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Karl Popper on Science and Pseudo Science

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ABSTRACT

Purpose: The aim of this research is to understand thoroughly the concept of Science and Pseudo Science of Karl R. Popper, who appeared before the world as an original thinker with his novel and creative ideas about science. Furthermore, this study will help comprehend the influence of his Principle of Falsifiability on different forms of human learning e.g., Science, Art, Social Sciences etc.

Design/Methodology/Approach: The study is fundamentally theoretical and qualitative in nature, in which the original books and articles of Popper are used as primary source.

Findings: The author of the article suggests that every educated person in the world should read Popper and understand the role of creative conjectures in human progress. Moreover, it should be kept in mind that human knowledge is not certain and conclusive.

Implications/Originality/Value: So, it is concluded that for Popper the method of science is simple a Trial-and-Error method and observation and experience play the role of a negative argument along with Critical Rationalism to check the validity of Scientific statements.

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1. Introduction

Karl R. Popper is supposed to be the great philosopher of 20th Century. He wrote extensively almost on every topic of Philosophy. He wrote about Epistemology, Cosmology, Philosophy of Science, Philosophy of Mathematics, Philosophical History, Political Philosophy and Ethics etc. (Miller, 1983). In the humble opinion of the author, his most original contribution is in the fields of Philosophical Epistemology and Philosophy of Science. Popper is very famous (among philosophers and non-philosophers for his Principle of Falsifiability). According to this principle, every scientific statement should be falsifiable and the falsifiability should be considered as its strength and not weakness. Scientific knowledge for Popper, is tentative and growing. It is not absolute or perfect. Every scientific statement should thoroughly be criticized and it should be abundant if falsified (Popper, 1992). In one of his articles, Popper takes the example of Astrology and Astronomy (Popper, 1960).

For Popper, Astronomy is scientific and Astrology is a good example of pseudo-science. Astrology, being a

pseudo-science is not falsifiable. Interestingly, you can verify your horoscope all the time but being non falsifiable you cannot check its validity.

Popper also considers psycho analysis of Sigmund Freud, Individual Psychology of Alfred Adler and Marxism as the three great examples of pseudo-science (Popper, 1992). Before World War 2, Popper worked with Alferd Adler for some time. He narrated the event in his book *Unended Quest: An Intellectual Autobiography* that Adler in one of the days, without examining the patient gave his Value judgment about its psychological issues. By narrating this event, Popper tried to prove that Adler's point of view is speculative in nature and not scientific at all (Popper, 1992). The same is the problem with the psychology of Sigmund Freud and the Philosophy of Karl Marx. The Personality Structure of Sigmund Freud and the Historical Determinism of Karl Marx cannot be falsified. He pointed out that a Marxist or a Psycho analyst always seem busy in verifying their theories (BBC Broadcast, 2015).

For Popper, observation and experience play as a negative argument along with the Critical Rationalism in order to falsify or check the validity of any scientific statement (Popper, 1972).

2. Literature Review

For the preparation of this article, the original books of Karl R. Popper and the original research articles of him are used as a primary source. *Conjectures and Refutations: The Growth of Scientific Knowledge.* and *The Logic of Scientific Discovery* are especially utilized. Popper's article i.e., 'Knowledge without authority' (1960), 'The Myth of the framework: In defense of science and rationality' (1996), 'Knowledge: Subjective versus Objective' (1967) are studied and comprehended. The introduction of *Pocket Popper* written by David Miller is used primarily as a secondary source.

3. Discussion

As said above for Popper, nothing can be produced or developed from mere observation and experience. In order to get new knowledge, one has to have an assumption, a guess, a hypothesis or a conjecture. Popper in his famous book *Conjectures and Refutations* explains in detail that knowledge starts from assumptions, bold guesses, conjectures (Popper, 1972). Popper also includes imagination, intellectual intuition or a vision etc. in this category. But he also insists that the conjecture of any scientist should be criticizable (Popper, 1992) and after proper scrutinization any conjecture can become a scientific statement or a scientific theory.

Popper in his writings severely criticizes Modern Philosophical Epistemology for its being extremely subjective and hence irrelevant to the growth of Science and Technology (Popper, 1960). In one of his important articles, he rejects Continental Rationalism and British Empiricism both considering them authoritative in nature (Popper, 1967). For Popper both of the schools have been trying to reach at flawless source of knowledge. For Rationalist it is reason and for Empiricists it is sense perception. For Popper, the proper question of Epistemology is not- what is the ultimate source of knowledge? but how we scrutinize the data given by any source of knowledge?

Once Popper remarked: *"Every source of knowledge should be welcomed but non should be given the soul authority"* (Popper, 1960, 50).

In order to understand the theory of Falsifiability of Karl Popper properly, it is but necessary to understand the epistemological views and remember his own epistemology starts with his severe criticism of Modern Philosophical Epistemology. Popper's own philosophy is sometimes called Critical Rationalism (Rowbottom, 2011). One can explain Critical Rationalism through the following points.

i. For Popper the proper question of Epistemology is not to reach at the ultimate source of knowledge. In this way, he neither can be considered rationalist nor empiricist.

ii. He considers himself a naïve realist who believes that objective world exists apart from our senses and our perception, conception and a disposition to act or react do exist also (Popper, 1967).
iii. For Popper every source of knowledge should be welcomed but no source of knowledge should be considered as single, soul and ultimate.
iv. Science for Popper is tentative, it should be falsified (as said above) and it should be abundant if falsified.

4. Deductive and Inductive Arguments

In philosophical logic, we have two kinds of arguments. One is deductive and the other is inductive argument. The problem with the deductive argument is that it does not provide any new information about the world and the problem with the inductive argument, according to Hume and Popper both, that it is not logically necessary.

Now the question arises, from where does the new knowledge come from? The Popper's answer in this regard is that knowledge always starts from assumptions and conjectures. Every source of knowledge can be utilized for the production and development of human knowledge but it should be kept in mind that the conjecture should always be criticizable. In other words, Popper accepts reason as a source of knowledge like rationalists but not consider it as the ultimate source of knowledge. He accepts sense perception as a source of knowledge but does not give it a single soul authority. The most interesting thing relating to the epistemology of Popper is that, he also accepts intuition or imagination as sources of knowledge but unlike intuitionists does not give them the central place in Epistemology.

"Intuition undoubtedly plays a great part in the life of a scientist, just as it does in the life of a poet. It leads him to his discoveries. But it also leads him to his failures. (Popper, 1945, 88)*."*

Popper wants to shift the emphasis, it seems, within the field of Philosophical Epistemology. He calls Continental Rationalism and British Empiricism both authoritative in nature. He explains his point of view in detail in his article Knowledge without Authority.

5. Popper's Pluralistic Cosmology

Keeping in view the above-mentioned discussion, it is quite clear that the position of Popper as a philosopher is very interesting. He is neither an idealist nor a materialist. He cannot be considered a Kantian also because he does believe in the existence of an objective world (Klemke, 1979). On another angle, he is neither a Monist nor a Dualist. He can be considered a pluralist because he presented the idea of 'World 3.'

i. The first world is the world of material objects.
ii. The second world is the world of human perception, conception and a disposition to act or react.
iii. The 'World 3' is the world of all possible human creations.

His position as a metaphysician is not very clear but he does present the idea of Pluralistic Cosmology. Popper wrote:

"To explain this expression world 3 I will point out that, without taking the words 'World 'or 'universe' too seriously, we may distinguish the following three world or universe first the world of physical objects or of physical states, secondly the world of states of consciousness or of material states, or perhaps of behavioural disposition to act or react and thirdly the world of objects of thought, especially of scientific and poetic thoughts and of works of Art" (Popper, 1979, 107).

6. Two Kinds of Rationalism

Karl Popper in one of his articles presented Two kinds of Rationalism (Popper, 1945). They are as follows:

i. Critical Rationalism
ii. Uncritical or Comprehensive Rationalism

Comprehensive Rationalism is according to Karl Popper, that kind of Rationalism that denies every statement which is not Rational proper. It is the attitude of the traditional Rationalists not to accept any statement which is not Rational proper from their point of view. Popper is of the opinion that this kind of Rationalism is not possible, since everything starts in human learning from assumptions and conjectures.

"Since all arguments must proceed from assumptions, it is plainly impossible to demand that all assumptions should be based on argument" (Popper, 1945, 34).

Popper is quite clear that conjectures cannot be considered as Rational proper statements. If knowledge starts with them, then the demand of Comprehensive Rationalists is impossible. *"Irrationalism is logically superior to uncritical rationalism."*

For Critical Rationalism, Popper means that kind of Rationalism that admits its limitations and boundaries. Obviously, the statement 'I am not going to accept any statement which is not rational proper' is not Rational proper itself. Unlike the traditional Rationalists, Popper does admit the limitations and boundaries of Rationalism. The most interesting thing about the Rationalism of Popper is that it starts with irrationalism. It should be kept in mind that intuition, imagination some kind of vision along with assumptions and hypothesis cannot be considered as Rational proper. Before proceeding ahead, it is appropriate to present some conclusive points in a logical order.

Unlike Logical Positivists, Popper presented the Principle of Falsifiability. According to this Principle it is quite easy to falsify any statement relating to human knowledge and understanding (especially scientific statements) then to verify it (BBC Broadcast, 2015). Verification is long long process, most of the time futile and irrelevant to check the validity of any statement. According to the Theory of Falsification, with a single soul evidence one can falsify the whole statement.

After presenting before the world his Theory of Falsification, Popper presented his novel distinction between Science and Pseudo Science. Pseudo-Scientific statements are those statements which are not falsifiable, which are speculative in nature. Astrology, the Psychology of Frued and Adler and the Philosophy of Karl Marx are the examples of it. For Popper the traditional view of Rationalists is also incorrect. Since knowledge starts with conjectures, Uncritical Rationalism is also impossible.

7. The Role of Assumptions and Conjectures in Popper's Philosophy of Science

Unlike the traditional view, Popper asserts that all knowledge starts from assumptions and conjectures and no knowledge can be produced or developed from mere observation and experience (as said above). In other words, in order to observe or experience properly, one has to have a tentative theory in his or her mind. With empty mind or with no presupposition at all, one cannot get any knowledge. Popper repeats his point of view when he explains his Critical Rationalism. This is quite interesting that while presenting before the world his novel concept of Critical Rationalism he accepts the priority of irrationalism. As he wrote: *"Irrationalism is logically superior to uncritical rationalism"* (Popper, 1945, 34).

The most interesting point about his Philosophy of Science is to insist the role of conjectures. The traditional view of science has been insisting and highlighting the role of observation and experience and unlike it Popper

insists upon the role of a theoretical background at the beginning and a valid, tentative and falsifiable statement at the end.

8. The Characteristics of Popper's Philosophy of Science

For Popper, the scientific knowledge is tentative in nature. It is not absolute and perfect. For him induction cannot be considered as the fundamental principle for Science. The problem with induction according to Popper is that it is not necessary and conclusive like deductive arguments. Popper explains the role of observation and experience in a very different way. According to him, they play as a negative argument like criticism and scrutinization. He further explains that like Logical Positivism, Uncritical Rationalism is unattainable (Popper, 1945). He further alarms the world that by accepting irrational elements in Philosophical Epistemology in general and in the Philosophy of Science in particular, one cannot be and should not be included among the irrationalists. One should be modest enough to understand the limitations of human knowledge but not to be unsatisfied and skeptic about its very nature (Popper, 1996). For Popper, the method of Science is nothing but trial and error (Miller, 1985). Like every form of learning in Science too, we learn from our mistakes.

9. Significance of the Study

This study could be considered very significant if we apply it on different forms of learning.

- According to the distinction (distinction between Science and Pseudo Science) the word Science cannot be applied on everything. Social Sciences, Art and Humanities including History should not be considered Scientific proper.
- Every Scientific statement should be falsifiable.
- Falsifiability is not a negative term because it tries to check the validity and integrity of any scientific theory.
- There is no specific method of Science. The method of Science is simple trial and error.
- Human knowledge is changing, growing and tentative in nature. One cannot get unrealistic reliance over it.

10. Conclusion

Unlike the traditional view of Science, Popper presented before the world his new, original and outstanding views about Science, for him there is no specific method of Science. Like other forms of learning Science also starts with conjectures and assumptions and observation and experience play the role of a negative argument along with Critical rationalism to check the validity of Scientific statements. For Popper scientific statements should be falsifiable and their being falsifiable is not a weakness of them but a strength. The method of Science is simple a Trial and Error method by Karl R. Popper. The Pseudo Science is non falsifiable and one cannot check the validity of it. The method of verification is tedious having no valid conclusion. The process of falsification is important and practical because by a single, soul example we can reject the false theory. The great message of Karl R. Popper to the world around is to always try with 'sincerity' to falsify any scientific statement and to abundant it with full confidence, if falsified.

11. Recommendations

The humble recommendations of the author are as follows:

- Every educated person in the world should read Popper and in the light of his philosophy and reconsider the categorizations in human knowledge.
- Every educated person should understand that human knowledge is not certain and conclusive.
- Everybody should understand the role of creative conjectures in human progress and in the development of human learning.

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