

The argument from vagueness in favour of Fourdimensionalism

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Sider's argument from vagueness does not establish Fourdimensionalism, but a weaker premiss, *Instantaneous Plenitude*. Let us use, following Sider (2001: 59), "four-dimensionalism" for the following claim:

(4D) Necessarily, each spatio-temporal object has a temporal part at every time at which it exists.

(4D) follows from three other claims, *Instantaneous Plenitude* (**IP**), *No Permanent Coincidence* (**NPC**) and *Unrestricted Diachronic Composition*. (**UDC**):

(IP) Necessarily, for every time that some spatiotemporal objects exists, there is something coincident with it at that time that exists only at that time.

(NPC) No two objects are coincident at every time at which any of them exists.

For all things that exist at some times, there is something that overlaps them and is overlapped

(UDC) by them at all and only the times at which they exist and that exists at all and only the times at which at least one of them exists.

Take some spatio-temporal object a . At any time t at which it exists, there is, by **(IP)**, some b_t coincident with a at t that exists only at t . By **(UDC)**, there is a fusion of all and only those b_t s that exists at the same times than a . By **(NPC)**, this fusion is identical to a . Hence a has instantaneous temporal parts at all times it exists (**4D**).

David Lewis' argument from vagueness for unrestricted composition goes as follows:

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| (i) | For every thing, definitely (it exists) or definitely (it does not exist) | no ontic vagueness |
| (ii) | For every things, definitely (they are identical) or definitely (they are not) | no ontic vagueness |
| (iii) | Definitely $(p \rightarrow q) \vdash$ Definitely $(p) \rightarrow$ Definitely (q) | logic |
| (iv) | For every n , definitely (there are just n things) or definitely (not so) | from (i), (ii), (iii) |
| (v) | Definitely (there is a cat iff $\phi(a_1, \dots, a_n)$) | composition |
| (vi) | Definitely (there is no cat iff there are just n things) | composition |
| (vii) | Definitely (there is a cat) or Definitely (there is no cat) | from (vi), (iv), (iii) |
| (viii) | Definitely $(\phi(a_1, \dots, a_n))$ or Definitely $(\neg\phi(a_1, \dots, a_n))$ | from (vii), (v), (iii) |

The argument shows that " $\phi(x_1, \dots, x_n)$ " must be definitely true or false of any n objects that may or may not be a cat. The argument then continues as follows:

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| (ix) | Every non-trivial condition ϕ on composition is vague | argument from elimination |
| (x) | No vague condition ϕ on composition satisfies (viii) | metaphysical non-arbitrariness |
| (xi) | Only the empty and the impossible conditions ϕ satisfy (viii) | from (ix) and (x) |
| (xii) | There are composite objects. | common sense |
| (xiii) | $\phi(a_1, \dots, a_n)$ iff a_1, \dots, a_n exist | from (xi) and (xii) |
| (xiv) | There is a cat iff a_1, \dots, a_n exist | from (xiii), (v), (iii) and
'Definitely $(p) \vdash p$ ' |

Sider's argument from vagueness is an adaptation of Lewis' argument to the temporal case. It consists in a restriction of (v) to diachronic composition, where a_1, \dots, a_n all exist at (possibly) different temporal instants. He concludes that there is no non-trivial restriction of diachronic composition, because any would be vague. This establishes **(UDC)**, but not yet **(4D)**.

References

Sider, Theodore. *Four-Dimensionalism: An Ontology of Persistence and Time*. Oxford: Clarendon Press, 2001.