forms of organization and so on changing scientific practice? How can we use these contemporary changes to rethink canonical explanations of ancient, early modern or modern science?
- How are historical and theoretical concepts formed within disciplines, and how are they formed by those analyzing the disciplines?
- What forms of writing, styles and new approaches to presentation or composition have emerged recently or might be imagined?

**Prerequisites:** This course assumes at least a basic familiarity with historical and social approaches to science, technology and medicine, and the controversies which the field has engendered over the last 25 years. We will not revisit the canon of works in this field in any depth, so the onus will be on students to learn the outlines of this field (the text by Sismondo is included on the syllabus for these purposes).

## Requirements:

1. Reading and participation: 20%
2. Weekly reading-responses (1500-2500 words): 40%
3. A review essay in which three works from the class, books and/or articles, are explored with respect to questions of method, including a review of relevant background literature, or annotated bibliography; due at the end of quarter: 40%

**Course Website:** <http://kelty.org/188>

## Required Texts:

- Biagioli, Mario. *Galileo's Instruments of Credit: Telescopes, Images, Secrecy*. University Of Chicago Press, 2007.

- Jones, Matthew L. *The Good Life in the Scientific Revolution: Descartes, Pascal, Leibniz, and the Cultivation of Virtue*. University Of Chicago Press, 2006.
- Shapin, Steven. *The Scientific Life: A Moral History of a Late Modern Vocation*. University Of Chicago Press, 2008.
- Landecker, Hannah. *Culturing Life: How Cells Became Technologies*. Harvard University Press, 2007.
- Franklin, Sarah, and Celia Roberts. *Born and Made: An Ethnography of Preimplantation Genetic Diagnosis*. Princeton University Press, 2006.
- Lakoff, Andrew, and Stephen J Collier. *Biosecurity Interventions: Global Health and Security in Question*. 1st ed. Columbia University Press, 2008.
- MacKenzie, Donald. *An Engine, Not a Camera: How Financial Models Shape Markets*. The MIT Press, 2008.
- Murphy, Michelle. *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers*. 1st ed. Duke University Press, 2006.
- Petryna, Adriana. *Life Exposed: Biological Citizens after Chernobyl*. 1st ed. Princeton University Press, 2002.
- Porter, Theodore M. *Trust in Numbers*. Princeton University Press, 1996.
- Kelty, Christopher, M. *Two Bits: The Cultural Significance of Free Software*. Duke University Press, 2008
- Sergio Sismondo, *An Introduction to Science and Technology Studies* (Wiley-Blackwell, 2003).

All other required readings will be provided in pdf form through the library or the course website.

## Detailed Schedule

When in doubt, check the website for the final schedule of readings (<http://kelty.org/188>)

### **Jan 6. Introduction**

An introduction to STS and the current state of the art. Orientation towards problems of method, techniques and concepts. Sismondo provides an excellent overview of the sociological and philosophical debates that have dominated the field to date. The readings by Wise introduce students to some of the challenges raised by recent and contemporary science, and how they might be approached historically.

Sismondo, Sergio. *An Introduction to Science and Technology Studies*. Wiley-Blackwell, 2003.

### **Jan 13. Histories of the Present?**

One of the most frequent experiences in STS today is the need to find ways to combine the anthropological and the historical aspects of a problem. This can take two primary forms which we will discuss throughout the class: The first is the experience of confronting working scientists and engineers with an alternative framing of their own history, and in some cases, attempting to make that framing part of their own practice. The other is the use of recent and contemporary science as a starting point for a re-evaluation of the historical transformations at work in other eras, including our own.

Creager, Angela N. H., Norton Wise, and Elizabeth Lunbeck, eds. *Science without Laws: Model Systems, Cases, Exemplary Narratives*. Duke University Press, 2007.

#### **Introduction**

Wise, M. Norton, ed. *Growing Explanations: Historical Perspectives on Recent Science*. Duke University Press, 2004. **Introduction**

Luis Campos on Synthetic Biology, TBD

Cyrus Mody, "Why History Matters to Nanotechnology", Manuscript (pdf on website)

Kelty, Christopher M. *Two Bits: The Cultural Significance of Free Software*. Duke University Press, 2008. **Introduction and Chapter 2**

Additional:

Lynch, Michael et al. *Truth Machine: The Contentious History of DNA Fingerprinting*. University Of Chicago Press, 2008.

## Jan 20. New Lives

A Classic approach to understanding science and engineering is through the lifeworld of the scientist or engineer. Max Weber's 'Science as a Vocation' and 'Politics as a Vocation' have been canonical here. In terms of sociology of science, this also connects to the language of professions, specialties, and disciplinary formation, including the recent focus by Collins and others on expertise (e.g. the self-dubbed "third wave" of science studies). This week's readings focus on new approaches to unraveling the meaning and process of science through the examination of the lifeworld of scientists.

Jones, Matthew L. *The Good Life in the Scientific Revolution: Descartes, Pascal, Leibniz, and the Cultivation of Virtue*. University Of Chicago Press, 2006. **Introduction, Part III, Epilogue.**

Shapin, Steven. *The Scientific Life: A Moral History of a Late Modern Vocation*. University Of Chicago Press, 2008. **Preface, Chapters 1,2, 8 epilogue**

Background:

Weber, Max et al. *The Vocation Lectures: Science As a Vocation, Politics As a Vocation*. Hackett Publishing Company, 2004.

Collins, Harry, and Robert Evans. *Rethinking Expertise*. University Of Chicago Press, 2007.

Rabinow, Paul. *Making PCR: A Story of Biotechnology*. University Of Chicago Press, 1997.

## Jan 27. New Properties

Classic Mertonian sociology of science focused in part on the norm of "communalism"-- the common ownership of scientific ideas. In recent years a variety of new work focused on issues of property, commons, credit, value, authorship and secrecy in science have emerged.

Biagioli, Mario. *Galileo's Instruments of Credit: Telescopes, Images, Secrecy*. University Of Chicago Press, 2007. **Introduction, Chapter 4, Epilogue**

Hayden, Cori. *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico*. Princeton University Press, 2003. **Introduction, Chapter 1 and 8**

Kelty, Christopher M. *Two Bits: The Cultural Significance of Free Software*. Duke University Press, 2008. **Chapter 6**

Supplementary

Hagstrom, Warren O. *The Scientific Community*. New York: Basic Books, 1965.

Hughes, Sally Smith. "Dollars out of DNA: The First Major Patent in Biotechnology and the Commercialization of Molecular Biology, 1974-1980." *Isis* 92.3 (2001): 541.

Long, Pamela O. *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance*. The Johns Hopkins University Press, 2004.

Merton, Robert K. *The Sociology of Science: Theoretical and Empirical Investigations*. University Of Chicago Press, 1979.

Mary Terrall "Uses of Anonymity in the Age of Reason," in Galison, Peter. *Scientific Authorship: Credit and Intellectual Property in Science*. Routledge, 2002.

### **Feb 3. New Biologicals**

Social and Historical studies of biology and biomedicine has emerged out of multiple streams of research: medical anthropology, medical sociology, a theoretical interest in Foucault's "biopolitics"; anthropology of kinship, and anthropology of the life sciences. This section looks at some of the many bio-prefixed debates that have taken shape in the last ten years: biopolitics, biosociality, biocapitalism, biocitizenship, biosafety, biosecurity, etc.

Stefan Helmreich. 2008. "Species of Biocapital" *Science as Culture* 17(4):463-478.

Petryna, Adriana. *Life Exposed: Biological Citizens after Chernobyl*. Princeton University Press, 2002. **Introduction,**

Rajan, Kaushik Sunder. *Biocapital: The Constitution of Postgenomic Life*. Duke University Press, 2006. **Introduction, Chapter 2**

Landecker, Hannah. *Culturing Life: How Cells Became Technologies*. Harvard University Press, 2007. **Introduction, Chapter 4, epilogue**

#### Supplementary

Rose, Nikolas. *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*. Princeton University Press, 2006.

Helmreich, Stefan. *Alien Ocean: anthropological voyages in microbial seas*. University of California Press. 2009

Fortun, Michael, *Promising Genomics*. University of California Press, 2008.

Franklin, Sarah. *Dolly Mixtures: The Remaking of Genealogy*. Duke University Press, 2007.

Rabinow, P. "Artificiality and Enlightenment: From Sociobiology to Biosociality." *Health Studies: A Critical and Cross-Cultural Reader* (1999): 50—.

Foucault, Michel. *The Birth of Biopolitics*. Palgrave Macmillan, 2008.

### **Feb 10. New Reproductions**

Work in feminist science studies has made new reproductive technologies into a canonical object of analysis in STS, mixing issues of complex science with high political context: in vitro fertilization, adoption and abortion, stem cells, tissue banking and so forth. Recent work has also expanded this work into the domains of biopolitics, science policy and population management. The readings for this week look at some of these approaches across the disciplines.

Franklin, Sarah and Celia Roberts. *Born and Made: An ethnography of preimplantation*

*genetic diagnosis*. Princeton University Press, 2006. **Intro, Chapters 1,2**

Greenhalgh, Susan. *Just One Child: Science and Policy in Deng's China*. University of California Press, 2008. **Introduction, TBD**

#### Supplement

Thompson, Charis. *Making Parents: The Ontological Choreography of Reproductive Technologies*. The MIT Press, 2007. TBD

Foucault, Michel. *The Birth of Biopolitics*. Palgrave Macmillan, 2008.

Halfon, Saul. *The Cairo Consensus: Demographic Surveys, Women's Empowerment, and Regime Change in Population Policy*. Lexington Books, 2006.

Herman, Ellen. *Kinship by Design: A History of Adoption in the Modern United States*. University Of Chicago Press, 2008.

#### Feb 17. New Environmentalisms

Environmental and ecological studies have consistently been domains where complex causality, uncertainty and systems thinking have been critically examined and brought into dialogue with the history and social study of science and medicine, as well as urban studies, geography. It's also been a domain for deep interaction with activists and social movements, and is, according to Latour, at least, only viable if it can get over the concept of Nature. These works explore concepts of nature, uncertainty and the construction of knowledge about complex objects like buildings and allergies.

Nash, Linda. *Inescapable Ecologies: A History of Environment, Disease, and Knowledge*. University of California Press, 2007. **Introduction, Chapters 1,5**

Murphy, Michelle. *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers*. Duke University Press, 2006.  
**Introduction, Chapters 3,4**

#### Supplementary

Mitman, Gregg. *Breathing Space: How Allergies Shape Our Lives and Landscapes*. Yale University Press, 2007.

Latour, Bruno. *Politics of Nature: How to Bring the Sciences into Democracy*. Harvard University Press, 2004.

Star, Susan Leigh, and James R. Griesemer. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19.3 (1989): 387-420.

#### Feb 24. New Risks

Risk has become a core object of concern in the social and policy analysis of science and technology, but covers a huge range of approaches and problems: catastrophe (Bhopal, Chernobyl), safety in labs and communities, public perception and understanding, new subjectivities formed through things such as genetic risk and predisposition, and so on. Post-9/11 this also includes discourses of bio-security and preparedness planning. These readings look at a few of these domains of risk, and some of the new ways in which anthropologists, geographers and others are approaching them.

Lakoff, Andrew, and Stephen J Collier. *Biosecurity Interventions: Global Health and Security in Question*. Columbia University Press, 2008. **Chapter 1, 3, 8**

Collier, "Enacting Catastrophe: preparedness, insurance, budgetary rationalization"  
*Economy and Society* 37(2):224-250

Jain, Sarah S. Lochlann. *Injury: The politics of product design and safety law in the US*.  
Princeton University Press, 2006. **Chapter 1**

#### Supplementary

"Embracing Risk" eds. Tom Baker and Jonathon Simon (Introduction and Chapter 11),  
Chicago: University of Chicago Press, 2002.

Silbey, Susan and A.F. Brown "Safety Cultures," *Annual Review of Sociology*, Volume 34(?)

Beck, Ulrich. *Risk Society: Towards a New Modernity*. Sage Publications Ltd, 1992.

Fortun, Kim. *Advocacy After Bhopal*. 2001.

Petryna, Adriana. *Life Exposed: Biological Citizens after Chernobyl*. Princeton University  
Press, 2002.

#### Feb 31. New Monies

An outgrowth of the sociology and anthropology of science in recent years has been a new focus on high finance. Driven in part by work on the history of statistics and accounting (Porter and Hacking), and by the tradition in anthropology of analyzing gift and exchange (Strathern, Wiener, Munn, Guyer), these new works in "economic sociology" and STS of finance open up a qualitatively new field for STS, and have entered new concepts into the lexicon: performativity, calculative agencies, qualification and

Callon, Michel. *The Laws of the Markets*. Blackwell Publishers, 1998. **Introduction**

MacKenzie, Donald. *An Engine, Not a Camera: How Financial Models Shape Markets*. The  
MIT Press, 2008. **Chapters 1,6,9**

Porter, Theodore M. *Trust in Numbers*. Princeton University Press, 1996. **Introduction, 5, 8, 9.**

#### Other readings

Vincent Lepinay and Michel Callon, "Derivative Calculations" Manuscript.

Mirowski, Philip. *Machine Dreams Economics Becomes a Cyborg Science*. Cambridge  
University Press, 2001.

Poovey, Mary. *Genres of the Credit Economy: Mediating Value in Eighteenth- and  
Nineteenth-Century Britain*. University Of Chicago Press, 2008.

Hertz, Ellen. *The Trading Crowd: An Ethnography of the Shanghai Stock Market*. Cambridge  
University Press, 1998.

Maurer, Bill. *Mutual Life, Limited: Islamic Banking, Alternative Currencies, Lateral Reason*.  
Princeton University Press, 2005.

Zaloom, Caitlin. *Out of the Pits: Traders and Technology from Chicago to London*. University  
Of Chicago Press, 2006.

Guyer, Jane I. *Marginal Gains: Monetary Transactions in Atlantic Africa*. University of  
Chicago 2004.

#### March 7. Conclusion.