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The syntheticity of time: Comments on Fang's critique of divine computers

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THE SYNTHETICITY OF TIME

Comments on Fang's Critique of Divine Computers

In a recent article in this journal [Phil. Math., II, v.4 (1989), n.2, pp.?- ?] J. Fang argues that we must not be fooled by A.J. Ayer (God rest his soul!) and his cohorts into believing that mathematical knowledge has an analytic a priori status. Even computers, he reminds us, take some amount of time to perform their calculations. The simplicity of Kant's infamous example of a mathematical proposition (7+5=12) is "partly to blame" for "mislead[ing] scholars in the direction of neglecting the temporal element"; yet a brief instant of time is required to grasp even this simple truth. If Kant were alive today, "and if he had had a little more mathematical savvy", Fang explains, he could have used the latest example of the largest prime number (391,581 x 2 216,193 - 1) as a better example of the "synthetic a priori" character of mathematics. The reason Fang is so intent upon emphasizing the temporal character of mathematics is that he wishes to avoid "the uncritical mixing of ... a theology and a philosophy of mathematics." For "in the light of the Computer Age today: finitism is king!" Although Kant's aim was explicitly "to study the 'human' ... faculty", Fang claims that even he did not adequatley emphasize "the clearly and concretely distinguishable line of demarcation between the human and divine faculties."

Fang's basic point, that mathematics takes time because it is a "human, all too human" discipline, is well made. However, there are several problems with the details of his argument which ought to be pointed out. First, the alternative he suggests to Kant's simple equation is not actually a proposition at all, but a calculation; so it cannot be used to demonstrate the synthetic a priori character of mathematical propositions. Fang would defend himself, no doubt, by noting that the solution to the calculation is 65,087 digits long, so it would have taken a large chunk of that issue just to write the calculation in the form of an equation (to say nothing of the typesetting expense!).

Nevertheless, if he wished to use it as an example of a mathematical proposition, he should at least have included "= ..." after the calculation itself. Or, alternatively, he could have written it as:

391,581 x 2216,193 - 1 = (a prime number with 65,087 digits).

The second problem is more substantial. Fang assumes throughout his article that in order to demonstrate the synthetic a priori status of mathematical propositions, all he has to do is to show that it takes time to carry out the calculations they involve. (For example, in note 28 he mentions someone who spent twenty years making a series of calculations which turned out to be erroneous, and suggests that this is evidedence against the analytic a priority of mathematics.) Presumably, this is because he thinks that analytic truths can be known immediately and that almost everyone agrees that mathematical calculation is a priori [see e.g. his notes 26 and 28]. However, such assumptions ignore the fact that the "actual process" of discovering or learning to understand analytic truths, considered as an empirical activity, takes time just as much as does the process of discovering or learning to understand any sythetic truth. (Kant himself suggests this when he says [in Critique of Pure Reason, tr. N. Kemp Smith, p.B15] "I may analyse my concept of such a possible sum as long as I please...".) However, the syntheticity in question for such temporal matters is entirely a posteriori. In other words, any time we look at a real, "lived experience" in this way, with a view towards highlighting its temporal nature, we are adopting the empirical perspective, the result of which is always to aim at achieving synthetic a posteriori truth. Time itself is synthetic a priori, according to Kant, not particular times; hence, everything else which is also synthetic a priori must obviously be in some sense atemporal (i.e., the justification for its truth must come from a source other than the particular experiences we have in time and space). And this means the temporal character of all mathematical calculations is irrelevant to the debate as to whether the a priority of mathematics is synthetic or analytic.

The third problem is directly related to the second. Because he does not locate the synthetic a priori in its proper (transcendental, and thus atemporal) frame of reference, he underestimates the extent to which Kant was intentionally distinguishing between the human and divine perspectives (as opposed to simply describing the former). Indeed, the "synthetic a priori" is itself intended by Kant to define the boundary line between the human (the immanent) and the divine (the transcendent). Defining this boundary line and its implications was the primary task of Kant's entire Critical philosophy. In order to show conclusively (in Kantian terms) that computers are human, rather than divine machines, it is indeed important to demonstrate that they require time (and space) as a kind of "synthetic a priori" condition for the possibility of their operation. But this alone is not sufficient. A full proof would require a further demonstration that the principles upon which their functioning depends correspond directly to those necessary for the possibility of human knowledge. (An example of such a parallel would be to demonstrate how algorithms do for the computer what Kant says "schematism" does for human understanding.)

Finally, there remains the question as to whether Kant was right in assigning a synthetic a priori status to propositions such as 7+5=12, as Fang clearly wishes us to believe he is. However, as I have presented my views on this matter in sufficient detail elsewhere [see my article, "A Priori Knowledge in Perspective: (2) Naming, Necessity and the Analytic A Posteriori", The Review of Metaphysics 41.2 (Dec. 1987), pp.273-276,279-282], I will conclude here merely by stating that if we wish to regard a particular mathematical proposition as having a synthetic a priori status, we ought to go about demonstrating this not by arguing that the mathematical calculation in question takes time to perform as an empirical task, but rather that it is in some sense necessary for the very possibility of the mathematical aspect of human experience.