

Popperian falsificationism and assessment on potential pros and cons in social sc...



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I. Discussions on what Popperian falsificationism tried to solve

How the scientific theory and a fiction work could differ from each other in nature? Popper(1966, p. 390) held that the differences would lie in distinctive critical traditions to be “ judged by quite different traditional standards”. So it is not the matter of scientific theory is true that makes it scientific theory, but the matter of falsification or disconfirming to continuously processes our understanding of the world on “ instances of which we have had no experience resemble those of which we have had experience” (Hume, 1739/1978, p. 184). In general, Popper (1962/2009) regarded the scientific methods as criticism (for instance, falsifications or attempted falsifications) after noticing the two topics: demarcation and induction are actually “ in a sense one” (Popper, 1962/2009, p. 486) to be explained, discussed or judged.

One problem Popperian falsificationism was intended to solve is the problem of demarcation. The criterion of falsifiability was proposed as “ a solution to the problem of demarcation” (Lee, 1969, p. 291). Therefore, falsification draws a clear line for distinguishing scientific theories from metaphysical or mythological claims due to the testability (whether the scientific hypothesis could be disconfirmed) and highlighted that the criterion of verification and justification would eventually imply and lead to false demarcation. Moreover, it disputes the theory held by Wittgenstein (1958) that deduced the verifiability criterion of demarcation to a blurred stage through opposing the philosophical propositions to be senseful propositions and defining facts as assertions on the observation level, which “ verifiability, meaningfulness, and scientific character all coincide” (Popper, 1962/2009). By creating a space or

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criteria for falsifiability, the problem of demarcation would be solved since under “ a system of statements” (Popper, 1962/2009) for hypothesis going through the process of contradiction, refutability and confliction against the potential observables to be considered to be “ scientific”.

Another topic Popperian tried to criticize is the nature of induction method and its related implications. The critique builds on Hume’s refutation (1739/1978, p. 184) and offers a logical platform for the establishment of the Popperian falsificationism and thus disapproves the Baconian Observationalism. Induction is always derived from observations and examinations of “ a set of particulars” or “ to lead to conclusion” (Rothchild, 2006) while deduction is the “ identification of an unknown particular” or “ to lead from conclusion”(Rothchild, 2006). Ernst Mayer (1982) commented on how unbiased or objective conclusions are arrived at or confirmed by inductivists, based on the theories of Francis Bacon, “ by simply recording, measuring, and describing what he encounters without having any prior hypotheses or preconceived expectations.” However, Popperian believes that the method of deduction should be applied in the process of falsification and the idea of induction is problematic for the reason that it would not be able to arrive the final conclusion considering the exemptions, or say, “ logically justified” (Popper, 1962/2009). In the meantime, he summarized his conclusions on induction as “ neither a psychological fact, nor a fact of ordinary life, nor one of scientific procedure” whereas the science procedures are under the process of conjecture that subsequently lead to conclusions perhaps only after a single observation.

Like what was presented by Max Born in his Nobel Prize acceptance lecture, ideas like absolute exactness, final truth and so on should not belong to, or be admissible and discussed under any scientific realm due to their feigned nature. For the conjectures (Popper, 1962/2009) and hypotheses, the purposes of induction serve for “ attempted refutations” (Popper, 1962/2009) or probable judgement in the generation of new science theories. Then Medewar (1963, p. 377) added from a probability perspective that as for the process of generalization, no matter how many individual cases are found as additional support for a statement or synthetic statement, the overall rate of number of the wide range that the universal generalization could apply divided by what is actually observed in reality is always zero considering all possible cases. In other words, the repetition of the generalization outcome is not guaranteed. This opinion views the matter of observation in a more practical way, which indicates that induction is not a scientific method, or a “ hypothetical-deductive” approach could be more appropriate as mentioned by Popper (1962/2009).

II. A ssession on advantages of Popperian falsificationism in social science

As for the advantages, to begin with, it is undoubtedly appraisable that Popperian falsificationism recognized the importance of adapting deduction methods in scientific research to draw specific conclusions and critically discussed inductivism under the intersection of observation, the demarcation problems, justification as well as the unneglectable probability issues concerning generalization and exception, thus providing a more provisional thinking in studying social science than former researchers even the

falsification theory itself is not adequately developed in terms of its own
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criteria. Moreover, Popperian originally offered an explanation against what was believed and promoted by the Vienna Circle on the generation of knowledge, which indicates the way that probabilistic reasoning could be employed and displayed for epidemiological inferences (Greenland, 1998, p. 546).

Secondly, Popperian falsificationism stressed that researchers should use falsification for the unjustified system of principles to replace confirmation that serves for building up the “ body of knowledge” (Compton and Jansen, 1990, p. 250) so that we can eliminate wrong hypotheses. And specially for social science, this implies that in we cannot adequately contain the “ intelligibility of reality” in our knowledge in the unending search for insights expressions in our progression (Compton and Jansen, 1990, p. 249), which, to some extent, could be a encouragement for younger researchers to further their work towards developing new theories for attaining high levels of scientific credibility in an “ efficient and unbiased replication mechanisms” (Ioannidis, 2012, p. 645).

I II. A sssessment on potential problems of Popperian falsificationism in social science

However, as for the disadvantages, firstly the principle of falsificationism is too demanding and unpractical in its own nature that even makes itself unscientific based on the criteria. This is a “ wrong kind of seriousness”, illustrated by Richard C. Jeffrey (1975, p. 100). For example, you cannot simply reject the Newtonian physics just because a planet does not follow the orbit that has been anticipated and predicted, or you might not have new

discoveries for space exploration towards unknown things (planets in this case). It is crucial to notice that if science merely rely on falsification, then even the statistically falsifiable p value in social quantitative study will lose its value for the simple reason that it can get some degree of confidence instead of absolute falsification.

Additionally, the way Popperian corrected and criticized other researchers may neglect to expose their ideas for correction on their own (Richard C, 1975, p. 97) although they hold that our knowledge would grow from the process of falsification. And even if a series of criticisms is received, it is hard to clearly point out which one is right on what perspectives, which may render the falsification lose its meaning while it cannot be ignored that apparently, Popperian regards things as binary, making the mentioned situation trapped into a paradox. Except from *ignoratio elenchi*, social science also could be negatively influenced by *prima facie*, or the *ad hoc* hypothesis since falsification could be seen as a process of extraction of the false elements from the true contents, this insufficient verisimilitude could eventually lead to the discussions on which concepts are closer to truth (Tichy, 1974, p. 160).

Lastly, it is indicated by Pearce and Crawford-Brown (1989, p. 179) that even the validity of a theory has raised concerns from repeated predictions, to refute the theory still count on existing available knowledge for the dictates of the theory that may erode the countability, or “only falsify a theory to a degree” (Pearce and Crawford-Brown, 1989, p. 179) through subjective appraisals to make up for cognitive discrepancy without prior knowledge before experiment on whether the theory itself is true or not.

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