

Comments and Response

A FLOWING TIME INTERPRETATION OF SPECIAL RELATIVITY VIA AN INHOMOGENEOUS TENSE-AS-RELATIONAL ONTOLOGY: A COMMENT ON SAULSON

“Flowing time” is the unquestioned assumption not only in our daily experience (“when’s dinner?”) but embedded into every academic discipline from physics (pace special relativity, SR) to evolutionary biology, history, jurisprudence, political science, psychology, the neurosciences, and Christian theology. But it is severely challenged both by the philosophical issues raised by traditional debates in the philosophy of time reaching back to Parmenides and Plato, but especially by the geometrical interpretation of SR constructed by Minkowski in 1908, an interpretation which is now ubiquitously identified with SR itself: spacetime is a geometry whose metric (i.e., the measure of the distance between points) seems close to, but is importantly very different from, Euclidean geometry. Here, I will briefly treat the traditional debates on flowing time and then, again very briefly, turn to the debates around SR and the challenge to flowing time of the “block universe.” Finally, I will comment on Prof. Peter Paulson’s brief and *inaccurate* statement about my own position in his *Zygon: Journal of Religion and Science* article in this issue (December 2021).

First, the traditional debates on time: In 1927, J. M. E. McTaggart notably defended a “static time” interpretation of SR by pointing to what he considered as a fundamental paradox in any flowing time rendition:

Past, present and future are incompatible determinations. Every event must be one or the other. . . . But every event has them all. . . . How is this consistent with their being incompatible?

Shortly thereafter, C. D. Broad claimed to resolve McTaggart’s paradox by arguing:

I cannot myself see that there is any contradiction to be avoided. When it is said that pastness, presentness, and futurity are incompatible predicates, this is true only in the sense that no one term could have two of them simultaneously or timelessly. . . . [But] certain terms have them successively.

In my opinion, while helpful, Broad’s response to McTaggart fails because of his assumption that tenses such as past and future are Aristotelian-like predicates of events, as betrayed by his use of the term “successively.” This term seems to assume a new temporal component, a “second time” if you like, introduced into his response.

My proposed solution¹ to overcome McTaggart’s apparent contradictions and picking up on Broad’s response involves the idea that past and future tenses are *not* properties of events. Instead they are *relations* between events suggestive of Leibniz’s philosophy. I call this solution “a tense-as-relational A-theory (flowing

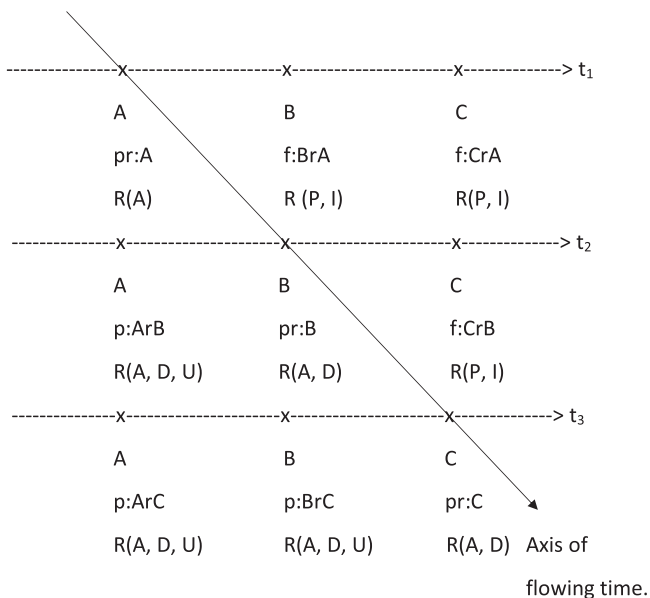


Figure 1. The flow of time. See Figure 12.2 in Russell (2012, 144). Please note: This schematic is similar to a “family tree diagram” or “game tree diagram.” It is not a geometrical depiction of time and its relations.

time theory) of time.” They are indicated in the schematic shown in Figure 1, where for each of the three different moments in time t_1 , t_2 , and t_3 , we see past and future relations between events A, B, and C when each is present. Moreover, these relations each carry an *inhomogeneous* ontological weight in addition to the ontology of the events themselves, as indicated in the schematic where:

- at the moment t_2 when event B is present, it is real (R), actual (A), and determinate (D);
- at this same moment t_2 , event A is real, actual, and determinate but forever unavailable (A, D, U); and
- at the same moment event C is future, potentially real, and indeterminate (P, I).

Because these ontologies vary according to my proposed inhomogeneous ontology of flowing time, I call this interpretation “an inhomogeneous tense-as-relational A-theory (flowing time theory) of time.” I believe this offers a novel solution to the traditional philosophical interpretation of time as flowing.

Next, I expand this same approach to SR, focusing in particular on such famous spacetime “paradoxes” as the “pole-in-the-barn,” and I seek to show that no contradictions arise here from applying the same arguments from traditional flowing time positions (above) to the context of SR. I also suggest a response to William Lane Craig to the effect that this interpretation is preferable to his,

particularly in light of the difficulties he raises for such SR effects as time-dilation and length-contraction when interpreted, as he does, as physical effects in nature and not geometrical aspects of spacetime.

My views were discussed briefly by Professor Peter Saulson in his essay, “The Nature of Time as a Puzzle for Naturalism.” Prof. Saulson begins with the fact that the light cone in SR that accompanies an event P in spacetime divides the world into the causal future, the causal past, and the acausal elsewhere. He notes that events A and B in the elsewhere “have no determinate temporal relation.” He then claims that “this ‘elsewhere’ relation is precisely the one that gives the difficulty in establishing absolute simultaneity and temporal order, so it does not appear that Russell has rescued the flow of time from within the Theory of Relativity.”

Prof. Saulson is correct that this indeterminate relation is one factor in undermining absolute simultaneity in SR, although there are complications he does not mention (such as clock synchronization along with time dilation).² The problem is that I *do not* seek to establish absolute simultaneity (although Craig can be read that way). Instead, I interpret the “elsewhere” region as containing an infinite number of axes of simultaneity, each one associated with a different inertial observer all in relative motion. I celebrate this as the “Simultaneity Richness” of the world according to SR. Theologically in light of this “richness,” I claim that God is present to every observer in their own axis of simultaneity. I then contrast this view with what I call the “Austere Paucity” of the anthropocentric world of classical physics, with its unique, global axis of simultaneity and the concomitant suppression of the elsewhere when $v \rightarrow c$, where v is the relative velocity of the observer and c is the speed of light (Russell 2012, 313).

I look forward to read the response from Prof. Saulson to my comments.

NOTES

1. Russell (2012). See p. 130 for the quotation from McTaggart and p. 133 for the quotation from Broad.
2. See “The Downfall of the Present” in Russell (2012, 234–37).

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REFERENCE

- Russell, Robert John. 2012. *Time in Eternity: Pannenberg, Physics, and Eschatology in Creative Mutual Interaction*. Notre Dame, IN: University of Notre Dame Press.