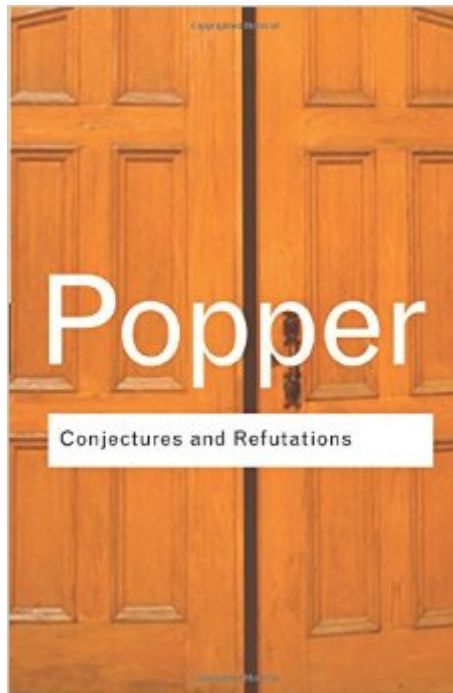


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# Conjectures And Refutations: The Growth Of Scientific Knowledge (Routledge Classics)



## Synopsis

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.

## Book Information

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## Customer Reviews

This book is a collection of twenty papers and speeches that Popper has written throughout his life. The connection between these papers is that they are all loosely related to Popper's famous thesis that science progresses as a series of conjectures and refutations. Scientists build tentative theories (conjectures) to explain what they observe. Since no scientific theory can actually be proven, all a scientist can do is trying to refute it. If a theory withstands severe attempts to refute it, the conjecture becomes more credible (but not more probable, and not more true). A successful refutation of a conjecture is a breakthrough: it leads to new insights, and it can eventually lead to better conjectures. Science is a systematic way of learning from your errors, and criticism is an essential part of it. Some of the papers in this book make a good introduction to Popper's ideas, but technical discussions of this kind are never easy to read. For instance, if you are unfamiliar with the ideas of Rudolph Carnap, you might want to skip the chapter devoted to him. I had a hard time reading it. Nevertheless, this is probably a better starting point than "The Logic of Scientific Discovery", a very difficult book. The format of the book as a collection of papers is both a strength and a weakness.

Some of the papers are a joy to read, especially when Popper writes about the presocratic philosophers and the birth of science. Popper is very good at introducing his subject, almost as if he were telling a tale. On the other hand, the many repetitions of the same theme become cumbersome after some time. This book is over 400 pages! BIG pages! Apparently, when Popper published this book, he was so famous that publishers uncritically printed anything he wrote, no matter how long-winded. Somehow, this is an ironical illustration of Popper's own thesis.

It is rare these days to read a proper treatment of science. Bookshelves in the "science" sections are filled with astronomy, biology, chemistry and such. Not to suggest there is anything wrong with these disciplines; it's just that science is a way of thinking, or if you will, a method- not a collection of beliefs. Karl Popper has been largely misunderstood, being labeled a relativist and destroyer of objective science. To be sure, he did believe, as the reader will find in this enjoyable collection, that all theories- even well corroborated, are tentative. To give his critics more ammo, Popper considers science "reasoned myth-making." Neither of these extend to relativism. If theories are tentative- always subject to new and different tests- a theory can never be fully proved but CAN be fully falsified. This is the essence of the book's essays. Whether Popper is discussing the pre-socratic philosophers, social science or demarcation, his falsification theory is the common theme here. As for the "reasoned myth-making," Popper has a bone to pick with those who think that science is purely based on observation. Any theory, by necessity, is a generality and there are no generalities in nature. Theories are made by observation + induction and induction, as Popper will add, is never logically - only psychologically - justified. This is another common thread of the essays. Two suggestions for reading this book. First, if you are a Popper critic, you NEED to read this book as he goes a long way in explaining many beliefs of his that critics get wrong. Second, do not read the book front to back. As all of these 500+ pages are on the falsification theory applied to different situations, it will get extremely repetitive. Read a few essays at a time and come back later.

The book is a collection of articles by Popper. It is easier to understand than his classic *Logik der Forshung*, and is much richer in content, for Popper embarks in some of these lectures on the history of philosophy and the history of science. There is also a delicious paper on self-reference and meaning in ordinary language. I especially recommend the paper on "Scientific problems and their roots in metaphysics". Popper's conception of scientific dynamics as a sequence of big problems and answers to them makes him see continuity where experts on some particular philosopher usually don't. Thus Popper sees a direct relation between Pythagoras, Plato and Euclid

based on some fundamental cosmological problems. Euclid's Elements, Popper claims, were conceived by its author not as an exercise in pure geometry but as an organon of a theory of the world, designed to solve the problems of Plato's cosmology. Plato realized that Pythagoras' "arithmetical" theory of the world was in ruins after the discovery of irrational numbers, and that a new method was needed to understand the world. That is why he initiated the "gemoetrical" programme, which found its culmination in platonic Euclid's work. This way of seeing things is a bit unrealistic, a kind of free "rational reconstruction", but I think it is nevertheless a valuable view. The fundamental lecture on philosophy of science in this collection is chapter 10, "Truth, rationality & the growth of scientific knowledge", where Popper presents his philosophy of science quite clearly and in detail. There has been a lot of water under the bridge since this paper was first published. His theory of "verisimilitude", for instance, was shown to be unmistakably wrong in the 1970s. His approach to Tarski's theory of truth in that chapter is rather awkward: he pretends that Tarski's work showed what is meant by correspondence with the facts. To prove this, he appeals to instances of convention (T) and replacement of "is true" by "corresponds to the facts". Thus "snow is white" corresponds to the facts if and only if snow is white. But this might explain what it is for "snow is white" to correspond to the facts, but not what "correspondence with the facts" is. We cannot ascertain what that single property consists of, and surely Tarski's definiens for "truth" (i.e. "satisfaction by every infinite sequence") won't do the job. Also, Popper's answer to the challenge that Duhem's problem posed on his philosophy is disappointing, the answer being something like "there exists a logical method of proving independence from axioms, so we might hopefully see from which axiomS the failed prediction depended; and even so, I admit that this method is usually difficult to apply; therefore holism is an untenable dogma." The thesis of the book, says Popper, can be put like this: we can learn from our mistakes. This is held together with this other thesis: there is no ground for believing any empirical statement to be true. The reader might wonder how Popper managed to believe in these two thesis at one and the same time. In Popper's view, science is this: conjecturing a theory to be true; subjecting this theory to criticism (empirical testing); this testing is done after experiment, but experiments are not reliable, we have no warrant that our perceptual apparatus is not deceiving us; if the theory fails the test, we reject it; but "it" is a whole system of related theories, even observational theories (even logic and mathematics, says Quine); and then we have to guess which of these we have to reject. The risk of taking a true theory to be false is certainly very high, as high as that of taking a false theory to be true. So I don't see how Popper can be so confident that we can learn from mistakes. Perhaps if we purged Popper's methodology of things like truth (not to mention verisimilitude), we could get a methodology of science conceived as

a canon of critical procedure, with no claims as to what we are achieving when we abide by it. The article on Hegelian Dialectics is amusing. It tries the impossible task of explaining dialectics in a simple language, and then to refute it. The dialectician's typical reply to this kind of criticism is: you used clear language, so that is NOT Hegel's dialectics. As I said, this is a highly stimulating and clearly written book, which deserves to be read even if many things in it must be corrected or complemented.

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