The problem of induction in the light of contemporary Cognitivism

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ABSTRACT. This paper presents an original way to look at the problem of induction. It is based on the evidence that there is no logic justification in separating the universal affirmative proposition of an inductive inference on a certain topic from the opposite particular negative on the same topic, as far as both derive from the same observational premises. At the operational level, such a practice of separation could be explained, although probably not justified, through basic issues related to the so-called 'focal attention.' This offers a plausible alternative to the solution presented by Hume in terms of 'custom' or 'habit.'

1. Introduction

The problem of induction has been widely debated in epistemology, logic, and the philosophy of science, and in tackling such an issue the risk of providing a partial examination looms large. However, it is still possible – may be – to add something new. Nowadays, the term 'induction' refers to a family of related inferential processes, including for example much synthetic or contin-

gent reasoning. Therefore, this paper does not consider the relation between premises and the conclusion of the inductive inference, as traditionally done by many authorities in the past, nor deals with the nature of that relation, but it simply refers to logical implications involved by any conclusion inferred from a certain number of observational instances. The difference is substantial. For example, Aristotle's classical distinction between 'incomplete and complete' induction is based on the amount of premises of the inductive inference, and Ockham reflects on their required minimum number. Bacon discriminates the 'quality' of them, and indicates methods to obtain 'good instances' by means of the experience. During the last century, the 'inductive probability' of Reichenbach refers to the nature of the relation between premises and the conclusion; and Carnap stresses the continuum of all non-deductive inference derived from observation. Even the current distinction between induction made by enumeration and on a probabilistic basis or otherwise concerns similar aspects. The present discussion is focused, on the contrary, eminently on the conclusion of the inductive inference, whatever is the way through which it is obtained from single instances. And such an approach will disclose a different view of the problem of induction.
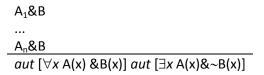
2. Towards a more inclusive conclusion

From the same observational premises by which we presume to obtain the general conclusion of any form of induction (made by simple enumeration or through a more sophisticated method, such as the probabilistic basis, or otherwise), we can always derive the particular negative proposition expressing the exact contradiction. Using the classical example of the crows, we can say that if 'n' crows are black, then every crow is black (universal affirmative on a certain topic), but it is also possible that some crows are not black (particular negative on the same topic). The latter is a type of 'counter-induction.' Whenever it is possible to infer an universal affirmative proposition from a homogeneous series of single objects or events, it is equally possible to infer from the same series the particular negative proposition diametrically opposite. This was clearly stated also by Hume, when he remarks that all we share the observation that the sun is risen every morning for a certain number of days, but "that the sun will not rise tomorrow is no less intelligible a proposition, and implies no more contradiction, than the affirmation, that it will rise." Whatever is intelligible, and can be distinctly conceived, implies no contradiction, and can never be proved false by any demonstrative argument or abstract reasoning à priori. Obviously, the term 'counter-induction' does not appear in

Hume's argument, anywhere in the Treatise or the Inquiry, but the same holds true for the term 'induction', as well known. Hume's concern is simply with inferences revealing causal connections. In both cases there is a non-deductive inference derived from observation, either universal or particular, and their opposition depend upon the context and nature of the trait or property to which they are applied. If we observe that one crow is black, then the property is 'colour of the plumage', and it is evidently impossible to state any universal affirmative different from every crow is black; but it is still possible that some crows are grey, or white, or blue, etc., and more simply that some crows are not black.

3. The *foxy* induction

Induction and counter-induction share a common inferential basis, and both of them are conceivable, imply no contradiction and are not false à priori (although they possess a different predictive value). Hence, joining the two opposite conclusions by means of an exclusive disjunction (aut-aut), we obtain a tautology: if 'n' crows are black, then either all crows are black or some crows are not. Considering a generic form of inference, in symbols we have:

$$\frac{\begin{array}{l} A_1 \& B \\ ... \\ A_n \& B \end{array}}{aut\ [\forall x\ A(x)\ \& B(x)]\ aut\ [\exists x\ A(x)\& \sim B(x)]}$$

This statement is trivially always true, especially in the context of modal logic. It represents an inclusive inference that seems 'cunning' on the one hand, though on the other it seems very 'naive', since its disjunctive conclusion states something and its opposite. In that lies its strength (as well as its weakness). Not without some irony, this enlarged inference can be defined as the 'induction of the fox,' or 'the foxy induction.' It does not solve the problem of induction at all, but shows it from another point of view, and, most importantly, allows us to give a new explanation of the inductive reasoning on the basis of Cognitivism, providing an alternative to the solution presented by Hume in terms of 'custom' or 'habit.

4. The problem of induction as an unjustified split

The problem of induction arises when splitting the 'either-or' in the aforementioned wide-ranging conclusion, retaining only its first part (i.e., the universal affirmative) and rejecting the second (i.e., the particular negative). This could be explained, for instance, (1) on the basis of operational difficulties concerning the idea that some crows are not black. From a practical point of view, in fact, this possibility does not make predictions on other colours, as does the statement that every crow is black. The unjustified split, however, could also be perpetrated (2) on the basis of psychological factors related to the so-called 'focal attention.' First, the universal affirmative attracts more attention than the particular negative; and, consequently, the mind maintains one at the expense of the other, thus ignoring the formal correctness of that logic operation. Secondly, the human mind shows indifference to the denial: saying non-B, at first glance, is like saying B. It is well-known that the denial is not an immediate target of the mind at the level of understanding, but a secondary result subsequently achieved. The sentence 'some crows are not black' suggests immediately the 'black,' and only after one thinks of other possible colours.

5. Conclusion

In some way, the reflection carried out by Hume appears in a new perspective: what explains – but does not justify – the inductive inference is not 'custom' or 'habit,' but the peculiar functioning of attention of the human mind. As Karl Popper observed, the central idea of the ante litteram Hume's psychological theory is that of repetition based upon similarity (or resemblance), but that is probably 'groundless.' The 'focal attention' principle offers a plausible alternative.

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