

Unity and change in Newton's physics

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Abstract

Here is a problem at the heart of the metaphysics of the natural world: How, if at all, can a unity undergo change? This problem incorporates two questions. First, in virtue of what is a thing a genuine unity? And second, the issue that's more obvious in the formulation of the question: how, if at all, can such a unity undergo change? There are two basic approaches to this problem present in Newton's physics. The more familiar grounds unity and change in space and time, the second in the laws of nature. The latter approach is set out in this paper. I argue that a law-constitutive approach to the entities that are the subject-matter of Newton's physics offers a principle of unity for things, be they simple or composite, and for the parts of composites, such that we also gain an account of what it is for a genuine unity to undergo change in its properties whilst retaining its numerical identity. I end by arguing that the law-constitutive approach favors endurantism over perdurantism. This paper is intended as an example of a particular approach to the relationship between metaphysics and philosophy of physics, according to which, as a philosopher, one engages with physics as a part of the history of philosophy, beginning with our deepest philosophical questions and using the development of physics read as a contribution to natural philosophy to explore how these questions are transformed, re-worked, addressed, and sometimes rendered non-questions.

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