

**Introduction to Science Studies. I.  
HIGR 238; SOCG 255A; PHIL 209A; COGR 225A  
Fall 2014**

Professor Robert S. Westman  
Tuesday, 9:30 a.m.–12:20 p.m.  
Science Studies Seminar Room (3<sup>rd</sup> Floor H&SS: Room 3027)  
Office Hours: **Thursdays, 3:30–5:30 p.m.** (4072 H&SS)

**Objectives and Requirements:** This seminar is a *historical* introduction to the main problems of Science Studies. It is necessarily selective and does not include all topics. It is required for all first-year students in the Science Studies Program; other interested students only by special permission of the instructor.

**ACCESS POINTS:**

**\*\*AVAILABLE ELECTRONICALLY ONLINE THROUGH TED**

Other items can be found fairly easily with clever and obvious browser entries or by going directly to the journal via Roger (*Representations*, *Isis*, etc.)

1. October 7: **Some Opening Deconstructions: *Science, Scientist, Objectivity.***

--Laura Snyder. *The Philosophical Breakfast Club and the Invention of the Scientist*. 2011 Dibner Library Lecture:

[http://library.si.edu/sites/default/files/pdf/general\\_pages/2011-DibnerLecture-LauraSnyder.pdf](http://library.si.edu/sites/default/files/pdf/general_pages/2011-DibnerLecture-LauraSnyder.pdf)

--Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, 1992, 40:81–128. [Note: This article has now been expanded into a substantial book entitled, *Objectivity* (New York: Zone Books, 2007)].

--Peter Dear, "What is the History of Science the History *Of?*" *Isis*, 2005, 96:390–406.

--Jan Golinski, "Is It Time to Forget Science? Reflections on Singular Science and Its History," *Osiris*, 27, 2012, pp. 19–36.

## 2. October 14: From 19C Positivism and the Logical Positivists to Popper and Cold War Philosophy of Science.

-- Michele Marsonet, "Positivism." <http://www.inters.org/positivism>

\*\*Robert Klee, *Introduction to the Philosophy of Science: Cutting Nature at its Seams* (New York: Oxford UP, 1997), pp. 28–61.

\*\*Karl Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge*. (New York: Harper Torchbooks, 1965; first pub. 1962), pp. 33–65.

\*\*George Reisch, *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic* (Cambridge UP, 2005), pp. 1–26; 118–135; 369–388.

## 3. October 21: Underdetermination and Anti-Realism: Pierre Duhem--Scientist, Philosopher and Historian of Science.

\*\*Pierre Duhem, "Some Reflections on the Subject of Experimental Physics," tr. Roger Ariew and Peter Barker in *Pierre Duhem: Essays in the History and Philosophy of Science* (Indianapolis: Hackett Pub., 1996), pp. 75–111 ("Quelques réflexions au sujet de la physique expérimentale," *Revue des questions scientifiques*, 1894, 36:179–229).

\*\*Pierre Duhem, From: *To Save the Phenomena: Essay on the Concept of Physical Theory from Plato to Galileo*, tr. Ariew and Barker, pp. 131–156 (*SOZEIN TA PHAINOMENA: essai sur la notion de théorie physique de Platon à Galilée* [Paris: Hermann, 1908], chap. 7 and Conclusion).

\*\*Pierre Duhem, "The English School and Physical Theories: On a Recent Book by W. Thomson," (1908), pp. 50–74.

\*\*Ian Hacking, "The Self-Vindication of the Laboratory Sciences," in Andrew Pickering, ed. *Science as Practice and Culture*, Chicago: University of Chicago Press, 1992, pp. 29–44.

## 4. October 28: Marxist and Non-Marxist Sociology of Scientific Knowledge, ca.

## 1930s–70s.

\*\*Robert K. Merton, “Motive Forces of the New Science (1938),” from *Science, Technology and Society in Seventeenth Century England* (New York: Howard Fertig, 1970; repr. in I. Bernard Cohen ed., *Puritanism and the Rise of Modern Science* (New Brunswick and London: Rutgers Univ. Press, 1990), pp.112–131; repr. from 1938).

\*\*Robert K. Merton, “The Normative Structure of Science,” (1942) in Robert K. Merton, *The Sociology of Science*, ed. and intro. N.W. Storer (Chicago: Univ. of Chicago Press, 1973), pp. 267–78.

\*\*Boris Hessen, *The Social and Economic Roots of Newton’s ‘Principia’*, (New York: Howard Fertig, 1971), pp. 1–62.

Loren Graham, “The Socio–Political Roots of Boris Hessen: Soviet Marxism and the History of Science,” *Social Studies of Science*, 1985, 15: 705–722.

## 5. Nov. 4: The Scientific Fact as Locus of History, Philosophy and Sociology of Science.

Ludwik Fleck, *Genesis and Development of a Scientific Fact*. Tr. Fred Bradley and Thaddeus J. Trenn; ed. Thaddeus J. Trenn and Robert K. Merton. Foreword by Thomas S. Kuhn. Chicago: Univ. of Chicago Press, 1979 (first pub. as *Entstehung und Entwicklung einer wissenschaftlichen Tatsache: Einführung in die Lehre vom Denkstil und Denkkollektiv* [Basel, Switzerland: Benno Schwabe, 1935]).

## 6. Nov. 11: Scientific Change as Revolution.

--Thomas S. Kuhn. *The Structure of Scientific Revolutions*. Chicago: Univ. of Chicago Press, 2011 (with a new forward by Ian Hacking); first pub. 1962.

--Struan Jacobs, “J.B. Conant’s Other Assistant: Science as Depicted by Leonard K. Nash, including Reference to Thomas Kuhn,” *Perspectives on Science*, 2010, vol. 18, pp. 328–351.

--Struan Jacobs, “Polanyi’s Presagement of the Incommensurability Concept,”

*Polanyiana*, 2006, vol. 15: 5–20. First pub. 2002 in *Studies in History and Philosophy of Science*.

[http://www.polanyi.bme.hu/folyoirat/2006/2006\\_01\\_Struan\\_Jacobs.pdf](http://www.polanyi.bme.hu/folyoirat/2006/2006_01_Struan_Jacobs.pdf)

### 7. Nov. 18: In the Wake of Kuhn.

\*\*Karl Popper, "Normal Science and Its Dangers," in *Criticism and the Growth of Knowledge* (Cambridge: Cambridge UP, 1970), pp. 51–58.

\*\*Thomas S. Kuhn, "Reflections on my Critics," in *Criticism and the Growth of Knowledge*, pp. 231–278.

\*\*David Bloor, "The Strong Programme in the Sociology of Knowledge," *Knowledge and Social Imagery*, (London: Routledge and Kegan Paul, 1976), pp. 1–19.

Trevor Pinch, "Kuhn--The Conservative and Radical Interpretations: Are Some Mertonians 'Kuhnians' and Some Kuhnians 'Mertonians'?" *Social Studies of Science*, 1997, 27:465–482; first pub., *4S Newsletter*, 1982, 78.1, pp.10–25).

Robert S. Westman, "The Melanchthon Circle, Rheticus, and the Wittenberg Interpretation of the Copernican Theory," *Isis*, 1975, 66:164–193.

For comparison, see my *The Copernican Question: Prognostication, Skepticism and Celestial Order* (Berkeley: University of California Press, 2011), chap. 5 (available online through Roger).

### 8. Nov. 25: The Localist Turn and the Problem of Rule-Following.

\*\*Peter Winch, *The Idea of a Social Science and Its Relation to Philosophy* (Atlantic Highlands, NJ: Humanities Press, 1958), pp. 21–39.

\*\*Clifford Geertz, "'From the Native's Point of View': On the Nature of Anthropological Understanding," pp. 55–70.

\*\*John Zammito: "How Kuhn Became a Sociologist," from *A Nice Derangement of Epistemes*, (Univ. of Chicago Press, 2004), pp. 123–150 + 318–331(endnotes).

--Michael Friedman, "On the Sociology of Scientific Knowledge and Its Philosophical Agenda," *Studies in History and Philosophy of Science*, 1998,

29:215–265.

--Jouni-Matti Kuukkanen, "Senses of Localism," *History of Science*, 50 (2012): 477–500.

### 9. Dec. 2: The Experimental Fact at the Origins of Modern Science.

--Steven Shapin and Simon Schaffer. *Leviathan and the Air Pump*. Princeton: Princeton Univ. Press, 1985.

\*\*Peter Dear, "Historiography of Not-So-Recent Science," *History of Science* 50 (2012): 197–211.

### 10. December 9: Contextuality, Inter-contextuality, Anti-Contextuality.

--Bruno Latour. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard Univ. Press, 1987. Select chapters.

\*\*Bruno Latour and Steve Woolgar. *Laboratory Life*. Beverly Hills, CA: Sage, 1979. *Postscript* from 1986 edition only.

\*\* *The Sokal Hoax: The Sham That Shook the Academy*. Lincoln, NB: University of Nebraska Press, 2000. Excerpts to be assigned.

### Where and When to Turn in Your Essay:

Due: Wednesday, December 17, 2014, 2 p.m.

Please deliver a hard copy to the Science Studies Program Coordinator, Courtney Hibbard, at the Science Studies Office and send an e-copy to me at:

[rwestman@ucsd.edu](mailto:rwestman@ucsd.edu)

### Essay Topic.

In the past century or so, humanistic and social scientific disciplines have made scientific knowledge a major topic of study. Over this period, different assumptions, questions, conceptual tools and methods have guided

investigation, ultimately leading to greater sophistication—but also to controversy.

Using only materials studied in this seminar, (1) identify the major questions, methods, controversies (if relevant) and subject matters that have prevailed in different periods from the pre–World War I era to the recent past; and (2) describe and, if possible, explain shifts in intellectual interest and commitment.

A one–page outline will be due in class in Week 7. The outline will be marked Satisfactory/Unsatisfactory.

### **Class Discussion and Presentations.**

You are expected to read all texts listed under the topic for each week, unless marked “recommended”.

A group of students will lead each week’s discussion (except for Week 1). Be prepared to volunteer. Each week’s group will prepare a set of questions before the session and distribute it to the seminar by Monday evening. The week’s leaders will also present short reviews of the readings in class and raise questions for discussion. These presentations will be taken into consideration in your final grade.

### **Evaluation.**

Final Essay (double–spaced; approximately 25 pp.)

Class discussion and presentation: +/- to final grade on paper.

### **Required Books: To be purchased at your favorite book outlet.**

--Ludwik Fleck, *Genesis and Development of a Scientific Fact*. Tr. Fred Bradley and Thaddeus J. Trenn; ed. Thaddeus J. Trenn and Robert K. Merton. Foreword by Thomas S. Kuhn. Chicago: Univ. of Chicago Press, 1979

--Thomas S. Kuhn. *The Structure of Scientific Revolutions*. 3rd ed. Chicago:

Univ. of Chicago Press, 1996; first pub. 1962.

--Bruno Latour. *Science in Action*. Harvard Univ. Press, 1987.

--Steven Shapin and Simon Schaffer. *Leviathan and the Air Pump*. Princeton: Princeton Univ. Press, 1985.

--*The Sokal Hoax*. Lincoln, NB: University of Nebraska Press, 2000.