

Science and Faith? Evolution and Creation.

I. Recap Induction

- Does Hume's "problem of induction" show that we have no more reason to trust scientific inquiry than any other form of inquiry (crystal gazing, guessing, etc.) in our efforts to gain knowledge of nature?
- Is there any difference in kind between our confidence in science and religious faith?

Possible responses to Hume's argument:

- Inductive justification for induction: Science is tremendously successful in providing accurate predictions; more successful than any alternative method. This shows (UN) to be acceptable. Reply: Isn't this a circular justification? (Does make a difference if the inductive principle we rely on is a rule of inference rather than a premise?)
- Principle of reason: (UN) is a principle of reason; following it constitutes what it is to reason correctly about matters of fact. Reply: Don't we need *some* basis for accepting a principle as a rule of reason, i.e., some non-circular evidence that it helps us find truth or avoid error?
- Good evidence: Science relies on better evidence than any alternative methods. This distinguishes (UN) from other principles – the regularities found are more uniform, more systematically tested, etc. Reply: But what is the evidence that this will continue into the future? What entitles us to believe that what we have *is* good evidence?
- Goals of science: Perhaps science is not about prediction, but is about explaining the past. So science doesn't need induction. Reply: This weakens the value of science too far.

II. Creationism v. Evolution

Creationists such as Duane Gish (in "Creation, Evolution, and Public Education") argue that there is no reason to privilege evolutionary theory over creation theory in public science education, for evolutionary theory and creation theory are on a par with respect to their epistemic credentials.¹ In effect, they argue that:

- 1) Science is a body of proven truths.
- 2) Evolutionary theory is not proven.
- 3) Therefore, evolutionary theory is not science.

In particular, Gish claims that:

- a) Evolution has never been observed.
- b) Evolution cannot be subjected to the experimental method.
- c) Natural selection cannot explain anything [because it is circular].
- d) There is not enough time for evolution to have produced human beings.
- e) The fossil record does not confirm evolutionary theory.

¹ See Gish, "Creation, Evolution, and Public Education" in *Evolution and Creation: The Public Education Controversy*. Orynx Press, 1983.

In his essay, "Believing Where We Cannot Prove," Philip Kitcher argues that creationists pose a false dichotomy between science and religion. He points out:

I) No scientific truths are *proven*. When scientists allow that their theories cannot be proven, their point is philosophical: any empirical generalization about the world could be shown wrong by further observation and further theorizing. I.e., science is fallible.

We've seen, e.g., that the problem of induction raises serious problems for scientific theorizing. But should this undermine our reliance on scientific theory? Should we become skeptics about science or about knowledge of matters of fact more generally? Are we left with faith alone? What standards ought we to use in forming beliefs about matters of fact?

II) It is impossible for evolutionary theory to *both* be unfalsifiable (e.g., (b) above), and falsified by the fossil record and calculations concerning the rate of evolutionary change, i.e., (d) and (e) above.

III) Creationists rely upon a naïve theory about the relationship between theory and evidence to make their claims. A more sophisticated understanding of scientific method shows that evolutionary theory is a better theory than creation theory, even if evolutionary theory is unproven.

It may be useful to say a few things about (III).

One virtue of a scientific theory is its *predictive power*. A theory is a collection of statements, some of which are universal generalizations (Anything that is F is G; all mammals nurse their young.) In general, then, theories can be used to derive statements about what has been the case and will be the case. They also can be used to derive predictions about what we observe. The *observational consequences* of a theory are observationally verifiable statements that must be true if the theory is true. Any theory with a false observational consequence contains a false statement.

Naïve Falsificationism: A scientific theory is a theory that can be falsified. An unfalsifiable theory is one with no observational consequences.

Problem: Even if a theory has false observational consequences, we are not logically compelled to reject the theory. Scientific claims do not confront the world one by one. Rather, hypotheses are tested in large bundles. (Duhem)

However, a good scientific theory must meet certain criteria. E.g.,

Auxiliary hypotheses must be *independently testable*: hypotheses introduced to save the theory in the face of problematic observations must be testable independently of the bundle of hypotheses/claims it was introduced to save.

Unified explanations: A good theory should be simple and have a small number of problem solving strategies that can be applied to a wide variety of cases.

Fecundity: A good theory should open up new areas of research.

Explanatory Power: A good theory should be as concerned not only with prediction, but with giving satisfying explanations of puzzling phenomena.

Kitcher maintains that if we accept such criteria for good scientific theories, evolutionary theory fares much better than creation theory, so deserves its standing as science.

Questions:

- 1) How might a creationist respond? E.g., can creation theory meet the further criteria Kitcher describes? Does evolutionary theory? Are there other scientific theories that don't and non-scientific theories that do meet the criteria?
- 2) To what extent do the further criteria Kitcher describes establish that a theory is "better"? Is a theory that meets these criteria more likely to be *true* than one that doesn't? Why or why not?
- 3) Should evolutionary theory be taught in science class in public schools? Should creation theory? Why or why not?