

History of Science 157

Sociology of Science

Fall 2009

Steven Shapin

Science Center 469
Tuesdays, 2 -> 4 (with
sections TBD)

This course introduces students to a range of sociological approaches to thinking about science, its historical development, its relations to society and other forms of culture, the conditions of its credibility, authority, and transmission. It distinguishes between a sociology of the scientific community and a sociology of scientific knowledge and it inquires into sources of resistance to the very idea of the latter.

Basis of assessment:

(i) There will be a short, take-home exam due in October, due date TBD: 30% of final grade.

(ii) There will be a final essay of 10-12 pages, on set topics to be announced later, due Friday, 11 December: 50% of final grade.

(iii) Class and section participation and evidence of preparation will count for 20% of the final grade.

Contact Details

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Further Details TBD

Readings: All readings bar the Kuhn book (which you should purchase) will be available as pdfs on the course website. A copy of all readings will also be available in Lamont reserves.

I do **not** anticipate that all students will read **everything** listed below. The week before readings become relevant to class meetings, I will indicate the relative importance of reading materials-- what is essential, what may be skimmed, what may be read in depth by those with special interests, etc.

There are several sources which are **not** assigned, and which students are **not** in any way responsible for, but which may be consulted (the books in Lamont reserves; the papers on the course website) by those seeking handy overviews of the recent and current state of sociological studies of scientific knowledge. These include:

Barnes, Barry, David Bloor, and John Henry, 1996. Scientific Knowledge: A Sociological Analysis. Chicago: University of Chicago Press.

Golinski, J. V., 1998. Making Natural Knowledge: Constructivism and the History of Science. Cambridge: Cambridge University Press.

Shapin, Steven, 1982. "History of Science and Its Sociological Reconstructions," History of Science 20: 157-211.

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

I have indicated (in round brackets) after each course section-title a **provisional** idea about how many sessions will be devoted

to each section.

1. What is Sociological about Science? (1 session)

Science has historically presented conceptual, methodological, and even moral and political, obstacles to understanding it in sociological terms. So what **is** sociological about science and why has there been such resistance to thinking sociologically about science?

Introduction: no required readings

2. Order (3 sessions)

The founding figures of the sociology of science were struck by both the remarkable consensus characteristic of the natural sciences and by the distinctive and admirable set of moral commitments that distinguished the scientific community from other social institutions. This tradition of work aimed to say something important about the social conditions for the production of scientific truth, but it also testified to the distinctive cultural and social conditions of the settings from which this sociological project emerged.

Critics of the approach represented by Robert Merton sometimes pointed to so-called problems of "agency": if social order in science was to be accounted for by socialization into the structures and collectively held values, then what did this make of individual decision-making processes? What are social "norms," such that they can count as explanations of social behavior? Should agency be regarded as an illusion or was the failure of structural-functionalist sociology to give an account of individual agency a sign of its impoverishment?

Readings:

Merton, Robert K., [1938] 1973. "Science and the Social Order," in Merton, The Sociology of Science, ed. Norman W. Storer. Chicago: University of Chicago Press, pp. 254-66.

- Merton, Robert K., [1942] 1973. "The Normative Structure of Science," in ibid., pp. 267-78.
- Hagstrom, Warren O., [1965] 1982. "Gift Giving as an Organizing Principle in Science," in Science in Context: Readings in the Sociology of Science, eds Barry Barnes and David Edge. Milton Keynes: Open University Press, pp. 21-34.
- Latour, Bruno and Steve Woolgar, [1979] 1982. "The Cycle of Credibility," in ibid., pp. 35-43.
- Barnes, Barry, 1971. "Making Out in Industrial Research," Science Studies 1: 157-75.
- Becker, Howard S., 1964. "Personal Change in Adult Life," Sociometry 27: 40-53.
- Mulkay, Michael J., 1976. "Norms and Ideology in Science," Social Science Information 15: 627-56.
- Mulkay, Michael J., 1980. "Interpretation and the Use of Rules: The Case of the Norms of Science," in Thomas F. Gieryn, ed., Science and Social Structure: A Festschrift for Robert K. Merton, Transactions of the New York Academy of Sciences, Series II, Vol. 49, pp. 111-25.
- Wrong, Dennis H., 1961. "The Oversocialized Conception of Man in Modern Sociology," American Sociological Review 26: 183-93.

3. Disorder (2)

Much as the founding figures of the sociology of science were impressed by the special degree of orderliness in science, so later writers noted, and attempted to explain, evidence of scientific dissensus, controversy, and **disorder**. What were the facts of the matter about scientific disorder? Why did scientists disagree among themselves and how did scientific controversies come to an end, assuming that they did? Was scientific controversy pathological or normal? In these connections, the goal-directness of science was insisted upon, and conflicting scientific positions were ascribed to different goals, purposes, or interests.

Readings:

Barnes, Barry, 1977. Interests and the Growth of Knowledge. London: Routledge & Kegan Paul, ch. 1.

Dean, John, 1979. "Controversy over Classification: A Case Study from the History of Botany," in Natural Order: Historical Studies of Scientific Culture, eds Barry Barnes and Steven Shapin. Beverly Hills, CA: Sage, pp. 211-30.

Collins, H. M., 1975. "The Seven Sexes: A Study in the Sociology of a Phenomenon, or the Replication of an Experiment in Physics," Sociology 9: 205-24.

Pinch, Trevor J., 1985. "Towards an Analysis of Scientific Observation: The Externality and Evidential Significance of Observational Reports in Physics," Social Studies of Science 15: 3-36.

4. Sociology of Knowledge and the Idea of 'External Influences' (1)

In traditional formulations of the sociology of knowledge, the subject had interest and legitimacy insofar as it could be shown that 'external social influences' bore upon the dynamics, thematics, or institutional standing of science, or upon the content of scientific knowledge. For many writers, scientific knowledge counted as a 'hard' or even limiting case. What could possibly be 'social' about facts, logical inference, the whole apparatus of Scientific Method? You could have-- it was considered-- a sociology of the scientific role, of the scientific institution, and of the thematics of science (what sort of science was done at certain times and places, and how much of one sort as opposed to another). You could have a sociology of error or of pseudo-science, but not, it was thought, a sociology of scientific knowledge proper. These sessions will introduce the frameworks which found such presumptions a matter of course, and then we will go on to suggest a different way of thinking that made a sociology of scientific knowledge not just possible but necessary for understanding the historical development and credibility of scientific knowledge.

Readings:

Zilsel, Edgar, 1942. "The Sociological Roots of Science,"

American Journal of Sociology 47: 544-62 (reprinted in Social Studies of Science 30 [2000], 935-49).

Shapin, Steven, 1992. "Discipline and Bounding: The History and Sociology of Science as Seen through the Externalism-Internalism Debate," History of Science 30: 333-69.

5. The Problem of Knowledge and the Problem of Order (2)

There are alternatives to the framework that supposes 'the social' to lie outside of 'science' and that equates the social with the notion of 'external social influences.' Thomas Kuhn's work-- perhaps unwittingly-- opened up the possibility of a new sort of sociology of science-- one which took the fabric of knowledge itself as social in nature and which sought the foundations of science in social institutions. If such views are taken seriously, one can think of the problem of social order and the problem of knowledge as different forms of the same problem.

Readings:

Kuhn, Thomas S., [1962] 1996. The Structure of Scientific Revolutions, 3rd ed. Chicago: University of Chicago Press.

Bloor, David, 1994. "What Can the Sociologist Say About $2 + 2 = 4$?", in Mathematics, Education and Philosophy: An International Perspective, ed. Paul Ernest. London: Falmer, pp. 21-32.

Shapin, Steven and Simon Schaffer, 1985. Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life. Princeton: Princeton University Press, chs 2, 4, 8.

6. Relativism (2)

Few aspects of the sociology of scientific knowledge are as controversial as the **relativism** associated with some of its versions. To what features of science do sociologists think one should adopt a relativistic posture? How does sociological relativism square with currently accepted standards of historical practice?

Readings:

Bloor, David, [1976] 1991. Knowledge and Social Imagery. Chicago: University of Chicago Press, chs 1-2.

Barnes, Barry and David Bloor, 1982. "Relativism, Rationalism and the Sociology of Knowledge," in Rationality and Relativism, eds Martin Hollis and Steven Lukes. Oxford: Blackwell, pp. 21-47.

Bloor, David, 1982. "Durkheim and Mauss Revisited: Classification and the Sociology of Knowledge," Studies in History and Philosophy of Science 13: 267-97.

Barnes, Barry, 1992. "Realism, Relativism and Finitism," in Cognitive Relativism and Social Science, eds Diederick Raven, Lieteke van Vucht Tijssen, and Jan de Wolf. New Brunswick, NJ: Transaction, pp. 131-47.

7. Motives, Meanings, and Context (1)

In founding the discipline called the sociology of science Robert Merton urged practitioners not to conflate what he called motivational and institutional levels of analyses. While the psychologist and the historian might seek to discern people's motives, the sociologist should avoid these individualistic categories and seek for explanatory items belonging to social structure. While that sorting scheme is very widely shared, we want here to explore sociological possibilities for understanding what motives are, some of which have an important bearing on largely taken-for-granted practices in the history of science and in history generally.

Readings:

Weber, Max, 1978. Economy and Society: An Outline of Interpretive Sociology, eds Guenther Roth and Claus Wittich, trans. Ephraim Fischhoff et al., 2 vols. Berkeley: University of California Press, Vol. I, pp. 3-24.

Mills, C. Wright, 1940. "Situated Actions and Vocabularies of Motive," American Sociological Review 5: 904-13.

Gellner, Ernst, [1962] 1970. "Concepts and Society," in Rationality, ed. Bryan R. Wilson. Oxford: Basil Blackwell,

pp. 18-49.

8. Sociology and the Individual (1)

It is sometimes said that the sociologist studies social structure while the historian studies the actions of individuals. It is true that many historians conceive of society as an aggregate of individuals while others treat supra-individual entities (e.g., economic structures, the body of ideas, the institutions of law and religion), but, in fact, explicitly sociological studies of individual lives and their trajectories are rare and it is hard to think of a single biography written by a sociologist, save for studies of the discipline's "founding figures." Nevertheless, there are some powerful sociological tools for thinking about individual lives-- whether or not they are lives in science-- and these tools have the capacity to shape new kinds of historical study.

Readings:

Becker, Howard S., 1994. "'Foi por Acaso': Conceptualizing Coincidence," The Sociological Quarterly 35: 183-94.

Goffman, Erving, [1959] 1969. The Presentation of Self in Everyday Life. London: Allen Lane, The Penguin Press, pp. 1-66.

Granovetter, Mark S., 1973. "The Strength of Weak Ties," American Journal of Sociology 78: 1360-80.