

Exam Philosophy of Science, 4 November 2013

Be systematic and pay attention to the logical structure of your answer. Within these boundaries: be concise! Clearly mention your name and student number.

1. The “problem of underdetermination” plays an important role in several areas within the philosophy of science.
 - a. Explain what the general problem of underdetermination is.
 - b. Explain which more specific forms the problem assumes and which further problems it engenders in discussions of i) scientific realism, ii) induction, and iii) scientific rationality, respectively.
2. An often-made claim is that Kuhn’s philosophy of science involves a downgrading of the role of rationality in science. On the other hand, in his later writings Kuhn himself has stated that he has been misunderstood and that nothing is in fact more rational than the decisions of the scientific community.

Explain the argumentation both for the claim that Kuhn views the development of science as irrational and for the claim that rationality is not endangered at all by Kuhn’s picture of science.
3. According to Mayo the Bayesian approach in the philosophy of science is misdirected: it is too subjective to make sense of science.
 - a. Explain the central ideas of Bayesianism
 - b. Explain Mayo’s argument against Bayesianism.
4. Bruno Latour, in his text “Give me a laboratory and I will raise the world”, states that “the weakness of the sociology of science is its propensity to look for obvious stated political motives and interests in one of the only places, the laboratories, where sources of fresh politics as yet unrecognized as such are emerging.”
 - a. What kind of implicitly political role of laboratories is Latour here referring to? Discuss using the case of Pasteur.
 - b. Latour also claims that for a scientist “to retain the strength gained inside his laboratory” is never to leave that laboratory. The solution for aspiring Pasteurians is then to “transform society into a vast laboratory.” In what concrete way is that done in the example of Pasteur? How can we understand à la Latour that Pasteur’s microbes are not supposed to do their work if society is not “transformed into a laboratory”?
5. According to some philosophers Scientific Realism is the only philosophy of science that can make the success of science understandable.
 - a. Explain this “success of science” argument.
 - b. Van Fraassen offers an alternative explanation for the success of science. Explain this alternative explanation by van Fraassen.
 - c. Larry Laudan rejects the “success of science” argument for scientific realism. What are his most important arguments?
6. Realists often rely on “inference to the best explanation”.
 - a. What *is* inference to the best explanation?
 - b. According to van Fraassen explanation is not an aim in itself for science. What, according to van Fraassen, is the real aim of science? How does this reflect on the “inference to the best explanation argument”?

