Relational Ontology for Space and Time

Steven DP Moore[1*]

[1*]Independent Researcher, Milton, Ontario, Canada.

Corresponding author(s). E-mail(s):
steven.moore86400@protonmail.com;

Abstract

Discrete quantum or continuous sensory-observable entities constitute a real system that admits multiple mathematical representations. In relativistic spacetime ontology, space and time are modelled as inseparable, dynamic, and coupled to mass, forces, momentum, and gravity, forming a continuous four-dimensional continuum with Riemannian geometry defined relative to an observer's frame. Heisenberg's uncertainty principle highlights a fundamental limit in jointly defining position and momentum, motivating alternative frameworks that focus on position. This work presents a developing relational ontology that relies solely on position, employing intrinsic discrete Euclidean geometry to map spatial structures using object-oriented zero-dimensional terminal and centroidal points, rather than coordinates in abstract three-dimensional space. A set of object-oriented points of no parts are members of a shared static Euclidean subsystem, each subsystem indexed by an anchored zero-time point. A duration magnitude, defined between two anchored temporal points, is independent of the spatial magnitudes between point locations within a subsystem. Length and time dimensional elements can be paired to generate bi-dimensional spatiotemporal elements to model motion. Object-oriented geometric magnitudes can be partitioned into relational units, and using fixed-point modelling along with various transformations, three-dimensional object models can be constructed from a static spatial subsystem dataset. Measurement of these magnitudes is achieved through extrinsic dynamical tools.

Analogous to the Sapir–Whorf hypothesis in linguistics, I proposed that the choice of mathematical abstraction in modelling a real system shapes the conceptualization of physical phenomena and the resulting theoretical constructs. A developing position-based relational ontology, representing a real system, suggests an alternative mathematical representation for conceptualizing observed phenomena and introduces novel theoretical paths for both classical and quantum studies in physics.