

Conjectures And Refutations The Growth Of Scientific Knowledge Karl Popper

On its publication in 1957, *The Poverty of Historicism* was hailed by Arthur Koestler as 'probably the only book published this year which will outlive the century.' A devastating criticism of fixed and predictable laws in history, Popper dedicated the book to all those 'who fell victim to the fascist and communist belief in Inexorable Laws of Historical Destiny.' Short and beautifully written, it has inspired generations of readers, intellectuals and policy makers. One of the most important books on the social sciences since the Second World War, it is a searing insight into the ideas of this great thinker.

'Never before has there been so many and such dreadful weapons in so many irresponsible hands.' - Karl Popper, from the Preface *All Life is Problem Solving* is a stimulating and provocative selection of Popper's writings on his main preoccupations during the last twenty-five years of his life. This collection illuminates Popper's process of working out key formulations in his theory of science, and indicates his view of the state of the world at the end of the Cold War and after the collapse of communism.

In a letter of 1932, Karl Popper described *Die beiden Grundprobleme der Erkenntnistheorie – The Two Fundamental Problems of the Theory of Knowledge* – as '...a child of crises, above all of ...the crisis of physics.' Finally available in English, it is a major contribution to the philosophy of science, epistemology and twentieth century philosophy generally. The two fundamental problems of knowledge that lie at the centre of the book are the problem of induction, that although we are able to observe only a limited number of particular events, science nevertheless advances unrestricted universal statements; and the problem of demarcation, which asks for a separating line between empirical science and non-science. Popper seeks to solve these two basic problems with his celebrated theory of falsifiability, arguing that the inferences made in science are not inductive but deductive; science does not start with observations and proceed to generalise them but with problems, which it attacks with bold conjectures. *The Two Fundamental Problems of the Theory of Knowledge* is essential reading for anyone interested in Karl Popper, in the history and philosophy of science, and in the methods and theories of science itself.

Described by the philosopher A.J. Ayer as a work of 'great originality and power', this book revolutionized contemporary thinking on science and knowledge. Ideas such as the now legendary doctrine of 'falsificationism' electrified the scientific community, influencing even working scientists, as well as post-war philosophy. This astonishing work ranks alongside *The Open Society and Its Enemies* as one of Popper's most enduring books and contains insights and arguments that demand to be read to this day.

In this long-awaited volume, Jeremy Shearmur and Piers Norris Turner bring to light Popper's most important unpublished and uncollected writings from the time of *The Open Society* until his death in 1994. *After The Open Society: Selected Social and Political Writings* reveals the development of Popper's political and philosophical thought during and after the Second World War, from his early socialism through to the radical humanitarianism of *The Open Society*. The papers in this collection, many of which are available here for the first time, demonstrate the clarity and pertinence of Popper's thinking on such topics as religion, history, Plato and Aristotle, while revealing a lifetime of unwavering political commitment. *After The Open Society* illuminates the thought of one of the twentieth century's greatest philosophers and is essential reading for anyone interested in the recent course of philosophy, politics, history and society.

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The work that helped to determine Paul Feyerabend's fame and notoriety, *Against Method*, stemmed from Imre Lakatos's challenge: "In 1970 Imre cornered me at a party. 'Paul,' he said, 'you have such strange ideas. Why don't you write them down? I shall write a reply, we publish the whole thing and I promise you—we shall have a lot of fun.' " Although Lakatos died before he could write his reply, *For and Against Method* reconstructs his original counter-arguments from lectures and correspondence previously unpublished in English, allowing us to enjoy the "fun" two of this century's most eminent philosophers had, matching their wits and ideas on the subject of the scientific method. *For and Against Method* opens with an imaginary dialogue between Lakatos and Feyerabend, which Matteo Motterlini has constructed, based on their published works, to synthesize their positions and arguments. Part one presents the transcripts of the last lectures on method that Lakatos delivered. Part two, Feyerabend's response, consists of a previously published essay on anarchism, which began the attack on Lakatos's position that Feyerabend later continued in *Against Method*. The third and longest section consists of the correspondence Lakatos and Feyerabend exchanged on method and many other issues and ideas, as well as the events of their daily lives, between 1968 and Lakatos's death in 1974. The delight Lakatos and Feyerabend took in philosophical debate, and the relish with which they sparred, come to life again in *For and Against Method*, making it essential and lively reading for anyone interested in these two fascinating and controversial thinkers and their immense contributions to philosophy of science. "The writings in this volume are of considerable intellectual importance, and will be of great interest to anyone concerned with the development of the philosophical views of Lakatos and Feyerabend, or indeed with the development of philosophy of science in general during this crucial period."—Donald Gillies, *British Journal for the Philosophy of Science* (on the Italian edition) "A stimulating exchange of letters between two philosophical entertainers."—Tariq Ali, *The Independent* Imre Lakatos (1922-1974) was professor of logic at the London School of Economics. He was the author of *Proofs and Refutations* and the two-volume *Philosophical Papers*. Paul Feyerabend (1924-1994) was educated in Europe and held numerous teaching posts throughout his career. Among his books are *Against Method*; *Science in a Free Society*; *Farewell to Reason*; and *Killing Time: The Autobiography of Paul Feyerabend*, the last published by the University of Chicago Press.

This inaugural handbook documents the distinctive research field that utilizes history and philosophy in investigation of theoretical, curricular and pedagogical issues in the teaching of science and mathematics. It is contributed to by 130 researchers from 30 countries; it provides a logically structured, fully referenced guide to the ways in which science and mathematics education is, informed by the history and philosophy of these disciplines, as well as by the philosophy of education more generally. The first handbook to cover the field, it lays down a much-needed marker of progress to date and provides a platform for informed and coherent future analysis and research of the subject. The publication comes at a time of heightened worldwide concern over the standard of science and mathematics education, attended by fierce debate over how best to reform curricula and enliven student engagement in the subjects. There is a growing recognition among educators and policy makers that the learning of science must dovetail with learning about science; this handbook is uniquely positioned as a locus for the discussion. The handbook features sections on pedagogical, theoretical, national, and biographical research, setting the literature of each tradition in its historical context. It reminds readers at a crucial juncture that there has been a long and rich tradition of historical and

philosophical engagements with science and mathematics teaching, and that lessons can be learnt from these engagements for the resolution of current theoretical, curricular and pedagogical questions that face teachers and administrators. Science educators will be grateful for this unique, encyclopaedic handbook, Gerald Holton, Physics Department, Harvard University This handbook gathers the fruits of over thirty years' research by a growing international and cosmopolitan community Fabio Bevilacqua, Physics Department, University of Pavia

In a career spanning sixty years, Sir Karl Popper has made some of the most important contributions to the twentieth century discussion of science and rationality. The Myth of the Framework is a new collection of some of Popper's most important material on this subject. Sir Karl discusses such issues as the aims of science, the role that it plays in our civilization, the moral responsibility of the scientist, the structure of history, and the perennial choice between reason and revolution. In doing so, he attacks intellectual fashions (like positivism) that exaggerate what science and rationality have done, as well as intellectual fashions (like relativism) that denigrate what science and rationality can do. Scientific knowledge, according to Popper, is one of the most rational and creative of human achievements, but it is also inherently fallible and subject to revision. In place of intellectual fashions, Popper offers his own critical rationalism - a view that he regards both as a theory of knowledge and as an attitude towards human life, human morals and democracy. Published in cooperation with the Central European University.

How does science work? Does it tell us what the world is "really" like? What makes it different from other ways of understanding the universe? In Theory and Reality, Peter Godfrey-Smith addresses these questions by taking the reader on a grand tour of more than a hundred years of debate about science. The result is a completely accessible introduction to the main themes of the philosophy of science. Examples and asides engage the beginning student, a glossary of terms explains key concepts, and suggestions for further reading are included at the end of each chapter. Like no other text in this field, Theory and Reality combines a survey of recent history of the philosophy of science with current key debates that any beginning scholar or critical reader can follow. The second edition is thoroughly updated and expanded by the author with a new chapter on truth, simplicity, and models in science.

Imre Lakatos's Proofs and Refutations is an enduring classic, which has never lost its relevance. Taking the form of a dialogue between a teacher and some students, the book considers various solutions to mathematical problems and, in the process, raises important questions about the nature of mathematical discovery and methodology. Lakatos shows that mathematics grows through a process of improvement by attempts at proofs and critiques of these attempts, and his work continues to inspire mathematicians and philosophers aspiring to develop a philosophy of mathematics that accounts for both the static and the dynamic complexity of mathematical practice. With a specially commissioned Preface written by Paolo Mancosu, this book has been revived for a new generation of readers.

This book traces the history of the concept of work from its earliest stages and shows that its further formalization leads to equilibrium principle and to the principle of virtual works, and so pointing the way ahead for future research and applications. The idea that something remains constant in a machine operation is very old and has been expressed by many mathematicians and philosophers such as, for instance, Aristotle. Thus, a concept of energy developed. Another important idea in machine operation is Archimedes' lever principle. In modern times the concept of work is analyzed in the context of applied mechanics mainly in Lazare Carnot mechanics and the mechanics of the new generation of polytechnical engineers like Navier, Coriolis and Poncelet. In this context the word "work" is finally adopted. These engineers are also responsible for the incorporation of the concept of work into the discipline of economics when they endeavoured to combine the study of the work of machines and men together.

Realism and the Aim of Science is one of the three volumes of Karl Popper's Postscript to the Logic of scientific Discovery. The Postscript is the culmination of Popper's work in the philosophy of physics and a new famous attack on subjectivist approaches to philosophy of science. Realism and the Aim of Science is the first volume of the Postscript. Popper here formulates and explains his non-justificationist theory of knowledge: science aims at true explanatory theories, yet it can never prove, or justify, any theory to be true, not even if it is a true theory. Science must continue to question and criticise all its theories, even those that happen to be true. Realism and the Aim of Science presents Popper's mature statement on scientific knowledge and offers important insights into his thinking on problems of method within science.

Popper and After: Four Modern Irrationalists focuses on a tendency in the philosophy of science, of which the leading representatives are Professor Sir Karl Popper, the late Professor Imre Lakatos, and Professors T. S. Kuhn and P. K. Feyerabend. Their philosophy of science is in substance irrationalist. They doubt, or deny outright, that there can be any reason to believe any scientific theory; and a fortiori they doubt or deny, for example, that there has been any accumulation of knowledge in recent centuries. The book is composed of two parts and Part One explains how these writers succeeded in making irrationalism about science acceptable to readers. Part Two explores the intellectual influence that led these writers to embrace irrationalism about science.

A sampling of the philosophical writings of Karl Popper includes discussions of rationalism, knowledge, human freedom, and the scientific method

At the age of eight, Karl Popper was puzzling over the idea of infinity and by fifteen was beginning to take a keen interest in his father's well-stocked library of books. Unended Quest recounts these moments and many others in the life of one of the most influential thinkers of the twentieth century, providing an indispensable account of the ideas that influenced him most. As an introduction to Popper's philosophy, Unended Quest also shines. Popper lucidly explains the central ideas in his work, making this book ideal for anyone coming to Popper's life and work for the first time.

"An important collection of significant papers." American Scientist

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Scientists use concepts and principles that are partly specific for their subject matter, but they also share part of them with colleagues working in different fields. Compare the biological notion of a 'natural kind' with the general notion of 'confirmation' of a hypothesis by certain evidence. Or compare the physical principle of the 'conservation of energy' and the general principle of 'the unity of science'. Scientists agree that all such notions and principles aren't as crystal clear as one might wish. An important task of the philosophy of the special sciences, such as philosophy of physics, of biology and of economics, to mention only a few of the many flourishing examples, is the clarification of such subject specific concepts and principles. Similarly, an important task of 'general' philosophy of science is the clarification of concepts like 'confirmation' and principles like 'the unity of science'. It is evident that clarification of concepts and principles only makes sense if one tries to do justice, as much as possible, to the actual use of these notions by scientists, without however following this use slavishly. That is, occasionally a philosopher may have good reasons for suggesting to scientists that they should deviate from a standard use. Frequently, this amounts to a plea for differentiation in order to stop debates at cross-purposes due to the conflation of different meanings. While the special volumes of the series of Handbooks of the Philosophy of Science address topics relative to a specific discipline, this general volume deals with focal issues of a general nature. After an editorial introduction about the dominant method of clarifying concepts and principles in philosophy of science, called explication, the first five chapters deal with the following subjects. Laws, theories, and research programs as units of empirical knowledge (Theo Kuipers), various past and contemporary perspectives on explanation (Stathis Psillos), the evaluation of theories in terms of their virtues (Ilkka Niiniluoto), and the role of experiments in the natural sciences, notably physics and biology (Allan Franklin), and their role in the social sciences, notably economics (Wenceslao Gonzalez). In the subsequent three chapters there is even more attention to various positions and methods that philosophers of science and scientists may favor: ontological, epistemological, and methodological positions (James Ladyman), reduction, integration, and the unity of science as aims in the sciences and the humanities (William Bechtel and Andrew Hamilton), and logical, historical and computational approaches to the philosophy of science (Atocha Aliseda and Donald Gillies). The volume concludes with the much debated question of demarcating science from nonscience (Martin Mahner) and the rich European-American history of the philosophy of science in the 20th century (Friedrich Stadler). Comprehensive coverage of the philosophy of science written by leading philosophers in this field
Clear style of writing for an interdisciplinary audience
No specific pre-knowledge required

Modern philosophy of science has paid great attention to the understanding of scientific 'practice', in contrast to concentration on scientific 'method'. Paul Feyerabend's acclaimed work, which has contributed greatly to this new emphasis, shows the deficiencies of some widespread ideas about the nature of knowledge. He argues that the only feasible explanations of scientific successes are historical explanations, and that anarchism must now replace rationalism in the theory of knowledge. The third edition of this classic text contains a new preface and additional reflections at various points in which the author takes account both of recent debates on science and on the impact of scientific products and practices on the human community. While disavowing populism or relativism, Feyerabend continues to insist that the voice of the inexpert must be heard. Thus many environmental perils were first identified by non-experts against prevailing assumptions in the scientific community. Feyerabend's challenging reassessment of scientific claims and understandings are as pungent and timely as ever.

"Comprising more than 500 entries, the Encyclopedia of Research Design explains how to make decisions about research design, undertake research projects in an ethical manner, interpret and draw valid inferences from data, and evaluate experiment design strategies and results. Two additional features carry this encyclopedia far above other works in the field: bibliographic entries devoted to significant articles in the history of research design and reviews of contemporary tools, such as software and statistical procedures, used to analyze results. It covers the spectrum of research design strategies, from material presented in introductory classes to topics necessary in graduate research; it addresses cross- and multidisciplinary research needs, with many examples drawn from the social and behavioral sciences, neurosciences, and biomedical and life sciences; it provides summaries of advantages and disadvantages of often-used strategies; and it uses hundreds of sample tables, figures, and equations based on real-life cases."--Publisher's description.

The human mind is the single most powerful entity in the universe. Yet we have made no progress in our efforts to simulate it as artificial general intelligence. Why is that? In this groundbreaking book, software engineer and philosopher Dennis Hackethal explains the mistakes intelligence researchers have been making - and how to avoid them. Based out of Silicon Valley, he proposes a research program for building truly intelligent machines. He argues for a fundamental unification of software engineering and reason generally that will aid greatly in our goal to simulate intelligence. Taking you on a journey through several fields, including the theory of evolution, epistemology, psychotherapy, and astronomy, Hackethal provides insight into the unlimited potential of artificial general intelligence that may one day take us to the stars. A Window on Intelligence is your field guide to the exciting world of your mind.

Conjectures and Refutations is one of Karl Popper's most wide-ranging and popular works, notable not only for its acute insight into the way scientific knowledge grows, but also for applying those insights to politics and to history. It provides one of the clearest and most accessible statements of the fundamental idea that guided his work: not only our knowledge, but our aims and our standards, grow through an unending process of trial and error.

