

How objective is science?

by [Kathleen L. Housley](#) in the [January 5, 2000](#) issue

Mystery of Mysteries: Is Evolution a Social Construction, by Michael Ruse

The question at the heart of this book is not the one contained in the subtitle; rather, it asks whether science in its entirety is objective or subjective. Michael Ruse uses evolution only as a case study, albeit one that takes up the bulk of the book.

Beginning with Charles Darwin's grandfather, Erasmus Darwin, and ending with the eminent paleontologist Jack Sepkoski, Ruse shows how internalized belief structures influence scientists. For example, he looks at Edward O. Wilson's Southern Baptist upbringing for clues to his quasi-religious concept of science as the most satisfying creed for the modern age.

However, Ruse also believes strongly that there are scientific epistemic standards which are not affected by culture. These include predictive accuracy (the ability accurately to forecast what will be found in the unknown) and external consistency (alignment of a theory in one field with theories in another). It is these standards that validate scientific findings and point to the existence of a real world.

Ruse is a professor of philosophy and zoology at the University of Guelph, Ontario. In one of his recent books about evolution, *Monad to Man: The Concept of Progress in Evolutionary Biology*, he argued persuasively that the reason many people are uneasy with evolution is that it is permeated with the secular ideology of progress. Ruse was an expert witness in a 1981 creation science case in Arkansas and has frequently debated creationists. However, he is neither doctrinaire nor derisive toward his opponents. His evenhandedness, coupled with an engaging, jargon-free writing style, makes *Mystery of Mysteries* a good book for nonscientists who want to know more about evolution and the nature of science.

Ruse begins by reviewing some of the recent skirmishes in the "science wars." From the critics of science has come a spate of books that spotlight the personal peccadilloes of famous scientists in order to discredit their work. Readers of these books learn, for example, that Newton finagled his data, and that Louis Pasteur recklessly put patients at risk. Ruse counters that the character of scientists is

irrelevant to the truth and importance of their theories. "A total rotter might produce something of transcendent worth," he writes. Newton's observations about gravity were of enormous importance despite irregularities in the data, and Pasteur's scientific achievements significantly reduced human suffering.

Ruse summarizes the two main competing theories about the nature of science, as set forth by Karl Popper and Thomas Kuhn, and then attempts to chart his own middle course. Popper saw science as objective and the world as real. Science, a net in which reality could be captured, expressed the highest ideal of human inquiry. Kuhn, in contrast, saw science as subjective and the world as a social construct. Scientists, he argued, hold an unchallenged allegiance to a particular coherent tradition, called a paradigm, which shapes their research.

To Ruse, the fact that scientists can never totally free themselves from cultural influences does not necessarily invalidate their research. However, as Ruse himself recognizes, his book's weakness is that while he may have answered to his own satisfaction the question of whether evolutionary theory is subjective or objective, he does not succeed in his initial intent of carrying his conclusions over to science as a whole. The objectivity/subjectivity debate plays out in different ways in different branches of science. For example, biologists can see similarities between the behavior of leaf-cutter ants and their own and, therefore, can make inferences based on their own culture. It is more difficult for astrophysicists to do this with the behavior of quasars.

Ruse ends his book by hurling the following challenge at the critics of science: "Do not simply throw at us disgusting stories about the personal lives of the great men of science or of the vile or outlandish values that they embraced. Move the debate forward now and show that I am wrong in claiming that cultural values do get pushed out, that epistemic norms are important and stand up through time and space. . . . Do these things and then we can argue again."