

HPS 2501/PHIL 2600 Philosophy of Science (Core)

Fall 2003 (04-1)

Instructor

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(I prefer email. Please put 2501 or Phil Sci Core in the subject line. My reply may come from various other addresses – they all end up at the same place and may be used interchangeably.)

Meetings

Wednesday 9.30-12.00 G28 CL. There will be a coffee break in the middle.

Required Texts

- Salmon, M. H., J. Earman, et al. (1992). Introduction to the Philosophy of Science. Englewood Cliffs, NJ, Prentice Hall. (Reprinted by Hackett Publishing, 1999) (abbreviated below as 'S')
- Machamer, P. and M. Silberstein, Eds. (2002). Blackwell Guide to the Philosophy of Science. Oxford and New York, Blackwells (Abbreviated below as 'M')
- Other readings listed below are available for photocopying in the box next to the photocopier in 1017D

Assessment

- Four short papers (2-4 pages double spaced) one on each of the four topics of explanation, reduction, confirmation, and realism & the structure of theories. Each paper should explore some aspect of the philosophical literature with reference to a specific case of scientific practice (e.g. specific theory, a specific experiment/observation or a specific purported explanation). There are no fixed due dates, but I expect to have received two papers by the end of October and all four by the end of the week after Thanksgiving (Dec 5th). Papers should roughly conform to the formatting of *Philosophy of Science* (e.g. references, etc).
- A two-hour closed book essay examination on all aspects of the course.
- Adequate preparation for seminars and active participation in discussion is required of all participants and will be taken into account when determining a final grade.

HPS Competency Requirement

- The *final examination* for this course will also be assessed on a pass-fail basis for the competency requirement in HPS graduate program

Readings

- I have kept the weekly readings short, but I expect their content to have been thoroughly digested so that you are in a position to critically discuss the reading and relate it to other views. This may require following up some of the references given in the readings.

Date	Topic	Reading
August 27	1. Overview	<ul style="list-style-type: none"> • M Chs 1 & 2
September 3	2. Explanation I	<ul style="list-style-type: none"> • Hempel, C.G. Aspects of Scientific Explanation, in <i>Aspects of Scientific Explanation</i>: 333-376 • S 1.1-1.14
September 10	3. Explanation II	<ul style="list-style-type: none"> • S 1.14-1.17 • Kitcher, P., Explanatory Unification. <i>Philosophy of Science</i>, 1981. 48: 507-531.
September 17	4. Philosophy of Evolutionary Biology (Lennox and Mitchell)	<ul style="list-style-type: none"> • S Ch. 7 • Mitchell, S. D. (1987). Competing Units of Selection? - A Case of Symbiosis. <i>Philosophy of Science</i>, 53(3), 351-367.
September 24	5. Laws	<ul style="list-style-type: none"> • Dretske, F. I. (1977). "Laws of Nature." <i>Philosophy of Science</i> 44(2): 248-268. • Cartwright, Nancy (1980) "Do the Laws of Physics State the Facts?" <i>Pacific Philosophical Quarterly</i> 61: 75-84.¹
October 1	6. Reduction I	<ul style="list-style-type: none"> • S 8.4-8.10 • M Ch 5
October 8	7. Case study: The reduction of Mendelian Genetics to Molecular Biology	<ul style="list-style-type: none"> • Sterelny, K., & Griffiths, P. E. (1999). <i>Sex and Death: An Introduction to the Philosophy of Biology</i>. Chicago: University of Chicago Press. Chs 6 & 7 • M Ch 12
October 15	8. Reduction II	<ul style="list-style-type: none"> • Machamer, P., L. Darden, et al. (2000). "Thinking about Mechanisms." <i>Philosophy of Science</i> 67(1): 1-25.
October 22	9. Confirmation I	<ul style="list-style-type: none"> • S 2.1-2.6 • See note 1 below.
October 29	10. Confirmation II (John Norton on Induction)	<ul style="list-style-type: none"> • Norton, J. D (manuscript) A little survey of induction (to be distributed electronically)

¹ The rather different perspective on this topic from biology can be seen in: Mitchell, Sandra D. (2000). Dimensions of Scientific Laws. *Philosophy of Science*, 67(2), 242-265; Griffiths, Paul E. (1999) Squaring the Circle: Natural kinds with historical essences. In *Species: New Interdisciplinary Essays*, edited by R. A. Wilson. Cambridge, M.A: MIT Press.

November 5	11. Confirmation III (Includes presentation by Sherri Roush)	<ul style="list-style-type: none"> • S2.7-2.11 • Readings in folder in 1017
November 12	12. Realism and the structure of theories I	<ul style="list-style-type: none"> • van Fraassen, B. (1980). <i>The Scientific Image</i>. Oxford and New York: Oxford University Press. Pp 6-39. • Psillos, S. (1999). <i>Scientific Realism: How Science Tracks Truth</i>. London and New York: Routledge. Chs 5 & 6
November 19	13. Realism and the structure of theories II	<ul style="list-style-type: none"> • M Ch 4
November 26	Thanksgiving break	
December 3	14. Philosophy of Modern Physics (Ruetsche and Earman)	<ul style="list-style-type: none"> • S 5 & 6
December 10	Final Exam (in class)	

Note 1. Some of you have little or no experience of working with or thinking about probability and statistics. Although the Salmon et al text does explain the basics, it does so in a very compressed manner. I would ask that people in this position read in addition Chapters 3-7 of Hacking, I. (2001). *An Introduction to Probability and Inductive Logic*. Cambridge and New York: Cambridge University Press. These are very short chapters, so this is only 46 pages and I do not expect you to do the exercises (although you might want to). I would also be happy to accept a summary and analysis of Chapters 20-21 of the same book in place of the third paper on confirmation. Those three chapters are about 20 pages in total, although you would also need to read Chapters 13-19 to make sense of the discussion.