

“Platonic” Thought Experiments? Mundane but Adaptive.

One of the fields where the battle between empiricism and rationalism in epistemology is fought is the domain of thought experiments. On one extreme, Norton (1996, 2004a,b) claims that thought arguments are nothing but “ordinary argumentation that is disguised in a vivid pictorial or narrative form” (Norton, 2004b, 45). On the other, Brown (1991a,b, 2004, 2008) embraces Platonism and insists that thought experiments provide us with insight into the abstract realm of laws of nature, resulting in what he calls “*a priori* (though still fallible) knowledge of nature” (Brown, 2008).

Brown rests his case on the existence of what he calls “platonic” thought experiments. Those are thought experiments which not only perform a destructive task by motivating the rejection of one of the initially accepted beliefs, but also positively lead to the correct resolution of the encountered anomaly afterwards. According to Brown (1991a, 76-78), they provide us with knowledge that is *a priori*, because “it is not based on new empirical evidence nor is it merely logically derived from old data”. His explanation for how this knowledge is achieved is that such thought experiments allow us to perceive the abstract realm of laws of nature. He argues against Norton’s view that thought experiments are arguments by claiming that the positive solutions cannot be reached by reasoning, because no sensible type of reasoning is available once a contradiction is encountered. In a similar vein, Bishop (1999) argues that thought experiments cannot be arguments because there are cases where two people use one and the same thought experiment to justify two opposite views.

Norton doesn’t explicitly address this concern. In general, he doesn’t seem to care too much about logical details. His approach to “platonic” thought experiment (Norton, 1996, 341-3) is logically quite straightforward, and there are reasons to consider it a bit too simplistic (Gendler, 1998; Schrenk, 2004; Gendler, 2004, 2007).

In a sense, on Gendler’s view, visualization in thought experiments provides certain (possibly tacit) assumptions with entrenchment levels that straightforward considerations of explicitly stated premisses couldn’t yield. Gendler’s approach seems plausible, and she makes an interesting case against Norton’s claim that the “picturesque clothing” of thought experiments doesn’t do more than “give them special rhetorical powers” (Norton, 2004a).

However, this doesn’t mean that the enterprise of reconstructing thought experiments *as* arguments is pointless. Indeed, a thought experiment can err (see Norton 2004b for examples), and the bare fact that certain (possibly tacit) beliefs are more entrenched than certain others doesn’t mean that we will always be right if we reject the less entrenched assumptions when faced with a contradiction. This motivates the search for a more detailed understanding of all assumptions needed to obtain the result of a given thought experiment. In other words, even if a thought experiment leads us to a certain belief, it seems worthwhile to see exactly what assumptions exactly are at play, and what reasons we have to accept them, even if we tend to accept them without hesitation or even assume them tacitly without thinking about them too much.

As far as premise entrenchment and revision are involved, Gendler’s account seems quite natural. For the purpose of a formalized reconstruction, however, it is insufficient, because such steps are described informally in a metalanguage, and the fact that they seem to lead to a certain conclusion doesn’t completely undermine Brown’s suggestion that no sensible logic deals with such arguments. Thus, it would be useful to have a logic which can handle arguments of the “platonic” sort. Within such a logic we should be able to trace various levels of entrenchment of the premises involved, to reject some of the previous steps upon encountering a contradiction and to reason in a sensible manner even in face of contradiction without running into logical triviality (all of this within one and the same argument by means of a single logical system).

I will argue that there actually is a system that satisfies these requirements. It is a variant of an adaptive logic (some basic papers about adaptive logics are Batens 1995, 2004, 2007). I will explain what adaptive logics and prioritized adaptive logics (as formulated in Verhoeven 2003) are, and reconstruct certain Platonic thought experiment within this formal framework (Galileo’s thought experiment about falling bodies and Einstein’s Clock-in-the-Box thought experiment).

On my approach, adaptive formal framework will be argued to be a convenient tool for capturing how thought experiments “assist in the elimination of prior confusion by forcing the scientist to recognize contradictions that had been inherent in his way of thinking from the start” even though “the elimination of existing confusion does not seem to demand additional empirical data” (Kuhn, 1977, 242). The philosophical upshot will be that Brown’s argument that some sort of platonic insight must be involved because logic can’t handle further arguments once a contradiction is derived, is unsound.

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