

Handout #14

Kuhn's *The Structure of Scientific Revolutions* (2)

Three threats to objectivity of science have been identified. In increasing order of seriousness, they are

DIFFERENT REASONS: No objectively cogent reasons, recognizable by both sides, for preferring new paradigm to old.

DIFFERENT MEANINGS: No shared meanings between practitioners of new theory and old.

DIFFERENT "WORLDS": Practitioners of the new theory live in a different world.

Today we focus on the first of these. "My views, it is said, make of theory choice 'a matter of mob psychology'. Kuhn believes, I am told, that 'the decision of a scientific group to adopt a new paradigm cannot be based on good reasons of any kind, factual or otherwise'...Reports of this sort manifest total misunderstanding" (From a paper by Kuhn called "Objectivity, Value Judgment, and Theory Choice").

Two ways for reasons to differ

A useful distinction to bear in mind: reasons in the sense of rational grounds vs. reasons in the mere cause sense. This turns up in the philosophy of science as the distinction between (i) the circumstances in which a hypothesis is *formed* (the "context of discovery") and (ii) the circumstances in which the hypothesis is *tested* (the "context of justification"). It might be that "good reasons" do not drive our behavior in the first context, but do in the second. This underestimates Kuhn's novelty, though. Even Popper accepts that discovery is not a rational process. Kuhn is saying something, it seems, about the context of justification. What?

Some possible theses

Weak Underdetermination: The truth of a theory is not determined by the experimental evidence for it; the evidence is logically consistent with the falsity of the theory and/or the truth of a competing theory.

Comment: Logical consistency is a very weak requirement. One of the theories might still be best supported by the evidence.

Strong Underdetermination: The experimental evidence for a theory is equally supportive of some alternative theory; the preference for one theory over the other is not because one better accommodates the available evidence.

Comment: For a preference to be reasonable it does not necessarily have to be based on observational evidence. The preferred theory might exhibit more "supra-empirical" virtues: simplicity, convenience, memorability, applicability...

No Knock-Down Argument: Practitioners of the old theory are not being flatly irrational in refusing to switch to the new one.

Comment: Kuhn certainly says this. But how threatening is it? Compare the debate between theists and atheists, or Nietzschean vs. conventional morality, or solipsism vs. realism.

No Good Reason At The Time: Good reasons are only a small part of the explanation of why scientists adopt a new theory and reject its competitors.

Comment: Does Kuhn believe this? How threatening is it to traditional notions of rational progress?

No Testing During Normal Science: During periods of normal science, the accepted theory is never tested or confirmed, but rather presupposed: it functions as something like an unquestioned background assumption. (So, in particular, over a period of normal science, scientists have no more reason to believe in the theory's ontology at the end than they did at the start.) ("[Normal science's] object is to solve a puzzle for whose very existence the validity of the paradigm must be assumed. Failure to achieve a solution discredits only the scientist and not the theory" (p. 80).)

Comment: Does Kuhn believe this? How radical a claim is it?

No Good Reason Ever: Acceptance of a theory and the rejection of its competitors is never rationally compelling (even after the paradigm shift). ("[The] issue of paradigm choice can never be unequivocally settled by logic and experiment alone" (p. 94); "Lifelong resistance...is not a violation of scientific standards" (p. 151).)

Comment: Perhaps what is rationally compelling after the shift need not be compelling to those who refuse to make it? And perhaps the shift is, if not rationally mandatory, still rationally preferable? Analogy in ethics. That one option is morally preferable doesn't mean that other options are morally prohibited. Switching to the new paradigm might be "supererogatory": good to do but not so good as to make refusal blameworthy. Examples?