

Explaining the Scientific Revolution of the 17th Century: The Problem and Promise of the Category of Natural Philosophy

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Abstract:

By natural philosophy I mean the following: not simply the new mechanical philosophy, nor the still institutionally entrenched neo-Scholastic Aristotelianism. Rather, I mean the wider institution, sub-culture and disciplinary field of natural philosophy in all its variety, contention and change—a field that had both a social structure (in flux) and certain rules of engagement (also under strain and change). A field that began to fragment and dissolve from the middle of the 17th century, as there began a long and complex process of crystallization of new sciences (and radically altered classical sciences). If such an entity had nothing to do with the Scientific Revolution, or only obstructed that process, then either there actually was no Scientific Revolution, or we historians simply do not know what we are talking about.

The history of science ... should be conceived as a history of the evolution of scientific cultures. It studies the production of knowledge as the result of the continuous battle between rival scientific claims and of the constant interplay between scientists and the wider cultural domains of which they form a part. [Mission Statement of the Descartes Centre for the History of the Sciences and Humanities, University of Utrecht, circa 2008] (cited by J. A. Schuster, 'Opening Remarks', Colloquium of Descartes Centre, University of Utrecht, 23 September 2008)

*A much more challenging argument is being developed by John Schuster (2013), but I don't agree with his view that natural philosophy is the category for thinking about the Scientific Revolution.... See also on an alternative category physico-mathematics, which seems to me much more helpful... (Dear 1995, Schuster, 2013, 2013a) [David Wootton, *The Invention of Science: A New History of the Scientific Revolution* (Penguin, 2015) p.602 n.25]*

1. The Sciences are Many and Each Research Culture is *Sui Generis* and Dynamic
2. Natural Philosophy—Beginnings of a model
3. Articulation: Widening the Field and Glimpsing the Patterns of Contestation
4. Physico-mathematics
5. Extending our Model of Articulation and Articulation Profiles
6. Modes of Competition—Their Evolution and How to Model Them
7. Emergence of Physico-mathematical Disciplines Through the Natural Philosophical Mill
8. From the Critical Stage 1600-1650 of the Scientific Revolution to the CMF Stage 1660-1720
9. The New Institutions. Natural Philosophy Did Not Die But Was Played Through and Upon
10. Dynamics of Natural Philosophy and the Rise of the New (Kuhnian) Experimental Sciences
11. On the Fate of Natural Philosophy: Key to the Story of the Scientific Revolution
12. Discussion of Other Accounts: Henry, Cohen, Wootton, Gaukroger, Dear

Modelling the Category Natural Philosophy and Scientific Revolution Dynamics

- John Schuster, 'The Scientific Revolution' in *Companion to the History of Modern Science*, eds R. C. Olby, G. N. Cantor, J. R. R. Christie and M. J. S. Hodge, London: 1990 pp. 217–42.
- John Schuster, and Graeme Watchirs, 'Natural philosophy, experiment and discourse in the 18th Century: beyond the Kuhn/Bachelard problematic' in *Experimental Inquiries: Historical, Philosophical & Social Studies of Experiment*, ed. H. E. LeGrand,(1990) pp. 1–48.
- John Schuster and Alan B. H. Taylor 'Blind Trust: The Gentlemanly Origins of Experimental Science' *Social Studies of Science* 27 (1997), 503-536;
- John Schuster, 'L'Aristotelismo e le sue Alternative', in D. Garber [ed] *La Rivoluzione Scientifica*. Rome: Istituto della Enciclopedia Italiana (2002) pp. 337-357; English version at website descartes-agonistes.com
- J.A. Schuster 'The European Birth of Modern Science: An Exercise in Macro and Comparative History' (Essay Review of H.F. Cohen, *How Modern Science Came into the World*), *Metascience* (2012) 21: 657-665. Slightly longer version on my website, descartes-agonistes.com
- John Schuster, *Descartes Agonistes: Physico-mathematics, Method & Corpuscular-Mechanism 1618-37* (2013) Chapter II, 'Conceptual and Historiographical Foundations—Natural Philosophy, Mixed Mathematics, Physico-mathematics, Method'
- John A. Schuster 'What was the relation of Baroque Culture to the Trajectory of Early Modern Natural Philosophy', in O. Gal and R. Chen-Morris (eds.), *Science in the Age of Baroque* (2013), pp.13-45.
- John A. Schuster 'Did Descartes Teach a 'Philosophy of Science' or Implement 'Strategies of Natural Philosophical Explanation'? in Stephen Gaukroger & Catherine Wilson [Eds.] *Descartes and Cartesianism: Essays in Honour of Desmond Clarke*. (2017) chapter 1, pp. 3-25.