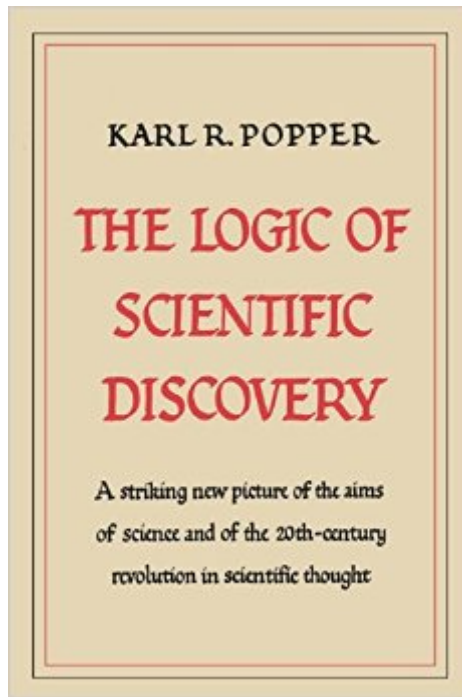


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# The Logic Of Scientific Discovery



## Synopsis

2014 Reprint of Original 1959 Edition. Exact facsimile of the original edition, not reproduced with Optical Recognition Software. This book by one of the world's foremost philosophers of science presented a striking new picture of the logical character of scientific discovery--a picture which does full justice to the liberating effect of the Einsteinian revolution in physics and its immense impact upon scientific thought in general. For this new English edition Dr. Popper did his own translation and has written 150 pages of entirely new text. Ernest Nagel considered this work "a first rate contribution to the logic of scientific method. The book contains a very interesting chapter on quantum mechanics, which performs one of the few sensible analyses of the Indeterminacy Principle which I have seen in print... The book is highly stimulating and contains much that is bed-rock for future work."--From the Dusk Jacket.

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## Customer Reviews

This is the book where Popper first introduced his famous "solution" to the problem of induction. Originally published in German in 1934, this version is Popper's own English translation undertaken in the 1950s. It should go without saying that the book is a classic in philosophic epistemology--perhaps the most important such work to appear since Hume's "An Enquiry Concerning Human Understanding." Popper argues that scientific theories can never be proven, merely tested and corroborated. Scientific inquiry is distinguished from all other types of investigation by its testability, or, as Popper put it, by the falsifiability of its theories. Unfalsifiable

theories are unscientific precisely because they cannot be tested. Popper has always been known for his straightforward, lucid writing style. There are no books on epistemology that are as easy to read and understand than Popper's. Nonetheless, of all Popper's books, "Logic of Scientific Discovery" is easily the most difficult. I don't know whether it is because it was his first book or because it was originally written in German or because of all the technical problems in probability and quantum theory that are dealt within its pages. Whatever the reason, this book, despite its tremendous importance, cannot be recommended to those seeking an introduction to Popper's thinking (and Popper, whether you agree with his conclusions or not, is well worth getting to know). For those who merely want a rough overview of Popper's opinions, perhaps the best book is "Popper Selections," edited by David Miller. For those eager for more depth, I would recommend "Realism and the Aim of Science." Popper nowhere makes a better case for his epistemological views than in this eminently readable book. Further elaborations of Popper's views can be read in "Conjectures and Refutations" and "Objective Knowledge." Popper has been severely attacked by philosophers who are offended by his bold fallibilism and anti-dogmatism. No philosopher attacked Popper more strenuously than David Stove. Stove's criticisms are interesting, but they are not as conclusive as one disparaging critic has suggested. Stove makes three main arguments against Popper: (1) Popper theories are bad because they lead to the epistemological relativism of Kuhn, Lakatos, and Feyerabend; (2) Popper's dismissal of induction is contrary to common sense and is therefore "irrational"; and (3) Popper's argument on behalf of "conjectural knowledge" is fallacious because the phrase "conjectural knowledge" is a contradiction in terms. All three of these arguments are logically fallacious. The first commits the fallacy of "argument ad consequentiam," which tries to refute the truth of a doctrine by associating it to its (alleged) consequences. This is, in a way, a sort of guilt by association argument. The second argument simply assumes the very point at issue. Nowhere in his book on Popper does Stove attempt to prove that induction is rational. He simply assumes it is and denounces Popper on the basis of this gratuitous assumption. The last argument is merely verbal and proves only that Popper has violated common linguistic usage. But why should we assume that linguistic usage must always be philosophically right? Stove also makes a great fuss about Popper's assertion that a "falsifiability" is preferable to "irrefutability." Stove assumes that this is palpably absurd. How can a theory that is falsifiable possibly be better than one that is irrefutable? But Stove appears to have missed the whole point of Popper's theory. Falsifiability merely means "testability." Irrefutable, on the other hand, means simply "untestable." When looked at in this line, Popper's theory no longer seems so absurd. In fact, it is merely a great leap forward in the fight against dogmatism and close-mindedness.

This is Popper's early masterpiece, which still deserves to be thoroughly read. Thesis of the book: theories are guesses which have no secure basis and can be at any time overthrown, but which must be able to stick out their necks and face experimental tests. If they pass the tests, this does not make them any more secure or reliable than they were before. Its first chapter explains two fundamental problems which will be grappled with in the following chapters: the problem of induction and the problem of demarcation (between science and non-science). The solution to the first problem is straightforward: there is no such thing as induction. If you want to learn more on Popper's formulation and purported solution of this problem, you should read the whole book. The second chapter gives some methodological rules which, though presented as conventions, are set down in order to combat "conventionalism", the attempt to regard theories as irrefutable, as true by convention. The third chapter, a bit boring, is an analysis of causality, scientific explanation, the kinds of scientific concepts and the structure of theories (these are considered interpreted axiomatic systems). The fourth chapter deals with the notion of falsifiability, something theories must have in order to be scientific according to Popper's criterion of demarcation. Falsifiability, as here defined, is (roughly) incompatibility with at least one singular statement reporting the existence of an observable event (the distinction between occurrences and events will be found here; it was previously drawn by Bertrand Russell, I may add). The fifth chapter deals with these last kind of statements (basic statements): their form, their content and their role in science. These statements are in no sense justified by experience, says Popper, even if their acceptance is caused by experience; they are as risky as theories, although in scientific practice there is not (usually) much trouble in agreeing to accept or to reject them. It is a pity that Popper says that basic statements are accepted by a "free choice" or convention, because it is only after observing that the popperian Forscher will agree to accept a basic statement. The sixth chapter tries to define comparative criteria of falsifiability. Given that all scientific theories have an infinity of observable consequences, how are we to compare their boldness = refutability = their sticking out their necks? I am running out of words. The seventh chapter deals with the notion of simplicity. Popper's thesis here is: simplicity = boldness = falsifiability; a simple thesis, and a bold one. The eighth chapter contains a deft and clear discussion of some methodological and mathematical problems of probability. I highly recommend it. It is after reading a chapter like these that you can realize how cheap and misleading the criticisms of Stove are to which some previous reviewers referred. Chapter 9 contains a plea for objectivism in quantum physics, although it is rather out-dated. But the attack on Heisenberg's programme is still instructive. The last chapter deals with "corroboration" of theories and includes an

important critique of justificationist probabilism. One should read it together with Reichenbach's highly negative Erkenntnis review: "Über Induktion und Wahrscheinlichkeit: Bemerkungen zu K. Popper's Logik der Forschung". The appendices are also worth reading, even if they tackle mainly with technical problems. I think that no one has seen with greater clarity the problems and ambiguities of Popper's methodology as displayed in this book than his colleague-rival Imre Lakatos. Even if he is not half as gifted as Popper, and makes many mistakes as regards induction, his critique of popperian demarcation and rules of science is certainly worth reading. On this book, one can also benefit and enjoy reading Neurath's indignant review of the 1934 edition: "Pseudo-Rationalismus der Falsifikation", and Grelling's review in "Theoria", 1937 (1).

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