

Peer Review

Review of: "The Vicarage Iconoclast: Whitehead, Leibniz, Relativity and the Quantum"

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Review of 'The Vicarage Iconoclast'

I very much enjoyed reading this essay on the 'Vicarage Iconoclast' and agree with the author's strategy of setting up a most engaging dialogue. As a bookend to this essay, I can imagine that the final paragraph could briefly refer back to the 'iconoclast' notion.

The problem with various forms of a 'God's-eye' view is both well expressed and often difficult to avoid, even by the author. In particular, it appears to me that reference to "a spacetime region" within "a spacetime region in which no events have yet occurred for that event" (page 33, 14th line from bottom) is inconsistent with the author's intent within that same paragraph to critique "the tendency to spatialize time, rightly decried by Bergson" (10-11th lines from bottom of Review Article page). As the author shows so well, the presupposition of some form of spacetime actualism (projected properly for modeling via "human imagination" but all too often improperly 'ontologized' as in multiverse talk) permeates standard discussions of relativity and cosmology with talk of spacetime fabric, 'foam' etc.

This 'substantialist view' of spacetime is systematically criticised by Kastner (2022, pp. 221-222) in a way consistent with Whitehead's rejection of "spacetime composed of events' versus a relationship between events/possibilities. Currently, the first paragraph of page 32 implies that Kastner holds to spacetime actualism, which is incorrect. In contrast, Kastner's mentor John Cramer, originator of the TI interpretation, did hold to spacetime actualism, which is why he

found Kastner's possibilist interpretation as "an unnecessarily abstract roadblock to visualization" (Cramer, *The Quantum Handshake*, p. 71 footnote). Perhaps reference to Cramer's book could be used instead to set up the contrast. Although TI transactions are basically atemporal, Cramer (unlike Kastner) allows for retrocausal effects (see Cramer p. 37). As I understand it, reference to TI in the literature almost always is making reference to Cramer's framing of TI, and not to Kastner's 'possibilist' version. The common rejection of TI is often based on this retrocausal feature, which is not part of Kastner's approach and which IMHO is the closest framework we have of the core of quantum physics (as first discovered by Heisenberg 100 years ago) without ad hoc additions or classical metaphysics overlays (such as spacetime actualism); arguably the only addition is the Feynman propagator / causal set theory, which then enables a solution to the quantum measurement problem, the Born rule, etc.

While reading through this essay, I spotted two minor typos, as follows:

p. 22, line 8, change "Whiteside" to "Whitehead"

p. 26, 7th line from bottom: delete duplication of "are" at the beginning of the line.

p. 33, for "spacetime region" 14th line from bottom of page, perhaps qualify this by adding something like "an imaginatively projected 'spacetime region'"

Also, in general, I recommend the use of the phrase "quantum physics" in place of "quantum mechanics" (in spite of this common usage), and limit the latter phrase to

Declarations

Potential competing interests: No potential competing interests to declare.