Towards an Ontological Framework for Events as Transitions among Situations

Fabrício H. Rodrigues[1]

[1]*Federal University of Rio Grande do Sul, Av. Paulo Gama 110, Farroupilha, Porto Alegre, Rio Grande do Sul, Brazil*

Abstract

Events are broadly defined as things that happen in time involving continuants as participants [1]. Besides that, there are some trends regarding the happening nature of events. One of them is what we call the *transition view*, which regards an event as a transition among situations (i.e., instantaneous, particular configurations of some part of reality that is understood as a whole [2][3]). Another is what we call the *manifestation view*, according to which events are manifestations of certain properties (in special, dispositions) of their participants [?].

Current ontologies offer rich support to build a great variety of intended models of events according to this account, allowing the representation of changes in participants, of temporal parts of events, of causation between events, and other aspects. However, they do not seem to be so effective in constraining unintended models of events. In particular, they seem to lack good criteria for deciding whether or not a given succession of situations corresponds to a genuine event and for deciding which continuants participate in a given event at each time.

If the role of ontologies involves carving reality at its joints, we believe that identifying suitable constraints over the notion of event can reveal informative patterns to compose an ontological framework to guide the process of analyzing and modeling this type of entity. Thus, in this work, we adopt the transition view of events and propose the use of the notion of system (i.e., a set of interconnected objects [4]) as the invariant element that is present in each of the successive situations in the course of an event. With that, an event is the transition among situations that consist in snapshots of a single system at different times and we say that such a system delimits the event. The participants of the event are the components of the invariant system and the connections that unify such a system are defined in terms of the relationships between participants that contribute to activating the dispositions that are manifested in the event. With that, we provide criteria to decide whether or not a succession of situations correspond to a genuine event (i.e., being a succession of snapshots of a system) and to decide which are the participants of an event at each time (i.e., the continuants that are part of the delimiting system at the time).

Based on that, we have derived some types of event. Events may be open or closed according to whether the system that delimits it is open or closed to the entry/exit of components and/or

amounts of basic ontological substrate (i.e., the stuff that ultimately constitutes objects [5]). In the case of open events, we also have auxiliary events corresponding entry/exit of participants. Besides that, we have derived 5 types of event according to the pattern of variation among the situations (i.e., stasis, qualitative change, identity change, creation, and destruction) [5]. Finally, we intend to apply this framework to model both natural events (e.g., geological processes) and artificial ones (e.g., manufacturing processes).

Acknowledgments

References

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