

# KNOWLEDGE: Science

## Lecture 12

Phil 1000, Fall 2008  
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## Quick Review

- Review: Empiricism & Induction
  - Hume's empiricism as an alternative to Descartes' rationalism
  - The problem of induction & PUN
  - Foundationalism & Solutions?
- Today: Science to the Rescue!
  - Science as model of knowledge
  - Empiricism & Coherentism (Fallibilism?)

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## Problem of Induction

- P1:** Either there is a demonstrative (a priori) argument or an inductive (a posteriori) argument for PUN.
- P2:** No demonstrative argument because PUN is a matter of fact, not a relation of ideas.
- P3:** No inductive argument because this would be circular (begging the question); using PUN to justify PUN.
- C:** There is no rational justification for PUN.

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## Solutions?

- **Hume:** we are not rationally justified in PUN, but we are psychologically (habitually) compelled to rely on PUN.
  - Problem: makes knowledge accidental, not justifiable (JTB?), and thus suspect.
- **Pragmatic:** We can accept PUN because it seems to work, the best thing going.
  - Problem: either is circular or simply doesn't address the problem of justification (JTB?).

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## Coherentism?

- Hume and Descartes are both **foundationalist**. What if we avoid foundationalism?
- **Coherentism:** in order for belief to be justified it doesn't have to ultimately rest on foundational beliefs, but it does need to cohere (be consistent) with other beliefs, like a network or web of beliefs.
  - Problem: how do we know our coherent set of beliefs is reliable about the world?

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## Science to the Rescue!

- Science as a model for reliable knowledge
  - A coherent set of beliefs about the world that are ultimately testable by experience;
  - A web of beliefs is adjusted to fit experiential tests.

Will science save the day?

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## Science is Fallible

- Science does not give certainty.
- Sciences is not mere faith.
- Science gives justification (evidence) that may turn out to be false later on: Fallibilism.

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## What is Science?

- Prediction & Testable Hypotheses:
  - Empiricism
- Naïve Falsificationism
  - Pascal's Test of Torricelli's hypothesis
  - A theory/hypothesis should have observational consequences that can be either confirmed or disconfirmed.
  - $H \rightarrow O$ 
    - So if O, then support; but if  $\sim O$ , falsified.
    - Problem: doesn't

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## Ad hoc Save?

- Naïve Falsificationism is inaccurate
  - H is not a single statement, but a set of statements (always tested in bundles) a Theory:  $T \rightarrow O$  (Coherentism)
  - If  $\sim O$ , tells us only T is inconsistent set; can adjust T to fit O, or resist  $\sim O$ .
  - Problem: ad hoc hypotheses (auxillary) to save T.
- What makes for acceptable auxiallaries?

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## Successful Science

- Newtonian mechanics and Neptune (pp. 275-76)
- Lessons:
  1. Auxillary hypotheses should **be independently testable** (not dependent on original problem).
  2. Science should be **unified** (a number of problems approached by same problem-solving strategy)
  3. A good scientific theory is **fecund** (opens up new areas of research; applies problem-solving strategy to novel areas)

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## Does Science Save the Day?

- Problem of induction: how do we know PUN is reliable, or that our inferences are reliable?
- Is the fallibility of science a weakness or a strength when it comes to acquiring knowledge (JTB)?
- How is science both empiricists and coherentist? Is it foundationalist or rationalist?

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## Next Time

### Mind and Other Minds

The analogy and explanation for minds.

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