

Philosophy 455: Introduction to the Philosophy of Science

Spring 2006
TH 2:30-4:18
UH 147

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Text: *Philosophy of Science*, 1998, Alexander Bird, McGill-Queen's University Press

Aim

The aim in this course is to introduce students to the central issues in the philosophy of science, and to do so, in part, by critically examining a series of papers by the most eminent philosophers in the philosophy of science (e.g., Hempel, Kitcher, Popper, Boyd, van Fraassen). What is the nature of the scientific method? Is it inductivist, and concerned both with confirmation and disconfirmation? Or is it deductivist, and solely concerned with disconfirmation? Is inductive inference ever cogent? Could we show that it is? Does science need it? Is the predictive success of science a good indication that science is tracking the truth? Or is the underdetermination problem so intractable that not even the predictive success of science is enough? Do we need to be scientific realists to do science? What about scientific explanation? Is it law-based? Is it deductive? Need it be causal? These and other questions will be our focus.

Requirements and Grading

- There will be three exams, together worth 65% of your overall grade. The first two are each worth 20%. The third is worth 25%.
- There will be one 6-page paper, worth 25% of your overall grade. The grading will be based both on content and on writing. Late papers are permissible, but at a penalty of a letter-grade reduction for every day past the due date.
- There will be a participation requirement, worth 10% of your overall grade. The requirement, in short, is that you be consistently engaged with the course. I will measure this by your attendance, your verbal contributions to class discussions, and your performance on reading quizzes.
- grading scale:
 - A: 100-95
 - A-: 94-90
 - B+: 89-87
 - B: 86-83
 - B-: 82-80

C+: 79-77
C: 76-73
C-: 72-70
D+: 69-65
D: 64-60
E: 59-0

Plagiarism

Plagiarism is the representation of another person's work or ideas as your own. It includes the unacknowledged word-for-word use and/or paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas. It is a form of academic misconduct, and, were there any, would be dealt with accordingly.

Disabilities

If you think you might have a disability, learning or non-learning, needing accommodation, tell either me or the Office of Disability Services (or both) about it. The Office of Disability Services is in 150 Pomerene Hall, and the phone number is 292-3307.

Topics, Readings, and Requirements Schedule

Week 1

- Tuesday 3-28
Topic: The Creationism/Evolutionism Debate
Readings:
 - Introduction: 1-22
- Thursday 3-30
Topic: Theories of Confirmation
Readings:
 - Chapter 2: 91-4
 - Chapter 4: 121-60
 - Hempel's "Studies in the Logic of Confirmation" and "Postscript"

Week 2

- Tuesday 4-4
Topic: The Underdetermination Problem
Readings:
 - Chapter 4: 121-60
 - Laudan's "Demystifying Underdetermination"
- Thursday 4-6
Topic: Inference to the Best Explanation
Readings:
 - Chapter 2: 85-91
 - Chapter 4: 121-60

- van Fraassen's "Inference to the Best Explanation: Salvation by Laws?"
- Psillos's "On van Fraassen's Critique of Abductive Reasoning"

Week 3

- Tuesday 4-11
Topic: Success Arguments for Realism
Readings:
 - Chapter 4: 121-60
 - Boyd's "The Current Status of Scientific Realism"
- Thursday 4-13
Topic: Objections to Success Arguments
Readings:
 - Chapter 4: 121-60
 - Fine's "Unnatural Attitudes: Realist and Instrumentalist Attachments to Science"
 - Laudan's "A Confutation of Convergent Realism"

Week 4

- Tuesday 4-18
Exam 1
- Thursday 4-20
Topic: Objections to Success Arguments
Readings:
 - Chapter 4: 121-60
 - Chapter 8: 275-85
 - Kuhn's *Scientific Revolutions*, chapters 3 and 9

Week 5

- Tuesday 4-25
Topic: Hume's Skepticism about Induction
Readings:
 - Chapter 5: 165-73
 - Chapter 3: 113-20
 - Hume's *An Enquiry Concerning Human Understanding*, sections 2-7
 - Goodman's "The New Riddle of Induction"
- Thursday 4-27
Topic: Replies to Hume's Skepticism
Readings:
 - Chapter 6: 187-213
 - Chapter 5: 182-6
 - Strawson's "Inductive Reasoning and Probability"

Week 6

- Tuesday 5-2
Topic: Replies to Hume's Skepticism
Readings:
 - Chapter 5: 173-82

- Chapter 8: 237-47
 - Reichenbach's "Probability and Induction"
 - Popper's *The Logic of Scientific Discovery*, chapters 1, 4, 5, and 10
- Thursday 5-4
 Topic: Replies to Hume's Skepticism
 Readings:
- Chapter 7: 215-35
 - Carroll's "What the Tortoise said to Achilles"
 - van Cleve's "Reliability, Justification, and the Problem of Induction"

Week 7

- Tuesday 5-9
- Exam 2
- Thursday 5-11
 Topic: Explanation
 Readings:
- Chapter 2: 61-79
 - Hempel's "Aspects of Scientific Explanation", sections 1-3

Week 8

- Tuesday 5-16
 Topic: Explanation
 Readings:
- Chapter 2: 61-79
 - Salmon's "Statistical Explanation" and "Postscript"
 - Lewis's "Causal Explanation"
- Thursday 5-18
 Topic: Explanation
 Readings:
- Chapter 2: 79-91
 - Kitcher's "Explanatory Unification"

Week 9

- Tuesday 5-23
 Topic: Explanation
 Readings:
- van Fraassen's "The Pragmatics of Explanation"
- Thursday 5-25
 Topic: Laws of Nature
 Readings:
- Chapter 1: 25-60
 - Armstrong's "Laws of Nature as Relations Between Universals"

Week 10

- Tuesday 5-30
 - Topic: Natural-Kind Concepts
 - Readings:
 - Chapter 3: 95-113
- Thursday 6-1
 - Topic: The Creationism/Evolutionism Debate
 - Readings:
 - Sober's "Creationism"
 - Paper Due

Week 11

- Thursday 6-8
 - Final, from 1:30-3:18

Note: this is tentative, of course; changes, if any, will be announced in class.