The Scientific Method

Ioannis Votsis
votsis@phil.uni-duesseldorf.de
University of Duesseldorf, Germany

In this talk, I argue, contrary to popular belief, that there is such a thing as *the* scientific method and that we already possess some of its principles or at least approximate versions of them. The popularity of the opposite view can be traced back to the fact that most attempts to identify the scientific method involve an overly strong conception and are therefore bound to fail. I propose a weaker conception, one that maintains that there is core methodology shared across all domains of inquiry while at the same time allows for variation on the periphery.

Several attempts have been made over the years to uncover the one true scientific method. They include inductivism, hypothetico-deductivism, falsificationism, (objective and subjective) Bayesianism, abductivism, etc. Each of these views has been subjected to criticism. Among the main objections has been the claim that a candidate scientific method does not, and even cannot, do justice to what goes on in the context of discovery and/or the context of justification. The end result of all the different objections has been the emergence of a widespread pessimism over the existence of such a thing called 'the scientific method'. This pessimism is perhaps best reflected in two (otherwise very different) works, namely Feyerabend (1975) and Laudan (1984).

Worrall (1988) already provides some hope for optimism. He argues against Laudan that in order to coherently explain progress in science one must assume that some methodological principles remain fixed despite the occurrence of scientific revolutions. I provide a generalisation of Worrall's arguments to show that convergence of methodological principles does not only take place within a specific domain of inquiry but also across domains. Given the varied nature of the domains involved, not every methodological principle utilised in a specific domain will be found in all the other domains. Only some of them will have this cross-domain convergent character. A handful of candidates are discussed in the talk. One such example is the principle of reproducibility: Other things being equal, hypothesis generation and testing should be such that sufficiently similar hypotheses and sufficiently similar test results should be reproducible under sufficiently similar conditions.

Cross-domain convergence is not sufficient to establish that the said principles form part of the one true scientific method. It is also important to argue, as Laudan (1989) insists but Worrall (1989) resists, that any methodological principles we converge upon are justified. The spectre of regress looms if we expect them to be justified by further principles. To avoid it, I argue that the aims and goals of scientific inquiry are such that only certain methodological principles can help bring them about, namely the convergent ones.

References:

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