BOOK REVIEW
Criticism and the Growth of Knowledge
Imre Lakatos and Alan Musgrave; eds.
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The conflict between science and the Bible, between Science and Christianity, or between "reason" and "faith" in broader terms, is an old one. Ever since the middle of the nineteenth century and the publication of *Origin of Species*, Christians have been on the defensive. And they have been on the defensive because they have accepted and believed the myth that science furnishes truth. Sad to say, most Christians have not kept up with the battle and still cling to the idea that there are at least two roads to truth: science and the Scripture. Consequently, they spend most of their time trying to reconcile science and Scripture in such a way as not to offend the "reason" of the natural man. In so doing, in accepting the premise that science is a cognitive enterprise that, properly pursued, leads to truth, these Christians have been doing a disservice to truth and to Christianity.

Because most Christians have not read the account of the last battle, they have made almost no contributions to the fray, and the decisive and strategic maneuvers have been made by the non-Christians. Books published by Christians have accepted in one form or another, the idea that there are two means of learning truth, that is, that science can and does provide us with truth, in addition to the Bible. But if one admits that premise, then one has implicitly given up the case for Christianity. For while it does not necessarily follow that because one method, properly applied leads to truth, it will lead to other, or all truths, it does give epistemological standing to that method and establishes the right of its practitioners to demand that all other alleged truths conform to the "facts" discovered by their method. The battle between the Bible and autonomous science is, therefore, a total war. If one millimeter is allowed to science, it will soon take a kilometer. For that reason, any attempt to "harmonize" or "reconcile" science and the Bible as sources of truth is futile. If science be given epistemological standing, it will and has the right to demand that all other claimants to truth must bow before it. Science must be seen not as a cognitive enterprise, but as a manipulative enterprise. It provides not truth, but, at best, fallible directions.

Unbeknownst to most Christians is the fact that the two leading philosophers of science today, Thomas Kuhn and Karl Popper, have already conceded the fact that science is non-cognitive. Kuhn, in his ***Structure of Scientific Revolutions***, has subjected science to a perspectivist analysis and destroys the view that science consists in the steady and linear accumulation of knowledge. Science, rather, is characterized by paradigms, and paradigmatic changes are revolutions in scientific thought, for successive paradigms are irreconcilable. "Neutrality" and "objectivity," two of the putative qualities of the "impartial scientific observer, are myths, for "scientific fact and theory are not categorically separable" (Structure, p. 7).

Popper, in his ***Conjectures and Refutations***, holds that science is just that: conjectural and refuted. No scientific factor theory can be proved true; it can only be disproved and then only tentatively. He writes that: "Science has nothing to do with the quest for certainty or probability or reliability. We are not interested in establishing scientific theories as secure, or certain, or probable" (Conjectures, p.229). "It can even be shown that all theories, including the best, have the same probability, namely zero" (ibid, p.192). And finally, "our attempts to see and to find the truth are not final, but open to improvement; that our knowledge, our doctrine, is conjectural; that it consists of guesses, of hypotheses, rather than of final and certain truths" (ibid, p. 151).

Now the book that this review is concerned with is a series of essays on Kuhn's philosophy of science, and the essayists include such thinkers as Kuhn himself, J. W. N. Watkins, S. F. Toulmin, L. Pearce Williams, Karl Popper, Margaret Masterman, Imre Lakatos, and Paul Feyerabend. All the essays are good, but there is one outstanding essay by Lakatos that deserves the attention of all Christians.

Lakatos, formerly professor of logic at the University of London, and now of the London School of Economics, titled his essay "Falsification and the Methodology of Scientific Research Programmers." In that essay he presents an overview of the development of various philosophies of science, beginning with the view that science provides proven knowledge. He writes:

> For centuries knowledge meant proven knowledge proven either by the power of the intellect or by the evidence of the senses. . . . The proving power of the intellect or the senses was questioned by the skeptics more than two thousand years ago, but they were browbeaten into confusion by the glory of Newtonian physics. Einstein's results again turned the table and now very few philosophers or scientists still think that scientific knowledge is, or can be, proven knowledge. But few realize that with this the whole classical structure of intellectual values falls in ruins and has to be replaced: one cannot simply water down the ideal of proven truth as some logical empiricists do to the ideal of "probable truth" or as some sociologists of knowledge do to "truth by (changing) consensus. (pp.91-92).

Popper, Lakatos writes, has grasped the full implications of the collapse of the ideal of proven truth, and thus has arrived at the position that the proper scientific procedure is not to try to prove theories for that cannot be done in any case but to try to disprove them. One makes conjectures, in the Popperian program, and then specifies under what conditions the conjectures will be refuted. Science consists of conjectural or refuted theories, never proven ones.

To the first position, that science consists in proven truth, Lakatos assigns the name "justificationism." To the second position, that the proper scientific method is to seek to disprove conjectures, Lakatos assigns the name "falsificationism." Since justificationism has been seen to be logically indefensible (for all scientific procedures commit the fallacy of asserting the consequent), the philosophers of science have arrived at the conclusion that "all theories are equally unprovable" (p95), emphasis is Lakatos'. Unfortunately, Christians have not yet grasped that point, and are carrying on an argument that the scientists already admit they have lost.

Many scientists and philosophers were unhappy with the conclusion that all scientific theories are unprovable, and sought to lower the standard from proved truth to probable truth. Lakatos writes:

> Of course, replacing proof by probability was a major retreat for justificationist thought. But even this retreat turned out to be insufficient. It was soon shown, mainly by Popper's persistent efforts, that under very general conditions, all theories have zero probability, whatever the evidence; all theories are not only equally unprovable, but also equally improbable. (p. 95)

For the argument demonstrating that all theories have zero probability, I refer the reader to Gordon Clark's Philosophy of Science and Belief in God, pages 62-64. With the demise of probabilism, a demise that could have been hastened if Augustine's demonstration that one cannot know what is probable unless one first knows what is certain, falsificationism swept the field. And among the falsificationists, two schools emerged: the dogmatic falsificationists and the methodological falsificationists.

The hallmark of dogmatic falsificationism is then the recognition that all theories are equally conjectural. Science cannot prove any theory. But although science cannot prove, it can disprove: it "can perform with complete logical certainty (the act of) repudiation of what is false," that is, there is an absolutely firm empirical basis of facts which can be used to disprove theories. (p.96)

Lakatos proceeds to show that dogmatic falsificationism is untenable because it rests on two false assumptions. The first of these assumptions is that "there is a natural, psychological borderline between theoretical or speculative propositions on the one hand and factual or observational (or basic) propositions on the other" (p.97). The second false assumption is that "if a proposition satisfies the psychological criterion of being factual or observational (or basic) then it is true; one may say that it was proved from facts" (pp.97-98). Regarding the first assumption Lakatos gives the example of Galileo:

> Galileo claimed that he could "observe" mountains on the moon and spots on the sun and that these "observations" refuted the time-honored theory that celestial bodies are faultless crystal balls. But his "observations were not "observation" in the sense of being observed by the unaided senses: their reliability depended on the reliability of his telescope and of the optical theory of the telescope which was violently questioned by his contemporaries. It was not Galileo's pure, untheoretical observations that confronted Aristotelian theory but rather Galileo's "observations" in the light of his optical theory that confronted the Aristotelians "observations" in the light of their theory of the heavens. (p98)

Lakatos concludes from this and other arguments that "there are and can be no sensations unimpregnated by expectations and therefore there is no natural (i.e. psychological) demarcation between observational and theoretical propositions" (p.99).

Regarding the second false assumption made by dogmatic falsificationism, Lakatos presents a conclusive argument;

> the truth value of the "observational" propositions cannot be indubitably decided: no factual proposition can ever be proved from an experiment. Propositions can only be derived from other propositions, they cannot be derived from facts: one cannot prove statements from experiences "no more than by thumping the table." This is one of the basic points of elementary logic, but one which is understood by relatively few people even today. (p. 99)

From these considerations, Lakatos draws the quite obvious conclusion that science can neither prove nor disprove propositions: "all propositions of science are theoretical and incurably fallible" (p. 100).

One wishes that it had been a Christian philosopher who developed that argument; it is both embarrassing and annoying to realize that it is the Christians who are so oblivious to the development of the philosophy of science, that they still maintain that scientists can discover truth. The philosophers of science have handed us the weapons to destroy one of our most important intellectual antagonists, secular science itself, and we Christians are apparently too ignorant or too stupid to use those weapons. May God forgive us our intellectual sins.

To return to Lakatos, he is not content to let the argument end at this point. He goes on to offer a third reason why dogmatic falsificationism would be useless for disproving theories: "the most admired scientific theories simply fail to forbid any observable state of affairs" (p. 100).

Recall that dogmatic falsificationism requires that a scientific theory, to be scientific and not "metaphysical," must specify conditions under which it would be disproved. But the best scientific theories do not specify such conditions; Lakatos illustrates the point by imagining a story about a case of planetary misbehavior:

A physicist of the pre-Einsteinian era takes Newton's mechanics and his law of gravitation, (N), the accepted initial conditions, and calculates, with their help, the path of a newly discovered small planet, p. But the planet deviates from the calculated path. Does our Newtonian physicist consider that the deviation was forbidden by Newton's theory and therefore that, once established, it refutes the theory N? No.

The physicist simply says there must be an unknown body causing the deviation from the predicted path. If present telescopes are unable to discover that unknown body, bigger and better ones are built. If they are not adequate to discover the unknown planet, satellites are launched. And if they are unable to discover the unknown cause of the "deviation," the scientists invent other reasons why the unknown body cannot be discovered. And so the process continues. It is not the Christians who postulate leprechauns behind every tree who become invisible if one looks for them, but the scientists; for as Lakatos says, "it is exactly the most important, mature theories in the history of science which are prima facie, undisprovable in this way" (p. 102).

Lakatos is not satisfied with this conclusion, and he attempts to construct a sophisticated methodological falsificationism that escapes skepticism and irrationalism. He realizes how close to utter bankruptcy science is and tries as best he can – he is no mean logician – to rescue science from skepticism and irrationality. In this valiant attempt, he is not successful, and could not be.

The noncognitive nature of science is established once the justificationist position, the idea that scientific knowledge is proven knowledge, has been rejected. No amount of logical fine tuning of any variety of "falsificationism" can bridge the gap between opinion and truth. And Lakatos admits as much in his discussion of the decisions that must be made by a sophisticated methodological falsificationist, decisions that are inevitably arbitrary:

> But even this appeal procedure cannot do more than postpone the conventional decision. For the verdict of the appeal court is not infallible either. When we decide whether it is the replacement of the "interpretative" or of the "explanatory" theory that produces novel facts, we must again make a decision about the acceptance or rejection of basic statements. But then we have only postponed and possibly improved the decision, not avoided it. The difficulties concerning the empirical basis which confronted "naive" falsificationism cannot be avoided by "sophisticated" falsificationism either. (p. 131)

There is, then, no escape from the conclusions that autonomous science can prove nothing, that it can disprove nothing, and that, therefore, it is not a means of cognition at all. Scientists are, in the words of Paul, ever learning and never able to come to the knowledge of truth. The long essay by Lakatos (105 pages) is itself worth ten times the price of the book.

The fallacy of asserting the consequent is one of the many logical problems science faces, but it is, perhaps, the most obvious and most damaging. It consists in arguing: if p then q: q therefore, p. A simple example is: if it is raining, the ground is wet: the ground is wet: therefore, it is raining. Scientists argue in this way: if a theory is true (p), it will have a certain result (q). An experiment is devised and performed, and the predicted result (q) is observed. The scientists then conclude, quite illogically, that the theory is true. *All* scientific investigation commits this logical fallacy.

http://www.creationism.org/csshs/v01n2p12.htm