PHIL 244 – Philosophy and the Natural Sciences
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Synopsis

An introduction to central issues in the philosophy of science through the study of its recent history. By progressing from the logical positivists to contemporary theorists, we will examine how our understanding of the nature of scientific theories has developed through the 20th century. Topics will include the nature of scientific explanation, evidence, inductive reasoning, paradigm shifts, and evolutionary biology. Topics in Evolutionary biology include Darwinism, Fitness, Selection, Adaptationism, Laws, Essentialism, Population Thinking, Species, Race, and Evolutionary Ethics. Readings will include Appiah, Ayer, Dawkins, Goodman, Hempel, Kitcher, Kuhn, Laudan, Mayr, Popper, Schlick, Sober, and others.

Grading

80% of your grade will come from four 3-4 page papers (weighted evenly). Papers will be graded on the grounds of ability to clearly explain the material you are writing about and original argumentation. Original argumentation will be evaluated in terms of its existence (is there any?) and plausibility (how well does it stand up to criticism?). I encourage you to take risks within reason. Don’t think you can come up with a new theory of evolution in 2-3 pages, but do try to critique arguments, and propose solutions to smaller problems. (I take grading papers to be something like scoring diving: both the difficulty of the project and the quality of the execution are taken into account).

20% of your grade will come from class participation. Participation will be determined by attendance, preparedness (having read the assigned readings before class with questions in mind), discussion, and 2 five-minute presentations. The presentations will take the form of a brief summary of the central arguments of a reading, the main points of our discussion and any lingering concerns you had about the readings or our discussions. These presentations will be at the beginning of class and will be on the class after the discussion of the assigned reading was completed. For instance, if we finish reading and discussing Hume’s old riddle of induction on Monday, the presenter will give a brief presentation at the start of class on Wednesday. If you miss a class you should always contact me to see what you missed and what the next assignment is.

Office Hours

You are highly encouraged to come to office hours to discuss anything. You are especially encouraged to come to office hours if you have missed a class, are having problems with the course material (some of which is very difficult), or working on a paper. I am also available for office hours by appointment but I request that you give me at least 24 hours notice for this. If our schedules conflict too much I can also meet with you over Skype.

Readings

I should say that we probably will not get through all of the material below. Pace will be largely set by class discussion and interest. I’ll reserve the right to replace a reading with a similar one if I
think it will better facilitate class discussion or student interest. There are two required books for this course:


Class Schedule

**Part I: General Philosophy of Science**

**Section I. Empiricism and Scientific Theory**
- Introduction to Scientific Inquiry
- Logical Positivism
  - Schlick “Positivism and Realism”

**Hypothesis and Theories**

**Concepts**

**Section II. The Old and New Riddles of Induction.**
- The Old Riddle of Induction
  - Hume Enquiry Sects. IV-VI, IX-XI

- Confirmation and the Ravens Problem

- The New Riddle of Induction

**Section III - Karl Popper**

- Popper on Falsification
  - Popper, K. 1959. The Logic of Scientific Discovery. Chap 5*

- Popper on Conformation
  - Popper, K. 1959. The Logic of Scientific Discovery. Chp 10*

Optional: The two chapters above are difficult. It may help to get an overview of his work on these issues from his 1953 lecture “Science: Conjectures and Refutations”.

Section IV  Kuhn on the nature of Scientific Revolutions.

Kuhn on Science and Paradigms

What Happened After Structure?

Section V  Feminism in Philosophy of Science (aka ‘Females in the Evolutionary Process’)
Women in the Evolutionary Process

Section VI  Science Studies and Alan Sokal
Relativism in the Sciences
Sokal, A.  1996.  “Transgressing the Boundaries:  Towards a Transformative Hermeneutics of Quantum Gravity”.  In Social Text.  46/47:  217-252 (Just read the first 11 pages)

Part II:  Philosophy of Evolutionary Biology
Section I:  Evolution


Section II:  Further Issues in Evolutionary Theory:  Fitness, Selection,
Fitness
Sober, E.  2001.  “The Two Faces of Fitness” in CIEB.*

Selection
Williams, G. C.  1966.  Adaptation and Natural Selection.  excerpts in CIEB.
Non-adaptationism and Adaptationism


Section III: Evolutionary Psychology, Essentialism, and Populations

Evolutionary Psychology


Essentialism and Populations


Section IV: Species and Race

Species


Race

Appiah, K. 1996. “Why There Are No Human Races” in CIEB.

Section V: Further Extensions of Evolutionary Biology

Sociobiology and Ethics