We have found in the previous chapter (V) that inductive support of induction cannot give a satisfactory solution to the problem of induction. Now we shall advance another tentative solution to justify the problem of induction.

It is only in recent times that some influential writers have tried to offer a new solution to the problem of induction raised by Hume. These influential writers are known as "Pragmatists" or "Practicalists". Max Black says,

they are called pragmatists or practicalists because they try to offer pragmatic or practical considerations for following inductive policies.¹

They have claimed it to be a best and final solution because we can never expect the success of inductive policies as neither true probably nor success in the future. They deny the future success of a deductive proof, and again if we try to infer inductive arguments from the past success it will lead to circularity. Now, the question arises: How to justify
induction? “The only way to justify induction, we are told, is to show that induction is rational without reference to the truth or probability of its conclusions”.²

C.S. Peirce is said to be the originator of this type of justification but in latter it is Hans Reichenbach who independently elaborated it with great emphasis. Peirce’s view of induction has been discussed in the chapter II entitled: “History of the Problem”. So I have to consider here only the view of Reichenbach about the pragmatic justification of induction. Both these thinkers are considered as the original contributors to the subject.

The pragmatists maintain that the only general question that is sensible to us about an inductive method is the empirical question such as “Does it actually work?”

Pragmatists like E. Nagel holds the view that the justification of scientific method as well as of induction is that it works. He maintains that there is no problem of scientific method and of induction since all methods are sound so long as they work. But as soon as this view is drawn to us it will become circular. The circularity of this lies in this that if we have to trust a method of non-demonstrative inference as sound we have to presuppose the legitimacy of the principle of non-demonstrative inference.

The main task of the practicalists is to show that though the truth of the inductive inference is unknown yet the practical consideration can make it
rational to act in accordance with the customary rules of inductive inference. The practicalists also argue with the fact that there is circularity in all-inductive arguments in support of the inductive procedures. But yet the practicalists hold that in order to justify induction we are supposed to be justifying certain inductive policies.

Karl Popper somehow prefers the pragmatic type of solution to the problem of induction when he elaborates the theory of corroboration. Popper maintains that the theoretician always tries to prefer the better and more testable theory for the better-tested one for which he is facing some way of action before him. Before every action, the pure theoretician must presuppose a set of theories about the universe. So that he could have corroborated one. But the question arises as: “Which theory shall the man of action choose?” Popper's answers to these questions are:

we should prefer as basis for action the best tested theory, and from a rational point of view, we should not rely on any theory, for no theory has been shown to be true, or can be shown to be true.\(^3\)

The idea of a principle of induction, which can be regarded as a metaphysical principle or as probable or a mere conjecture, if true, would give good reasons for our reliance upon regularities. When this
reliance means (in the sense of 1st question) for pragmatic reliance upon the rationality then there is no need to rely upon regularities to justify preference.

But when the reliance (in the sense of 2nd question) is meant the principle of induction would simply be false. Thus we see a paradox here. This reliance actually tells us to rely on science, but science now-a-days tells us that the regularities can be found only under some improbable and special conditions. As such these conditions are rarely observed in the universe and “if they are observed, they are liable to occur for periods which will be short from a cosmological point of view”.

Thus we now pass to William Kneale who expresses his pragmatic views in the following way:

in order to justify induction we must show it to be rational, without reference to the truth or to the probability of its conclusions.

Kneale maintains that this can be done only when we adopt induction as a policy of action. He says that only way to justify induction is to show that inductive arguments are rational.

He does not accept Hume's view that there is no need for the justification of induction and that we must be quite satisfied with our common-sense beliefs. Kneale says that we cannot be satisfied with our natural belief because our reason will trouble the mind
with the problem until some solutions are derived at. Further, he maintains that induction can neither be justified with the help of deduction nor by adopting the rules of the theory of chances. It is mistaken to say that the conclusion of induction is certain because it is known as probable only in recent time. He agrees with most modern belief in saying that the conclusion of induction is probable and not certain. But he holds that the word ‘probable’ is used in different senses in the probability theory of chances and the inductive probability. In the probability theory of chances,

a proposition is said to be probable on a given evidence when a person knowing that evidence and no more; that proposition is taken as acceptable as the basis for action because of a rule about the chances of a so-and-so's being such-and-such.⁶

In short,

the probability of the conclusions of induction depends on the justification of induction, and not vice versa.⁷

Kneale holds that philosophical issues involved in the solution of the problem of induction are to consider induction as rational. He says,
to show that induction is rational, without referring to the truth or the probability of its conclusions, we must first conceive it as a policy to be adopted or rejected and then make clear that no one who understands his situation, that is to say, who realises his needs and his resources, can fail to choose this policy.\(^8\)

In adopting the inductive policy, Kneale distinguishes between primary and secondary induction. Primary policy of induction may be concerned either with natural laws or with probability rules. But secondary induction is concerned with theories as opposed to laws or probability rules.

Primary induction is a rational policy, not because it is certain to lead to success, but because it is the only way of trying to do what we want to do viz; making true predictions.

Kneale states that the policy, which we follow in induction of laws, consists of two points:

(a) to search for new conjunctions of character; and,

(b) to assume the impossibility of conjunctions which are not discovered by continued search.\(^9\)
But Kneal’s view of induction, like the positivist, seems to pretend to exclude all other justification by deductive reasoning as well as by the theory of chances.

We shall now discuss the views given by Hans Reichenbach.

Reichenbach’s views on probability and induction are related with his theory of knowledge in general and his theory of meaning in particular. He devoted the book ‘Experience and Prediction’ almost entirely to his version of the problem of induction, the problem of how we can go from what we know (‘experience’) to what we do not know (‘prediction’).

Reichenbach writes:

our conviction as to the justifiability of probability predictions is such a fundamental fact that it is impossible to disabuse ourselves of it. Philosophy cannot consist in criticising fundamental convictions on the basis of reconceived opinions as to the possibility of inferring certain propositions. Rather, we must simply accept such convictions, leaving to philosophy only the job of fitting them into a system. The justification of our belief in strict logic is, after all, in no better a position.
Reichenbach accepts ‘straight rule’ which Salmon calls induction by enumeration as his fundamental rule of induction. This rule directs inference from an observed sample of a class about the whole class in the conclusion. In other words, the rule governs the inference that that the whole matches to an observed sample of that class. Reichenbach conjoined this rule with the frequency interpretation of probability. The pragmatists attempt to provide a ‘justification’ for the use of the ‘straight rule’. This justification consists of:

not in showing that the conclusions yielded by it are probably true, but in showing that if there are true laws of nature, continued use of the straight rule will eventually produce them, and that there is no guarantee that continued use of any other rule will do so.\textsuperscript{12}

This justification which is provided by the pragmatists for the use of straight rule is a better rule than alternatives.

According to him a proposition is meaningful if it is possible to determine a degree of probability and two propositions have the same meaning if they obtain the same degree of probability. He accepted a form of relative frequency theory of probability. According to him, a statement such as,
the probability of getting a face showing 1(one) when tossing the die is 1/6; when correctly analysed assumes the form of a probability implication.\textsuperscript{13}

The probability implication is as follows:

for every correlated pair $x_1, y_1$; $x_1$ is a toss of this die implies with degree of probability 1/6 that $y_1$ is a face showing 1(one).\textsuperscript{14}

The probability implication is governed by some formal rule which have developed by Reichenbach. It is on the basis of these rules certain customary theorems of the probability calculus are formulated. Reichenbach accepts a relative frequency interpretation of probability. The rule formulated by Reichenbach ask us to assume provisionally as,

the relative frequency of occurrence of a given character in a given infinite series converges to a value close to the observed value of that relative frequency in an initial segment.\textsuperscript{15}

Thus in the above cited example, the probability statement may be given the following interpretation:
In an infinite series of tosses with this die, the relative frequency of a face showing 1, converges to 1/6 as a limit.\(^\text{16}\)

Further, Reichenbach also holds that this type of frequency interpretation of probability is admitted for all uses of the term ‘probability’. He knows the thesis as the “Identity conception of probability”. But the identity conception of probability has been objected as it is the probability attributed to some particular events. He says that statements about particular event are neither true nor false but they posit. By a posit he means a ‘wager’ or more clearly,

\[
\text{a posit is a statement with which we deal as true, although the truth value is unknown.}\(^\text{17}\)
\]

A weight can be given to a particular event by placing the event in the lowest class of that type of event for which we have reliable statistics and thus determine the relative frequency of relevant consequence within that class.

Reichenbach says that we have no direct knowledge of relative frequencies and says that we must use a rule of induction in order to determine the weights or individual posit which allows us to infer the existence of limits from finite observations. This rule of induction is as follows:
if an initial section of elements of a sequence is given, and if no second-level information is known for the occurrence of a certain limit, we posit that the relative frequency will approach a limit approximately as the sequence is continued.  

This rule is generally used for the justification of the probability statements. Now, the question arises as: what justification thus the rule has? Reichenbach considered this justification as a new way of solving the problems raised by Hume. Reichenbach proposes a unique and a new approach to Hume’s problem. His approach is different from the traditional attempts to refute Hume and also the modern attempts to show that the problem raised by Hume is not a genuine problem. The problem of the justification of induction is regarded by Reichenbach as a genuine philosophical problem. By clearing up only some elementary linguistic confusion the problem cannot be said to be dissolved. Again, he agrees that it is impossible to show that inductive conclusions are probable in the frequency sense of probable. Reichenbach says that a certain inductive method is the method best suited to fulfil the knowledge-extending function as proved deductively. From this we cannot say that induction will succeed in establishing true conclusions on the basis of true premises, nor it can said to be the only method which will. His main view is that if any
method will, then induction will also succeed. He holds:

Hume was right in holding demonstration of the soundness of inductive argument to be impossible; but he did not see that satisfactory consideration of a practical sort can be a advanced in support of inductive policies.\(^{19}\)

Reichenbach thus advances his solution to the justification of induction. To him any induction to be successful must be based on the assuming truth that there is a limit of the frequency. But whether this solution justifies induction or not, we do not know. What we know only that it is justified in finding the limit. Thus,

if there is a limit, there is a posit, and if not we cannot find one and hence all other methods will break down.\(^{20}\)

He maintains that when the universe contains the limits of frequencies it is orderly and using the policies of induction can discover this order. Further, he is of the opinion that inductive policies are self-correcting though it is said that induction works. The inductive policy requires us to act for uniform
generalisation of constantly increasing complexity. The policy is constantly correcting itself for achieving uniform generalisation by the character of a trial and error method. If it is so devised to lead automatically in the success of a finite number of steps. So, the method is now called a self-corrective method. This view has been shared by both William Kneale and C.S. Peirce. Kneale maintains that,

we have an additional reason for pre-severing namely the consideration that our procedure is self-correcting.\textsuperscript{21}

Peirce is of the opinion that:

the constant tendency of the inductive process is to correct itself.\textsuperscript{22}

The practicalists maintain that with regard to the adoption of inductive policies our position is similar to a doctor who does wish to save the life of a cancer patient. Reichenbach uses this example by saying that the doctor may argue,

if we operate a surgery, there is no guarantee that his life will be saved. But if we don't there is every person to suppose that he will die any how. Facing with a choice between an operation for cancer and sure death,
a patient may choose surgery, not because any assurance of cure but on rational ground that nothing is lost by taking the chance. 23

So the operation is justified. This is a sound argument and the policy it supports is also justified.

The pragmatist, Herbert Feigl, has called this type of justification of Reichenbach as ‘vindication’. The pragmatists claim that this type of vindication can solve the traditional problem of induction, though they are generally skeptical about empirical knowledge. Reichenbach maintains:

the aim of knowing the future is unattainable. 24

He denies the direct proofs of inductive inference. Peirce, further, claims that policy of vindication will prove successful in the long-run. Peirce recognises:

the justification for believing that an experiential theory which has been subjected to a number of experimental tests will be in the near future sustained about as well by further such tests as it has hitherto been, is that by steadily pursuing that method we must in the long run find out how the
matter really stands.\textsuperscript{25}

We notice that Peirce moves from talk about the ‘near future’ to talk about the ‘long-run’. Again, Peirce recognises elsewhere as:

the long-run must be taken to be ‘endless’. But the fact is that the probability of the die turning up a three or a six is not sure to produce any determination of the run of the numbers thrown in any finite series of others. It is only when the series is endless that we can be sure that it will have a particular character.\textsuperscript{26}

But Peirce cannot be said to be provided successful effort in defense of the policies by referring to long-run. It is the fact that long-run is what never happens, no matter how long we wait for or even impossible to attain by immortal beings. It also follows that a pragmatic types of defense deal no criteria for inductive decisions in short-run cases.

Reichenbach’s theory has been elaborated by Weasley Salmon. The views of Salmon mainly based on the objections of objections, which have raised against pragmatic justification. Salmon formulates that Hume has pointed out that if nature is not uniform then, inductive inference cannot establish the
knowledge of unobserved. As a result we cannot show that nature is uniform, prior to a justification of induction. We may examine two possibilities: that nature is uniform and nature is not uniform. It is true that if nature is uniform, then inductive inferences will establish the knowledge of unobserved and if nature is chaotic and lawless, they will fail. It is not true to say that every inductive inference with true premise will have a true conclusion if nature is uniform. If nature is uniform, there is the possibility that other methods of gaining knowledge may work but we have no proof even on the assumptions of uniformity that other methods of gaining knowledge will succeed. Reichenbach believes that if nature is not uniform even other methods will fail. Thus if other methods were to succeed, we can easily say that induction would also succeed in yielding knowledge of the unobserved.

To him the strongest claims of vindication are that everything to gain and nothing to lose and if any method works, then induction works. In his opinion the vindicationists do not hold the view that “induction must work”. This view is found in his thesis “Short-runs”. Salmon says that the aim of induction is attaining the correct predictions and true conclusions. Again, he says,

our purpose is to arrive at true results and the standards inductive methods are those best suited to the purpose of arriving at correct beliefs which is
explained in his ‘The Predictive Inference’.27

Salmon concludes that the problem with which he discussed in the short-run is full of difficulties which arises due to the introduction of the limit of the relative frequency as a media between the finite observed sample and short-run prediction.

Many objections have been put against Reichenbach’s attempt to justify induction by enumeration or by straight rule. But there is an infinite class of rules known as ‘asymptotic rules’?28 which are equally justified by the same argument.

John W. Lenz criticises Reichenbach’s view by saying that he has three basic objections against the claims of Reichenbach that he had pragmatically justified induction which are difficult to answer by the practicalists.

The first objection of Lenz is about a point which Reichenbach himself made but it was not clearly explained by him. Reichenbach’s point shows as follows:

that not only his rule of induction, the ‘straight rule’ but an infinity of inductive rules, the ‘asymptotic rules’, will eventually find the limit of the relative frequency of two events, if there is such a limit.29
To him, Reichenbach is right in saying that predictions, which are made on the basis of any of these rules, converge towards the actual limit of the relative frequency if there is a limit. But the problem, which he has failed to grasp, is that we do not know which rule to use or on what ground we prefer one than the other and which prediction to make. We cannot depend upon the grounds of descriptive simplicity as Reichenbach mentions because this is a very weak ground and as such it will become different from his pragmatic justification.

Reichenbach argues that other than the straight rules inductive rules can be justified only at an advanced state of knowledge. This view is largely oversimplify matters and there would be no reason in using straight rule in assessing other rules. M. Black has formulated the same view by saying that there is an infinity of inductive rules, we may pick any one of that to assess the others. But this view of Black faces another new difficulty as to; we do not know which inductive rule to pick for the justification of induction.

Lenz’s second objection is:

Practicalists, despite their ‘pragmatic justification of induction, give no assurance that any of the predictions that science actually makes are correct or even probably correct. Reichenbach did succeed in demonstrating that, if
there is a limit to the relative frequency of events, the repeated use of the inductive method will find that limit—eventually, that is, if, as the evidence increases, we make an indefinite number of tries.  

The objectionable point is that the needed number of tries is unknown to us. Whether any of our actual tries correct or even probably correct, we cannot be sure about them. Reichenbach argued that it can be inductively ascertained that the higher or lower probability of being correct is based on the number of samples. If the prediction is made on the basis of small samples then the probability of being correct is lower and if it is made on the basis of large number of samples the probability is higher. Thus the infinity of inductive rules cannot answer the second objection raised by Lenz.

Third objection is that the practicalists do not predict short-run relative frequencies of events. M. Black is quite right in commenting against the pragmatic justification of induction that they have narrowed the aims of science by their long-run relative frequencies. Because science is not contented to predict long-run relative frequencies of events. The pragmatic justifications as lays by the practicalists do not give us assurance whether predictions of short-run relative frequencies are correct or probably correct. Reichenbach, similarly, says that his frequency theory
could not directly take the help of short-run relative frequency. The problem, which, John Lenz finds is that even if we know the long-run relative frequency of two events, we still cannot know the short-run relative frequency of these two events. This problem can be solved if we know that short-run relative frequencies approximate those of the long-run but we do not have any assurance. So Lenz has shown that it is very premature to claim that induction can be justified pragmatically.

Thus we can say that the pragmatic justification of induction draws the conclusion, which is, completely skeptical. Hence this justification cannot be said to be the proper solution of the problem of induction.

Max Black raises some deficiencies in pragmatic justification of induction, which are as follows:

In the first, he finds the policies, which have been decorated either by expectation or by non-expectation, no provision is provided for degrees of expectation. But it is true that the generalisation, which we use, is generally based on degrees of assurance. Again, it may be objected that the policies are to be detailed. Most of the practicalists agree with each other in justification of inductive policies, the difference is only about technical details.

Max Black criticises the view that the Practicalists must accept one alternative process as either induction works, by which the true
generalisation can be possible or, on the other hand, think that the universe may be in disorder and it is too impossible to hold any generalisation. This process of disorderliness can only be able to discover by induction.

That induction is self-corrective is also objectioned by Max Black. The notion of ‘correction’ here means by him:

replacing an incorrect estimate by a correct one - or at any rate, one, that is nearer to the truth. ^

But this meaning is not correct, the actual meaning is that the inductive policy prepares this self-corrective process of induction for modification or alternation in the prescribed generalisations. In following this policy a constant revision is needed for action which is in turn must be progressive and would have some assurance that they are not moving to the wrong one. But this assurance is not found in the policies. So the inductive policies are misleading as claimed by him.

Another objection raised by Max Black is that the practicalists when advancing their arguments in defense of inductive policies are using deductive process. This is clear when we examine the various contention of definitions of practicalists, we find they are employing some deductive terms such as ‘reason’, ‘follow’ and so on which implies that these are done intentionally by the exponents. If so, they must show
the connection between them as done in logical proof, but these are unknown to us antecedently. We can say that pragmatic justification cannot deductively inferred from simpler principle.

Hence any approach to the problem of induction done by the practicalists is bound to end in an impasse.  

\textsuperscript{32}
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<table>
<thead>
<tr>
<th>Number</th>
<th>Author</th>
<th>Title</th>
<th>Publisher</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Peirce, C.S.</td>
<td>COLLECTION PAPERS</td>
<td>Cambridge</td>
<td>729</td>
</tr>
<tr>
<td>23</td>
<td>Black, Max</td>
<td>PROBLEMS OF ANALYSIS</td>
<td>Ithaca, New York</td>
<td>169</td>
</tr>
<tr>
<td>24</td>
<td>Reichenbach, Hans</td>
<td>THE THEORY OF PROBABILITY</td>
<td>Berkeley</td>
<td>481</td>
</tr>
<tr>
<td>25</td>
<td>Peirce, C.S.</td>
<td>COLLECTION PAPERS</td>
<td>Cambridge</td>
<td>5.170</td>
</tr>
<tr>
<td>26</td>
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<td>p-2.667</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Salmon, C.W.</td>
<td>THE SHORT RUN</td>
<td>Philosophy of Science</td>
<td>220</td>
</tr>
<tr>
<td>28</td>
<td>Swinburne, Richard</td>
<td>THE JUSTIFICATION OF INDUCTION</td>
<td>Oxford University Press</td>
<td>98</td>
</tr>
<tr>
<td>29</td>
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<td>p-98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Black Max</td>
<td>MODELS AND METAPHORS</td>
<td>Ithaca, New York</td>
<td>208</td>
</tr>
</tbody>
</table>