ABSTRACT. Reichenbach held that all scientific inference reduces, via probability calculus, to induction, and he held that induction can be justified. He sees scientific knowledge in a practical context and insists that any rational assessment of actions requires a justification of induction. Gaps remain in his justifying argument; for we can not hope to prove that induction will succeed if success is possible. However, there are good prospects for completing a justification of essentially the kind he sought by showing that while induction may succeed, no alternative is a rational way of trying.

Reichenbach's claim that probability calculus, especially via Bayes' Theorem, can help to exhibit the structure of inference to theories is a valuable insight. However, his thesis that the 'weighting' of all hypotheses rests only on frequency data is too restrictive, especially given his scientific realism. Other empirical factors are relevant. Any satisfactory account of scientific inference must be deeply indebted to Reichenbach's foundation work.

1. THE PRACTICAL ROLE OF INDUCTION

To adopt empiricism is to acknowledge that our beliefs must be based on the data gained in experience. But this leaves open the question of how our beliefs about what has not been directly experienced are to be based on what has been.

A radical empiricism may seem to avoid this question by insisting that the only beliefs we may claim as justified are those derived directly from experience. However, taking this view seriously leads to solipsism of the present moment. This doctrine is unacceptable to some philosophers because it conflicts with what we normally mean by the word 'knowledge'. To others there is a more important issue: namely the grounding of all practical activity. Our actions are based on our expectations; we act in the belief that we can bring about or avoid certain occurrences. The issue is whether there are legitimate critical standards which may be employed in assessing the beliefs which guide our actions.

A radical empiricism which denies that any belief going beyond what is given in experience is justified, thereby denies any basis for rational discrimination among the different actions which are open to us in any situation.
An action can only be intentional if it is done in the belief that certain consequences will follow it. The bases of all deliberate actions are conditional beliefs which go beyond experience, even if they may be based on it. If empiricism is to allow that thought and reflection have any place in human affairs, it must allow that there are rational criteria for assessing beliefs about the consequences of present happenings. It may well embrace a moderate scepticism which warns us that no such beliefs are beyond doubt, but it must reject a radical scepticism which tells us that any such belief is as good as any other since neither is legitimate.

In developing a philosophical position, one cannot, in conscience, simply adopt or reject certain positions in the light of common-sensical plausibility. One must go where the argument leads. The very notion of philosophical enquiry precludes our rejecting certain positions at the outset of our enquiry. Thus radical empiricism, and the scepticism it entails, can not be ruled out without a hearing. What is important, however, is to be aware of what is involved. If the seriousness of a problem is not recognized it may remain unsolved, even though a solution is possible. What is at issue here is the very idea that there is some point to thought and reflection. If nothing can be said as to why certain ways of forming expectations are superior to other ways, then nothing can be said in favour of thinking or urging others to think – there can be no basis for distinguishing between the fool who rushes in, and the angel who stops to think. To accept this would be to accept something of profound significance for the life-style common to us all. Those philosophers who say there is no question of justifying any kind of ampliative inference, and that all that can be hoped for is an analysis of how people do form beliefs, should be aware of the full import of what they say.

Hans Reichenbach never lost sight of the relationship between philosophy and practical activity. This marks him off from those philosophers of science who emphasize the theoretical and explanatory role of science, and forget the way it guides decisions in medicine, engineering and various other branches of technology. Karl Popper's thesis that inductive inference is not involved in science gains what plausibility it has by viewing science from this one-sided perspective. He argues with some force that the properties of a theory which make it valuable for scientific explanation can be measured by its 'degree of corroboration'. He defines this concept so that its measure at any time is