

DISCUSSÕES  
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NOTE ON HOWARD SANKEY'S "INDUCTION  
AND NATURAL KINDS"

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Howard Sankey's treatment of induction builds on epistemological naturalism and scientific realism, treating the former in an essentialist way, in agreement with Brian Ellis. I am all in favour of the way the gap between philosophy and science has been reduced in recent decades. Our scientific understanding of nature should certainly be employed wherever it bears on philosophical issues, which it does much more often than more traditional philosophy has allowed. In particular, we should not hesitate to make use of what we know of the processes of perception and thought in an account of the way we form and evaluate beliefs about the world. Our naturalistic knowledge should inform our epistemology, however there is a question as to how far this can go.

We have standards by which we appraise scientific theories, but without grounds for trust in our method of appraisal we could have no reason to trust our theories as a basis for justifying anything. This by no means denies that natural knowledge can contribute to the rational appraisal of many specific beliefs, but it does show that to hold that all epistemological justification rests on natural knowledge

would be circular. Sankey in his section 2 acknowledges the circularity of justifying induction by appeal to the uniformity of nature while accepting that we know about the uniformity of nature empirically, however he claims that a scientific essentialist approach to laws avoids this circularity. He sums up his position in the last two paragraphs of section 5. We are [i] rational to employ induction because nature is in fact uniform, in that [ii] the fundamental kinds of things which exist are natural kinds. [iii] All members of a natural kind share the same essential properties, so [iv] when we infer that an unobserved object will have a property, which observed objects of the same kind have, we will be right.

Sankey holds that circularity in [i] is avoided when uniformity is interpreted via [ii] and [iii], and that these two propositions establish [iv]. But this is too fast. In the first place there is a question as to how the uniformity of nature in the sense indicated can be established. Leaving this aside for the moment, we must also inquire whether [iv] follows from [ii] and [iii]. Certainly if property P is an essential property of a kind of object K, then assuredly as yet unobserved instances of kind K will have P. However the fact that all observed instances of kind K have property P does not establish that it is an essential property of that kind. A set of objects all of the same kind may happen to share some non-essential property which is absent from other members of that kind. A natural-kind theorist may hold that a natural kind must have as elements only fundamental, that is completely simple, entities and that every property of such an entity must be an essential property. But on this interpretation the kinds that we identify empirically will rarely be natural kinds, and when we assume that an observed kind is natural in this sense we may very easily be wrong. (Chemically pure substances may be taken

to be natural kinds, but [a] the actual samples we deal with are rarely pure, and [b] even a chemical element typically has isotopes which differ in physical, if not chemical, properties.) Other theorists, such as Kornblith, allow that kinds based on observed resemblance are often natural kinds. He holds that the observed similarities are caused by the essential properties of the entities which resemble each other, but that these entities will not all have exactly the same essential properties. Thus a property common to a finite set of elements of a natural kind, in Kornblith's sense, may be an accidental relative to that kind, and may not be present in other elements of the same natural kind.

Whichever version of the natural-kind theory is adopted, we must allow that the theory can not entail that a property common to a finite set of entities which are classified together on the basis of observable properties will also be possessed by any other individual that shares the classifying properties. (If the theory did entail this, then the many cases where careful inductions have been wrong would refute the theory.) The theory can explain any case where an induction succeeds, but a finite run of successes is always compatible with subsequent failures. It may be held that the natural-kinds theory makes inductive conclusions probable. The question remains, how probable? Certainly the theory shows that an induction may succeed, but we do not need the theory to draw that conclusion. To establish anything more about the probability of an inductive prediction succeeding than that it is non-zero will require some principle in addition to the existence of natural kinds. (A. W. Burks, who postulated the uniformity of nature in offering a justification, also recognized the need to postulate a principle of limited variety of possible properties ([1977] p. 633).) Even then we will also need some assumption about the distribution of prior probabilities over the

set of alternative hypotheses in order to derive a value for the probability of one of these hypotheses relative to a given set of evidence. Using just the principles of uniformity of nature and limited variability, suitably formulated, we may show without evaluating probability that it will increase with the accumulation of items of evidence, and some may see this as enough to justify induction. Nevertheless a question will remain as to how these principles may be established as true.

Since Sankey allows that the justification he proposes would be circular if our belief in the uniformity of nature were inductively based, he must hold that [ii] and [iii] can be known independently of induction. To clarify the issue here it is essential to distinguish epistemic from ontic necessity, a distinction that has often been confused in the history of philosophy. We may believe, contra Hume, that there are natural (or nomic) necessities, and we may agree with David Armstrong that we attribute such necessities in drawing inductive conclusions. I, for one, endorse both these propositions. However it is clear that when we claim that a certain general statement expresses a law of nature, or states what properties are essential to some kind, we are not claiming that this is true a priori. The generalization is epistemically contingent and must be supported by empirical evidence, even although it expresses a claim about a necessity in nature.

Perhaps the thesis that things fall into natural kinds to which certain properties are essential can be known to be true independently of any empirical evidence. This would sound strange coming from someone who espouses a naturalistic epistemology, but some of what Sankey says seems to suggest such a position. In his answer to *objection two* he indicates that the thesis is part of the correct ontological picture, and suggests that at least some

ontological assumptions must be prior to any epistemological speculations. However Sankey here only seeks to protect his thesis from rebuttal, and does not offer a systematic account of the grounding of basic ontology. If some kind of transcendentalist argument for the natural kind thesis is formulated, then it must be judged in its own right. Meanwhile it seems to me that what Sankey says in answering *objection one* indicates a much more plausible and rather different position: that the existence of natural kinds is the best explanation of the success of science. He urges that no circularity is involved here because the justification rests on an inference to the best explanation, a form of argument different to the enumerative induction that it is held to justify. There are, however, two problems with this position. In the first place it implies that the initial development of science was a non-rational activity. If the justification of induction depends on the natural kinds thesis, and the justification of the latter requires as a premise the success of science, then until science achieves a substantial degree of success, the method by which it proceeds lacks a rational justification. A second difficulty is with the status of inferences to the best explanation. If induction is to be justified by using this mode of reasoning then its justification, in place of the justification of induction, becomes the issue.

Some who advocate a naturalistic epistemology avoid a justification of induction by holding that this method simply is the way we appraise general claims, see for instance Larry Laudan ([1987] pp. 25–6). In a somewhat similar way, Kornblith sees the primary task as explaining the success of induction. Sankey while seeing much merit in Kornblith's approach, believes that a justification is needed. I endorse this position. To claim that the use of the inductive method is simply a fact of human behaviour overlooks the fact that people all too often use bad induc-

tive arguments. If we can recognize that one ought not accept beliefs arrived at in such a way, surely it is because we can recognize the way we ought to proceed. We should aim to explain all behaviour but justify only some. And to hold that the past reliability of induction grounds our expectation of continued reliability is to use induction, not justify it.

I agree that a justification is needed, but see difficulties with Sankey's approach. Nevertheless I believe that the thesis of natural kinds, or at least of natural necessity, plays an important role here. It is important to recognize two ways that such a notion may be involved: as a necessary or as a contributing (or sufficient) condition for a justification. Armstrong argued for the former position ([1983] pp. 52 *et seq.*). He insisted that we can only reasonably expect a pattern to persist if we believe that what we have already detected occurred according to a natural necessity. So far I agree, but, as I have indicated, saying that such necessities ground our inductive inferences raises problems as to how we can know of these necessities. Invoking some a priori, perhaps transcendental, argument to justify an ontology of natural kinds seems to me quite unacceptable. It is certainly contrary to the spirit of a naturalistic epistemology, and if such a justification is employed at all, it would surely be easier to use it directly to justify induction.

I believe that we should proceed as follows: allow that using induction commits us to claims about natural necessities, and justify making such inferences with these implicit commitments. Without invoking knowledge that there are such necessities, we may be able to show that it is rational to presume them in thinking about the objective world. Let me explain the notion of presumption that I am employing here. When we are not in a position to claim knowledge of a proposition, it may be rational to act *as if* it

were true Troops cleaning up a captured town do not know whether or not there are snipers in a certain house, but if they are wise they presume that there are, they act in a way that would be appropriate if this were the case In doing so they have everything to gain and very little to lose Similarly, when we detect a pattern that persists through all contexts of kind K which we have observed, there are two possibilities we must consider in deciding how to proceed The pattern may be due to a necessity, in which case inductive predicting will succeed Alternatively the past pattern may have been a mere coincidence, due to no natural necessity If this should be the case, any expectation about what will happen in other K-contexts will only be correct by great good luck, and we cannot reasonably expect the pattern to persist (Actually the above dichotomy is a serious oversimplification, for there is a third possibility that the pattern is due to a tendency which makes such a pattern probable in K-contexts Sophisticated induction handles such cases by inferences to probabilistic laws, and thence to probable predictions The correct dichotomy is between an observed pattern being due to a tendency--the strongest of which are necessities--or, on the other hand, being a mere coincidence )

There are two objective possibilities and we do not know which is the case However we do know that if one of these is the case induction will work (or, if it should be a tendency rather than a necessity, will work in the long run), if the other should be the case there would be no rational way of selecting one of the many possible predictions Since we certainly do want to predict, it is methodologically rational to presume that the pattern we have detected is due to a natural necessity (or tendency) To do so exploits a possibility If our presumption should be correct, our predictions will succeed for the most part, if incorrect,

anything might happen. Given the latter possibility any prediction would only be a guess, and it would be irrational to expect an unguided guess to succeed. (The argument, of course needs elaboration. I have tried to do this elsewhere, especially Clendinnen [1996].)

I do not see that adopting a policy which is rational for predicting commits us to instrumentalism. Our goal of having beliefs which are practically efficacious is not inconsistent with seeking to represent the objective world as well as we can. Indeed in so far as we have reason to believe that a certain system will function better than any other in predicting, it can be argued that we thereby have reason to take that system as the best representation of reality.

The presumption which lies behind induction is, I believe, both stronger and weaker than Sankey suggests. We presume not only that there are uniformities in nature, but that the patterns we detect are instances of such uniformities. We then have enough to get induction going without additional presumptions concerning the degree of variability, or the prior probability of alternative hypotheses. However what we get from the crude inferences, sustained by no more than the bare rationality of induction, is by no means certain. It leads us to beliefs which are fallible but for which we have some warrant. As our policy of using induction persists we come to integrate the generalizations we accept into a system of wider and wider scope which covers more and more known facts. Thus we acquire more and more grounds for confidence in our body of beliefs. This can be expressed in probabilistic concepts by saying that a system of theory gives a basis for assigning prior probabilities to hypotheses. Then as evidence accumulates the resultant posterior probabilities of many hypotheses can become quite high.



As science has become integrated and unified in this way, a strong case has emerged for Ellis's view of natural kinds. It seems that there are a strictly limited number of fundamental kinds of entities, that a small number of properties are essential to all members of each kind, and the character of observable objects can be explained by their being structured out of fundamental components. So it seems to me that interpreting the uniformity of nature via this ontology rests on a substantial body of theoretical development, and that this development depends on a prior, less sophisticated form of inductive reasoning. Nevertheless I agree that even in its most primitive form, induction involves the attributing of natural necessities. We are initially justified in presuming such necessities, but that they are due to natural kinds of fundamental entities only emerges after the development of sophisticated theories.

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