Branching space–times

Prof. Tomasz Placek, PhD

Jagiellonian University in Kraków
Institute of Philosophy

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Abstracts:

An Introduction to Branching space-times (April 27th)

Belnap's (*Synthese* 1992) theory of branching space-times (BST) provides a rigorous framework accommodating modal aspects as well as (rudimentary relativistic) spatiotemporal aspects. In a later development, the theory has been equipped with (kolmogorovian) probabilities, naturally interpreted as single case objective probabilities in this framework. Recently, the theory has been applied to analyzing causation. Another significant area is BST analysis of Bell-type theorems and quantum non-locality. The talk begins with sketching the motivations for BST as well as the background theory of branching time. I will survey the axioms of the theory and some consequences thereof. Finally, I will point to some recent developments and applications of BST mentioned above.

The problem of now - a BST perspective (April 28th)

My aim is to apply BST to the problem of "now". Starting with Goedel, rigorous proofs have been constructed to the effect that special relativity allows for only trivial notions of being co-present: either there is a single event co-present with a given event *e*, namely event *e* itself, or all events are co-present with any given event. This provides a hostile environment for the notion of "now". I argue that, if we supplement special relativity with some indeterministic picture of the world, it is possible to define a non-trivial notion of being co-present and then of "now", by elaborating the following intuition: something is in the future, because it is possible, but not yet settled to happen. The resulting "now" has interesting topological properties.