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Mathematics Abstracts

Kadvany, John

Imre Lakatos and the guises of reason.

Durham, NC: Duke University Press, (ISBN 0-8223-2649-3/pbk; 0-8223-2660-4/hbk). xx, 379 p. $ 23.95/pbk; $ 69.95/hbk (2001).

In 1957 Imre Lakatos fled from Hungary to England. In the 1960s he became famous with the publication of 'Proofs and Refutations' (based on his Cambridge Ph. D. thesis and reprinted by Cambridge Univ. Press (1976; Zbl 0334.00022)) in which he argued that mathematics is not a collection of infallible truths developing in a cumulative way, but, that on the contrary, mathematical theories are constantly being refuted and replaced by others. Lakatos views can be seen as an extension to mathematics of Karl Popper's work with respect to scientific theories. At the end of the 1960s, in a reaction to Thomas Kuhn's 'The Structure of Scientific Revolutions' Lakatos developed his 'Methodology of scientific research programmes' [cf. Cambridge Univ. Press (1978; Zbl 0373.02002)]. Both the methodology of proofs and refutations and the methodology of scientific research programmes are attempts to capture the rationality of the development of mathematics and science. Usually Lakatos' work is rightly interpreted as part of Anglo-Saxon philosophy [cf. *T. Koetsier*, Lakatos' philosophy of mathematics. A historical approach. North-Holland (1991; Zbl 0743.00017)]. Yet, before Lakatos came to England, he had spent the first 34 years of his life in Hungary. He had been active in the communist party and he had been in a communist jail for three years for reasons that remain unknown. Moreover, he had studied the works of Marx and Engels and had undergone the influence of the influential Hungarian marxist philosopher Georg Lukacs.

In this fascinating book the author attempts in considerable detail to relate in various ways Lakatos' Anglo-Saxon philosophical work to his Hungarian past. Lakatos had read Lukacs's 'History and Class Consciousness' and acquired a Hegelian-Marxist view of science: the views of a scientific community can only be understood as a historical cathegory and as part of a dialectical development. Moreover, Lukacs's 'The Destruction of Reason' and the practice of Hungarian Stalinism had shown him how the idea of criticism building knowledge through solutions to contradictions could be easily perverted. Stalinism reduced dialectics to a forced admitting of one's errors often before being eliminated. For example, Kadvany points out that Lakatos's method of proofs and refutations is strikingly similar to Hegel's phenomenology of the spirit; the neutralisation of a counter-example by means of the method of lemma-incorporation is 'aufheben' in the Hegelian sense of the word. Hegel described his own philosophy as the final stage in the history of philosophy. Analogously Lakatos described his methodology of scientific research programmes as the natural outcome of a dialectical development in which successively more powerful methodologies succeed each other. Lakatos was in fact a "classic Hungarian Stalinist intellectual of the postwar area" (p. xvi). Kadvany's reconstruction of the intellectual development of Lakatos' s thinking is very convincing: it is clear that it is necessary for a full understanding of Lakatos's philosophical work to take his Hungarian past into account.

Two chapters of the book are devoted to new rational reconstructions along Lakatosian lines. Chapter 4 contains a history of 'monster barring' and 'lemma-incorporation' for Gödel's second incompleteness theorem. Chapter 11 argues that Marxist economics qualified as a research programme and as such must be considered as scientific from a Lakatosian point of view. The last chapter of the book is an intriguing attempt to understand Hungarian history between World War II and the failed revolution of 1956 by means of Lakatos's philosophy.

Teun Koetsier (Amsterdam).

JOHN KADVANY, *Imre Lakatos and the Guises of Reason*, Durham (North Carolina) and London, Duke University Press, 2001, xx + 278 pp.

The author discusses the contributions to the philosophy of mathematics and of science of this figure, who made great publicity especially in the later years of his life (which ended in 1974) and has continued to gain some attention since. He gives a good account of Lakatos on the whole, and his book is a worthwhile contribution to the history of recent philosophy.

On mathematics Lakatos is best remembered for an interesting essay on the ways in which modifying the proofs of a theorem alters the theorem itself, and the general mathematical contexts in which it may be understood. His approach formed a refreshing change from the usual concern with mathematics of philosophers, who usually treat only axioms and justification and the three main traditions of the 20th century (logicism, intuitionism, and so-called formalism). I would have liked to see much more in this book on the considerable influence on Lakatos of his compatriot Georg Polya (1887-1985), who treated such questions over a wide range of topics in books such as *Mathematics and plausible reasoning* (1954) and *Mathematical discovery* (1962-1965): Lakatos handled only one particular theorem, on the edges, faces and vertices of planar solids. He also sketched an essay on the history of mathematical analysis, which was published posthumously. The author reasonably wonders if it influenced my own work on this history (p. 327): in fact it did not, for the simple reason that Lakatos never told me of its existence, and I found it only after most of my research was done.

On science Lakatos wrote extensive post-Popperian essays, heavy in terminology, attempting to replace Popper's hit-and-miss methodology of falsification with various types of "sophisticated methodological falsificationism" by assessing the "progressive" (good) or "degenerating" (bad) aspects of the pertaining "research programmes." As part of a break with Lakatos, Popper famously characterised his philosophy as "mak[ing] nonsense of all my views." The author takes a far more admiring view of it than Popper (or I) have been able to muster. For example, Lakatos assumed that scientific theories always have competitors, whereas in many cases, at least for a time, only one theory may be available, and perhaps fragmentary at that; further, in such a situation the phrase "research programme" is inappropriate. A particularly serious difficulty concerns the status of the "hard core" of a research programme, the principal assumption(s) around which it is built: Lakatos states that they gain such a status in the development of that theory by trial and error, whereas the main feature of his sophisticated methodological falsification is precisely to furnish an intellectual algorithm to replace the trial-and-error style of Popper's "naïve" falsificationism. In chapter 6 the author compares Lakatos and Popper with Feyerabend and Kuhn, placing the last as fourth in the list: I would place him second (after Popper), especially for his clarification of the importance of normal science, with which scientists are largely concerned without necessarily descending to the roboticism that philosophers, even Popper, seem to imagine.

Among other problematic features of Lakatos's philosophy, many historians of science have been astounded at his practice of deliberately presenting false history so that he can say that history itself (as a record and explanation of events and processes) is a falsification of its historical accounts. On this point, however, lies the most valuable part of this book, where the author describes the intellectual life of Hungary during and especially after the Second World War, where truth and falsehood were often inverted, and a version of dialectic prevailed which was confected largely out of a distortion of the philosophy of Hegel and Marx (ch. 12). The notions involved include the place of theory in writing history, the status of research programmes, the use of footnotes to text, the links between historicism and the rejection of permanent foundations of knowledge, and false consciousness. The author supplies an excellent table (pp. 274-275) in which Hegelian and Marxist notions and Hungarian variants are listed in parallel columns (and seems to deploy the Hungarian style in some of his own footnotes). Lakatos, then "the fanatical leader of a Communist cell" who "apparently orchestrated the death of an innocent woman" (p. 313), imbibed of this potion, especially under the influence of the Marxist philosopher and post-Marxist literary critic Georg Lukacs (1885-1971). It seems that after fleeing to the West after the Hungarian Revolution of 1956 Lakatos never managed to get these techniques under better control, either in his philosophical work or his professional activities.

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Book Reviews

Imre Lakatos and the Guises of Reason. By John Kadvany. Durham, N.C.: Duke University Press, 2001. xx; 378 pp. $23.95 (paperback); $69.95 (hardback).

For much of the 1970s and 1980s, there was great interest in using Imre Lakatos's methodology of scientific research programs (MSRPs) as a framework within which to make sense of the history of economics. In the whole of the resulting literature, it was assumed that Lakatos's philosophical position was essentially Popperian, his MSRP being very close to the later, more "sophisticated," position held by Karl Popper. In this book, John Kadvany challenges this assumption. Lakatos, he argues, had a Hegelian view of rationality that he never abandoned. The MSRP should be seen, not simply as a variant on Popperian philosophy, but as a covert Hegelian attempt to subvert Popperianism. Kadvany argues that Hegelian methods also provided the foundations for Lakatos's work on the philosophy of mathematics (in his doctoral thesis, which became *Proofs and Refutations* [1976]) and his work as a Communist Party activist in Hungary before he left for Britain. To quote Kadvany's preface, his thesis is that "Lakatos's English-language philosophy of science and mathematics is a philosophical palimpsest, containing an original and instructive account of historical rationality deriving from Hegel, Marx and the Hegelian-Marxism of . . . Georg Lukács" (xvii). In short, Lakatos never abandoned the philosophical position of his Stalinist youth; he applied it covertly to new problems.

The essence of Lakatos's method goes back, through Hegel, to Pyrrhonian skepticism. This is not a doctrine about whether or not it is possible to get beneath appearances to some form of certain knowledge, but rather a set of methods designed to show that all claims to certainty can be undermined. At the risk of oversimplifying a long and complex argument, the skeptical method involves turning people's claims against themselves. This is what the MSRP did for Popper's philosophy of science. It is also the method through which, according to Lakatos's account, mathematics developed in the nineteenth century. Proofs (claims to certain knowledge) were turned against themselves through the generation of counterexamples. Analyses of counterexamples led to new proofs, which were in turn overthrown. Kadvany

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even claims that this method makes sense of the way Lakatos applied his method of rational reconstructions (with their attendant falsifying footnotes) to question conventional approaches to the history of science. Throughout, Lakatos was searching for rationality in a world where one knows that all one's beliefs are false. In such a world, rationality has to be found in history—in a process that causes current beliefs to be better than those previously held.

To evaluate Kadvany's argument properly would require knowledge not only of Lakatos's work but also of Goethe and the *Bildungsroman* genre; Hegel's *Phenomenology of Spirit* and the relationship of Hegel to Kant; Lukács's *History and Class Consciousness*, Popperian philosophy of science, and the history of nineteenth-century mathematics; Kurt Gödel's theorem and the way mathematicians responded to it; and the political history of Hungary from the Communist takeover until the 1956 uprising. I will, therefore, refrain from attempting to do so. However, it is clear that the way in which Kadvany has integrated these diverse narratives into a single argument is a remarkable achievement. I found parts of the book hard going, but the book was extremely stimulating and I strongly recommend it. I doubt that this book will, or should, lead to a revival of interest in Lakatos's MSRP as a framework for studying the history of economics. It should, however, provoke a reevaluation of Lakatos's work (especially on the history of mathematics), providing an answer to anyone who regards it as philosophically naive. It may also provide a route whereby those for whom German philosophy has been a largely closed book can begin to understand something of Hegel.

Roger E. Backhouse, University of Birmingham

England's Disgrace? J. S. Mill and the Irish Question. By Bruce L. Kinzer. Toronto: University of Toronto Press, 2001. 292 pp. $60.00.

Toward the end of a review of ten of the thirty-three hefty volumes of the *Collected Works of John Stuart Mill*, Stefan Collini, slightly giddy after ingesting so much undiluted Mill, offers a platform speech à la Mill praising the editors of the *Collected Works*. Bruce Kinzer is singled out for special commendation:

> His Introduction to the present volumes maintains a standard which I shall not say has never suffered a blemish (*cries of Name!*), and of which modesty forbids me to give too extended or too favourable a consideration (*laughter*); but for command of information concerning the doings of the public men of the time, combined with sympathetic familiarity with the principles governing our great author's thought on all germane subjects, his discussion could be equaled by few and bettered by none (*applause*). (Collini 1999, 142)

The same high level of scholarship is very much in evidence in *England's Disgrace?* (Mill would probably have dispensed with the question mark.) Mill was engaged by the "Irish question" intermittently throughout his life, and one of the great merits of

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Kadvany, John

★Imre Lakatos and the guises of reason. (English summary)

Science and Cultural Theory.

Duke University Press, Durham, NC, 2001. xx+379 pp. $23.95. ISBN 0-8223-2649-3

This is an account of the work (and life) of Imre Lakatos (1922–1974), the brilliant but enigmatic Hungarian refugee who became an important philosopher of mathematics and science. His importance in the philosophy of mathematics rests primarily on his book *Proofs and refutations* [Cambridge Univ. Press, Cambridge, 1976; MR 58 #122], which elaborates two themes: the historical process whereby mathematical knowledge is developed and warranted and the consequent fallibility of all mathematical knowledge. Kadvany's book is the first fully to explore the import of Hegel's dialectics, and central European thinking in general, in Lakatos' work. This is the deliberate aim of the book, and it succeeds admirably in this goal with considerable thoroughness, depth and insight, culminating in Table 1 (pages 294–5), which identifies 18 Hegelian (or Marxist) themes in Lakatos. In the course of discussing Lakatos' views on the uniformalizability of informal mathematics, Kadvany also treats Gödel's theorem with insight and subtlety.

This book is an important contribution to the literature on Lakatos. It provides significant insights into the background, nature, import and implications of Lakatos' thought. However, it is not yet the definitive work on Lakatos' philosophy or even his philosophy of mathematics, for two reasons. First of all, like too many commentators, Kadvany draws exclusively on Lakatos' posthumous publications (including the two edited volumes of papers published in 1978) as a source of Lakatos' writings. There is a significant shift in Lakatos' thinking between his 1961 Ph.D. thesis and his 1963–64 papers based on his thesis (when he concealed the Marxist-Hegelian roots of his thought). Furthermore, his 1976 book based primarily on these papers is the work of two editors out of sympathy with Lakatos' early fallibilism (and Hegelianism). Any definitive study of Lakatos' thought cannot therefore rely solely on this last, posthumously edited work as a source for his main case study and contribution to the philosophy of mathematics. Secondly, in the book Kadvany is primarily advancing his thesis about the Hegelian underpinnings of Lakatos' work. He does this admirably, but this is a controversial position and he does not consider the disanalogies between the two thinkers. Although I am convinced he is largely right, a skeptic might argue that Lakatos gave up his Hegelian roots for a Popperian position (as indeed several commentators believe). This view is not adequately countered. As this point illustrates, Kadvany does not do full justice to the extensive literature that has built up explicating and commenting on Lakatos' work. For these reasons, the work cannot be regarded as definitive.

Nevertheless, this is the most important book that has appeared on Lakatos' work to date, and it contains much that is novel and of real interest and importance to philosophers and mathematicians. Every university library should have a copy.

Paul Ernest (4-EXTRED; Exeter)