

No paradox of multi-location

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In a recent paper, Stephen Barker and Phil Dowe (2003)¹ argue that multi-location is impossible. An object enjoys multi-location just in case it is wholly present at more than one (distinct) space-time region (106). One popular view that is committed to multi-located objects is *endurantism*, the doctrine that objects persist through time by being wholly present at each time they are located.² So if Barker and Dowe are right, endurantism is in big trouble.

I am not an endurantist, but some of my best friends are. Fortunately for them, Barker and Dowe's paradox can be resisted. Here, I attempt to show how.

Here is a brief summary of Barker and Dowe's argument. Endurantists say that enduring objects are not *extended* in time, which suggests that they are three-dimensional entities.³ Consider an enduring object *O* that is wholly present at each three-dimensional space-like hyperplane of a four-dimensional space-time region *R*. So for each such hyperplane *r* in *R*, *O* is wholly present at *r*. So *O* completely fills a four-dimensional region of space-time. Moreover, for any *r* in *R*, *O* has a part at *r*. But then *O* is

¹ All references are to this paper unless otherwise noted.

² Endurantism is not Barker and Dowe's sole target; they also intend to refute the view that universals enjoy multi-location. For the most part, I will restrict my attention to the consequences of Barker and Dowe's argument for endurantism. On the multi-location of universals, see Armstrong 1997.

³ Van Inwagen (1990) discusses a rough characterization of endurantism, according to which it is the view that 'persisting objects are extended in three spatial dimensions and have no other kind of extent'. Perdurantism is characterized as the view that 'persisting objects are extended not only in three spatial dimensions, but also in a fourth, temporal, dimension, and persist simply by being temporally extended'.

actually a four-dimensional entity. But nothing can be both three-dimensional and four-dimensional. So endurantism is false.

Let us say that the shape of an object is the conjunction of that object's topological, geometrical and metrical properties. An object's dimensionality is one part of an object's shape. Barker and Dowe's argument can be thought of as an instance of a more general problem, the problem of determining what the shape of a multi-located object is. Barker and Dowe consider (109–10) an enduring time-traveller who comes in physical contact with himself. We can ask, How *big* is this person at the moment at which he enjoys spatial bi-location? What is the shape of this person at that moment?

The endurantist should respond to Barker and Dowe's paradox by distinguishing between two ways of having a shape. First, an object can have a shape *intrinsically*. An object has a shape intrinsically if it has that shape in virtue of the way that object is in itself. Second, an object can have a shape *extrinsically*. An object has a shape extrinsically if it has that shape in virtue of the way that it relates to regions of space-time. Arguably, standard endurantism is committed to space-time substantivalism, and to claiming that enduring objects are not identical to the regions of space-time that they occupy.⁴ So standard endurantism is committed to at least two ontological categories: spatio-temporal regions and enduring objects that occupy those regions. Objects and regions are brought together by the occupation relation. An object can have a shape *extrinsically* in virtue of occupying a region of space-time that has that shape *intrinsically*. The extrinsic shape of an object is the intrinsic shape of the region of space-time that it fills.

Suppose that *O* is an enduring solid ball. What shape is *O* *intrinsically*? *O*'s intrinsic shape is spherical. What shape is *O* *extrinsically*? Since *O* occupies a successive series of spherical regions of space-time, the region of space-time that *O* fills is not spherical – rather it is the four-dimensional analogue of a cylinder. This is *O*'s extrinsic shape. So *O*'s extrinsic shape is not spherical. But no contradiction is entailed by the fact that *O*'s intrinsic shape differs from *O*'s extrinsic shape. Nothing can have two different *intrinsic* shapes, but *O* does not have two different intrinsic shapes.

Consider two persisting solid balls *O*1 and *O*2 such that at each time at which they are present, they are qualitatively indiscernible. Let us assume that each ball has the same properties at any time that it is present, i.e. neither undergoes qualitative change. Suppose that *O*1 persists from *t*1 to *t*3, whereas *O*2 persists from *t*1 to *t*4. *O*2 enjoys a longer lifespan than *O*1, but given how I have set up the case, no endurantist should think that *O*2 differs intrinsically from *O*1. *O*1 and *O*2 are qualitative duplicates; *O*2's

⁴ See Sider 2001: 110–20 for a defence of this claim.

lasting longer than *O1* is an extrinsic difference, not an intrinsic one. There is a sense in which *O1* and *O2* have a different shape; this is because they differ with respect to their extrinsic shapes. But they have the same intrinsic shape; both *O1* and *O2* are intrinsically three-dimensional spheres.

I would like to conclude with two brief observations about this response. First, perhaps we can take the defining thesis of endurantism to be the claim that enduring objects have their *spatial* shape *intrinsically* and their *spatio-temporal* shape *extrinsically*.⁵ Second, this response assumes that material objects have intrinsic shapes.⁵ This could be challenged. One could hold instead that the only shape had by a material object is the shape it has in virtue of occupying a region of space-time.⁶ But that is a story for another time.⁷

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References

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⁵ Intuitively, universals have no intrinsic shape; all universals have their shapes *extrinsically*.

⁶ No paradox ensues if no material object has an intrinsic shape. For then the first premiss of Barker and Dowe's paradox (1) is false (107).

⁷ I would like to thank Daniel Doviak, Chris Heathwood, Hud Hudson and Justin Klockseim for helpful comments.