

# Review of: "Why naturalists must give up deduction, or return to Hume"

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The authors argue that there is an inconsistency in the naturalist attempt to, on the one hand, reject analyticity and a priori knowledge and, on the other hand, use deductive reasoning. The authors also refer to Hume's understanding of deductive reasoning which should be the standard. Since some of the previous commentators have already discussed Hume's position and since I am not a Hume expert, I will not say anything about this aspect. I will rather try to point out a potential misunderstanding of the naturalist position, as I understand them, that concerns the difference between the epistemic status of knowledge and the form of deductive reasoning. My criticism shall be read in the spirit of this platform as a suggestion and as an incitement for further revisions and for continuing thoughts.

The commentator Graham Oppy remarked that it would be helpful to provide a brief definition of the following three pairs: a priori/a posteriori, analytic/synthetic, and necessary/contingent that are relevant to determine the status of a judgment/proposition. It would be helpful because, from time to time, it seems that the authors are lumping them together, treating the analytic as the a priori and the necessary as the analytic. It might turn out that they are the same, but this needs to be proven first.

Furthermore, some of the cited philosophers seem to use these notions differently than the authors do. For instance, for Kripke 'necessary' and 'contingent', are not epistemic concepts or concepts concerning the status of an inference; they are rather metaphysical concepts (Kripke 1981, 35-36). Therefore, for Kripke, the proposition "Hesperus is Phosphorus" is necessarily true, not because it follows 'necessarily' from a conceptual truth but because Hesperus and Phosphorus are one and the same heavenly body in every possible world (I will return to this kind of identity statement later). The authors are not citing Kripke directly but they, at least, discuss his example and they are citing Devitt who refers to Kripke.

In contrast to that, Kripke uses the words 'a priori' and 'a posteriori' (empirically, based on experience) to determine the epistemic status of a piece of knowledge: How does a *specific* subject come to know that *p* is the case? By observation (a posterior) or without the need to observe anything (a priori). It seems to me that this is a proper definition. It is probably not in line with what Kant says. Kripke gives the example of someone learning that a certain number is prime. The person can learn it by calculating in the head (a priori) or by letting a computing machine calculate it and then by reading it off the screen (a posteriori) (ibid., 35).

This being said, I, independently of what Kripke or others claim, think that both concepts do not describe the *form* of reasoning or the *mode* of an inference (which concerns the main argumentative point of the paper). To specify the form or mode of an inference, we should reserve the notions 'analytic' and 'synthetic'. Drawing a conclusion from a pair of

premises has, *prima facie*, nothing to do with observation or the lack of observation. It rather has something to do with how much I can get out of the premises and *in virtue of* what can I draw the conclusion (based on the premises). Is the inference such that I can draw the conclusion based on the *logical form* of the inference alone? Then the inference or the reasoning is analytical (or the inference or the reasoning leads to an analytical truth). Do I need to analyze the meaning of the words entailed in the premises (their conceptual or semantical content) to draw the conclusion? Then the inference or the reasoning is synthetic (or the inference or the reasoning leads to a synthetic truth).

Of course, these are just suggestions how to distinguish the abovementioned three pairs. The authors might not agree with that, but I think such a distinction would be helpful for the reader to understand the argument and also for the argument to have bite. At least, making this distinction in the way I did might help the authors to understand the following central point of criticism that I would like to share with them.

There is a difference between the (1) claim that every piece of *knowledge* is (at least partially) empirical (or known a posteriori) in the sense that it is justified empirically in a direct or indirect way (this seems to be Devitt's position, cited on page 2) and the (2) claim that drawing a deductive *inference* requires further a posteriori knowledge or is justified a posteriori (This seems to be the position of the putative naturalist who is the target of this paper). Claim (1) might be true but claim (2) is definitely false. Claim (2) is false because deduction, by definition, is a form of inference in which the conclusion is logically *ensured* by the premises in virtue of the premises' conceptual or semantical content or in virtue of its bare logical form. This, as I take it, is what the authors also call 'the freshman's position'. (Graham Oppy, correctly remarked that the word 'deduction' is polysemous, that it can both refer to a logical relation between propositions and to the psychological act of inferring a fact from a rule or law. But since the psychological process depends on the form of inference, the differences between these two notions can be neglected here).

It seems to me that the authors confuse these two claims from time to time, or, at least, they do not distinguish them properly; but such a distinction is necessary in order to launch their criticism against 'all' naturalists without committing the straw man fallacy. I do not think that there is any naturalist agreeing with (2) but there are certainly many agreeing with (1). Consider the classical modus ponens to see the difference:

- i. If it is raining, the streets will get wet
- ii. It is raining
- iii. The streets will get wet

The inference is valid, and it is valid in virtue of the logical form alone. It is a logical truth *If, but only if*, (i) and (ii) are true, (iii) is also true. There is no a posterior knowledge needed to infer (iii) from the conjunction of (i) and (ii) alone. No observation is needed. So, the inference shows that (2) is false. That, however, does not mean that (1) is false. There is no a posteriori knowledge needed to *infer* (iii) from (i) and (ii), but there might be a posteriori knowledge needed to *prove* that (i) and (ii) are true. Claim (1) concerns the *epistemic status* of logically simple propositions or pieces of knowledge (by 'logically simple propositions' I mean propositions that cannot be decomposed into a logical inference. A logically complex proposition would be "If Peter is a duck, he is a duck"). Claim (2) concerns the *mode* or *form* of deductive inferences.

Furthermore, (i), (ii), and (iii) are, if they are true at all, *contingently* true. That means they could also have been false. (i) is a scientific law or a rule that is based on induction (a limited number of observations and generalization) and is, therefore, fallible. (ii) is an observed fact that can, due to bad observation turn out to be not the case, too, and (iii) is an anticipated fact that can also turn out to be not the case if both (i) and (ii) are not the case. In contrast to that, the *whole* inference is *necessarily* true. It could not have been wrong.

The authors mentioned Quine and his holistic approach (the web of beliefs) towards knowledge as one of the naturalists that they are arguing against. If I understand Quine correctly, he is arguing exactly for claim (1) but not for claim (2). In fact, he accepts the analyticity of purely logical truths such as: “All unmarried men are unmarried” (Quine 1980, 22). With Quine, we can draw plenty of deductive inferences from various logically simple propositions. Accordingly, the inferential relationship *as such*, even for Quine, is *not* justified a posteriori. However, every single of these logically simple propositions must be empirically justified by being (directly or indirectly) connected to a proposition grounded in observation. When Quine says that there is no a priori knowledge in, for instance, *Two Dogmas of Empiricism*, he means exactly that, namely that every piece of knowledge must be holistically embedded in a web of beliefs whose edges are formed by propositions grounded in direct observation (ibid. 1980, 42-43). He does not say that drawing a conclusion from a pair of premises itself requires direct observation.

Now, what about the mathematical propositions? The authors refer to a quote by Devitt (page 16) who argues that the ‘laws’ of mathematic might also be confirmed in such an empirical holistic way. Mathematics is, obviously, not an empirical science. Its laws are not really falsifiable by observation. Which potential observation could disprove that  $1+2=3$ ? This is so because mathematical entities (numbers) are highly abstracted quantities and doing math means to operate within a formal rule-based system. Philosophers such as Frege argue that mathematics can be entirely deduced from formal logic and, therefore, constitutes a system that does not need to be justified by any kind of experience or observation. But I am not so sure if this will work. Mathematics is based on axioms and axioms are not drawn from further more basic premises but postulated. One could, for instance, argue that the Peano axioms characterizing the properties of natural numbers are grounded in empirical observation, namely in very simple observation such as the following: If you add an object of the same kind to another object of the same kind, your number of objects will consist of two objects of the same kind. Consequently, more has to be said to prove that ‘the laws of mathematics’ or ‘mathematical propositions’ are not also embedded in an empirical, holistic network.

There seem to be some logically simple propositions that do not need any empirical justification such as “All bachelors are male” or “All bachelors are unmarried”, and whose existence threatens the truth of claim (1). But it is controversial whether these propositions constitute a form of knowledge, at all. One could argue that they constitute some form of *definitional* knowledge. Quine discusses this option and offers two possible interpretations: Either a lexicographer *found out* that bachelors are defined as unmarried men, and then, based on this insight, formulated the proposition. But then, the proposition (that bachelors are unmarried men) would be *empirical* and, therefore, known a posteriori, because the lexicographer had to do some research which could turn out to be wrong (Quine 1980, 24). Or, alternatively, someone with enough authority in a community normatively determined that ‘bachelor’, henceforth, is an *abbreviation* for ‘unmarried

men' (ibid., 26). In that case, the proposition (that bachelors are unmarried men) would not be based on observation and its truth would be known a priori, but it would also not provide any kind of knowledge. There might be another option to show that the proposition provides both some kind of knowledge and is also entirely a priori (not based on any kind of observation), but I cannot think of any.

Let me, at the end, turn to the example of Hesperus and Phosphorus. I think that it is true that the identity statement "Hesperus is Phosphorus" is a contingent statement. Therefore, I agree with the authors and disagree with Kripke (and Graham Oppy) and his notion of the necessary a posteriori. However, I also think that the authors need to provide further arguments to show that (and why) Kripke was wrong. For instance, the authors argue that astronomers with better equipment could show that the appearances on the sky are appearances of two distinct heavenly bodies (page 16). That is true but Kripke, in fact, admits that it can turn out that we named two distinct heavenly bodies 'Hesperus' and 'Phosphorus', respectively; that we encountered two distinct heavenly bodies in each naming situation (Kripke 1981, 104). But his argument for the necessary a posteriori is that, *if* Hesperus is identical to Phosphorus, there is still no possible world in which they could have been distinct. Hence, they are *necessarily* identical. Why is that so and what is the different between these two analyses?

I think Kripke argues like that because he understands identity as *areflexive relation* – a relation between an object and itself (ibid., 108). If the identity statement "Hesperus is Phosphorus" simply states that the referent of both names is identical to itself, then, given that both names refer to the same object – the Venus –, the statement is *necessarily* true because, trivially, *every* object is identical to itself. It cannot not be identical to itself. But one need not treat identity as a reflexive relation. One can also treat it as a relation between names or, as (I think) Frege does, a relation between 'modes of givenness' (ways in which objects are given to observers). In these cases, one could argue that Hesperus can turn out to be not Phosphorus in the sense that the heavenly body that we named 'Hesperus' (or that appeared in the evening at the sky) can turn out to be distinct from the heavenly body that we named 'Phosphorus' (or that appeared in the morning at the sky).

Before I end the review, I would like to add some formal remarks. I already mentioned at the beginning of the review that some definitions and clarifications of technical terms might be useful for the reader to understand the argument. Further information could be added to facilitate the reading flow and to support the argumentative structure.

For instance, on page 1, the authors write: "Naturalists typically reject the existence of a priori knowledge" and "there is much evidence of deductive argumentation in the work of philosophical naturalists". It has already been mentioned by the other commentators that naturalism is a field of heterogeneous positions. Which naturalists reject that and where is the evidence? Examples should immediately be given.

Similarly, on page 7: "The difficulty is that naturalists, we know very well do not want to be logical positivists ... the rest is history ... we have been told and told again ..." The authors should not presuppose this knowledge but rather provide it (in a footnote for instance) if it necessary for the argument, or not mention it at all.

The quotes on page 8 and 9 are not very well embedded in the argumentative structure and in the flow of the text in

general. It might be better to delete some of them and to write an own paragraph with the important points of the quotes paraphrased.

Kripke, Saul (1981) *Naming and Necessity*. Malden: Blackwell.

Quine, W.V.O. (1980) "Two Dogmas of Empiricism" in *From a Logical Point of View*. Cambridge, London: Harvard University Press. 20-46.