PHILOSOPHY OF SCIENCE

Time & Place  Philosophy second floor seminar room, 5 Washington Place
9.30 to 10.45 AM


- The Structure of Scientific Revolutions, Thomas Kuhn, University of Chicago Press, 1996. (Any edition that contains Kuhn’s postscript will work.)

- Readings distributed via Blackboard

Web  The latest versions of course handouts and so on are at my personal web page: [www.strevens.org/classes/philsci12](http://www.strevens.org/classes/philsci12)

Scanned readings will be posted on the course’s Blackboard site, which you access from [NYU Home](http://www.nyu.edu)

Content  What is science? How does it work? When it works, what kind of knowledge does it provide? Is there a scientific method? How do experiments provide evidence for theories? What is the nature of scientific explanation? How does the social organization of science contribute, if at all, to its success?

Evaluation  Your total grade will be made up of:

- First paper (due March 5)  20%
- Second paper (due April 2)  20%
- Third paper (due April 30)  20%
- Class participation  10%
- Take-home exam (due May 9)  30%

Papers should be 1800 to 2000 words long (about six pages with lines one-and-a-half spaced)

Strevens  Office hours are Wed 11:00 to 12:30, after class, and by appointment.
Room 603, 5 Washington Place, phone 8-3559
strevens@nyu.edu [www.strevens.org](http://www.strevens.org)
212-998-3559 (work) 212-414-1905 (home)
Jan 23  Introduction
  ▶ Godfrey-Smith, Theory and Reality, chapter 1

Jan 25  Big Theories of Science
  The logical empiricist tradition
  ▶ Schlick, M., “Positivism and realism”, pp. 86–102, 106–107
  ▶ Godfrey-Smith, Theory and Reality, chapter 2

Jan 30  The problems of induction
  ▶ Strevens, “The problem of induction” (background)
  ▶ Goodman, N., Fact, Fiction, and Forecast, pp. 66–83
  ▶ Godfrey-Smith, Theory and Reality, chapter 3 (skip §3.3)

Feb 1   Popper’s falsificationism
  ▶ Godfrey-Smith, Theory and Reality, chapter 4

Feb 6   Popper continued

Feb 8   No class

Feb 13  Kuhn on normal science
  ▶ Kuhn, Structure, chapters 1 through 8
  ▶ Godfrey-Smith, Theory and Reality, chapter 5

Feb 15  Kuhn on revolutions
  ▶ Kuhn, Structure, chapters 9 through 13 and postscript
  ▶ Godfrey-Smith, Theory and Reality, chapter 6

Feb 20  President’s day – no class

Feb 22  Theory and observation
  ▶ Hanson, N. R., Patterns of Discovery, chapter 1
  ▶ Fodor, J. A., “Observation reconsidered” (NYU Proxy), introduction, §3 (so omit §§1 & 2)
  ▶ Godfrey-Smith, Theory and Reality, chapter 10, §3

Feb 27  After Kuhn
  ▶ Laudan, L., Progress and Its Problems, excerpt
  ▶ Godfrey-Smith, Theory and Reality, chapter 7

Feb 29  Corrigibility and the scientific method
  ▶ Reading to be announced
Realism, Laws of Nature, Causality

Mar 5  Unobservable entities: Empiricism versus realism  
▷ Maxwell, G., “The ontological status of theoretical entities”, pp. 1–15, 25–27 (the rest is recommended but optional)  
▷ van Fraassen, B. C., The Scientific Image [NYU Proxy], pp. 6–21, 23–25  
▷ Godfrey-Smith, Theory and Reality, chapter 12  
■ First paper due

Mar 7  Pessimism and beyond  
▷ Stanford, P. K., “Pyrrhic victories for scientific realism” [NYU Proxy]

Mar 19  Laws and causality: Empiricism versus realism  
▷ Ayer, A. J., “What is a law of nature?”, part II  
▷ Dretske, F., “Laws of nature” [NYU Proxy]

Mar 21  Laws and causality: Humeanism  
▷ Lewis, D., Counterfactuals, pp. 72–77  
▷ Lewis, D., Philosophical Papers, volume 2, pp. ix–xiii  
▷ Menzies, P., “Counterfactual theories of causation”, §§1, 2, 3.4

Explanation

Mar 26  Hempel’s expectability approach  
▷ Hempel, C. G. and P. Oppenheim, “Studies in the logic of explanation” [NYU Proxy], pp. 135–146  
▷ Salmon, W. C., Four Decades of Scientific Explanation pp. 46–50  
▷ Godfrey-Smith, Theory and Reality, chapter 13 (optional)

Mar 28  The causal approach  
▷ Strevens, M., Depth, §§1.41, 1.42, 2.1

Apr 2  The unification approach  
▷ Kitcher, P., “Explanatory unification” [NYU Proxy]  
■ Second paper due

Apr 4  Sophisticated causalism  
▷ Strevens, M., “The causal and unification accounts of explanation unified – causally” [NYU Proxy]

Evidence

Apr 9  Instantialism and the ravens  
▷ Hempel, C. G., “Studies in the logic of confirmation” [NYU Proxy], §§1–5  
▷ Godfrey-Smith, Theory and Reality, chapter 3, §3

Apr 11  Instantialism and unobservables  
▷ Glymour, C., “Relevant evidence” [NYU Proxy]
Apr 16  Bayesianism: Mechanics
   ▶ Strevens, M., “Notes on Bayesian confirmation theory”, §§1–6
   ▶ Godfrey-Smith, Theory and Reality, chapter 14, §§1–4 (optional)

Apr 18  Bayesianism: Philosophical issues
   ▶ Strevens, M., “Notes on Bayesian confirmation theory”, §§7, 9

Apr 23  Breathcatching day – No reading

The Social Structure of Science

Apr 25  The sociology of science: Merton
   ▶ Merton, R. K., “The normative structure of science”
   ▶ Merton, R. K., “Priorities in scientific discovery” [NYU Proxy]
     pp. 635–649, 658–659 (the rest is optional)
   ▶ Godfrey-Smith, Theory and Reality, chapter 8

Apr 30  The sociology of science: Critical approaches  < Due date
   ▶ Collins, H. M., “The seven sexes” [NYU Proxy]
   ▶ Okruhlik, K., “Gender bias in the biological and social sciences”
     (interesting but optional)
   ▶ Godfrey-Smith, Theory and Reality, chapter 9
   ▶ Third paper due

May 2   Organizing science
   ▶ Kitcher, P., “The division of cognitive labor” [NYU Proxy]
   ▶ Godfrey-Smith, Theory and Reality, chapter 11

May 7   The credit system in science
   ▶ Latour, B. and S. Woolgar, Laboratory Life, pp. 200–208
   ▶ Strevens, M., “The role of the priority rule in science” [NYU Proxy]

No classes: Feb 8; Feb 20

Papers are due on March 5th, April 2nd, April 30th

Take-home exam due May 9th
REFERENCES PHIL SCIENCE


