

## CHAPTER II

### REFORMULATIONS OF THE PROBLEM OF INDUCTION

It is a good maxim of philosophizing that when we find ourselves involved in perplexities without hope of escape, we should turn back and perfectly understand the question with which we have started and try to reformulate it.

The 'problem of Induction' which was raised by David Hume is not a genuine problem or it is not a problem in the real sense. He was not clear himself as to what type of justification is required for induction, and the problem has been misconceived.

The condition which Hume prescribes for the solution of the problem of induction can never be satisfied. The condition is that in induction the conclusion should deductively follow from the premisses. In order to give a deductive sort of validity to induction, premiss or premisses can be added. For example, in order to arrive at the conclusion 'All A's are B' from  $A^1, A^2, A^3, \dots$  are B, another premiss 'If  $A^4, A^5, A^6, \dots$  are B, then all A's are B' may be added to give this inductive argument a deductive form.

Prof. Pap's objection against Hume is that his demand for the justification of induction in this form is a demand to change induction into deduction. If this could be done, then as in deduction the conclusion necessarily follows from the premisses, in induction also it would be the same. Therefore according to Pap if we accept Hume's condition for the justification of induction, then it will be difficult rather impossible to differentiate induction from deduction. But by definition Induction is different from Deduction. Hence it is not right to ask for a deductive mode of validity or justification in the case of induction. Some other sort of justification, if possible, may be sought. According to some philosophers Hume's problem of induction is not a wrong problem. We can reformulate it, thereby giving it an intelligible form.

According to them Hume's problem of induction is not a problem in itself because he makes its solution impossible. Every type of reasoning has some principles, some rules. For example the law of contradiction, law of identity etc., are some fundamental principles in deductive reasoning which are analytically true or are self-evident. But the principles of inductive reasoning are not analytically true and we can raise questions about their justification. One reformulation of the problem of induction can be the following:

How can the ultimate principle of inductive reasoning be justified ? The fundamental principle assumed in all inductive

reasoning is supposed to be the principle of the Uniformity of Nature, which says that the future resemble the past. Consequently the reformulated problem of induction can be put thus: What is the justification for the ultimate principle of inductive reasoning or what is the justification for the belief that future will be like the past ?

Here the question may arise as to how we can deduce the statement that today's uniformities will hold tomorrow from the fact that they have always held thus far. Perhaps the answer may be that we cannot; then our evidence is not deductive but inductive.

Again, Hume's problem of induction can be dealt in mainly two ways. First by adding further premisses and secondly by interpreting the conclusion as a statement of probability. A non-demonstrative argument is invalid and needs extra premisses to become valid. For example, if the conclusion C from the premiss P (where C is regarded as a categorical statement of alleged fact containing no reference to probability) is invalid, it can be made valid by adding a premiss "If C then P". (This premiss may be called Q). The additional premiss Q may be contingent statement of fact, the knowledge of the truth of which is to be derived either by deduction from more general principles or by induction from empirical data. But here again the problem arises. If the added premiss is justified by appealing to more general

principles then the problem of justification only shifts to these principles; it is not solved at all. On the other hand, if the added premiss is justified on the basis of empirical data, then the problem of induction crops up there again.

It is assumed that if induction produces true conclusion, then there must be regularity in the universe that should be expressed in some fundamental principles or postulates of induction. These postulates of induction must be assumed as implicit premisses of all sound inductive arguments.

These postulates are that the future resembles the past, a general principle of causation to the effect that every event has a cause, and a principle of limited independent variety ensuring that the attributes of individual cluster together in a finite number of kinds of individuals. If any of these principles is true, then it records the presence in the universe of a certain global order, which allows inductive method to produce true conclusions. Suppose we have found that the property F is always in our experience accompanied by another property G, and some other properties say H, I, J have accompanied F on some occasions but not always. In this case the above mentioned principle of limited independent variety allows us to infer high probability of the presence of the property G from an experience of F.

This type of solution to Hume's problem, viz adding some non-analytical principles regarding the universe as the premisses of every induction, has the obvious difficulty of justifying these principles. This was precisely the demand of Hume which remains unsolved.

On the second option to solve the Humean problem, philosophers have modified their definition of inductive arguments by showing when and why its conclusion attain high probability and by including some explicit reference to probability. Although C does not necessarily follow from P in a inductive argument, where P is the set of its premisses and C is the conclusion, we can still draw the modest conclusion that C is probable.

C. D. Broad says "The conclusions of inductive argument must therefore be modified, and the most reasonable modification to make is to state them in terms of probability.....with the suggested modification of our conclusion the logical difficulty vanishes. Suppose the conclusion becomes that it is highly probable that all S's are p. There is then no illicit process. We argue from a certain proposition about some S's to the probability of a proposition about all S's. This is perfectly legitimate".<sup>1</sup>

This view is very widespread that categorical inductive

conclusion are not legitimate and ought to be replaced by probability statements.

According to Keynes the probability of a generalization relative to an unbroken series of confirmatory instances steadily approaches unity. Its necessary condition is that generalizations have an initial nonzero probability. Many of the confirmatory instances are independent in the sense of having less than maximum probability of occurrence given the already accumulated evidence.

When there is an empirical interpretation of probability the probability of the conclusion extends beyond the premisses by covert reference to finite or infinite sets of events, for example:

Ram is mortal

Mohan is mortal

Sohan is mortal

Therefore all men are mortal.

In this sort of approach too there remains the problem of proving the assumption of the probability calculus.

Some modern philosophers reformulate Hume's problem without restriction to causal inference as follows: Only if the association is known to be law-like and not merely accidental,

then an inductive inference from an observed association of attributes  $(A_i - B_i)$  can justify inference to another case  $(A_{i+1} - B_{i+1})$  or inference to the corresponding generalization (All A's are B).

Here the question may arise: How can this be known in primary inductions that do not themselves depend upon the assumed truth of the other laws? This cannot be known by immediate experience nor without begging the question by appeal to induction.

According to Nelson Goodman the criticism of Hume's opinion is based on the fact that this explanation only shows how the belief in necessary connection comes about and not how it is justified. But Goodman holds that the problem of the justification of induction cannot be disassociated from the problem of describing how it comes about. Thus Goodman reformulated the problem and called it 'The new riddle of Induction'. He assumes that the problem of justification of induction cannot be solved, it can nevertheless be dissolved. The dissolution of the problem consists not in proving why an empirical generalization must be true and why an inductive inference must be valid, but it consists in showing the meaning of the statement that an empirical generalization is true and the statement that an inductive inference is valid.

He compares the problem of justification of deduction with that of induction. He says that just as valid deductive inferences must presuppose valid deductive rules or principles, in the same manner valid inductive inferences also presupposes valid inductive rules or principles.

If we ask: How are we to justify inductive rules as correct or valid? Goodman's reply will be that we have to see whether it actually "codifies" accepted inductive practice. If it does really codify or formulate a rule used in accepted inductive inferences, it is valid; if it does not, it is invalid and therefore is to be rejected. According to Goodman there is no other problem of justifying induction beside this.

According to him the problem of justification of induction can be replaced by a new problem. The new problem is: "What are the valid principles of inductive inference? What is to be regarded as appropriate confirmation of a law, a generalization or a theory?" This is what he calls 'The new riddle of Induction'. This is a problem that Hume overlooked.

Following Goodman, Richard Swinburne, gives the following argument purporting to show that arguments in an enumerative form need not always be regarded as correct. "Suppose that all emeralds observed so far have been green. We can conclude by an inductive inference that all emeralds (future as well as past)



are green. But now we introduce a new term 'grue', which is defined as follows: An object at a time t is grue if (and only if) it is green and t is before A.D. 2000, or it is blue and t is after A.D. 2000. We now, living before A.D. 2000, record our observations using this new predicate. All the emeralds which we have observed so far have been grue. So if all arguments of the enumerative pattern were correct inductive arguments, we could conclude that all emeralds (future as well as past) are grue. But this means that emeralds existing after A.D. 2000 will be blue, for to be grue after A.D. 2000 is to be blue. We do not, however, think the conclusion warranted (and indeed it contradicts the conclusion reached by the previous inductive argument)".<sup>2</sup>

Goodman seeks to bypass the classical problem of inductive validity by replacing it by the new problem of confirmation. But it seems that the solution of the new riddle is also beset with insuperable difficulties.

Thus it appears that the problem of induction cannot be dismissed simply by calling it a 'pseudo-problem'. It reappears in some form or the other in different formulations. These formulations and their problems will be taken up in the subsequent chapters.