

Scientific Discovery: Its History, Philosophy, and Sociology

PLACE: Sala de videoconferencies (=Seminari B11), Facultat de Filosofia i Lletres
UAB, Departament de Filosofia
TIME: Fridays, 11:30-1:30
Organization: Thomas Sturm (Thomas.Sturm@uab.cat)

The group discusses philosophical, historical, and sociological aspects of scientific discovery. How should we understand the very notion? What are typical instances of such discoveries? How (far) can they be explained rationally? Are there rational tools or even “logics” of discovery? What are the implications for science policy? Philosophical analyses, historical and sociological case studies, as well as controversies between different approaches will be used to discuss these and related questions. – There is some leeway about the reading list; group members are invited to propose better alternatives. All welcome.

1: Nov 14, 2014: The Discovery/Justification Distinction I

- Nickles, T. 1980. Introductory essay: Scientific discovery and the future of philosophy of science. In T. Nickles (ed.), *Scientific discovery, logic and rationality*. Dordrecht: D. Reidel, 1-59. (FOCUS ON: 1-22, 43-49)
- Gruber, H. E. 1980. The evolving systems approach to creative scientific work: Darwin’s early thought. In T. Nickles (ed.), *Scientific discovery: Case studies*. Dordrecht: D. Reidel, 113-130.

2: Nov 28, 2014: The Discovery/Justification Distinction II

- Kuhn, T. 1962/1970. *The structure of scientific revolutions*. Chicago: Chicago UP, ch. 6.
- Hoyningen-Huene, P. 2006. Context of discovery versus context of justification and Thomas Kuhn. In J. Schickore & F. Steinle (eds.), *Revisiting discovery and justification*. New York: Springer, 119-131.
- Schaffer, S. 1994. Making up discovery. In M. Boden (ed.), *Dimensions of creativity*. Cambridge, MA: MIT press, 13-51.

3: Dec 19, 2014: The Discovery/Justification Distinction III

- Sturm, T. & Gigerenzer, G. 2006. How can we use the distinction between discovery and justification? On the weaknesses of the Strong Programme in the sociology of science. In J. Schickore & F. Steinle (eds.), *Revisiting discovery and justification*. New York: Springer, 133-158.
- Arabatzis, T. 2006. On the inextricability of the context of discovery and the context of justification. In J. Schickore & F. Steinle (eds.), *Revisiting discovery and justification*. New York: Springer, 215-230.

4: Jan 16, 2015: Computer-Aided Discovery: For & Against I

- Simon, H. A., Langley, P., & Bradshaw, G. L. (1981). Scientific discovery as problem solving. *Synthese*, 47, 1-27.
- (Consensed versions of: Langley, P., Simon, H. A., Bradshaw, G. L., & Zytkow, J. M. 1987. *Scientific discovery*. Cambridge, MA: MIT Press. Here ch. 1 may also be an option)

5: Feb 6, 2015: Computer-Aided Discovery: For & Against II

- Slezak, P. 1989. Scientific discovery by computer as empirical refutation of the Strong Programme. *Social Studies of Science*, 19, 563-600.
- Brannigan, A. 1989. Artificial intelligence and the attributional model of scientific discovery. *Social Studies of Science*, 19, pp. 601-613.

6: Feb 27, 2015: Computer-Aided Discovery: For & Against III

- Collins, H.M. 1989. Computers and the sociology of scientific knowledge. *Social Studies of Science*, 19, 613-624.
- Thagard, P. 1989. Welcome to the cognitive revolution. *Social Studies of Science*, 19, 653-657.
- Simon, H. 1991. Comments on the symposium "Scientific discovery by computer and the sociology of scientific knowledge". *Social Studies of Science*, 11, 143-148.

7: March 20, 2015: Discovery and Conceptual Change I

- Andersen, H. 2009. Unexpected discoveries, graded structures, and the difference between acceptance and neglect. In J. Meheus & T. Nickles (eds.), *Models of discovery and creativity*. Dordrecht: Springer, 1-28.
- Brown, H.I. 2009. Conceptual comparison and conceptual innovation. In J. Meheus & T. Nickles (eds.), *Models of discovery and creativity*. Dordrecht: Springer, 29-42.

8: April 10, 2015: Discovery and Conceptual Change II

- Nersessian, N. 2009. Conceptual change: Creativity, cognition, and culture. In J. Meheus & T. Nickles (eds.), *Models of discovery and creativity*. Dordrecht: Springer, 127-166.

9: April 24, 2015: Experimentation and Discovery

- Steinle, F. 2006. Concept formation and the limits of justification. In J. Schickore & F. Steinle (eds.), *Revisiting discovery and justification*. New York: Springer, 183-196.
- Holmes, F. 2009. Experimental systems, investigative pathways, and the nature of discovery. In J. Meheus & T. Nickles (eds.), *Models of discovery and creativity*. Dordrecht: Springer, 65-80.

10: May 8, 2015: Ontology: What Is It That's Being Discovered?

- Daston, L. 2000. The coming into being of scientific objects. In L. Daston (ed.), *Biographies of scientific objects*. Chicago: University of Chicago Press, 1-14.
- Arabatzis, T. 2003. Towards a historical ontology? *Studies in History and Philosophy of Science*, 34, 431-442.

11: May 29, 2015: Discovery and Science Policy

- Holton, G., Chang, H., Jurkowitz, E. 1996. How a scientific discovery is made: A case history. *American Scientist*, 84, 364-375.
- Strevens, M. 2003. The role of the priority rule in scientific discovery. *Journal of Philosophy*, 100, 55-79.

12: June 12, 2015, 11:30-1:30: TBA – Candidate texts:

- Caneva, K. L. 2005. 'Discovery' as a site for the collective construction of scientific knowledge. *Historical Studies in the Physical Sciences*, 35, 175-291.
- Dick, S. J. 2013. *Discovery and classification in astronomy: Controversy and consensus*. New York: Cambridge University Press, e.g. Intro, ch. 6-7.