

## The Order, and the Ordering, of Nature

A seminar in

Philosophy of Science

History of Philosophy

Science Studies

UCSD, Winter Term, 2011

Led by Nancy Cartwright

Tuesdays, 2:00 – 5:00

The theme will be 'Natural order: imposed (by us? by God?) or within?' There will be a conference on the early modern history of order sponsored by the project *God's Order, Man's Order and the Order of Nature*, March 4 – 6. Students should attend the conference and we will discuss the papers in the last seminar. We center in history for the first 5 weeks and again at the end in the conference and last two sessions, with 3 weeks in between dedicated to some contemporary accounts. We will omit Kant since that is a seminar in itself and we all know, albeit probably only very roughly, the Kantian position. Similarly with Latour. And for Feyerabend we will read only one particularly striking paper.

Week 1. Generating order through science: (1) Bacon and Mach

- Mach, *The Science of Mechanics*, 'The Economy of Science'.
- Mach, *Analysis of Sensations*, sections to be decided.
- Bacon, *The Advancement of Learning*, sections to be decided.
- Perez-Ramos, A., 'Bacon's forms and the maker's knowledge tradition', in M. Peltonen (ed.), *The Cambridge Companion to Bacon*, CUP 1996.

Weeks 2&3. How laws came to natural philosophy

- John Henry, 'Metaphysics and the Origins of Modern Science: Descartes and the Importance of Laws of Nature', *Early Science and Medicine* 9 (2004), pp. 73-114.
- Dennis Des Chene, 'Natural law and divine agency in the later seventeenth century' <http://artsci.wustl.edu/~ddeschene/purdue201003.pdf>.
- Peter Harrison, 'The Development of the Concept of Laws of Nature', from Fraser Watts (ed.), *Creation: Law and Probability*, photocopy available.
- Descartes, *Principles of Philosophy*, part II, §§36 & 37.
- Malebranche, *Dialogue on Metaphysics and Religion*, Dialogue VII, 'The inefficacy of natural causes, or the impotence of creatures. We are immediately and directly united to God alone.'
- More Malebranche for reference:
  - *Search after Truth*, Book Six: Part Two, Chapter Three, 'The most dangerous error of the philosophy of the ancients'.
  - *Search*, Elucidation 15 (elaboration on the former), 'Concerning the efficacy of secondary causes'.

Week 4. Necessary order and wonderful exceptions

- Peter Dear, *Discipline and Experience: The Mathematical Way in the Scientific Revolution*.
- Lorraine Daston and K Park, *Wonders and the Order of Nature*.

Week 5. Generating order through science: (2) Duhem

- Pierre Duhem, *The Aim and Structure of Physical Theory*

Weeks 6&7. One order? many orders? united? unifiable? at odds?

Background reading for both weeks

- Jordi Cat, 'The Unity of Science', *Stanford Encyclopedia of Philosophy*

Week 6

- Jordi Cat and Gennaro, 'Analysis of Theories and Synthesis of Models' (photocopy available).
- Sandra Mitchell, *Biological Complexity and Integrative Pluralism*, Part II.

Week 7

- William Wimsatt, *Re-Engineering Philosophy for Limited Beings*, sections to be decided.
- Paul Feyerabend, "Problems of Empiricism," in R. G. Colodny (ed.), *Beyond the Edge of Certainty*. Englewood Cliffs, N.J.: Prentice-Hall, 1965.

Week 8. Two views on how laws don't govern

- Helen Beebe, 'The Non-Governing Conception of Laws of Nature', *Philosophy and Phenomenological Research* 56 (2000), pp. 571-94. Reprinted in J.W. Carroll (ed.), *Readings in Laws of Nature* (Pittsburgh: Pittsburg University Press 2004), pp.250-76.
- Nancy Cartwright, 'Causal laws, policy predictions and the need for genuine powers', photocopy available.

Week 9. The natural order and the moral order

- Lorraine Daston, *The History of Moral Order*, photocopy available.
- Amartya Sen, *The Idea of Justice*, chapters 5,6,7,9.

Week 10. Post conference discussion