

Philosophy of Science - Traditions

Or: What it meant and means to become an academic scholar

Mandatory Course for Ph.D. students, faculty of communication sciences, USI

1,5 ECTS

Peter Seele

As a starting point, *human self-reflection* is understood as precondition to the emergence of science. Pre-classing thinker and sophist Protagoras can be seen as a foundation father when stating: "Man is the measure of all things; of what is, that it is; of what is not, that it is not". Based on the ability to *think about thinking* and to reflect upon different approaches, the course turns towards classical antiquity and here foremost to Plato's definition of knowledge as 'justified true belief' and Aristotle's distinction of *Episteme*, *Techne* and *Doxa*; terms used in different concepts until today. The course introduces the 'reflective self' as introduced by Augustine and briefly introduces the notion of scholasticism, where following Thomas Aquinas, "the knowledge of any truth whatsoever man needs divine help". Knowledge was liberated in the wake modernity and the concept of science was further developed by William of Ockham, who contributed the principle of simple and economic science known as *Ockham's razor*. The development of science and the 'scientific method' can be seen in Descartes foundation of '*rationalism*' based on 'methodological skepticism', which he developed in his "Discourse on the Method". Rationalism opened the way to modernity and enlightenment. As Descartes was thinking of a principal method based on reason, Thomas Kuhn in the last century arrived at the sequential notion of *scientific revolutions*. Following Kuhn science *happens* in *paradigms* and a *paradigm shift* is characterized by the *incommensurability* of the old and the new paradigm. This approach explains why different scientific findings are perceived as 'right' or 'valid' although they are in logical opposition to the previous and/or the following paradigm. Furthermore and also in the last century, Karl Popper introduced the idea of falsification and the value of failing theories in the context of deduction and induction as means to arrive at scientific conclusions. Based on the different philosophical viewpoints and core questions of philosophy of science, the course opens space for discussion about the responsibility of science in general and the scientist in particular. This question also imposes the question of communication in science and between scientists.

Lastly, we look at what is known as 'positivistic turn'. Here Ludwig Wittgenstein's contribution about the ability to "think what cannot be thought" can be seen as ongoing yet also controversial invitation to focus on a positivistic paradigm. Wittgenstein's postulation to remain 'silent' on what cannot be said clearly opens debate about the role of communication as medium of science. An outlook for recent debates in the philosophy of science (Schurz 2013) translating into social sciences is presented leading to the most recent debates on the 'power of methods' and 'social epistemology'. The course also introduces the technicalities of data points, research design and theory building of current philosophy of science.

Finally, big data and digitalization affect the way in which science is conceptualized leading to a data-driven networked understanding of 'the science of science'. The closing discussion is on the responsibility of science and the scientist and reflects upon the role and responsibilities of what it means to become a scholar.

Students will receive 1.5 ECTS for Philosophy of Science by attending the two days and writing an essay on the topic.

Selected Readings

- Aristotele: Nicomachean Ethics
- Ockham, W. Summa logicae (1324)
- Descartes, R. Discourse on the Method for Rightly Directing One's Reason and Searching for Truth in the Sciences (1637)

- Kuhn, T.S. (1970), The nature and necessity of scientific revolution, The Structure of Scientific Revolution,
- Wittenstein; Ludwig (1918), Tractatus Logico-Philosophicus
- Okasha, S. (2002), Philosophy of Science, Chapter 1: What is Science, Oxford University Press
- Feynman, R.P. (1998), The Meaning of It All, The Uncertainty of Science, 1-28
- Schurz, G. (2013): Philosophy of Science: A unified approach. Routledge. 16-37
- Sukale, M. (1987): Sehen als Erkennen. Univ. Konstanz. Press.
- Goldman, Alvin and Blanchard, Thomas, "Social Epistemology", The Stanford Encyclopedia of Philosophy (Winter 2016 Edition), Edward N. Zalta (ed.)
- Fortunato, S. et al (2018): The Science of Science. Science 359, eaao0185 (2018). DOI: 10.1126/science.aao0185