

## **Philosophy 3330: Philosophy of Science Spring 2021, Long Paper Assignment #1**

**Purpose:** The purpose of our class as a whole is to think about the nature of science. Chapters 4-6 in James Ladyman's *Understanding Philosophy of Science* discuss Thomas Kuhn's views on scientific methodology, scientific realism, and underdetermination. These issues are deeply intertwined with many 'big picture' questions about the nature of science such as the whether there is a best 'scientific method', the growth of scientific knowledge over time, the distinction between appearance and reality, the nature of observations, and how observations relate to our scientific theories. Thinking through these issues is central to thinking about the nature of science.

The standard unit of philosophical analysis is the argumentative essay. Writing is an extension of thinking. It allows you (and forces you!) to think more deeply about a topic than you are able to do by keeping things 'in your head.' Exposition of someone else's views (including careful description of those ideas, issues, terms and scope) allows you to understand them better, and it is then much easier to critically evaluate these views. Laying out your own argument or that of someone else often forces you to be explicit about connections which can reveal weaknesses in your own thinking which must be acknowledged so they can then either be fixed or can lead to better views overall. Thus the purpose of assigning an essay is both as an effective way to evaluate your learning and progress in the class and to help improve your philosophical skills.

**Instructions:** You are to write an argumentative paper on some topic relevant to Chapters 4-6 in Ladyman's *Understanding Philosophy of Science*. The paper should be between roughly 1300 and 1800 words. If you double space and have natural fonts and margins, your essay would be about 4-6 pages.

**Due Date:** Your essay should be uploaded into Blackboard before your class on Tuesday, March 23rd (so before 2:00pm).

**Grading:** This paper will be worth 20 points (20% of your final grade).

**Guidelines:** An argumentative essay is a reasoned defense of some particular claim. A general guideline for a paper like this is that you should spend about half of your time in exposition and half your time in evaluation.

Here are some useful guides to writing philosophy papers:

[https://philosophy.fas.harvard.edu/files/phildept/files/brief\\_guide\\_to\\_writing\\_philosophy\\_paper.pdf](https://philosophy.fas.harvard.edu/files/phildept/files/brief_guide_to_writing_philosophy_paper.pdf) (from Harvard College's Writing Center)

<https://www1.cmc.edu/pages/faculty/akind/Intro01s/Writing.htm> (from Amy Kind)

<http://www.jimpryor.net/teaching/guidelines/writing.html> (from Jim Pryor)

[http://joelvelasco.net/teaching/120/How\\_to\\_Write.pdf](http://joelvelasco.net/teaching/120/How_to_Write.pdf) (from Chris Hitchcock)

**Topic:**

You may choose to write about any topic relevant to these three chapters. For example, here are some sample questions that might help stimulate your thinking (questions 1-3 due to Michael Strevens).

1. According to Kuhn, what role is played by a paradigm (in the broad sense) during normal science? In answering this question, discuss two important functions of the paradigm. To what extent do you think is it important that scientists are incapable of thinking outside the paradigm? Discuss and evaluate Kuhn's views on this issue.
2. In revolutionary times, can there be good reasons for a scientist to make the leap from the old paradigm to the new paradigm? Explain and critically evaluate Kuhn's answer to this question.
3. To what extent are the results of observations in science determined by outputs of parts of the brain that work the same way in all normal humans, regardless of beliefs, culture, and so on? How does this help with the problem of the theory-ladenness of observation? (Be sure to say what the problem is.)
4. What are direct realism, idealism, causal realism, and idealism? Which of these (if any) are correct views?
5. The logical positivists believed in the verifiability theory of meaning. How does this relate to their views about scientific realism and the nature of observation? Were they right?
6. What is the underdetermination argument against scientific realism? Is it a good argument?
7. Can a principled distinction be drawn between what is observable and what is not observable? What role does your answer play in debates about scientific realism?