CHAPTER IV
KARL R. POPPER: REJECTION OF INDUCTION

In the third chapter, we have already found that an attempt to justify deductive standard of justification leads to absurdity. Now, we shall try with the view of Karl R. Popper to show whether the justification of induction is possible or not.

One of the most difficult issues regarding induction is: what are the rules of induction for distinguishing between correct and incorrect inductive conclusions? Or, what are the principles in the light of which a hypothesis may be said to be confirmed? The inductionists cannot give precise answer to these questions. The only answer, which the inductionists have given, is that a scientific law or theory is justified only if the evidence in its favour conforms to certain inductive scheme. In the history of philosophy of science we find that there are different points of view given by different inductionists. But still there are several difficulties in this process.

In the twentieth century, Karl R. Popper has emphasised the role of hypothesis and the hypothetical-deductive-method to solve the traditional problem of induction raised by Hume. The problem of induction raised by Hume has two problems: one is logical and the other is psychological. Hume also has given two
answers; one is positive and the other is negative respectively. I have already discussed the views of Hume in the second chapter entitled ‘history of the problem’.

Popper is also of the opinion that the problem of induction is actually Hume’s problem. He is of the opinion that Hume’s two answers to these two problems of induction somehow conflict with each other. He thus discussed in detail Hume’s view and then formulated some solutions.

Russell says about Hume’s treatment of induction and writes:

Hume’s philosophy whether true or false, represents the bankruptcy of eighteenth century reasonableness.¹

Popper reformulates the traditional philosophical problem of induction in the following way;

what is the justification for the belief that the future will be like the past? Or, perhaps, what is the justification for inductive inferences.²

According to Popper, both these formulations are wrongly dressed for several reasons. He regards both the formulations to be mistaken and they are simply uncritical. Popper’s main method of approach
to the logical problem is to translate all the subjective or psychological terms into objective terms. As a result, instead of speaking 'belief', we have to say 'statement' or a 'test statement' and instead of 'justification of a belief' it will 'justification of the claim that a theory is true'.

Popper claims that his way of approaching the problem of induction is different from Hume and says that the logical problem can be solved by the process of putting things into the objective or logical or formal mode of speaking and this procedure can be applied to Hume’s logical problem, but not to his psychological problem. Once the logical problem is solved, then the solution is transferred to the psychological problem on the basis of the 'principle of transference' according to which what is true in logic is also true in psychology. If he can answer Hume’s problem of induction without violating the principle of transference, then we cannot find any clash between logic and psychology and thus we can have a rational conclusion. Popper says,

One of my main results is that, since Hume is right that there is no such thing as induction by repetition in logic by the principle of transference there cannot be any such thing in psychology; the idea of induction by repetition must be due to an error - a kind of optical illusion. Thus there is no such thing as induction by repetition.
Popper formulates Hume’s logical problem of induction in the following way:

firstly by replacing ‘instances’, of which we have no experience, by ‘explanatory universal theories’ as: can the claim that an explanatory universal theory is truly justified by the statements based on experience.  

This formulation of Popper is only an attempt to translate the problem of Hume into an objective mode of speech. Popper uses universal laws or theories in the place of Hume’s future instances, as we don’t have any experience or any expectation of it. He thus like Russell connects the universal laws or theories of science with the problem of induction and also regards this law as hypothetical or conjectural; that is as guesses. But Prof. Gilbert Ryle does not accept this view of Popper. Ryle argues that it is wrong to say that

All the general propositions of science are mere hypothesis. 

Ryle uses the term ‘hypothesis’ exactly in the same way as it is used by Popper, that is, as a proposition which is guessed to be true and holds the view that when some general propositions are established they are called laws and not hypothesis.
But Popper discredited this view of Ryle because scientific theory is certainly based on a mere hypothesis or conjecture. Popper is also opposed the view that there can be any established theory or laws. So, he regards Einstein’s theory of gravity, Newton’s law as a mere hypothesis or conjecture. He also denies the established laws of induction, especially, the three different examples of induction, which are refuted in the sense of their original meaning. These three established inductive propositions are as follows: -

(a) that the sun will rise and also will set once in 24 hours.
(b) that all men are mortal.
(c) that bread nourishes.

In the words of Popper :

(1) the first proposition was refuted when Pytheas of Marseilles discovered ‘the frozen sea and the midnight sun’ which is shown as disbelief with his report.

(2) The second one which is based on the Aristotelian theory was also refuted. It is said that the predicate mortal is a bad translation from the Greek which means ‘bound to die’ or, ‘liable to die’ rather than merely mortal.

(3) The third one which is a favourite of Hume was also refuted when
people eating daily bread died of ergotism as happened in a French village. It was found that people were poisoned by bread rather nourishing.\(^6\)

Thus Popper resolves that a positive reply to Hume’s logical problem leads induction to inductively incorrect and hence paradoxical. Again, it is also implied by Ryle and by the common-sense theory of knowledge that Hume’s negative reply to logical problem as well as of Popper is based on very practical realities. In accordance with Prof. Ryle, P.F. Strawson writes:

If ... there is a problem of induction and ... Hume posed it, it must be added that he solved it – that it, by Hume’s positive answer to Hps (psychological problem) which Strawson seems to accept, describing it as follows: our acceptance of the basic canons (of induction) – is forced upon us by nature -----. Reason is, and ought to be, the slave of the passions.\(^7\)

Popper finds that the positive reply to Hume’s logical problem entails its own negation, and thus it must be false. He is ready to admit that nothing could
be achieved without passion. Again, Hume says that reason does not play any role in our intellect and it is habit, which is the main force that guides our thoughts and our actions. Hence here lies the paradox which led Hume to reject rationalism and to accept that man is endowed with blind habit which is the result of sheer repetition. This paradox can be solved by showing that: there is no conflict between reason and practical actions of human beings. But we find in Popper’s new solution to Hume’s psychological problem of induction that induction, which is believed as the formation of belief by repetition, is a myth. His theory cannot be said to be logically true. Even according to Popper, the starting-point of science is the critical explanation of myths.

Popper is of the opinion,

all solutions which he has advanced to the problem of induction fall within the subject matter of deductive logic.\(^8\)

He believes that it is possible to construct logic without assumptions. It does not depend on axioms rather the general notion of deductibility is a sufficient starting-point by itself.

He says that the starting-point of science is perception, that is, sense-experience. Again, all our scientific theories are based on guesses, conjectures, and hypothesis, according to Popper. The theories of science, which are testable, are distinguished from
other non-testable theories. This raises the problem of demarcation. Demarcation here means the problem of distinction between empirical science and pseudo science, especially metaphysics. Pseudo science not only includes transcendental metaphysics but also astrology. Popper regards this problem as objectively important as he has suspected it of giving merely a definition of science. As a result, the principle of demarcation becomes helpful for Popper for clarifying his attitude to science and pseudo science.

Popper, now, comes to the view that the quest for justification is to be given up in the sense of the justification of the claim that a theory is true. In the words of Popper:

all theories are hypothesis; all may be overthrown. 9

But this does not mean that Popper has given up the search for truth. To him, truth plays the role of regulative idea, by eliminating falsehood, we test for truth and that all knowledge is hypothetical. Popper says that in deductive logic there is no relation between verification and falsification by experience. This distinction leads to the logical distinction between refuted hypothesis and which have not been refuted hypothesis. Popper believes in the theory of preference and that our preferences are justified by an appeal to the idea of truth. He classifies preference for theories into two;
Theoretical and pragmatic preference.\textsuperscript{10}

Popper's criterion that only theories that can be falsified are scientific has achieved widespread acceptance. The theoretician is generally more fond of finding the true theories and as such they must also be interested in falsity because if a theory is false, it implies that its negation will be true. The theoretician will prefer a non-refuted theory to a refuted one, if it explains the successes and failures of the refuted theory. But the new theory may be false and the theoretician will try to construct severe tests and crucial test situations. This will lead to the construction of law of falsification and will suggest a crucial experiment by which a theory may refute either on the basis that it may be tested or it may be falsified.

Popper thinks that we should use the notion of corroboration and not confirmation to judge the merit of theories. Popper introduces the idea of corroboration, by which he can show that,

every probabilistic theory of preference are absurd and if a hypothesis stands up to test we should assess that it has been corroborated.\textsuperscript{11}

The phrase ‘stands up to test’ seems to mean to some people ‘to stand up to future tests’ who are radically denied by Popper, as there is a fundamental
difference between his approach and the approach of the inductionist. He lays stress on the negative arguments such as negative instances, refutation and attempted refutations, that is, criticism. But he argues that the inductionist lays stress on the positive instances by which he establishes non-demonstrative inferences. Popper denies the inductive inference in the similar way in, which Hume says,

\[\text{those instances}, \text{of which we have had no experience (are likely to) resemble those of which we have had experience.}\]^{12}

Popper says that we should not rely on any general theory because no general theory has been or could be shown to be true. He shows:

the reliance on so-called induction is impossible; even genuine induction by repetition does not exist. What looks like induction is hypothetical reasoning, well corroborated and in agreement with reason and common sense. For there is a method of corroboration – the serious attempt to refute a theory where a refutation seems likely if this attempt fails, the theory can be conjectured, on rational grounds, to be a good approximation to truth - at
any rate a better one than its predecessor.\textsuperscript{13}

We can confidently say like anyone that the sun will rise tomorrow, that bread will continue to nourish. But at the same time we can say that the other things may happen. Thus we may succeed in making a theory today which may fail tomorrow. So we cannot argue from induction to realism as is done by Hume. Popper argues that even the best inductively approved theory can be turned up to be false.

The epistemology of Popper is essentially a theory of scientific knowledge. He rejects the traditional theory of knowledge because it has studied knowledge only in a subjective sense of (i.e. the ordinary use of) the words ‘I know’ or ‘I am thinking’. Scientific knowledge is not like the simple knowledge of ‘I know’. Popper uses the concept ‘knowledge’ in two different senses: one is in the sense of subjective and the other in the objective sense. He also refers to three different ‘worlds’ in the following ways:

the common-sense knowledge belongs to the first world, the knowledge, which is simple, is called by him as the second world and the scientific knowledge belongs to his third world, to the world of objective theories, objective problems and objective arguments.\textsuperscript{14}
Objective knowledge consists of problems, theories and arguments. In this knowledge there is no subject; it is totally independent of one’s claim to know. The theory of knowledge from the objective point of view becomes the theory of problem solving, or, in other words, of the construction, critical discussion and also critical testing of conjectural theories. For him it is better to call the competing theories as evaluation or appraisal rather as acceptable. The appraisal of competing theories is partly a priori and partly a posteriori. The ideas for the a priori appraisal of theories are content and virtual explanatory power and that of a posteriori appraisal is truth. Popper introduces the term ‘verisimilitude’ to mean nearness of truth. Popper claims to solve the logical problem by showing that there is no need for induction to preserve the rationality of science. He says that our interpretation of certain experiences as being falsifying instances is a matter of convention. He claims,

just as there is no logically justified reasoning, so there is no logically justified way of getting from experiences to statements because all statements go beyond what we experience.\(^{15}\)

He does not accept the view that scientific theories are really probable because even good
conjectures may sometimes appear to be highly improbable.

Popper advances his solution to the psychological problem in that the existence of certain regularities is conjectural first and then we test them also. We accept only the unrefuted conjectures. Thus we never arrive at some laws regarding the process of induction from experience. There is thus no need to assume the existence of an inductive procedure. The main parts of scientific reasoning can be easily reconstructed. He does not accept the view that scientific theories are typically very probable, but he argues that good conjectures will often be highly improbable. His use of the word 'improbable' is derived from the probability theory. Popper's account of induction is that they make things upside down. It stresses that theories should have come from the known to the unknown. But Popper argues that knowledge through the conjectures, which has not yet been observed, can attain the unknown.

Popper's theory of rejection of induction has been criticised by some philosophers of whom the views of Anthony O'Hear, David Miller and Imre Lakatos need special mention.

Anthony O'Hear has advanced some critical objections against the views of induction expounded by Popper.

O'Hear says that induction is necessary and as such he has given two arguments in support of it. The first argument is:
“Inductive assumptions” are needed in science and the second that Popper cannot do science without them.\textsuperscript{16}

But Popper is of the opinion that both these arguments are mistaken and thus he maintains that the first argument is true to those who think in an inductive way. That is, it is similar to the common inductive view that, in order to argue from the past experience to the expectation of future an inductive assumption is always needed.

Popper again says that we never (least of all of in science) draw inferences from mere observational experience to the prediction of future events. Because such an inference is based on observational experience and on some universal theories as well. These universal theories are essential to draw an inference from the past to the future. But these universal theories are not erred from past observational experience. To Popper they are, rather, guesses: they are conjectures.\textsuperscript{17}

Popper is of the opinion that in deductive inference there is no room for inductive assumptions because deductive inference does not lead from initial conditions and universal theories to a future prediction. Thus inductive assumptions are possible only in the universal theories. But the universal are not inferred
but are conjectured, then there is no need for inductive assumptions. Thus Popper says,

> Future predictions which is based on the universal theories and initial conditions, are not justified even when the universal theories are justified. Popper says that justification need not play any role in the critical analysis of scientific knowledge.\(^\text{18}\)

The second objection which is raised by O’Hear that “Popper cannot do science without induction”, seems to Popper less important because it is based on a misunderstanding. Popper again says that O’Hear comments on the point that his rejection of induction makes him difficult to show that he finds no reason to prefer the best tested scientific theory. But the reply given by Popper is that the best-tested scientific theories are necessary to search for a true theory. In the words of Popper,

> the best we can do is to search for a true theory, making use of all our imaginative, critical, and experimental ingenuity. Of course, there may be cases there a true theory of the desired kind does not exist. But if there is a true theory have the kind we are looking for, then the method of proposing bold guesses and of trying hard to eliminate the mistaken
ones may be successful in producing a true theory; and it clearly does not leave everything to chance, as does the method of bold guesses alone without attempted elimination.\textsuperscript{19}

Popper fully agrees with the view of O’Hear that the mere fact is;

there is no “better” or “more rational” Method than a given one (choosing the best-tested theory) does not show that the method is itself a rational way to achieve a given end (successful action).\textsuperscript{20}

Popper says that there is no guarantee of success and as such there exists only a less rational method. He also claims that he is right in advocating the method of guesses and he is somehow sure that O’Hear will not deny the same.

The inductivists have often put this question to Popper: if the corroboration theory gains do nothing whatever towards verifying it, not even raising its probability, then what do they do? David Muller, one of Popperian, has given answer to this by saying that corroboration do not matter. But Popper does not mean it in this negative sense. He further brings the idea of verisimilitude to rescue the idea of corroboration. He declares that corroboration acts as an indicator of verisimilitude. It is true that one theory is more
what Popper really meant to say is that we should act on the best-corroborated theory not so much because there is no reason for supposing it to be true, but because there are no reasons for supposing it not to be true.\textsuperscript{23}

But Popper is not satisfied with this view because this comment of Miller may be puzzling. If it indicates a solution to what he calls the pragmatic problem of induction and if we follow this, we cannot rely on any theory because no general theory could be shown to be true. It is also difficult to understand why Popper says that well tested theories may turn out to be false. Hence the attempts of both Popper and Miller to solve the pragmatic problem of induction fail fully.

Imre Lakatos, another critic of Popper, criticises the falsificational account of Popper and offers some modifications upon them. Lakatos believes that there are many merits of the modified form of falsificationism, but he says that some variants of falsificationism are faced with three different important problems.

First, most of the falsificationists are unwilling to subject their account to any empirical test. On the basis of this, Popper says that theories of scientific method are normative and are not descriptive. But this leads to an inconsistency with the falsificationism as it gives importance to the dangers of relying on intuitions.
Secondly, Lakatos also criticises the naive variant of falsification, which holds that if a theory is contradicted by experience it should be treated as refuted. In the words of Lakatos, naive falsificationism would have forced us to reject Copernican astronomy because, in its original form, it was inconsistent with:

(a) the known paths of the planets; and
(b) with the fact that the planets look about the same size when they are supposedly far away.\(^{24}\)

Thirdly, it is misleading for the falsificationists to talk as if one were testing a single theory against the facts. Lakatos holds that this view is misleading in two ways. These are as follows:

1. Scientific communities will never abandon a theory, however bad, unless there is a better theory to replace it. Even good theories do not spring from people's mind in a fully developed state but it take many years to develop.
2. The interpretation of the facts which are used to test a theory may be mistaken and sometimes a good way to find this out is to allow a rival theory to develop.\(^{25}\)
Lakatos finds that there is a danger in the original account of Popper as it does not discuss the conditions on the basis of which we are allowed to question the conventional interpretation of certain experimental results.

So, Popper's view is dogmatic in its adoption of convention.

But Lakatos proposes the theory of research programs to explain these problems. According to this theory, assessment in science is not assessment of the absolute merit of a theory or of the relative merits of two theories, but of the relative merits of rival research program. Again, he says that the goodness or badness of a research program is based on its relation to rival research program; it is better when it is progressive in relation to rival and it is worse when it is degenerating in relation to that rival. Lakatos takes prediction of a novel fact to give an additional weight to a research program. Though Popper accepts the similar things about novel facts, he speaks of theories rather than research program. Popper claims,

the fact that the predictions of a theory have been corroborated is not relevant to their future performance. But science is, at least in part, a quest for true universal theories and true universal theories are as much about the future as about the past.
Lakatos tries to modify Popper's account of science in order to acquiring knowledge from past to future. Lakatos says that a principle is to be added to the falsificationism on the ground that well-corroborated theories lead to the truth. Lakatos says,

falsificationists need to add a principle saying that, well-corroborated theories are more likely to be close to the truth than theories which have no novel fact to their credit. That is, they need to assume the plausibility of an inductive principle to stop their account from becoming a useless game, even when they are dealing with the theoretical sciences. 27

Popper does not accept the inductional modification done by Lakatos; for his modification changes falsificationism into inductionism. As a result falsificationism fails to solve the problem of induction.
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