

Beyond Relativity: A Novel Growing-Block Theory in Minkowski Spacetime

Is the future fixed or open? The eternalist says it is fixed — that is, its events already belong to a complete four-dimensional reality. Yet one might intuitively think otherwise. For time seems to pass as new events come into existence. But special relativity creates a problem for this intuition; it seems to show that there is no objective division between past, present, and future. So, if one says, “The future is open,” another might ask, “Whose future?” After all, on relativity, an event in one inertial frame’s future may be in another’s past, and if the event is fixed in one frame’s past, then how can it be open in another frame’s future? It cannot — it is the same event! This is GBT’s challenge: relativity provides no unique, frame-independent surface of simultaneity, so GBT must explain growth without a privileged global edge of becoming.

To overcome this challenge, I develop and defend a novel version of GBT by distinguishing two senses of the future: a “relative future” and a “further future.” The relative future consists of actualized events that are spacelike-separated from a given actualized event and classified by one inertial frame as later than it, but by another as simultaneous with or earlier than it. The further future, by contrast, consists of possible physical occurrences that have not yet become part of concrete reality. And since no concrete further-future event yet exists, there is no event to which any inertial frame could assign a temporal coordinate or simultaneity relation. The further future is therefore beyond relativity — that is, beyond its constraints. This does not deny Minkowski geometry; it denies that representational completeness entails concrete completeness.

The argument proceeds in three steps. First, the fact that events in the relative future are already fixed and bear relativistic relations does not entail that the further future already exists within a complete four-dimensional block. Second, GBT *can* represent growth without a global edge. For if $A\tau$ represents the whole of actualized reality, the proper-subset relation $A\tau \subsetneq A\tau'$ represents its enlargement: $A\tau'$ preserves everything already actualized while adding at least one object or event. And since τ and τ' label domains rather than spacetime slices or coordinate times, this growth requires neither a universal surface of simultaneity nor an external meta-time. Third, extending Stein’s local form of becoming, I ground actualization in interactions among objects and fields already within $A\tau$. Through these interactions, new configurations and relations produce new events and composite objects. An event does not first occur and then enter the block through a separate process ordered by meta-time; it occurs locally in spacetime, and its occurrence is itself its actualization and the enlargement of $A\tau$ into $A\tau'$. Granted, the eternalist is right that an event fixed in one frame’s past cannot remain open in another frame’s future. But the further future contains no such event. Thus, when asked, “Is the future open?” we can echo a familiar reply: “Which future?”