Science and Reason: Essay One

Requirements

You are to submit one 6–8 page research paper on Wednesday 6 March, addressing one and only one of the questions listed below. A hard copy of the paper must be submitted in class.

Guidelines

Essay guidelines are available here:

Questions

- Explain and evaluate Popper's solution to the demarcation problem. Address at least one of the following questions:

    - According to Putnam, "in a great many important cases, scientific theories do not imply predictions at all". What does he mean? Is this a problem for Popper?
    - According to Laudan, Popper's demarcation criterion is inadequate because it provides a semantic rather than an epistemological distinction between theories. What does he mean? Is this a problem for Popper?

- Explain and evaluate Popper and Kuhn's solutions to the demarcation problem, addressing at least one of the following questions:

    - According to Kuhn, Popper has focussed on an atypical variety of scientific activity. What does he mean? Is this a problem for Popper?
    - According to Kuhn, it is typically the scientist rather than the scientific theory that is tested. What does he mean? Is this a problem for Popper?

- Lakatos criticises both Popper and Kuhn, and attempts to combine their views into a unified solution to the demarcation problem. Evaluate Lakatos on the demarcation problem, addressing at least one of the following questions:

    - What is the difference between a Kuhnian paradigm and a Lakatosian research program, and how is it relevant to their views on demarcation?
    - What does Lakatos think is wrong with Popper's solution? Is he right?
    - What does Lakatos think is wrong with Kuhn's solution? Is he right?

- Describe and evaluate how the view of either Popper, Kuhn, Lakatos, Thagard or Laudan applies to the question of whether astrology is a pseudoscience.

  Note: I will accept papers evaluating other alleged pseudosciences *provided you have sought and received permission to do so*.

- Behe argues that irreducibly complex systems cannot have evolved by natural selection, and that we should infer that they were intelligently designed. Explain and evaluate Behe's argument, addressing at least one of the following questions:

  - According to Miller, "if the flagellum contains within it a smaller functional set of components [...], then the flagellum itself cannot be irreducibly complex". Explain why this is a mistake, and reformulate Miller's argument against Behe so that it does not depend on this mistake.
  - Behe claims that "the problem of irreducibility remains, even if individual proteins homologous to system components separately and originally had their own functions". What does he mean? Is he right?