

Nelson Goodman & the New Riddle of Induction

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"Induction is the glory of science and the scandal of philosophy"

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1. Induction and Goodman's New Riddle

Induction is a kind of reasoning that infers a general law or principle from the observation of particular instances. Probably the two most popular problems, addressed by philosophers, are the original Problem of Induction, by David Hume, which discusses the difficulty of justifying the forms of inductive inference, and the New Riddle of Induction, by Nelson Goodman. In his discussion of the Problem of Induction, Hume observed that induction reasoning "was based solely on human habit and regularities to which our day-to-day existence has accustomed us." Goodman accepted this observation, but also highlights its inadequacy that while some regularities established habits (a piece of copper conducting electricity increases the credibility that all other pieces of copper conduct electricity) while some do not (the fact that a given man in the room has beard does not increase the credibility that other men in the room have beard). Goodman's New Riddle of Induction is how we can distinguish between "which regularities are appropriately habituating and which are not".

It is also beneficial to look at Goodman's view on justifying inductive reasoning since it gives better understanding of Goodman's argument on his Riddle. Goodman notes that the justification of deductive reasoning are their conformity with accepted deductive practice. Rules and particular inferences are justified by being brought into agreement with each other. He thinks that we can say the same thing about justification of induction: "Predictions are justified if they conform to valid canons of induction; and the canons are valid if and only if they accurately codify accepted inductive practice". But one can ask what the valid canons of induction are. Indeed, according to Goodman, the task of finding these canons of inductive inference is the task of explaining the validity of inductive reasoning: when a conclusion in an inductive argument can be allowed from a set of premises.

The inductive argument that is discussed by Goodman is of the following form:

1. Emerald 1 is Green
2. Emerald 2 is Green
3.
4. Emerald 1000 is Green

C. All Emeralds are Green

An induction reasoning of this form seems to be a good argument. Intuitively, what makes it look good is probably the fact that the premises are particular instances of the conclusion, which is a generalization. This can, therefore, urge us to accept that in an inductive argument, a generalization is confirmed by its instances. However, Goodman says that it is not necessary that all generalizations are confirmed by their instances. Goodman shows this by defining artificial predicates Grue and Bleen. An object is Grue if and only if the object is either (1) Green, and has been observed before now, or (2), Blue, and has not been observed before now. Similarly, the definition of Bleen is constructed with Blue having been observed before now and Green having been observed afterward. Although there are more than one interpretations of Grue's definition, the most convincing argument suggests that the object (or the emerald) in

Goodman's definition does not change color. What can be called Grue must have all of its observed instances be Green up until now, and Blue from now on.

Goodman's Riddle: Taking the inductive reasoning above, If we can conclude that All Emeralds are Green, it is equally true to conclude that All Emeralds are also Grue. The Grue argument shows the exactly same evidence as of Green, and therefore the next Emerald should be both Green and Grue. But this is, of course, absurd because the next observed Emerald is both Green, and Blue (because it is Grue). The Riddle is to explain why Induction can be used to conclude that Emeralds are Green but not to conclude that Emeralds are Grue.

Clearly, there is something wrong with the argument with Grue. However, could we say that there is also something wrong with the argument with Green, which allows us to reject the validity of induction reasoning? Or could we find the differences between these two inductive arguments? The latter question receive many responses.

2. Responses to The New Riddle

A response to the Riddle would naturally claim that there must be something wrong with the definition of Grue. Indeed, if we can find what is wrong with it, we could then restrict the canons of induction to only apply to inductive arguments that do not contain definitions that are defective in this way.

One of the first responses to the Riddle is that we accept the Green argument because Green is a more commonly used predicate than Grue. Clearly, this is not the case because Goodman says that if we start with Grue and Bleen, then Green can be defined in terms of Grue and Bleen: Green is "Grue if first observed before now, and Bleen otherwise. In other words, Green is commonly used only because it has been discovered first and become so, and this has nothing to do with the quality or correctness of the predicate.

Another response is at the artificially disjunctive definition of Grue. But Goodman notes that this does not work, also because Green can be disjunctively defined as above. Therefore to "deny the acceptability of the disjunctive definition of Grue" would be to "beg the question."

Another response aims at the fact that Grue refers to a specific time: that is Grue is a predicate of time. One can know, without knowing the time of observation, if an emerald is Green but cannot know that it is Grue. This makes the predicate seem artificial and it is natural to think that this is what makes the inductive argument illegitimate. Therefore, we should probably restrict inductive reasoning to predicates that do not reference to a specific time. However, the problem is that according to the above definition of Green, it is also a predicate of time. Therefore, to explain this is to "beg the question" again.

One can, then, immediately argue that, from the above response, Green can be defined in 2 possible ways, without reference to time and based on other terms with reference to time, and Grue can only defined with reference to time. In fact, Swineburn makes explicit distinction between qualitative and locational predicates. A qualitative predicate on X is one that can be assessed without knowing the temporal or spatial relation of X, whereas the locational predicate of X cannot be assessed without knowing this relation. The reason we accept the Green argument and reject the Grue argument is then because Green, although can be considered as a locational predicate, is also a qualitative predicate while

Grue is not qualitative. As a consequence, this suggests that we should restrict inductive reasoning to qualitative predicates.

3. Why should we bother?

A natural question to ask about Goodman's Riddle is that why we need to worry about such unfamiliar, and artificial predicates as Grue; after all, we will probably never see them in our daily lives. Answering this question, Goodman says that in regular science, it would probably be sufficient. In the case of philosophy, however, if we "seek a theory at all we cannot excuse gross anomalies" because they may bring us a "widespread and destructive malady". In other words, it may be enough to have small errors in our conception of the world for daily life, but these seemingly small mistakes, in the end, can add up to a great deal when looking for a precise theory of Induction.

REFERENCES

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- [3] <http://plato.stanford.edu/entries/induction-problem/#WhaPro>
- [4] [http://en.wikipedia.org/wiki/Grue_\(color\)](http://en.wikipedia.org/wiki/Grue_(color))