



"Mystery of Mysteries: Is Evolution a Social Construction?"
by Michael Ruse
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The title of this book suggests a rather ambitious undertaking, and on that score we are certainly not disappointed. Philosopher and zoologist Michael Ruse takes note of the ongoing debates known as the "Science Wars" and identifies, as the central issue, a fundamental controversy about the nature of science. Namely, is science objective knowledge about the real world? Or is it a subjective reflection of our culture? He then sets himself the goal of resolving this controversy by exploring the history of evolutionary biology.

Ruse's strategy is to distinguish between, and assess the relative influence of, two classes of values that drive the scientist: epistemic and nonepistemic. Among the former are the norms and criteria that philosophers offer as characteristic of science, such as consistency and coherence, predictive power, and fertility; while the latter include religious and cultural beliefs, desire for rewards and status, etc. Ruse examines ten notable figures in the development of evolution as a respectable scientific field, some historical — Erasmus and Charles Darwin, Julian Huxley, Theodosius Dobzhansky — and some contemporary — Richard Dawkins, Stephen Jay Gould, Richard Lewontin, Edward O. Wilson, Geoffrey Parker, and (recently deceased) J. John Sepkoski. For each case, he attempts to tease apart the different motivations and methodologies that underlie their respective contributions.

By the end, Ruse believes he has amassed evidence for several conclusions. First, epistemic values unquestionably play an important role, and furthermore, one whose importance increases over time. We see, for example, how much Parker and Sepkoski insist upon quantitative predictive power as a measure of good science. On the other hand, the role of cultural values is equally beyond question. According to Ruse the entire notion of progressivity in evolution

derives primarily from cultural influences, religion and the pervasive power of metaphor. Thus the ubiquitous evolutionary “tree of life” is inextricably connected with the positive associations to “upward” metaphors. (But why “The Descent of Man”? Just asking.)

Finally, does science study a real world or one that science itself constructs? Is it founded primarily on objective standards or on cultural preferences? To Ruse, these are two quite separate questions. On the first — a long-standing (back to Plato, at least) philosophical issue — he acknowledges that his historical/empirical approach has nothing to say at all; that will have to be referred back to the philosophers. But he thinks he can answer the second, and his answer is — both: “It is true that science is special, and this is because of its standards; the critics were wrong in arguing otherwise. But it is also true that science is not special, and this is because of its culture; the defenders were wrong in arguing otherwise.”

Now, I have no objection to this conclusion, and it is consistent with the story Ruse’s historical survey tells. But the way he presents his case is frequently unconvincing and even, occasionally, somewhat irritating. To be fair, this book is aimed at the general reader, and Ruse was obviously concerned about going beyond his audience’s comfort zone in terms of length and detail. (More of the latter is provided in his 1996 book “Monad to Man” which deals with much of the same material from a different focus.) Even granting that, there are serious shortcomings.

First off, the entire approach, looking at a small number of specific scientists, seems questionable at best. There is a risk of selectional bias — Ruse claims his choices are representative, but how can we be sure? Support for his claim of increasing concern with epistemic standards consists largely of describing the more recent scientists’ work in greater detail. Might not similar attention to detail for some of their predecessors create a quite different impression? And does the fact that Parker and Sepkoski are much more mathematical than Darwin or Dobzhansky really speak to changing epistemic standards? Couldn’t it just be the availability of computers?

Furthermore, how much can we learn about science in general by focusing on individuals? Many of the historians and sociologists who study science (who are little more than caricatured in Ruse’s cursory and sensationalist exposition of the “Science Wars”) consider the group to be the main locus of the scientific endeavor. It is not the initial individual discovery, they would argue, but what happens as it diffuses into the scientific community and withstands (or not) the tests of colleagues and time, that is primarily responsible for the generation of reliable scientific knowledge. Therein lies the significance of the word “social” in the phrase “social construction”, which Ruse uses in his subtitle; but he does not much address this aspect. Ruse misses a great opportunity to explore an intriguing resonance between this question of the role of the individual vs. the group in the evolution of scientific knowledge, and a parallel theme within the science of evolution itself: does selection take place primarily at the individual or group level?

Another problem: Ruse asserts that he wants to avoid the philosopher's tendency to obscure disputes behind hair-splitting language, a laudable goal. But in avoiding that cliff he sometimes falls off the other side: the very concepts and criteria at the heart of Ruse's analysis seem (to this non-philosopher reader) to begin dissolving around the edges even as he purports to distinguish between them. For example, is an individual scientist's commitment to epistemic values to be measured in terms of intent, or of achievement? Discussing Gould, Ruse argues that he isn't all that productive as a professional scientist because of his mixed motivations: "Gould's work does not yield...the payoff you expect from full implementation of the epistemic norms of good science." (Ruse also observes that successful popularizers such as Gould or Carl Sagan tend to be looked down upon by their professional colleagues, a secondary theme of this book.) But where did that word "expect" come from? Is science some sort of algorithm, where all you have to do is follow rules and important science automatically comes out? Surely not; but then simple logic tells us we can't infer limited commitment from limited accomplishment.

Similarly, Ruse comments that Darwin had "epistemic weaknesses" because he couldn't reconcile his theories with Kelvin's calculated limit of the earth's age. It's not that he didn't try — which might fairly be taken as evidence for a low regard for values such as consistency and coherence — rather, as described by Ruse, he tried mightily but failed. And in the end, of course, the discrepancy turned out to lie at Kelvin's door, not Darwin's.

Ruse considers objectivity itself to be, sometimes, a cultural value; or, more precisely, what he calls a "metavalue" — a value held about the nature of science rather than within science. Thus, many of his scientists are claimed to push for objectivity not (or not only) because they think it is the right way to do good science, but because they think it is the way to make science look good — to secure higher status in the eyes of their beholders. No doubt this distinction has some validity, although it is more than a little reminiscent of the tired old argument over whether altruists really want to do good, or just make themselves feel better by doing good. But such fuzzing of categories ensures that the conclusion Ruse finally reaches — that epistemic and cultural factors are both important — was inevitable from the start. Is the long path to get there, then, necessary or even all that relevant? At the very end of the book, Ruse suggests that those who wish to engage in these debates must first establish their credentials by carrying out a similarly detailed historical study of their own pet field; but given his rather uneventful outcome, it's hard to see why anyone would bother to take up that challenge.

The above reservations notwithstanding, "Mystery of Mysteries" is an entertaining and knowledgeable (though abbreviated and selective) survey of evolutionary thought, highlighting in particular some of the prominent arenas of current controversy, such as those between Gould and Lewontin on one side, Dawkins and Wilson on the other. (He overreaches with some of his attempts to account for differences of opinion in terms of cultural influence — *e.g.*, Gould the New York Jew vs. Wilson the Southern Baptist. These sound a bit too much like

the plausible-at-best explanations of physiological features that are offered by strong adaptationists like Dawkins, and dismissed by their opponents as “just-so stories.”) And, for those who want to know what the Science Wars are all about, this work at least provides a starting point for further reading. But I very much doubt that it will resolve any controversies for anyone, and why Ruse, a professional philosopher, would feel comfortable with his strong claims for having done so, is a bit of a mystery as well.