

Philosophy 125: Philosophy of Science Scientific Realism in the 20th Century

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Class times: T, Th 10-11:45 am
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In this class, we will examine the development of scientific realism in the 20th century. What is the ontological status of processes and entities referred to by our best scientific theories? Do these processes and entities exist? How could we possibly know if they existed? What happens to them, if anything, when our theories change? These questions were constitutive for even establishing Philosophy of Science as a profession during the early 20th century. We will examine different types of answers to these questions in roughly chronological order throughout the 20th century. For example, *logical positivists* (e.g., Rudolf Carnap and Moritz Schlick) and *pragmatists* (e.g., William James and John Dewey) at the beginning of the last century, *metaphysical constructivists* at mid-century (e.g., Paul Feyerabend and Thomas Kuhn), and *realists* (e.g., Richard Boyd and Philip Kitcher) and *feminists* (e.g., Evelyn Fox Keller and Donna Haraway) at its end, represent five different manners of thinking about these questions. These schools are neither mutually exclusive nor collectively exhaustive. Of course, significant variation existed within each school, but there are general philosophical positions that characterize each tradition as such. One goal of this course will be to assess the internal consistency of these general positions. We will also evaluate the cogency of the contemporary "realist consensus" in light of alternative schools.

COURSE REQUIREMENTS

1. Bi-weekly 1 page summaries (starting Thursday January 17). (30%)
2. Take-home midterm due MONDAY February 4, by 5 pm in my office. (25%)
3. Paper (5-7 pages) due Tuesday March 18, by 5 pm in my office. (30%)
4. Participation in class. Attendance will be taken and there will be "random questioning". (15%)

- You must satisfy each requirement in order to pass the course.

- One third of a letter grade will be deducted per day for any late papers and midterm (e.g., a B+ becomes a B, etc.).

WARNING

Academic misconduct will not be tolerated. Please consult:
http://www.ucsc.edu/academics/academic_integrity/index.html

READINGS

ALL TEXTS ARE IN THE COURSE READER

Weeks 1 and 2 (1/8, 1/10, 1/15, 1/17): Introduction to Basic Themes

1. (1/10) Duhem, P. 1954/1982. "Physical Theory and Metaphysical Explanation" and "Physical Theory and Natural Classification", Chapters 1 and 2, pp. 7-30 in *The Aim and Structure of Physical Theory*. Princeton University Press.
2. (1/15) McMullin, E. 1984. "A Case for Scientific Realism", pp. 8-40 in Leplin, J. (ed.), *Scientific Realism*. Berkeley, CA: University of California Press.
3. (1/17) Godfrey-Smith, P. 2003. "Scientific Realism", Chapter 12, pp. 173-189 in *Theory and Reality. An Introduction to the Philosophy of Science*. University of Chicago Press.

Week 3 (1/22, 1/24): Logical Positivism

4. Schlick, M. 1932/33. "Positivism and Idealism", pp. 37-55 in Boyd, Gasper y Trout (eds.), *The Philosophy of Science* (1991). MIT Press.
5. Carnap, R. 1928/2003. "The Objective", pp. 5-10 and "The Metaphysical Problem of Reality", pp. 281-287 in *The Logical Structure of the World (Der Logische Aufbau der Welt)*. Peru, Illinois: Open Court.
6. Friedman, M. 1999. "Carnap's *Aufbau* Reconsidered", Chapter 5, pp. 89-113 in *Logical Positivism Reconsidered*. [Originally in *Noûs* 21 (1987), pp. 521-45.]

Week 4 (1/29, 1/31): Pragmatism

7. James, W. 1977. *The Writings of William James. A Comprehensive Edition*. McDermott (ed.), Harvard University Press.
 - "What Pragmatism Means" (originally Ch. 2 in *Pragmatism. A New Name for Some Old Ways of Thinking*, 1907), pp. 376-390.
 - "Some Metaphysical Problems Pragmatically Considered" (originally Ch. 3 in *Pragmatism. A New Name for Some Old Ways of Thinking*, 1907), pp. 390-404.
8. Dewey, J. 1925/1929(1958). *Experience and Nature*. "Experience and Philosophic Method", Chapter 1, pp. 1a-39. Dover.

Week 5 (2/5, 2/7): Metaphysical Constructivism

9. Kuhn, TS. 1962. "Revolutions as Changes of World View", Chapter 10, pp. 111-135 in *The Structure of Scientific Revolutions*. University of Chicago Press.
10. Feyerabend, P. 1989. Realism and the Historicity of Knowledge. *The Journal of Philosophy* 86: 393-406.
11. Devitt, M. 1991. "Kuhn, Feyerabend and the Radical Philosophers of Science", Chapter 9, pp. 155-179 in *Realism and Truth*. Basil Blackwell.

Week 6 (2/12, 2/14): Contemporary Empiricism

12. van Fraassen, B. 1980. "Introduction" and "Arguments Concerning Scientific Realism", pp. 1-40 in *The Scientific Image*. Oxford University Press.

13. Churchland, P.M. 1985. "The ontological status of observables: In praise of the superempirical virtues", pp. 35-47 in Churchland and Hooker (eds.), *Images of Science*.

Week 7 (2/19, 2/21): "The Realist Consensus" I

14. Boyd, R. 1984. "The Current Status of Scientific Realism", pp. 41-82 in J. Leplin, (ed.), *Scientific Realism*. Berkeley, CA: University of California Press.

Week 8 (2/26, 2/28): "The Realist Consensus" II

15. Kitcher, P. 1993. "Realism and Scientific Progress", Chapter 5, pp. 127-177. *The Advancement of Science. Science Without Legend, Objectivity Without Illusions*. Oxford University Press.

Week 9 (3/4, 3/6): Feminism

16. Keller, EF and Grontkowski CR. 1983. "The Mind's Eye", pp. 207-224 in Harding S. and Hintikka M. (eds.), *Discovering Reality. Feminist Perspectives on Epistemology, Metaphysics, Methodology and Philosophy of Science*. Kluwer Academic Publishers.

17. Haraway, D. 1988. Situated knowledges: the science question in feminism and the privilege of partial perspective. *Feminist Studies* 14: 575-599.

Week 10 (3/11, 3/13): "Experimentalism"

18. Hacking, I. 1983. *Representing and Intervening*, "What is scientific realism?" pp. 21-31, "Experiment" pp. 149-166, "Experimentation and scientific realism", pp. 262-275. Cambridge University Press.

19. Cartwright, N. 1983. *How the Laws of Physics Lie*. "Introduction", pp. 1-20. Oxford University Press.

Cartwright N. 1999. *The Dappled World. A Study of the Boundaries of Science*.

"Fundamentalism versus the patchwork of laws", Chapter 1, pp. 23-34. Cambridge University Press.