

RENSELAER POLYTECHNIC INSTITUTE
COURSE SYLLABUS
Science and Technology Studies

STSS 6962 - Institutional Approaches in STS

Spring 2012, Monday, 10 am to 1 pm

Professor Abby Kinchy, Sage 5306, x6980, office hours by appointment

Course Description

This graduate course prepares students to use the tools of sociological institutionalism in the study of scientific knowledge systems and processes of technological change. Sociological institutionalism—also called neo-institutionalism or simply institutional theory—is one of the major theoretical perspectives in contemporary sociology. Institutional research considers the processes by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines for social behavior. Sociological institutionalism rejects the rational-actor models of classical economics and focuses on the properties of supra-individual units of analysis that cannot be reduced to aggregations or direct consequences of individuals' attributes or motives. Sociological institutionalism has an important place in science and technology studies, from Merton's sociology of science through the neo-institutionalist turn now seen in the "new political sociology of science." In this course, students will grapple with the strengths and weaknesses of these theoretical approaches and will develop critical understanding of the research methods used in the study of institutions.

Expected Learning Outcomes

Upon completion of this course, students will be able to:

- Recognize and apply key institutional theories and concepts for analysis of scientific knowledge systems and processes of technological change.
- Interpret, explain, and critique contemporary issues in science and technology using institutional theory.
- Generate research questions and hypotheses informed by sociological institutionalism.
- Critically assess the research design and methods of diverse works in science and technology studies.

Assignments and Grading

Final grades will be assigned based on an assessment of four graded assignments, as well as the quality and frequency of participation in class discussion (including student-generated discussion questions to be posted on the LMS site in advance of the class meeting).

Assignment 1 – 20%

Assignment 2 – 20%

Assignment 3 – 20%

Assignment 4 – 25%

Discussion questions – 15%

Assignment 1: Institutional theory as explanation – Due March 19

1. Identify a research topic that interests you. This can be rather general, such as "women gamers" or "alternative energy."
2. Choose one scholar (or group of scholars) that you have encountered in the course so far, for additional reading and study.

3. Write a short paper (max 5 double spaced pages) about how the scholar(s) you chose would likely study the topic you chose. In this paper, you should identify a phenomenon to be explained (e.g. “why is the US solar industry primarily building large farms rather than widely distributed small-scale energy production?”), and the kind of explanation that the scholar you chose might offer.

Assignments 2 and 3: Logic of inquiry – staggered due dates

The purpose of this assignment is to help you to think carefully about research design. I strongly advise you to obtain, read, and consult the very helpful little methods book, *Salsa Dancing Into the Social Sciences*, by Kristin Luker, when working through this assignment.

You will do this assignment TWICE, choosing two of the books listed on the syllabus or one book from the syllabus and one book of your choosing, with the approval of the instructor. If you choose a book yourself, it should be of fairly close relevance to the topics, theories, and methods introduced in the course. Due dates for each assignment will be established with a sign-up sheet early in the semester.

For each book, you will hand in an essay of 2-3 pages and give a presentation in class, covering the questions below.

1. First, summarize the major claims, findings, or arguments of the book. What is the **explanandum** (the phenomenon to be explained)? What is the **explanans** (the explanation for the phenomenon)?
2. Think about the **research design** and the way that the author establishes the significance of the work. Is the methodology inductive (e.g. grounded theory – Corbin and Strauss) or deductive (e.g. extended case method –Burawoy)?
 - a. If the work is a **deductive** case study, what does the author believe it is a case of? To what set of parallel instances does it belong? Does the author argue that the instance s/he is studying is typical, is deviant, or has special attributes that make it interesting for theory? How does the author move between observations and theory? What theoretically derived expectations did the author begin with? Do you believe that these expectations were “falsifiable”? Did the author confirm initial expectations, refute them, or “reconstruct” them in some way?
 - b. If the work is **inductive**, how would you characterize the author’s analytical techniques? Are they primarily interpretive, or does the author seek to build theory by categorizing and comparing? How does s/he move from the specific to the general? What claims to generality are made, and how are they supported? How does the author handle multiple meanings? Contradictory evidence? To what set of instances do findings extend?
 - c. Possibly, the researcher is a “salsa dancing” social scientist, like Luker, and the research design has both inductive and deductive elements. In this case, explain how the author arrived at an explanandum and an explanans, and address all of the above questions that are relevant.
3. Whether the work is inductive or deductive, do the authors effectively use **triangulation** of methods and perspectives (that is, do they cross-check data and examine phenomena from more than one standpoint or theoretical perspective)? Does the work possess “**auditability**” (that is, can you follow the researcher’s “decision trail”)? Does the author attend to both participants’ meanings and theoretical meanings (the “**double hermeneutic**”)?

Assignment 4: Literature review – due May 9

1. Choose an STS research topic introduced in this course for further study. For example, “patenting and university science,” or “how social movements change scientific institutions.”
2. Write a short, synthetic, critical literature review (max 15 double spaced pages) addressing recent (last 10 years) research on the topic. What are the prevailing theories? What kinds of research methods are being used? What are the merits and weaknesses of these lines of inquiry?

Discussion questions

Students must post a question in the Discussion section of the LMS site before 8:00 AM on the day of class. Good discussion questions do not merely seek clarification, nor are they simply a critique posed in question form. You should strive to pose questions that will provoke thoughtful discussion about the readings in relation to one another and in relation to ideas discussed in previous weeks.

Academic Integrity

Student-teacher relationships are built on trust. Students must trust that teachers have made appropriate decisions about the structure and content of courses they teach, and teachers must trust that assignments that students turn in are their own. Acts that violate this trust undermine the educational process. Any acts of plagiarism will have grave consequences. The Rensselaer Handbook of Student Rights and Responsibilities defines various forms of academic dishonesty and you should make yourself familiar with these. In this class, all individual assignments that are turned in for a grade must represent the student’s own work.

Any instances of plagiarism will result in a failing grade for the assignment. Repeated instances of academic dishonesty will be grounds for failing the course. Plagiarism includes purchasing term papers; copying or handing in the writing of another student (current or former); using sentences verbatim from a published source without appropriate referencing (when in doubt, cite the source); and presenting as one’s own the detailed argument of a published source. “Recycling” papers written in other courses is also forbidden.

Course Calendar

PART I: GETTING ORIENTED

January 23

Introduction

Jepperson, Ronald L. 1991. “Institutions, Institutional Effects, and Institutionalism.” Pp. 143-163 in Walter W. Powell and Paul J. DiMaggio (eds.). *The New Institutionalism in Organizational Analysis*. Chicago, IL: University of Chicago Press.

January 30

Merton and his critics

Robert K. Merton. 1973 [1942]. “The Puritan Spur to Science,” “The Normative Structure of Science,” and “The Matthew Effect in Science.” In *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago: University of Chicago Press.

Mitroff, I. I. Norms and Counternorms in a Select Group of the Apollo Moon Scientist: A Case Study of the Ambivalence of Scientists. *American Sociological Review* 39: 579-95, 1974.

- Michael Mulkay, "Norms and Ideology in Science," *Social Science Information* 15 (1976): 637-656.
- Gieryn, T.F. (1982). Relativist/constructivist programmes in the sociology of science: redundancy and retreat. *Social Studies of Science*, 12(2), 279. Sage Publications.
- Karin Knorr-Cetina. 1991. "Merton's Sociology of Science: The First and Last Sociology of Science?" *Contemporary Sociology*, Vol. 20, No. 4 (Jul., 1991), pp. 522-526

February 6

Bringing institutions back into STS

- Klein, H. K., & Kleinman, D. L. (2002). The Social Construction of Technology: Structural Considerations. *Science, Technology & Human Values*, 27(1), 28-52.
- Kleinman, D. L. (1998). Untangling Context: Understanding a University Laboratory in the Commercial World. *Science, Technology & Human Values*, 23(3), 285-314.
- Pinch, T. (2008). Technology and institutions: living in a material world. *Theory and Society*, 37(5), 461-483
- Popp Berman, E. (2008). Why Did Universities Start Patenting? Institution-building and the Road to the Bayh-Dole Act. *Social Studies of Science*, 38(6), 835-871.
- Scott Frickel and Kelly Moore. 2006. Prospects and Challenges for a New Political Sociology of Science. In *The New Political Sociology of Science: Institutions, Networks, and Power*, Frickel and Moore, eds. UW Press.

PART II: THEORY AND METHODS

February 13

Theorizing the interplay of structure and agency

- Sewell, W. H. (1992). A theory of structure: Duality, agency, and transformation. *The American Journal of Sociology*, 98(1), 1-29.
- Giddens, Anthony. 1989. Hermeneutics and Social Theory, In *Hermeneutics: Questions and Prospects* (Gary Shapiro, Alan Sica, ed), Univ of Massachusetts Press.
- Loic Wacquant. 1992. "Toward a Social Praxeology: The Logic and Practice of Bourdieu's Sociology" in *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press. **(read through page 26).**
- Bourdieu, P. (1991). The peculiar history of scientific reason. *Sociological Forum*, 6(1), 3-26.
- Swidler, A. (1986). Culture in Action: Symbols and Strategies. *American Sociological Review*, 51, 273-286.

February 20

President's Day

February 27

New institutionalism

- DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields Paul J. DiMaggio; Walter W. Powell. *American Sociological Review*, 48(2), 147-160.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*, 83, 340-363.
- Clemens, E. S., & Cook, J. M. (1999). POLITICS AND INSTITUTIONALISM: Explaining Durability and Change. *Annual Review of Sociology*, 25(1), 441-466.
- Schmidt, V. a. (2008). Discursive Institutionalism: The Explanatory Power of Ideas and Discourse. *Annual Review of Political Science*, 11(1), 303-326.
- Fourcade-Gourinchas, M., & Babb, S. L. (2002). The Rebirth of the Liberal Creed: Paths to Neoliberalism in Four Countries. *American Journal of Sociology*, 108(3), 533-579.

March 5

World culture theory

- Meyer, O. W., Boli, J., Thomas, G. M., & Ramirez, F. O. (1997). World Society and the Nation-State. *American Journal of Sociology*, 103(1), 144-181.
- Drori, G. S., & Meyer, J. W. (2006). Global Scientization: An Environment for Expanded Organization. In G S Drori, J. W. Meyer, & H. Hwang (Eds.), (pp. 50-68). Oxford: Oxford University Press.
- Frank, D. J., Hironaka, A., & Schofer, E. (2000). The Nation-State and the Natural Environment over the Twentieth Century. *American Sociological Review*, 65(1), 96-116.
- Buttel, F. H. (2000). World Society, the Nation-State, and Environmental Protection: Comment on Frank, Hironaka, and Schofer. *American Sociological Review*, 65(1), 117.
- Frank, D. J., Hironaka, A., & Schofer, E. (2000). Environmentalism as a Global Institution: Reply to Buttel. *American Sociological Review*, 65(1), 122-127.

March 12

Spring Break

March 19 – ASSIGNMENT 1 DUE

Methodological concerns – how do we study institutions?

- Schneiberg, M., & Clemens, E. S. (2006). The typical tools for the job: research strategies in institutional analysis. *Sociological Theory*, 24(3), 195–227.
- Loic Wacquant. 1992. "Toward a Social Praxeology: The Logic and Practice of Bourdieu's Sociology" in *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press. **(read pages 26-59).**
- Michael Grenfell. 2008. Methodological Principles. In *Pierre Bourdieu: Key Concepts*, Grenfell, ed. Acumen.
- DeVault, Marjorie L. and Liza McCoy. (2001). Institutional ethnography: Using interviews to investigate ruling relations. In J.F. Gubrium and J.A. Holstein (Eds.), *Handbook of interview research: Context and methods*. Thousand Oaks: Sage Publications.
- Smith, Dorothy E. (2002). "Institutional Ethnography." Pp. 150-161 in Tim May (ed.), *Qualitative research in action: An international guide to issues in practice*. London: Sage. **[note: the e-book is available through the library – the pdf on LMS is not a very good copy]**
- Burawoy, M. (1998). The Extended Case Method. *Sociological Theory*, 16(1), 4-33.

PART III: OLD AND NEW INSTITUTIONALIST STS

March 26

Emergence and diffusion of scientific fields

- Ben David, J. and Collins, R. 1966. Social Factors in the Origins of a New Science: The Case of Psychology. *American Sociological Review* 31: 451-65.
- Scott Frickel. 2004. Building an Interdiscipline: Collective Action Framing and the Rise of Genetic Toxicology. *Social Problems*. 51(2): 269-287.
- Scott Frickel and Neil Gross. 2005. "A General Theory of Scientific/Intellectual Movements." *American Sociological Review* 70: 204-232.

Books for review

- Timothy Lenoir. *Instituting Science: The Cultural Production of Scientific Disciplines*.
- Fourcade, Marion. 2008. *Economists and Societies: Discipline and Profession in the United States, Britain and France, 1890s-1990s*.

April 2

Stratification and gender inequality

- Rossiter, Margaret. 1993. "The Matthew Matilda Effect in Science," *Social Studies of Science* 23 (2): 325-341.
- J. Scott Long and Mary Frank Fox, "Scientific Careers: Universalism and Particularism." *Annual Review of Sociology* 21(1995): 45-71.
- Laurel Smith-Doerr. 2004. "Flexibility and Fairness: Effects of the Network Form of Organization on Gender Equity in Life Sciences Careers." *Sociological Perspectives* 47(1): 25-54.

Books for review:

- Laurel Smith-Doerr. 2004. *Women's Work: Gender Equality vs. Hierarchy in the Life Sciences*.
- Henry Etzkowitz, Carol Kemelgor, Brian Uzzi. 2000. *Athena Unbound: the advancement of women in science and technology*

April 9

Boundary-work

- Gieryn, T. F. (1983). Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists. *American Sociological Review*, 48, 781-795.
- Moore, K. (1996). Organizing integrity: American science and the creation of public interest organizations, 1955-1975. *The American Journal of Sociology*, 101(6), 1592-1627.
- Kinchy, A. J., & Kleinman, D. L. (2003). Organizing Credibility: Discursive and Organizational Orthodoxy on the Borders of Ecology and Politics. *Social Studies of Science*, 33(6), 869-896. United Kingdom.

Books for review:

- Kelly Moore. 2008. *Disrupting Science: Social movements, American scientists, and the politics of the military, 1945-1975*
- Michele Lamont. 2009. *How Professors Think: Inside the Curious World of Academic Judgment*

April 16

Science and the state

- Stuart Blume. 1974. *Toward a Political Sociology of Science*. Free Press **(excerpt)**
- Espeland, Wendy Nelson. 1994. Legally Mediated Identity: The National Environmental Policy Act and the Bureaucratic Construction of Interests. *Law & Society Review*, 28(5), 1149-1180.
- Laurel Smith-Doerr. 2006. Learning to Reflect or Deflect? U.S. Policies and Graduate Programs' Ethics Training for Life Scientists. In *The New Political Sociology of Science*, Frickel and Moore, eds.
- Optional:** Kelly Moore, et al., 2001. Science and Neoliberal Globalization: A Political Sociological Approach. *Theory and Society* 40: 505-532.

Books for review:

- Atsushi Akera. 2007. *Calculating a Natural World: Scientists, Engineers, and Computers during the Rise of U.S. Cold War Research*
- Steven Epstein. 2009. *Inclusion: The Politics of Difference in Medical Research*

April 23

Science and the market

- Kleinman, D. L., & Vallas, S. P. (2001). Science, capitalism, and the rise of the "knowledge worker": The changing structure of knowledge production in the United States. *Theory and Society*, 30(4), 451-492.

- Murray, F. (2010). The Oncomouse That Roared: Hybrid Exchange Strategies as a Source of Distinction at the Boundary of Overlapping Institutions. *American Journal of Sociology*, 116(2), 341-388.
- Colyvas, J., & Powell, W. W. (2006). Roads to Institutionalization: The Remaking of Boundaries between Public and Private Science. *Research in Organizational Behavior*, 27, 305-353.

Books for review

- Daniel Lee Kleinman. 2003. *Impure Cultures: University Biology and the World of Commerce*
- Elizabeth Popp Berman. 2012. *Creating the Market University: How Academic Science Became an Economic Engine*

April 30

Social movements and institutional change

- Rao, H. (1998). Caveat Emptor: The Construction of Nonprofit Consumer Watchdog Organizations. *American Journal of Sociology*, 103(4), 912-961.
- Woodhouse, E. J. (2005). Green Chemistry as Social Movement? *Science, Technology & Human Values*, 30(2), 199-222.
- Lounsbury, M. (2003). Social movements, field frames and industry emergence: a cultural-political perspective on US recycling. *Socio-Economic Review*, 1(1), 71-104.

Books for review:

- David Hess. 2007. *Alternative Pathways in Science and Industry: activism, innovation, and the environment in an era of globalization*
- Steven Epstein. 1996. *Impure Science: AIDS, Activism, and the Politics of Knowledge*

May 7

Risk and disasters

- Clarke, L., & James F. Short, J. (1993). Social Organization and Risk: Some Current Controversies. *Annual Review of Sociology*, 19, 375-399.
- Perrow, C. (1981). Normal Accident at Three Mile Island. *Society*, 18(5), 17-26.
- Vaughan, D. (2008). Regulating Risk: Implications of the Challenger Accident. *Law & Policy*, 11(3), 330-349.
- Perrow, C. (2010). The meltdown was not an accident. In M. Lounsbury & P. M. Hirsch (Eds.), *Markets on Trial: The Economic Sociology of the U.S. Financial Crisis: Part A* (Research in the Sociology of Organizations, Volume 30) (pp. 309-330). Emerald Group Publishing Limited.

Books for review:

- Diane Vaughan. 1997. *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA*
- Lynn Eden. 2006. *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation*.

May 9 – LITERATURE REVIEW DUE