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INDUCTIVE RELATIONS*

In his *Introduction to Logical Theory* (1952) Strawson offers a certain argument for rejecting the 'customary' formulation of the induction problem in favour of his own reformulation. In this paper I wish to examine the argument as well as the reformulation in terms of their consequences. I shall conclude by proposing a tentative reformulation of my own.

It can sometimes, and perhaps generally, be a useful strategy to formulate a philosophical problem by ascertaining first the actual (paradigmatic) examples of what is thought to give rise to the problem. At the very outset, Strawson seems to follow this strategy by ascertaining typical cases of 'inductive reasoning' not by appealing to actual scientific practice but by drawing examples from the transactions of ordinary life.[1] Thus the following set of examples, which he believes to be crucial for his reformulation of the induction problem, is suggested by Strawson:

(a) He's been travelling for twenty-four hours, so he'll be very tired.

(b) The kettle's been on the fire for the last ten minutes, so it should be boiling by now.

(c) There's a hard frost this morning; you'll be cold without a coat.

These inductive 'arguments', all of the singular form 'p, so q', according to Strawson, give a 'realistic'[2] and hence, one may add, a paradigmatic picture of what inductive reasoning is like. Whereas the customary practice of depicting it as that kind of reasoning in which one 'argues' from the truth/acceptance of a finite, consistent set of singular observation statements '$0_1 \cdot 0_2 \cdot 0_3 \cdot, \ldots On$' to the acceptance of a corresponding general statement of unrestricted universality of the form '$(x)\ (fx \supset gx)$' gives, Strawson believes a relatively unrealistic and artificially contrived picture of it.[3] This seems questionable. However, what concerns us here is a certain argument which Strawson offers for rejecting the customary formulation which is obviously based on the latter manner of depicting the general pattern of inductive argument, the pattern that many scientists and philosophers of science would consider realistic rather than artificial. Moreover, even an 'anti-inductivist' like Karl Popper would accept that scientists do often find themselves in problem-situations of selecting from among a set of competing theories/hypotheses on the basis of the truth of corroboration-statements (observation statements of past performance of theories) that they accept. What name one gives to such situations of empirical reasoning matters little so long as one's account of them does not tend to be distorting and dogmatic.

The argument that Strawson gives for rejecting what I have in the present context called the customary formulation of the induction problem involves a threefold distinction made by him between : (1) an inductive inference of the form 'p, so q'; (2) a corresponding generalization of the form 'All cases of A are cases of B' whose addition, as the major premise, to (1) would result into a deductive kind of argument; and (3) a corresponding non-deductive principle of inference of the form; 'the fact that X is a case of A is a good ground for concluding that it will be a case of B'.[4] At least one of the reasons why Strawson finds it useful to make this threefold distinction is his belief in a certain structural parallelism between the (type-distinct) situations of deductive inference on the one hand and inductive 'inference' on the other. Thus his own reasoning at this point is analogical in the sense that he makes these distinctions concerning inductive inference on the model of what he considers to be the similar distinctions in respect of deductive inferences.[5] Supposing one's deductive inference to be of the form '$A = B$, $C = B$, $\therefore$ $A = C$', then it is in a way necessary to distinguish it from the (i) corresponding necessary proposition : 'Any two things, where each is equal to a third thing, are equal to each other' and (ii) the corresponding logical principle of inference underlying the given piece of inference, viz., the principle of transitivity of equality relation. It must be noted that Strawson's belief in the supposed structural parallelism between (type-distinct) deductive and inductive inference, as it underlies his initial analysis of the latter, seems dogmatic; for he does not go into the question of why at all is it necessary or reasonable to assume such a structural parallelism between the two without proper qualification. The assumption of such a parallelism would be, e. g., irrelevant in dealing with an inductive argument of form 'p, so probably q' to which there may, as a matter of fact, be no corresponding genera-lization and hence no corresponding principle of non-deductive inference. Strawson himself seems to admit the possibility of such an inductive argument.[6] However, I shall now consider Strawson's use of idea of such a parallelism in his argument for reformulating the induction problem.

Strawson formulates this argument as follows :

> Thus our acceptance of the non-necessary proposition that all kettles boil within ten minutes of being put on the fire will be the same as our acceptance of the non-deductive principle that the fact that a kettle has been on the fire for ten minutes is a good ground for concluding that it will be boiling; and both are the same as our acceptance of the step in (b) as sound or correct or reasonable.[7]

More generally, the argument can be restated to the effect that given the initial threefold distinction between the elements (1)—(3) as shown above, it must be recognized that at any given time our acceptance of the element (2) as established is the same as our acceptance of the element (3); and which means that to accept (2) as established is always the same as to accept 'the general correctnes of a class of particular pieces of reasoning'[8] of the form 'p, so q'. According to this argument what one must do is to equate/identify (our acceptance of) the elements of the type (2) and (3) with (our acceptance of) the 'general correctness' of the *corresponding classes* of particular pieces of inductive inference of the form 'p, so q' and, one may add, *vice versa*. Although, the three elements (1)—(3) seem to involve on initial analysis three different *levels* (of acceptance), ultimately, for Strawson, they reduce to only one, viz., our acceptance of the general correctness of the classes of particular pieces of inductive inference of the form 'p, so q'. From this argument Strawson concludes that the problem of induction must be formulated relative to paradigmatic cases of inductive inference of the form 'p, so q' and not relative to the form '0_1,—0_n' so (x) (fx $\supset$gx)'.

One of the consequences of this argument is that it dictates a certain formulation of the induction problem. viz., Stra wson's reformulation to be examined shortly. The other more direct, though less obvious, consequence of it is the reductionist one of reducing the *propositional status* of empirical generalizations of unrestricted universality to the non-propositional status of rules of non-demonstrative inference. For according to Strawson's argument we are precisely required to recognize that to acceptan empirical generalization of unrestricted universality of the form (2) as established is the same as to accept a corresponding principle of inference of the form (3). At one stage in the development of logical empiricism, such a view was advocated by thinkers like Moritz Schlick by considering universal statements of science as a stranger-species of rules of inference from one set of observation statements to another such set. The move was intended to save the verifiability criterion of meaningfulness rather dogmatically. There are others, however, who have advocated it explicitly as the instrumentalist view of science. But such a view must be totally rejected if only to save empirical sciences from its destructive conse quences. Even if it were narrowed down by restricting it to generalizations of restricted universality, it would be unacceptable for similar reasons. Familiar criticisms of such a view need not be repeated here. We may simply conclude that the rejection of this consequence of Strawson's argument warrants the rejections of the argument itself.

It is necessary now to consider his reformulation of the induction problem :

> The problem we are to consider, then, is the nature of that kind of reasoning from one non-necessary statement (or conjunction of statements) to another, in which the first does not ertail the second.[9]

This reformulation has, no doubt, the advantageous feature of generality in the sense that it could be said to embrace the traditional version of the induction problem, viz., the problem of explaining the nature of 'inference' patterns of the form '$0_1 - 0_n$, so (x) (fx$\supset$ gy)' as well as the Strawsonian version of it, viz., the problem of explaining the nature of the inductive 'inferece' patterns of the form 'p, so q'. But it ca1 be showr that it is 1ather *overly* general in character and fails in one crucial respect. It is overly general because it assumes a rather *negative* description of an inductive inference of the form 'p, so q' or '$p_1 - p_n$, so q' as *one* (i) in which each proposition involved is a non-necessary proposition, and (ii) where neither 'p' nor '$p_1 - P_n$' entails 'q'. If one accepts Strawson's formulation then one must recognize as legitimate any supposed piece of argument of the form 'p, so q' which satisfies this description and yet which may neither *ordinarily* nor scientifically be admitted as a piece of normal inductive argument. What on Strawson's reformulation one would always fail to do is to *discriminate* or distinguish between what might be called the *canonical* inductive inference as against the non-canonical (inductive) inference. The set of examples of inductive inference selected by Strawson is indeed as et of what everyone would consider to be normal/canonical pieces of ordinary inductive 'inference'. Inferences such as 'that pet family dog takes me for a stranger, so it will bark at me' would equally serve as a commonplace example of such an inductive inference. But what is it that gives an inductive inference its normal, canonical character? One may answer this fundamental question essentially on Humean lines by saying that it is not the likelihood of its truth but its conformity with a past (*interpreted*) regularity that makes a prediction a valid or a canonical one; that canonical inductive inferences of the form 'p, so q', unlike the non-canonical ones of the same general form, both *presuppose* and *conform to* hypotheses or general statements expressing these *past interpreted regularities*. The canonical character of the present example may accordingly be explained by showing how it presupposes as well as conforms to the corresponding general statement: 'A pet family dog always/generally barks at a passer-by stranger'.

There is no doubt that a canonical piece of inductive 'inference' like ' That family dog takes me for a stranger, so it will bark at me' will always satisfy the general, negative description of an inductive inference *assumed* by Strawson's reformulation. But a piece of non-canonical, if not entirely arbitrary and artificial, inference like 'That pet family dog takes me for a stranger, so it will be frightened by me' would equally satisfy it, for there is nothing in Strawson's reformulation to prevent it from passing as a genuine case of an inductive inference. The same consequence must be faced if we imagine a student 'arguing' that 'his teacher will make a partial and biased examiner in his next test because the teacher has been unhappy with his behaviour outside the class'. No one would recognize it as a normal, canonical piece of inductive inference, and yet on Strawson's reformulation of the problem it is entitled to receive such a recognition.

This consequence of Strawson's reformulation cannot be simply dismissed as unimportant. For no one would deny that the induction problem is precisely one of explaining or explicating the nature of the distinction between canonical and non-canonical patterns of inductive 'inference', between genuine *inductive relations* and the pseudo ones. In the words of Nelson Goodman, 'the problem of induction is not a problem of demonstration but a problem of defining the difference between vaild and invalid prediction'.[10] It is interesting to note, as pointed out by Goodman, that it is precisely formulated by the question 'why one prediction rather than another?' — (why people make and accept the kind of inductive inferences that they do make and accept?) — which David Hume correctly, though incompletely, answered to the effect that 'the elect prediction is one that accords with a past regularity, because this regularity has established a habit.' [11]

Conclusion : On Strawson's reformulation, the problem of induction *reduces* to : What is the nature of inductive relations as embodied in contingent statements of the form 'p, so q' satisfying the non-entailment condition that 'p' does not entail 'q'? Since both *genuine* and *pseudo* inductive relations can find expression through contingent statement of the form 'p, so q' satisfying the non-entailment condition, Strawson's reformulation fails in one crucial respect, viz., it fails to indicate the kind of solution that one should be looking for to solve the induction problem.[12] Perhaps there do arise kinds of situations in ordinary life in which a person 'argues' from one set of non-necessary, contingent propositions to another such set, without the first set entailing the second, which most people would recognize as some sort of reasoning situations and yet refrain from classifying them as situations of normal inductive reasoning. Yet on Strawson's reformulation, one should feel obliged to study them for explaining the nature of inductive reasoning. The reason why one must reject Strawson's reformulation as an alleged improvement over the customary formulations, which it is not, may become more clear if the induction problem is formulated as follows, retaining some of the Strawsonian elements in it.

How are genuine inductive relations different from the pseudo ones, where both may be embodied in or expressed through contingent statements of the form (i) 'p, so q' or '$p_1 - P_n$, so q' and (ii)

'0_1, — 0_n, so (x) (fx ⊃ gx)', all satisfying the condition of non-entailment. On this formulation it becomes clear that the problem of the nature of genuine inductive relations among statements about *matters of fact* is a problem concerning two *irreducible*, though inter-related *levels* of inductive relations : the level of specific canonical predictions involving singular statements alone on the one hand and the level of universal hypotheses which are law-like/confirmable rather than mere accidental/non-confirmable hypotheses on the other.[13]

This formulation is preferable even to Goodman's and to other usual formulations for several reasons. Firstly, without bringing in concepts like validity/invalidity as Goodman does, it makes it possible for us to have yet another look at the induction problem as a special case of the more general problem : 'What *kinds* of *relations* can obtain between different kinds of statements of an empirical informative character?' For it is quite reasonable to regard inductive relations as a special class of these relations that can range from deductive ones to those of incompatibility and contradiction. This feature of our formulation has the interesting consequence of giving a certain general methodological orientation to the problem while freeing it from traditional ideological fetters of inductivist empiricism, justificationist subjectivism, deductivism and the like. Secondly, and as a consequence of the preceding considerations, once construed as a kind of relation/s between empirical contents of statements, further clarification of the induction problem becomes possible along the following lines of reformulaion :

1. What is the nature of (the structure of) inductive relations? (Induction Problem_1)
2. What role can/do these inductive relations play in the growth of human knowledge? (Induction Problem_2).

This puts the whole problem in a proper epistemological perspective of which it has been robbed by the dust-raising justificationist controversies concerning the validity of 'inductive inference'. The induction problem_1 is of considerable epistemological interest from the point of view of the structure of human knowledge. While the induction problem_2 emphasizes and brings out the importance of the problem of distinguishing genuine inductive relations from pseudo-ones from the point of view of the growth of human knowledge.[14]

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NOTES

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1. See P. F. Strawson : *Introduction to Logical Theory*, London : Methuen and Co. Ltd., 1963, p. 235, where he writes : 'Fortunately, we need go to nothing so elevated as history, science, or detection to find examples of non-deductive reasoning. Ordinary life provides enough. But the fact that ordinary human life is replete with examples of such reasoning is of little philosophical consequence when our problem is precisely one of bringing them within the purview of philosophical understanding. And this cannot be done by admitting these examples at the very outset as *the paradigm* of inductive reasoning after robbing them of their complex pragmatical settings of actual life. For doing so entails our trying to solve the problem even before it is formulated. This difficulty does not, however, arise if, in the present context, we turn for examples to the enterprise of empirical science to which the problems of induction owe much of their philosophical character and interest.'
2. See P. F. Strawson : *Ibid*, P. 236.
3. Strawson (*Ibid*, P. 236) explains : ' ..... these generalizations based on common experience do not often appear in practice as the conclusions of arguments from particular instances. They are less reflectively addopted.'
4. See P. F. Strawson, *Ibid*, P. 236.
5. See *Ibid*. P. 236.
6. See *Ibid*. PP. 240-241.
7. See *Ibid*. P. 236.
8. Cf. *Ibid*. P. 237.
9. *Ibid*, P. 237.
10. Nelson Goodman : *Fact, Fiction, and Forecast*, The Bobbs-Merrill Company, Inc., Indianpolis, New York, 2nd ed., 1965, p. 65.

11. Nelson Goodman : *Ibid.*, p. 60

12. As a rule, the purpose of formulating a problem with more or less strategic clarity and precision is to indicate the kind of plausible solution that one should be looking for.

13. Cf. Nelson Goodman : *Ibid.*, p. 80; Strawson's argument for his reformulation of tne induction problem notwithstanding, his (*Introduction to Logical Theory*, pp. 237—247) subsequent discussion of the problem of the nature of inductive support leads him to recognize two *kinds* of inductive support, which closely, though only partially, correspond to what I call *two levels* of inductive relations,

14. For example, it can be argued and shown that all genuine inductive relations (of, e.g., confirmation/disconfirmation) play a crucial role in regulating the growth of our (scientific) knowledge, where the growth of scientific knowledge is understood as a *function* of the interaction between the *developmental structures* of problems and theories and hence as following an interactive pattern. In an as yet unpublished manuscript I argue to this effect after develpoing further my thesis and arguments in G. L. Pandit : ' Epistemology and An Interactive Model of the Growth of Knowledge ', *Indian Philosophical Quarterly*, Vol, III, No. 4, 1976. pp. 409-36.