

# SOC 282: SCIENCE, TECHNOLOGY & MEDICINE STUDIES

TUESDAYS 1:00 P.M.-4:00 P.M.

UCSF---SPRING, 2007---April 3 thru June 5

LAUREL HEIGHTS CAMPUS---ROOM 474 \*\*except Room 376 on 5/1 & 6/5

## FACULTY:

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## TEACHING ASSISTANT/CO-FACULTY:

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Office Hours: Please email for appointment.

## OVERVIEW

- 4/3 1. Overview of ST&MS: Marx to Latour & Woolgar
- 4/10 2. Mapping ST&MS From Merton to the Present
- 4/17 3. Science as Knowledge I: Community and the Production of Knowledges in Fleck and Kuhn
- 4/24 4. Science as Knowledge II: (Im)Modesty and the Production of Knowledges in Shapin, Shaffer, Haraway, Potter
- 5/1 5. Social Studies of Laboratories and Practices & Representations and Visualizations
- 5/8 6. Actor-Network, Social Worlds/Arenas, and Assemblage Theories: Constructing Facts/Constructing Doable Problems
- 5/15 7. Life Itself/Vital Politics/Biocapital
- 5/22 8. Genetics, Genomics, Cloning, Biotechnologies, and the Problem of Species Boundaries
- 5/29 9. Postcolonial Technoscience Studies
- 6/5 10. Technology & Medical Technology Studies: From Design to Consumption

**UNITS:** Course is open to doctoral students from all programs with some background in social theory and with the consent of the instructors. It is offered for 2-4 units as Sociology 282. Course may be taken for 2 units only on a pass/fail basis; at 3 units either as pass/fail or letter grade. Students desiring 4 units must take course for a letter grade and the required paper should be 20 pages minimum. See below for details and **BE SURE TO FILL OUT YOUR REGISTRATION FORM PROPERLY.**

**DESCRIPTION:** Doctoral level course reviews early Marxist and functionalist theories of science; takes up Kuhn's work as the temporal watershed in the development of contemporary science studies through its assertion---based on Fleck---of the significance of social factors in scientific work and in the construction/production of scientific knowledge. It then focuses intently on social constructionist, actor network, ethnomethodological, ethnographic and interactionist science studies as these diverse perspectives have attempted to open up the "black boxes" of sciences and technologies, including laboratories, practice/skills/tools, representations and related studies. Technology studies theorizing is examined from social construction of technology (production) to user studies (the consumption junction). Focused sessions on STS theorization of "life itself;" new issues in genetics, cloning and species boundaries; and postcolonial technoscience studies. Emphasis is primarily on the life sciences and medicine; includes attention to anthropology, history, sociology and philosophy of science. Goals are 1) to map ST&MS and the fundamental questions addressed (e.g., the nature of knowledge(s) and debates in the field; 2) to read and

grasp the classics/canonic works and their critiques; 3) to read some of what is currently at the cutting edge of ST&MS; 4) to grasp the basics for teaching ST&MS (your next course may be your own!); 5) if possible, to read a book that had a past life as a dissertation.

### **COURSE GOALS AND REQUIREMENTS:**

Course may be taken on a pass/fail basis or for a letter grade (see units above for further distinctions). The different requirements are detailed below. Those students lacking serious preparation in social theory are very strongly encouraged to take the course pass/fail (2 or 3 units). All students are expected to attend class and to participate in class discussions.

**PASS/FAIL REQUIREMENTS:** The intensive focus of the course is on the readings. To simply pass the course for 2-3 units, a "Critique Form" for specified required readings must be turned into the instructor and be deemed satisfactory. A list of required readings for critiques will be distributed. Critique sheets will be **DUE MAY 8th AND JUNE 5th** (for the readings through those dates). The sheets for readings for each week should be stapled together with your name on each page. A cover page should note your name and what weeks you have handed in readings for. Critique sheets may be in outline form. Be as elaborate or as simple as you wish.

**LETTER GRADE REQUIREMENTS:** In addition to handing in the critique forms noted above, for a letter grade at 3 units a short (10-15 page minimum) paper or book review is required. For 4 units (letter grade only), you need to turn in critique sheets and 1) two book reviews or 2) a paper (20+ pages). Typed proposals for papers (a brief sketch of what you intend to do and a preliminary bibliography) are **DUE APRIL 24<sup>th</sup>**. **FINAL PAPERS ARE DUE JUNE 12<sup>th</sup>** (earlier is better).

### **POSSIBLE PAPER FORMATS:**

The paper may be any of the following:

- 1) a research paper on a topic of your own choosing related to the course. You can use any theme or topic of the course as a starting point. Alternatively, you might wish to pursue science/technology aspects of a problem you are already involved with studying and researching.
- 2) a literature review, fairly ambitious and well focused. Possibly you might select to do an in-depth analysis of one of the perspectives we will be studying, or go into more depth on a particular problem.
- 3) a book review, about 5-10 typed pages or in outline format.
- 4) an alternative you develop and I approve.

While I will obviously be concerned with the actual content of your papers, I also want you to answer the questions: What kind of sociological work is this? How does it fit within its theoretical tradition? What were the author's goals and intentions? Where do I stand in relation to it?

**[NOTE:** Phantom sessions on other topics (which will not actually occur) may be found at the end of the electronic version of the syllabus.]

### **TEXTS AND OTHER READINGS:**

**Required Readings:** There will be a xeroxed set of papers you may copy that "live" in the student cubicle in LH455. If you need a copy card for use at Laurel Heights, please see Cynthia Mercado-Scott in Suite 455.

**Required texts** available in Millberry Bookstore.

Biagioli, Mario (Ed.) 1999. *The Science Studies Reader*. NY: Routledge.

Fleck, Ludwik. [1935] 1979. *Genesis and Development of a Scientific Fact*. U. of Chicago Press.

Kuhn, Thomas. [1962] 1996. *The Structure of Scientific Revolutions*. 3<sup>rd</sup> ed. U. of Chicago Press.

### **RECOMMENDED BOOKS: (not ordered from bookstore)**

**ABOUT STS:** These are aimed largely at undergraduates, with the exception of the Handbook. The most sophisticated is Hess, but also now a decade old.

Bauschspies, Wenda, Jennifer Croissant, and Sal Restivo. 2005. *Science, Technology and Society: A Sociological Approach*. Malden, MA: Blackwell.

Hess, David. 1997. *Science Studies: An Advanced Introduction*. NY: NYU Press.

Jasanoff, Sheila, G. Markle, J. Petersen, and T. Pinch (Eds.) 1995. *Handbook of Science and Technology Studies*. Thousand Oaks, Ca: Sage. NOTE: there is a 2001 updated paperback. A completely new edition is due out in 2008: Olga Amsterdamska, Mike Lynch, Ed Hackett, Judy Wajcman (Eds.) 2008. *The New Handbook of Science and Technology Studies*. Cambridge MA: MIT Press. I would not buy old one unless used.

Sismondo, Sergio. 2004. *An Introduction to Science and Technology Studies*. Malden, MA: Blackwell.

### **KEY MONOGRAPHS:**

Bijker, Wiebe E. and Law, John (Editors). 1992. *Shaping Technology/Building Society*. Cambridge, MA: The MIT Press.

Haraway, Donna. 1997. *Modest\_Witness@Second\_Millennium: Feminism and Technoscience*. NY: Routledge.

Haraway, Donna. 2003. *The companion species manifesto: dogs, people, and significant otherness*. Chicago: Prickly Paradigm/ Bristol, UK: University Presses Marketing.

Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*. Cambridge: Harvard University Press.

Latour, Bruno. 1993. *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.

Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford: Oxford University Press.

Latour, Bruno and Steve Woolgar. [1979] 1987. *Laboratory Life: The Social Construction of Scientific Facts*. Princeton U. Press.

Pickering, Andrew (Editor). 1992. *Science as Practice and Culture*. Chicago: The University of Chicago Press.

Rose, Nikolas. 2007. *The Politics of Life Itself: Biomedicine, Subjectivity and Power in the Twenty-first Century*. Princeton: Princeton University Press.

### **ELECTRONIC SUPPLEMENTARY BIBLIOGRAPHY**

Recommended readings through **1994** only are in this Bib. It will be sent to you electronically only. These will permit you to further examine these domains and serve as resources. None of these lists is intended to be exhaustive. Be sure you see the bibliographies in the major review papers as well.

Supplementary Bib has the following topics.

Major Review Books and Papers

Sociology of Science

Sociology of Technology

Gender, Science and Technology (and ask for my syllabus and supp. Bib. for S245)

History of Life Sciences

Major Journals in Science and Technology Studies

Major Professional Societies in Science and Technology Studies

**S282 SCIENCE, TECHNOLOGY AND MEDICINE STUDIES  
SYLLABUS  
SPRING 2003**

**4/3 WEEK 1 OVERVIEW OF ST&MS: MARX TO LATOUR & WOOLGAR**

Major overview lecture based largely on the articles listed under reviews in supplemental bibliography. Second Session focuses on overviews and recent "classics" in STS which, by and large, provide accounts of scientists and scientific work.

**REQUIRED READINGS:**

We know everyone may not be able to do these before class. Don't worry about it, but do catch up ASAP.

Biagioli, Mario. 1999. "Introduction." Pp. xi-xvi in his (Ed.) *The Science Studies Reader*. NY: Routledge.

Thompson, Charis Cussins. 2000. *Primate Suspect: Some Varieties of Science Studies*. Pp. 329-357 in Shirley Strum and Linda Marie Fedigan (Eds.) *Primate Encounters: Models of Science, Gender and Society*. Chicago: University of Chicago Press.

Hess, David. 1997. "If You're Thinking About Living in STS..." Pp. 143-64 in Gary Downey and Joe Dumit (Eds.) *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*. Santa Fe, MN: School of American Research Press.

Sismondo, Sergio. 2004. *An Introduction to Science and Technology Studies*. Malden, MA: Blackwell. Pp. 1-12.

**START** Reading Fleck and Kuhn books for week 3.

**RECOMMENDED READINGS: OVERVIEWS OF STS SINCE 1994**

Bauschspies, Wenda, Jennifer Croissant, and Sal Restivo. 2005. *Science, Technology and Society: A Sociological Approach*. Malden, MA: Blackwell.

Best, Steven and Douglas Kellner. 2001. *The Postmodern Adventure: Science, Technology, and Cultural Studies at the Third Millennium*. New York/London: The Guilford Press.

Biagioli, Mario, Reid, Roddey, and Sharon Traweek (Eds.). 1994. "Located Knowledges: Intersections between Cultural, Gender, and Science Studies." *Configurations* 2(1). Special issue.

Collins, Harry and Pinch, Trevor. 1993. "The Golem: What Everyone Should Know About Science."

Downey, Gary and Joe Dumit (Eds.) 1997. Introduction. Pp. 3-30 in their *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*. Santa Fe, MN: School of American Research Press. PO Box 2188 Santa Fe, NM 87504-2188.

Downey, Gary, Joe Dumit and Sharon Traweek. 1997. Corridor Talk. Pp. 245-263 in *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*. Santa Fe, MN: School of American Research Press.

Elston, Mary Ann (Ed.) 1997. *Sociology of Medical Science and Technology*. Boston: Blackwell.

Fisher, Michael M.J. 2000. "Calling the Future(s) with Ethnographic and Historiographic Legacy Disciplines." Pp. 275-322 in *Doing Science and Culture*. Edited by Roddy Reid and Sharon Traweek. New York: Routledge.

Golinski, Jan. 1998. *Making Natural Knowledge: Constructivism and the History of Science*. Cambridge: Cambridge University Press. Pp. 1-46.

Hess, David J. 1997. *Science Studies: An Advanced Introduction*. NYU Press. Read Chapter 1; skim chapters 2-3 noting some of the major concepts (and use these as reference resource when those concepts appear again); read all of chapters 4-6.

Hess, David. 2001. *Ethnography and the Development of Science and Technology Studies*. Pp. 234-245 in Atkinson, Paul, Amanda Coffey, Sara Delamont, John Lofland, and Lyn Lofland (Eds.) *Handbook of Ethnography*. London: Sage.

Hesse, Mary. 1980. *The Strong Thesis of the Sociology of Knowledge*. Pp. 29-60 in her *Reconstructions in the Philosophy of Science*. Bloomington: Indiana University Press.

- Jacob, Margaret C. 1999. "Science Studies after Social Construction" in Bonnell, Victoria and Lynda Hunt (eds.) *Beyond the Cultural Turn: New Directions in the Study of Society & Culture*. Berkeley: University of California Press.
- Jasanoff, Sheila. 2000. "Reconstructing the Past, Constructing the Present: Can Science Studies and the History of Science Live Happily Ever After?" *Social Studies of Science* 30(4):621-31.
- Knorr-Cetina, Karen and Michael Mulkay (Eds.). 1983. *Science Observed: Perspectives on the Social Study of Science*. Sage, pp. 1-17.
- Kumar, David D. and Daryl E. Chubin (Eds.) 2000. *Science, technology, and society : a sourcebook on research and practice*. New York: Kluwer. [Undergrad text]
- Markley, Robert. 1999. Foucault, Modernity and the Cultural Study of Science. *Configurations* 7:153-73.
- Pels, Dick. 1996. Karl Mannheim and the Sociology of Scientific Knowledge: Toward a New Agenda. *Sociological Theory* 14(1):30-48.
- Reid, Roddey, and Sharon Traweek. 2000. "Introduction: Researching Researchers." Pp. 1-18 in their (Eds.) *Doing Science & Culture*. New York: Routledge. Copy for xeroxing in SBS, Suite 455, look in mailbox for Clarke.
- Star, Susan Leigh. 1995. "Introduction" to *Ecologies of Knowledge: Work and Politics in Science and Technology*. Albany, NY: SUNY Press, 1-35.
- Star, S. Leigh. 1995. "Epilogue: Work and Practice in Social Studies of Science, Medicine and Technology." *Science, Technology and Human Values* 20(4):501-7.
- Stengers, Isabelle. 1997. *Of Paradigms and Puzzles*. Pp. 109-122 in her *Power And Invention: Situating Science*. Minneapolis: U. of Minnesota Press.

#### **4/10 WEEK 2 MAPPING ST&MS FROM ZILSEL AND MERTON TO PRESENT**

Session goal is to continue “drawing” an overview map of the canonic works in ST&Ms, this week since c1940. We begin with early Marxist and functionalist readings and move through the sociology of scientific knowledge (Edinburgh School), the early Bath School, Par-Ex (Paris-Exeter---precursor to ANT, linking Latour and Callon with Law), constructionist and interactionist contributions, etc.

#### **REQUIRED READINGS ON EARLY MARXIST SOCIOLOGY OF SCIENCE:**

Zilsel, Edgar. [1942] 2000. “The Sociological Roots of Science.” *Social Studies of Science* 30(6): 935-949.

#### **REQUIRED READINGS ON MERTONIAN/FUNCTIONALIST SOCIOLOGY OF SCIENCE:**

Merton, Robert K. [1942] 1973. “The Normative Structure of Science.” Pp. 267-278 in Norman W. Storer (ed.) *Robert K. Merton--The Sociology of Science: Theoretical and Empirical Investigations*. Chicago: U. of Chicago Press.

Mendelsohn, Everett. 1989. "Robert K. Merton: The Celebration and Defense of Science." *Science in Context* 3(1):269-289.

Knorr-Cetina, Karen. 1991. Merton's Sociology of Science: The First and the Last Sociology of Science? *Contemporary Sociology* 20(4):522-526.

#### **REQUIRED READINGS ON MAPPING:**

Latour, Bruno. [1983] 1999. “Give me a Laboratory and I Will Raise the World.” Pp. 258-275 in Biagioli, Mario (Ed.) *The Science Studies Reader*. NY: Routledge.

Shapin, Steven. 1995. Here and Everywhere: Sociology of Scientific Knowledge. *Annual Review of Sociology* 21:289-321.

Casper, Monica J. and Marc Berg. 1995. "Introduction to Special Issue on Constructivist Perspectives on Medical Work: Medical Practices in Science and Technology Studies." *Science, Technology and Human Values* 20(4):395-407.

#### **RECOMMENDED READINGS:**

##### **Neo-Marxist Approaches**

Ravetz, Jerome R. 1971. *Scientific Knowledge and its Social Problems*. Oxford: Clarendon Press.

##### **On Mertonian Approaches**

Cohen, I. Bernard; Duffin, K.E.; and Strickland, Stuart, eds. 1990. "Puritanism and the Rise of Modern Science: The Merton Thesis." New Brunswick, NJ: Rutgers University Press.

Shapin, Steven. 1993. "Mertonian Concessions." *Science*, Vol. 259, pp. 839-841.

Thomas, Keith. 1998. God in the Computer: Review of David Noble's *The Religion of Technology*. *The New York Review of Books* 12/17.

\*\*\*Zuckerman, Harriet. 1989. *The Sociology of Science*. Pp. 511-574 in Neil Smelser (ed.) *Handbook of Sociology*. Newbury Park, CA: Sage.

On Merton, see 2004 Special Issue on Merton of *Social Studies of Science* volume 34 number 6.

**For Recommended Readings on Marxist and other Classics: see supplemental bib. Sociology of Science section.**

### **4/17 WEEK 3 THE 'KNOWLEDGE QUESTION' IN SCIENCE AND SCIENCE STUDIES I: FLECK AND KUHN: Community and the production of knowledge**

The question of the nature of the production of knowledge has been at the heart of what we think of as STS since the outset, with positions ranging from “great brilliant [white] men” (basic history of science and technology) to “great institutions in supportive nation states” (Ben-David) to “thought collectives” (Fleck) transformed into “paradigms” (by Kuhn). These issues still echo quite loudly through the field today.

#### **REQUIRED READINGS:**

- Fleck, Ludwik. [1935] 1979. *Genesis and Development of a Scientific Fact*. University of Chicago Press.
- Kuhn, Thomas. [1962] 3<sup>rd</sup> ed. 1996. *The Structure of Scientific Revolutions*. Chicago: University of Chicago. \*\*Esp. Chapters 3,4,5, and 6; then 9 and 10 (1 and 2 as needed for background)
- Lowy, Ilana. 1988. Ludwik Fleck on the Social Construction of Medical Knowledge.” *Sociology of Health and Illness* 10(2):133-155.
- White, Kevin. 2002. “The Sociology Of Medical Knowledge.” Pp. 23-31 in his *An Introduction to the Sociology of Health and Illness*. London: Sage. [Originally published in 1991 as “Ludwik Fleck and the Sociology of Medical Thought. Pp. 58-70 in his “The Sociology of Health and Illness.” [A major overview with STS orientation] *Current Sociology* 39:1-115.]
- Jacobs, Struhan. 1987. *Scientific Community: Formulations and Critique of a Sociological Motif*. *British Journal of Sociology* 38(2):266-276.

#### **RECOMMENDED READINGS:**

- Bonah, Christian. 2003. “‘Experimental Rage’: The Development of Medical Ethics and the Genesis of Scientific Facts.” *Social History of Medicine* 15(2):187-207.
- Fleck, Ludwik. 1986. “To look, to see, to know.” Pp. 129-151 in R.S. Cohen and T. Schnelle Eds.) *Cognition and Fact--Materials on Ludwik Fleck*, Netherlands: D. Reidel.
- Fuller, Steve. 2000. *Thomas Kuhn: A Philosophical History of Our Time*. Chicago: University of Chicago Press.
- Gonzalez, Roberto J., Laura Nader and C. Jay Ou. 1995. "Between two Poles: Bronislaw Malinowski, Ludwik Fleck, and the Anthropology of Science." [JSTOR] *Current Anthropology* 36(5): 866-869.
- Hacking, Ian. 1992. “Style” for Historians and Philosophers. *Studies in the History and Philosophy of Science* 23(1):1-20.
- Kuhn, Thomas. 2000. *The Road Since Structure: Philosophical Essays, 1970-1993.*, with an autobiographical interview. Chicago: University of Chicago Press.
- Lowy, Ilana. 1990. *The Polish school of philosophy of medicine: From Tytus Chalubinski (1820-1889) to Ludwik Fleck (1896-1961)*. Dordrecht ; Boston : Kluwer Academic.
- Rochel de Camargo Jr., Kenneth. 2002. "The Thought Style of Physicians: Strategies for Keeping Up with Medical Knowledge." in *Social Studies of Science*, 32(5-6): 827-855.
- Wittich, Dieter. 1981. "Ludwik Fleck, a review essay." *Science and Nature* 4.

**4/24 WEEK 4 THE 'KNOWLEDGE QUESTION' IN SCIENCE AND SCIENCE STUDIES II: SHAPIN, SCHAFFER, HARAWAY, POTTER: Witnessing, (Im)Modesty and the Production of Knowledge(s)**

The flip side of the question of how science is produced (embedded in the question of the “scientific community” discussed last time) is the question of who can produce (legitimate) science? We take this question up in general terms in this session (focusing especially on the gendered nature of scientific knowledge production historically in the West), and return to it in the session on postcolonial technoscience studies (wherein geopolitical and funding issues are writ large along with epistemological relativism, epistemological diversity, etc., in terms of “what counts” as science, to whom, etc).

**REQUIRED READINGS:**

- Shapin, Steven and Simon Schaffer. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle and the Experimental Life*. Princeton University Press. Pp. 3-79 and 332-344.
- Shapin, Steven. [1988] “The House of Experiment in 17<sup>th</sup> Century England.” Pp. 479-504 in Biagioli, Mario (Ed.) 1999. *The Science Studies Reader*. NY: Routledge.
- Gieryn, Thomas. 1995. “Boundaries of Science.” Pp. 393-424 (excerpt only) in Jasanoff, Sheila, G. Markle, J. Petersen, and T. Pinch (Eds.) 1995. *Handbook of science and technology studies*. Thousand Oaks, Ca: Sage.
- Latour, Bruno. 1993. *We Have Never Been Modern*. Cambridge, MA: Harvard University Press, pp. 1-13 + diagrams.
- Haraway, Donna. [1988] 1999. “Situated Knowledges: The Science Question in Feminist and the Privilege of Partial Perspective.” Pp. 172-188 in Biagioli, Mario (Ed.) *The Science Studies Reader*. NY: Routledge.
- Haraway, Donna. 1997. *Modest\_Witness@Second\_Millennium*. NY: Routledge. Chapter 2. [also published as 1996. “Modest Witness: Feminist Diffractions in Science Studies.” Pp. 428-442 in Galison, Peter and David J. Stump. (Eds.) *The Disunity of Science: Boundaries, Contexts and Power*. Stanford University Press.
- Potter, Libby. 2001. *Gender and Boyle’s Law of Gases*. Bloomington: Indiana University Press. Read pp. ix-xiii and 180-185.
- Barad, Karen. [1998] “Agential Realism: Feminist Interventions in Understanding Scientific Practices.” Pp. 1-11 in Biagioli, Mario (Ed.) 1999. *The Science Studies Reader*. NY: Routledge.
- Sivin, N. 1995. “Why the Scientific Revolution Did Not Take Place in China --Or Didn't It?” Chapter VII in his *Science in Ancient China*, (Aldershot, Hants: Variorum, 1995).  
<http://ccat.sas.upenn.edu/~nsivin/scirev.html>

**RECOMMENDED READINGS:**

- Fujimura, Joan H. 1998. “Authorizing Knowledge in Science and Anthropology.” *American Anthropologist* 100(2):???
- Longino, Helen. 1990. *Science as Social Knowledge*. Princeton Univ. Press.
- Mialet, Helene. 1999. "Do Angels Have Bodies?: Two Stories about Subjectivity in Science." *Social Studies of Science* 29(4): 551-581.
- Nyhart, Lynn K. and Thomas H. Broman. (Eds.) 2002. *Special Issue on Science and Civil Society*. OSIRIS 17: whole issue.
- Shapin, Steven. 1994. *A Social History of Truth: Civility and Science in Seventeenth-Century England*. Chicago: University of Chicago Press.
- Shapin, Steven. 1996. *The Scientific Revolution*. Chicago/London: The University of Chicago Press.

**5/1 WEEK 5 KNOWLEDGE PRODUCTION PROCESSES IN SCIENCE: STUDIES OF LABORATORIES, PRACTICES AND REPRESENTATIONS IN SCIENTIFIC WORK**

This session visits the classic “STS” studies of scientific laboratories and actual practices, including the production and consumption of representations and the work they do. Again, the classic works are routinely referenced and they constitute the cannon of assumptions about scientific work qua work.

**REQUIRED READINGS: LABS AND PRACTICES**

Latour, Bruno and Steve Woolgar. [1979] 1987. *Laboratory Life: The Social Construction of Scientific Facts*. Princeton U. Press. Pp. 15-51 and 167.

Knorr Cetina, Karin. 1995. "Laboratory studies: The cultural approach to the study of science." Pp. 140-166 in *Handbook of science and technology studies*, edited by S. Jasanoff, G. Markle, J. Petersen, and T. Pinch. Thousand Oaks, Calif.: Sage Publications.

Clarke, Adele and Joan Fujimura. 1992. "Introduction: What Tools? Which Jobs? Why Right?" Pp. 3-46 in their (Eds.) *The Right Tools for the Job: At Work in Twentieth Century Life Sciences*. Princeton: Princeton University Press. [1996. French translation: *La Materialite des Sciences: Savoir-faire et Instruments dans les Sciences de la Vie*. Paris: Synthelabo Groupe.]

Pickering, Andrew. [1993] 1999. "The Mangle of Practice: Agency and Emergence in the Sociology of Science." Pp. 372-393 in Biagioli, Mario (Ed.) *The Science Studies Reader*. NY: Routledge. [1993. *American Journal of Sociology* 99(3):559-89.]

Star, S. Leigh. 1995. "Epilogue: Work and Practice in Social Studies of Science, Medicine and Technology." *Science, Technology and Human Values* 20(4):501-7.

Knorr Cetina, Karin. 1999. *Epistemic Cultures: How the Sciences make Knowledge*. Cambridge, MA: Harvard University Press. Read pp. 1-45.

**REQUIRED READINGS: REPRESENTATIONS IN SCIENTIFIC WORK**

Lynch, M. and S. Woolgar. 1988. "Introduction: Sociological Orientations to Representational Practice in Science." *Human Studies* 11(2-3):99-116. [Became a book from MIT Press]

Scan Lynch, Michael and John Law. [1988] 1999. "Pictures, Texts, and Objects: The Literary Language Game of Bird-Watching." Pp. 317-341 in Biagioli, Mario (Ed.) *The Science Studies Reader*. NY: Routledge.

Latour, Bruno. 1990. "Drawing Things Together." Pp. 19-67 in Michael Lynch and Steve Woolgar (Eds.) *Representation in scientific practice*. Cambridge, MA: MIT Press.

Daston, Lorraine. [1992] 1999. "Objectivity and the Escape from Perspective." Pp. 110-123 in Biagioli, Mario (Ed.) *The Science Studies Reader*. NY: Routledge.

**RECOMMENDED READINGS: LABS AND PRACTICES**

Borell, Merriley. 1987. "Instrumentation and the Rise of Physiology." *Science and Technology Studies* 5(2)1987:53-62.

Bowker, Geoffrey C. 1994. *Science on the Run. Information Management and Industrial Geophysics at Schlumberger, 1920-1940*. Cambridge, MA: The MIT Press. Introduction.

Callon, Michael and Bruno Latour. 1992. "Don't Throw the Baby Out with the Bath School!" In *Science as Practice and Culture*. Chicago: The University of Chicago Press, pp. 343-368.

Cambrosio, Alberto and Peter Keating. 1988. "'Going Monoclonal': Art, Science and Magic in the Day-to-Day Use of Hybridoma Technology." *Social Problems* 35(3)1988:244-260.

Cetina, Karin Knorr. 1992. "The Couch, the Cathedral, and the Laboratory: On the Relationship between Experiment and Laboratory in Science." In *Science as Practice and Culture*. Chicago: The University of Chicago Press, pp. 113-138.

Clarke, Adele. 1987. *Research Materials and Reproductive Science in the United States, 1910-1940*. In Gerald L. Geison (Ed.) *Physiology in the American Context, 1850-1940*. Bethesda: American Physiological Society.323-50. Reprinted in 1995, with "Epilogue: Research Materials (Re)Visited,"

- Pp. 220-225 in Susan Leigh Star (Ed.) *Ecologies of Knowledge: New Directions in Sociology of Science and Technology*. Albany, NY: SUNY Press.
- Collins, H. M. and Steven Yearley. 1992. "Epistemological Chicken." In *Science as Practice and Culture*. Chicago: The University of Chicago Press, pp. 301-326.
- Delamont, Sara and Paul Atkinson. 2001. *Doctoring Uncertainty: Mastering Craft Knowledge*. *Social Studies of Science* 31(1):87-107.
- Fujimura, Joan H. 1992. "Crafting Science: Standardized Packages, Boundary Objects, and 'Translations'" in *Science as Practice and Culture* (Andrew Pickering, ed.). Chicago: The University of Chicago Press.
- Galison, Peter and David J. Stump. 1996. "Introduction: The Contexts of Disunity." Pp. 1-36 in their (Eds.) *The Disunity of Science: Boundaries, Contexts and Power*. Stanford University Press.
- Gooding, David. 1990. "Mapping Experiment as a Learning Process: How the First Electromagnetic Motor Was Invented." *Science, Technology and Human Values* 15(2):165-201.
- Hacking, Ian. 1988. "The Participant Irrealist At Large in the Laboratory." *British Journal of Philosophy of Science* 39:277-94.
- Hacking, Ian. 1992. "The Self-Vindication of the Laboratory Sciences." In Andrew Pickering (Ed.) *Science as Practice and Culture*. Chicago: The University of Chicago Press, pp. 29-64.
- Jordan, Kathleen and Michael Lynch. 1992. "The Sociology of a Genetic Engineering Technique: Ritual and Rationality in the Performance of the 'Plasmid' Prep." In *The Right Tools for the Job. At Work in the Twentieth-Century Life Sciences* (Adele E. Clarke and Joan H. Fujimura, eds.). Princeton, New Jersey: Princeton University Press, pp. 77-114.
- Knorr-Cetina, Karen. 1981. *The Manufacture of Knowledge: An Essay on the Constructivist and Contextual Nature of Science*. Oxford: Pergamon Press, ch. 1 and conclusions, pp. 152-3.
- Kohler, Robert E. 1994. *Lords of the fly : Drosophila genetics and the experimental life*. Chicago: University of Chicago Press.
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### **RECOMMENDED READING: REPRESENTATIONS**

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**5/8 WEEK 6 ACTOR NETWORKS, SOCIAL WORLDS/ARENAS, AND ASSEMBLAGES:  
CONSTRUCTING FACTS/CONSTRUCTING DOABLE PROBLEMS**

While there are many conceptual frameworks used in STS, and many “blends,” this session covers three of the major ones and the critiques of them. In short, each does certain things excellently, and other less well. But an STS scholar should be able to compare and contrast with ease.

**REQUIRED READINGS: ANT THEORY**

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**RECOMMENDED READINGS ANT:**

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## 5/15 WEEK 7 VITAL POLITICS / LIFE ITSELF / BIOCAPITAL

When Foucault raised the notions of biopolitics and government in the 1970s, he was describing a form of political reason emerging in the 18th century. It was closely associated with the formation of the nation-state and modernity. Biopolitics always works with biopower, which, according to Foucault, is distinct from but coexistent with sovereign power. Remember this is a multidimensional transformation that not only evolved along with the emergence of disciplining of individual bodies (anatomy-politics) but also targeted at the masses as the focus of governmental actions (bio-politics). Specific forms of knowledge were bound up with this end, and so was the governmentality that newly took shape.

Nevertheless, this picture portrayed by Foucault implies the endless extension of government, which seems to be contradictory to the ideals of liberalism that asks for minimal government in the market. But, as Rose indicates, this superficial antagonism has been disappearing in recent years—We now have had a new form of governmentality in which the state has been shrinking and devolving the responsibilities, once held by welfare states as ultimate virtues, to their citizens. This is usually termed as effects of neoliberalism, which has sided with biopolitics especially in this globalizing world.

How do we (or does Foucault) conceptualize the contradictions between government and liberalism? This configuration of advanced liberal capitalism is the socio-political background where politics of life itself and biocapital become salient. Therefore we will start from understanding the interweaving relationships of liberalism and government and then proceed to the contemporary configurations of politics of life itself and biomedicalization, respectively. At last we read Kaushik Sunder Rajan's introduction to his inspiring work, *Biocapital*, in which he attempts to make a theoretical dialogue between Marx and Foucault by empirically studying genomics-related industries.

### REQUIRED READINGS:

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- Rabinow, Paul and Nikolas Rose. 2006. Biopower today. *Biosocieties* 1: 195-217. (For sociology students REREAD from S207/S212C) [URL link: [http://journals.cambridge.org/download.php?file=%2FBIO%2FBIO1\\_02%2FS1745855206040014.a.pdf&code=e576df82e6641f11417e3dfa463249ff](http://journals.cambridge.org/download.php?file=%2FBIO%2FBIO1_02%2FS1745855206040014.a.pdf&code=e576df82e6641f11417e3dfa463249ff) ]
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- Franklin, Sarah and Margaret Lock. 2003. "Animation and Cessation: The Remaking of Life and Death." [Intro essay] Pp. 3-22 in their (Eds.) *Remaking of Life and Death: Towards an Anthrop[ology] of the Biosciences*. Santa Fe: School of American Research Press.
- Rose, Nikolas. 2007. "Chapter 1: Biopolitics in the Twenty-First Century", Pp. 9-40; "Chapter 2 Politics and Life", Pp. 41-76 in *The Politics of Life Itself: Biomedicine, Power and Subjectivities in the Twenty-First Century*. Princeton: Princeton University Press.
- Sunder Rajan, Kaushik. 2006. "Introduction", Pp. 1-36, in *Biocapital: The Constitution of Postgenomic Life*. Durham, NC: Duke University Press. (Especially Pp. 1-30).
- Waldby, Catherine and Robert Mitchell. 2006. Chapter 5 "Commodity Communities and Corporate Commons." *Tissue Economies: Blood, Organs and Cell Lines in Late Capitalism*. Durham NC: Duke University Press.

[optional --- electronic distribution only ] Clarke, Adele E., Janet Shim, Laura Mamo, Jennifer Fosket, and Jennifer Fishman. 2007. "Biomedicalization: A Theoretical and Substantive Introduction." Pp. 1-63. (Especially 1-34; 40-43)

**RECOMMENDED READINGS:**

Franklin, Sarah. 2001. Culturing biology: Cell lines for the second millennium. *Health*, 5 (3), 335-354.

Franklin, Sarah. 2003. Ethical biocapital: New strategies of cell culture. In S. Franklin & M. Lock (Eds.), *Remaking life & death: Toward an anthropology of the biosciences* (pp. 97-128). Santa Fe, NM: School of American Research Advanced Seminar Series.

Franklin, Sarah. 2005. Stem Cells R Us: Emergent Life Forms and the Global Biological. Pp. 59-78 in *Global Assemblages: Technology, Politics and Ethics as Anthropological Problems*, edited by Aihwa Ong, and Stephen Collier. Malden MA: Blackwell.

Franklin, Sarah. 2006a. Mapping biocapital: new frontiers of bioprospecting. *Cultural Geographies* 13(2):301-4.

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Franklin, Sarah & M. Lock. (2003). Animation and Cessation: The Remaking of Life and Death. In S. Franklin & M. Lock (Eds.), *Remaking life & death: Toward an Anthropology of the Biosciences* (pp. 3-22). Santa Fe, NM: School of American Research Advanced Seminar Series.

Franklin, Sarah and Celia Roberts. 2006. *Born and Made: An Ethnography of Preimplantation Genetic Diagnosis*. Princeton NJ: Princeton University Press.

Ganchoff, C. (2004). Regenerating movements: embryonic stem cells and the politics of potentiality. *Sociology of Health and Illness*, 26, 757-774.

Rose, Nikolas. 2001. The politics of life itself. *Theory, Culture & Society* 18(6): 1-30. (For sociology students--REREAD from S207)

## **5/22 WEEK 8 GENETICS, GENOMICS, CLONING, BIOTECHNOLOGIES, AND THE PROBLEM OF SPECIES BOUNDARIES**

One of the key domains of vital politics past /present/future is heredity today framed in genetic/omic terms. Session provides some historical background and then examines genetics based biosociality, pharmacogenomics, toxicogenomics, and race. One of the key elements of genetic knowledge is the significance of species boundaries, violated via chimeras both in nature (marmosets) and via cloning. Haraway's about-to-be published work (shared with you electronically by permission) criss crosses the human/nonhuman "divide" and finds it rather blurry and in need of serious attention.

### **REQUIRED READINGS:**

- Kay, Lily E. [1998] 1999. "In the Beginning was the Word: The Genetic Code and the Book of Life." Pp. 224-233 in Biagioli, Mario (Ed.) *The Science Studies Reader*. NY: Routledge.
- Waldby, Catherine. 2001. "Code Unknown: Histories of the Gene [Review of Kay and Keller books]" *Social Studies of Science*, 31(5): 779-91.
- Rabinow, Paul. [1992] "Artificiality and Enlightenment: From Sociobiology to Biosociality." Pp. 407-416 in Biagioli, Mario (Ed.) 1999. *The Science Studies Reader*. NY: Routledge.
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### **RECOMMENDED READINGS:**

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## 5/29 WEEK 9 POSTCOLONIAL TECHNOSCIENCE

Postcolonial STS is still a vaguely defined but rapidly expanding area of academic interest. It does not limit itself to historical studies of science and technology in previous colonies, but extends the postcolonial concerns into the reflections about postcoloniality, modernity, and rationality. In this sense, it is indispensable to the thinking of globalization because the problems that science and technology in postcolonial states present are a major symptom of increased global communications.

Even though Sarah Franklin recommended anthropologists of science to pay attention to postcolonial contexts, it was not until 2002 when Warwick Anderson first explicitly formulated three major domains of research for postcolonial STS: colonial criticism, postcolonial thought, and historical anthropology of modernity. In our readings, Stoler and Cooper review the proliferating literatures of colonial history and problematize the hierarchical relations between colony and metropolis. Nandy, Abraham, and Chakrabarty extend their studies in India—a prototypical postcolonial state that has been studied the most—and discuss how modern science, Eurocentric epistemology, and the *raison d'état* are intertwined in the history of post-/colonial India. But is this the only way to conceptualize the presence of Europe in colonial history? David Scott gives another explanatory approach. All in all, science and technology as part of modernity have been fetishized ambivalently in postcolonial states, because these can also be the origin of another form of exploitation and orientalism in the international arena. The last two articles highlight this often hidden aspect and points out its wide implications in technoscience, sexuality, morality, and many other domains of postcolonial life.

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**NOTE:** If you are interested, ask me and I will send syllabus for S245 and other bibliographies that take up postcolonial technoscience further.

**6/5 WEEK 10 TECHNOLOGY STUDIES: FROM “SCOT” [SOCIAL CONSTRUCTION OF TECHNOLOGY] TO MEDICAL TECHNOLOGY STUDIES; FROM DESIGN TO CONSUMPTION**

While we use the term “technoscience” today to dispute the historical distinction made between science (as “basic”) and technology (as “applied”), and comfortably assert that “you can’t have one without the other,” the histories of science and of technology and social studies of technology have had separate trajectories, societies (Society for the History of Technology—SHOT and History of Science Society—HSS), and journals. This session first brings us up to speed on the basics and the key debate “do artifacts have politics?” which continues to inflect contemporary work. Second we take up medical technologies more explicitly, reading works by key contributors.

**REQUIRED READINGS: SCOT/TECHNOLOGY STUDIES**

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**MEDICAL TECHNOLOGY: REQUIRED READINGS**

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## 282 SYLLABUS CONTINUED

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- Everything is politics by some means or other (Clarke).

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