

# Scientific method and sir karl popper



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Sir Karl Popper, challenging the status quo, inspiring generations to ponder on the meaning of science, the methods to find truth, is one of the most influential philosophers of the 20th century. Of particular importance to scientific methods of inquiry is the brawl between the development of theory and the criteria for science. In Popper's own words, it is in this brawl that Popper decided to "grapple with the problem: When should a theory be ranked as scientific? or Is there a criterion for the scientific character or status of a theory? (Popper 1957), p. 1).

Born just after the turn of the century in 1902 (my Great Aunt was 4 at the time), in London, England, Popper began grappling with the brawl between "when is theory scientific" and "what is the criteria for the scientific character of theory" in the fall of 1919 (p. #). The thing that troubled Popper most he stated is "When is theory true?" (Popper 1957), p. 1-2). Born from the thing that was troubling Popper most originated his philosophy of Science as Falsification.

First, it may be dangerous to proceed any further in this discussion without bringing into light perspectives about the time when Popper toiled on the naissance of falsification. In 1919, when Popper began to labor about potential for truth in theory, social turbulence was epidemic in Europe. The period between 1914 and 1989 can be viewed as a "protracted European Civil war" (Williams 2005). World War I (WWI) is well underway while communism extends beyond German idealists and the Russian Comintern into Hungary and Italy.

Greek forces occupy Turkey's Aegean coast for territorial ambitions. Over 20 million people are dying of a flu epidemic sweeping across China, Europe, and into the Americas. Social principles shift in the United States with laws prohibiting the sale of alcohol and granting women the right to vote. Social disturbance, disorder is the standard, not the exception of the time when Popper inaugurates a quest to find 'truth' in scientific explainadum. Other philosophers of the time endeavor to understand and explain social phenomena during the early 20th century. Max Weber, Karl Marx, Freidrech Engles, Thorstein Veblen, and George Simmel excavate from all the political revolutions, the social disorder(s) of this period and emerge with capacious explainadum for a multitude of facets addressing social theory. “

Philosophers were accused—rightly, I believe—of 'philosophizing without knowledge of fact', and their philosophies were described as 'mere fancies, even imbecile fancies'”(Popper 1952)p.

127). It is with the back drop then a discussion may proceed that recognizes the angst Popper toiled under to emerge with a simply elegant position that science is falsification. What then is falsification? In an attempt to define science from pseudo-science, Popper states that the growth of scientific knowledge begins with an “imaginative proposal of hypotheses” (date, p. #). Then, the scientist must search for illustrations or situations that falsify or negate the hypothesis. This search for illustrations or situations that negate the hypothesis is falsification. Pseudo-science is science that does not meet scientific standards (of the period) but does conduct experiments. But what of pseudo-science? When is science the truth? What explains the

difference between science and pseudo-science? Popper explains by providing an example.

Traditionally, a discipline that conducts pseudo-scientific experiments is astrology. By amassing observations, astrologists produce horoscopes or biographies (Popper 1957). To distinguish science from pseudo-science, the investigator, at this point in the 20th century, could turn to the method and parse out true science from pseudo-science. The use of empirical methods and inductive explanations is the root cause for Popper's revolt upon the metaphysical reasoning used to explain social behavior (at this time).

It is not that astrology is a pseudo-science; astrology is merely a residue of the subject of the investigation (Popper 1952). Disciplines are means of administratively distinguishing the unified systems from which problems may be taught. It is far more important to understanding falsification that “ We are not students of a subject matter but students of problems” (Popper 1952)p. 125). Traditionally, scientists formed hypotheses to explain or rationalize some natural phenomenon that they have observed. Popper intends that a hypothesis must predict a phenomenon or behavior and not just offer to explain it. I believe that there is not a classic of science, or of mathematics, or indeed a book worth reading that could not be shown, by a skillful application of the technique of language analysis, to be full of meaningless pseudo-propositions” (Popper 1952), p.

130). Popper is positive that each hypothesis has a possible contradiction. This “ sensitiveness to problems” to the extent of having a “ consuming passion for them” fortifies Popper's revolt against merely accepting plausible

and rationalized results of observations. For falsification to take place, the scientist must identify situations that falsify or negate the hypothesis. Finally, after rigorous attempts have been made to find the hypothesis untrue, the scientist may tentatively accept the hypothesis as true. However, if the hypothesis is found untrue, the scientist must reject the hypothesis. Therefore, Popper has set forth not only a definition of a scientific theory, but also an environment wherein scientists may work.

Popper intends that a hypothesis must predict a phenomenon or behavior and not just offer to explain it. Therefore, a few statements may be made to expand and sequence the understanding of falsification. These ordered statements are that 1) for scientific discovery to take place, a clear problem statement must be designed, 2) attempts to find this hypothesis untrue must be conducted, 3) when the investigation cannot find the hypothesis untrue at that point then finally 4) the discovery is made regarding prediction of the original problem. Popper makes it clear that theory cannot be completely explanatory and all inclusive (Klemke et al. 1998). The key characteristic of a theory is falsification in itself. If the possibility for negating the theory does not exist, then the hypothesis is not scientific. When the theory is falsified, the scientific community learns from the experience and knowledge becomes a cumulative contribution among philosophers.

Popper provides a service to the scientific community by spawning a means to parse science from pseudo-science more clearly. Popper's theses in philosophy to include a tenet of falsification caused a tectonic shift in scientific investigation. Responses of rejection from other philosophers poured in regarding Popper's assertions for the need to falsify. Imre Lakatos, <https://assignbuster.com/scientific-method-and-sir-karl-popper/>

for example, is harsh on Popper. Criticisms include: Lakatos argues that falsifiable already refers to how science is practiced. Lakatos interprets Popper as demanding scientists to “ specify in advance a crucial experiment (or observation) which can falsify it, and it is pseudoscientific if one refuses to specify such a ‘ potential’ falsifier” (Lakatos 1963). “ If so, Popper does not demarcate scientific statements from pseudoscientific ones, but rather scientific method from non-scientific method” (Lakatos, p.

1). Lakatos goes onto claim that Popper fails to provide the scientific community with a means for “ rational criticism of consistent conventions” (Lakatos 1963). For Aiken, Popper does not address three different questions: 1) whether historical data can be trusted as evidence for social laws, 2) whether there are verifiable laws of ‘ development’...for the basis.. to predict future events, and 3) whether there can be what may be called laws of ‘ unrestrictive scope’ in terms of which all social processes may be explained. (Aiken 1947), p. 47) Clearly from this spurn of remarks from Lakatos, Aiken and others upon Popper’s falsification theses has caused a scientific revolution under the principles set forth by Thomas Kuhn (Kuhn 1996). References Aiken, Henry David (1947), “ Review: [Untitled],” *The Journal of Philosophy*, 44 (17), 459-73. Klemke, E. D.

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