

Multilocation and Parsimony

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The notion of multilocation—roughly, the notion of an object being wholly located at each of two or more disjoint regions of spacetime¹—appears frequently in contemporary metaphysics. It crops up in work on mereology (e.g. Kleinschmidt 2011; Donnelly 2010 and 2011), the nature of location (e.g. Hudson 2005 and 2008a-b; Parsons 2003 and 2008), universals (e.g. Armstrong 1997), persistence (e.g. Mellor 1998; Effingham and Robson 2007; Smith 2009; Effingham 2010 and 2011) and time travel (e.g. Keller and Nelson 2001; Wasserman 2018). It has even been applied to modal realism (McDaniel 2004), material coincidence (Gilmore 2007), the problem of the many (Hudson 2001), fission puzzles (Dainton 2008), the metaphysics of works of music (Tillman 2011; Tillman and Spencer 2012), and a handful of subjects in philosophical theology.²

¹ Hudson (2005 p. 103) defines multilocation as follows. ‘x multiply locates’ =df (i) x is a material object that is located at more than one region, and (ii) x is not located at the fusion of the regions at which x is located. I will presuppose Hudson’s definition, including his notion of location, which he takes as a primitive.

² Some of these are unsurprising: divine omnipresence (Cross 2016; Hudson 2009, 2014 ch. 7; Inman 2017) and the Eucharist (Pruss 2009, 2013; cf. Butakov 2017). But there are also

But multilocation has its detractors (e.g. Barker and Dowe 2003; Kleinschmidt 2011; Parsons 2003). One objection to multilocation is ‘the Problem of Parsimony’, which has been discussed by Hud Hudson and Josh Parsons.³ The worry is that the possibility of multilocation combined with a preference for parsimonious theories leads to an absurd result: that we ought to believe that the entire universe is composed of a single, multilocated simple. I will offer the multilocation theorist a solution to this problem.

Here is the Problem of Parsimony.⁴ Suppose for reductio that multilocation is metaphysically possible. Then, starting with a simple case of multilocation (e.g. a single backward time traveler), recombinatorial or inductive reasoning quickly leads to more elaborate and exotic scenarios. If *this* material object can be multilocated, then why not *that* one? If an object can be located in two places at once, then why not three places, or four? And so on. Apart from some suitable, principled restriction, we will soon find it hard to deny, e.g., that a single particle—like a material simple—could be multilocated many times over, such that it interacts with itself to compose⁵ a chair, a polar bear, or even an entire material universe.⁶

multilocation models of the Trinity (Effingham 2015, forthcoming), mind-body dualism (Effingham 2015), and resurrection (Hudson 2010).

³ I borrow the name ‘Problem of Parsimony’ from Hudson (2005 ch. 4). Parsons also discusses this problem in an unpublished paper called ‘Entension’. Unfortunately, I have not been able to get ahold of this unpublished work, so I am relying on Hudson’s discussion and what he reports about Parsons’.

⁴ Though heavily indebted to Hudson, what follows is my own presentation of the argument.

⁵ Intuitions may differ over whether a single particle multilocated in this way composes, constitutes, or is identical to the chair (cf. Wasserman 2018). I favor composition, and will assume this view throughout. Hudson seems to favor identity. Rejecting Hudson’s view makes my task harder, because, if no fundamental material simple is identical to any macroscopic object of ordinary perceptual experience, then I cannot merely appeal to the perceptual appearance of distinct objects to resist the Problem of Parsimony. (Thanks to Joshua Spencer for this point.)

⁶ These are Hudson’s examples. I would have preferred a hippo to a polar bear.

But now consider the hypothesis that *our* universe is composed of a single, multilocated material simple. Could this single-simple hypothesis be true? One could take the argument in a skeptical direction at this point and contend that we don't know whether the single-simple hypothesis is true or false, because our evidence is consistent with both alternatives.⁷ But that is not what the advocate of the Problem of Parsimony does. Instead, she argues that, as long as the single-simple hypothesis is possible, we should conclude that it is true on the basis of an inference to the best explanation.

The thought is that the single-simple hypothesis explains our empirical evidence just as well as the rival view that our world is composed of something like 10^{80} distinct material simples—the many-simple hypothesis. So, in terms of explanatory power and scope, the single- and many-simple hypotheses are on a par. And surely the former is much more ontologically parsimonious than the latter. So, given a criterion of theory selection which recommends the most parsimonious of otherwise equally good competing explanations, we ought to infer that the universe is composed of just one simple. But since this result is absurd, we must reject the assumption that led us here: that multilocation is possible.

As Hudson notes, there are a number of ways to resist this argument.⁸ We might deny that a whole universe could be composed of one particle by endorsing some principled restriction on multilocation. For example, one might think there are causal restrictions which ground diachoric identity,⁹ and that these restrictions prevent the recombinatorial step in the argument from going through.¹⁰ Other options include denying

⁷ Thanks to a referee for this point. The referee's feedback also pressed me to clarify and defend the anti-skeptical assumptions I introduce below.

⁸ In fact, he describes it as 'too quick' (p. 114) and finds its force in the costs and limitations of resisting it.

⁹ For an interesting discussion of diachoric identity, see Hudson (2005, 116-121).

¹⁰ Thanks to a referee for raising this point. Cody Gilmore made a similar point in conversation. Depending on the exact nature of the causal restrictions, one might be able to compose an entire universe like ours out of just one simple via repeated time travel,

that we ought to prefer parsimonious theories, or denying that the single-simple theory is more parsimonious than its rival.¹¹ But I think there is a better response available.

Set the simples aside for a moment and consider instead the world of ordinary perceptual experience. I am not the first to observe that appearances regarding what objects there are, and how they inhabit space and time, are one prominent aspect of our perceptual experiences. For example, there appear to be objects such as trees and dogs, but not tree-dog composites ('troggs') (Korman 2015). And these objects appear to persist through time under certain conditions, and to go out of being under other conditions. But most salient for present purposes is this: objects occupying different places at the same time appear to be distinct from each other. I doubt there is an effective way to argue for this latter claim, so I will simply recommend it as a plausible interpretation of ordinary experience.

This observation won't get us very far unless we assume that we should not be skeptics about perceptual experience. Fortunately, this assumption is dialectically appropriate, because one who rejects it is not likely either to advocate or be worried by the Problem of Parsimony. This is clearly true if successful inferences to the best explanation provide knowledge of the explanation inferred, since no skeptic about perceptual experience will grant that we have the sort of scientific knowledge that is entailed by knowing that the single-simple hypothesis is true. But even if successful inferences to the best explanation do not confer knowledge of the inferred explanation, a skeptic about perceptual experience will not take for granted much of the data that the single-simple and multi-simple hypotheses are competing to explain, such as the empirical data which support the thesis that, at many distinct locations in the external world,

even with the restrictions in place (Cf. the imaginative cases of composition by time travel in Gilmore (2007) and Effingham and Robson (2007)). But as Gilmore also pointed out, this seems to make the single-simple hypothesis much less simple in some sense, even if not less ontologically parsimonious.

¹¹ Parsons (unpublished) discusses the latter strategy. See also the previous note.

there is some simple or other. For this latter reason, the skeptic is not likely to concede that the single-simple hypothesis is the uniquely most parsimonious explanation of the available data.

To see this, consider the skeptical hypothesis that one is a dreaming Cartesian ego in an otherwise empty universe. The Cartesian ego is a single, mereologically simple substance, just like the multilocated material simple of the single-simple hypothesis. True, the Cartesian ego hypothesis requires that the ego enjoys many complex experiences, but the single-simple hypothesis requires that the material simple multilocates and interacts with itself in comparably complex ways. Moreover, the Cartesian ego hypothesis does not require the existence of any concrete substances other than the ego, but the single-simple hypothesis may well require substances other than the simple. It will require spacetime regions if substantivalism is true, and it will require all of the apparent composite objects in the universe if the simple is not identical to, but rather composes or constitutes, each of those objects. So the Cartesian ego hypothesis is at least as parsimonious as—and probably much more parsimonious than—the single-simple hypothesis. Therefore, even if she wanted to, the skeptic about perceptual experience is not well positioned to defend the Problem of Parsimony.

So, it is dialectically appropriate to assume that the way things perceptually appear is evidence of the way they are. That I appear to have hands is evidence that I have hands, even though my hand-experiences are indiscernible from experiences I might have while living the unenviable life of a brain in a vat. That the black-and-white-striped equine mammals in the zoo appear to be zebras is evidence that they are zebras, even if my zebra-experiences are indiscernible from experiences I would have were the ‘zebras’ cleverly disguised mules.¹²

What goes for appearances in general goes, *a fortiori*, for appearances of distinctness between objects. That spatially separated simultaneous objects appear distinct is evidence that they are distinct, even though my experiences would be the same if some of these objects were identical to

¹² The example comes from Dretske (1970).

each other and multilocated. That the several, spatially separated zebras at the zoo appear to be distinct is evidence that they are distinct, even if they would look no different were they a single, time-traveling zebra.

So, we have perceptual evidence for the distinctness of ordinary, spatially separated, macroscopic objects. If we assumed Classical Extensional Mereology (CEM), then we could immediately infer that the single-simple hypothesis is false. For CEM's uniqueness of fusions thesis entails that there could not be more than one fusion of a single, multilocated simple, and so perceptual evidence of distinct macroscopic composite objects would entail that the single-simple hypothesis is false.¹³ But I think friends of multilocation should reject CEM, including its unique fusions thesis. For consider a swarm of particles that is multilocated at disjoint regions R1 and R2, and which composes a dog at R1 and a cat at R2. Intuitively, the cat and dog are distinct, even though they are fusions of the same particles. So, friends of multilocation should reject the unique fusions thesis.

Nevertheless, I think we *do* have evidence for the distinctness of simples because the point I made about perceptual evidence seems to be an instance of a more general principle that encompasses other kinds of evidence, too. I suggest that it's not just perceptual evidence of spatial separation that is evidence of distinctness; rather, *any* evidence of spatial separation is evidence of distinctness.

To see that this claim is plausible, consider the following. Whether I see them myself, or hear about them from a trustworthy eyewitness, or infer their existence from indirect evidence, evidence that there are black-and-

¹³ I owe this point about CEM to a referee, who also notes that, because CEM and the single-simple hypothesis together entail that there is just one object, they also entail that our beliefs about the distinctness of objects are unreliable. But this seems to me only to reinforce the point that (given CEM), we have perceptual evidence against the single-simple hypothesis. Those of us who take perceptual evidence very seriously should be suspicious of a view which entails skepticism about a vast swath of perceptual evidence. This point applies even to the advocate of the Problem of Parsimony if, as I have argued, she too takes a non-skeptical attitude to perception.

white-striped equine mammals at the zoo is evidence that there are zebras at the zoo. Similarly, the natural thing to say about the location of objects is that, whether the evidence comes in the form of perceptual experiences, testimony, or something else, evidence of objects which are spatially separated from each other is evidence that those objects are distinct. So, for example, if we have indirect evidence in the form of gravitational anomalies that there is some unknown celestial body inhabiting a certain region of space, and also, at the same time, an unknown celestial body inhabiting another region of space very distant from the first, this is *prima facie* evidence that there are two distinct celestial bodies causing the gravitational anomalies. Whether perceptual or not, evidence of spatial separation is evidence of distinctness.

One might try to limit the application of this principle to the macro-world, but as far as I can see, there is no basis for such a restriction. While the micro world and the macro world are different in important ways, it is not clear that any of the differences are relevant to the evidential value of spatial separation *vis-à-vis* distinctness. Apart from some argument that there is such a relevant difference, restricting the scope of the evidential value of spatial separation to the macro world seems hardly less arbitrary than restricting its scope to e.g., things smaller than planets.

Alternatively, one could try to restrict the principle to composite objects. One might, for example, propose the following mereological thesis: When the *x*s fuse to form composite objects *y* and *z* then: *y* and *z* are spatially coincident iff $y = z$.¹⁴ This thesis entails that spatially separated composite objects are distinct, but it does not say the same about mereological simples. And if spatial separation entails distinctness only for composite objects, then perhaps evidence of spatial separation is evidence of distinctness only for composite objects.

¹⁴ Thanks to a referee for this principle and for both of the objections about restricting the scope of the principle that evidence of spatial separation is evidence of distinctness.

But I see no particularly strong reason to endorse the above mereological principle, and I am suspicious about the move from what spatial separation *entails* to what it is *evidence* for, too. Rarely does good evidence for a proposition entail that proposition.¹⁵ Moreover, I am skeptical of this argument because it seems to impose an arbitrary restriction on the evidential value of spatial separation vis-à-vis distinctness that we simply don't obey in practice, presumably because it isn't intuitive. For example, so far as I know, no one who suspects that electrons are mereological simples has taken this as a reason to lower their credence in the proposition that there are many distinct electrons at different places in the universe. So I do not think we have a good reason to restrict the scope of the principle that evidence of spatial separation is evidence of distinctness.

Now suppose we have scientific evidence that the world is composed of simples. More carefully, suppose we have empirical data in need of interpretation, and as we consider that data, we arrive at the conclusion that the most plausible interpretations, and therefore the salient alternatives, are the single-simple and multi-simple hypotheses. Since both of these hypotheses entail that each of many, many different locations in the universe is occupied by some simple, we should conclude that our data is evidence for the existence of spatially separated simples. And evidence of spatial separation is evidence of distinctness. So, we have evidence in favor the multi-simple theory over the single-simple theory.

But parsimony is one of the criteria we use when interpreting empirical data,¹⁶ so we need to ask whether the greater parsimony of the single-simple hypothesis should lead us to conclude that it is the best

¹⁵ Cf. the common view that conceivability is evidence of possibility even if it does not entail possibility.

¹⁶ This point was emphasized by a referee, who also suggests that the 'theory-ladenness of observation' may be enough to block the problem of parsimony from going through by leaving the debate between the single- and multi-simple theorist in a stalemate. The point I make in the final paragraph of the paper is similar, and perhaps inspired partly by the referee's suggestion.

interpretation of the data. I do not think it should. Either parsimony considerations kick in only when competing theories are otherwise on a par, or they kick in whenever theories are in competition. If the former, then, given that the data are best interpreted as indicating spatially separated simples, and that this in turn is evidence favoring the many-simple theory, parsimony considerations do not even arise. If the latter, then the Problem of Parsimony succeeds as an argument against multilocation only if the parsimony of the single-simple hypothesis carries enough weight to neutralize or defeat the positive evidence for the multi-simple hypothesis. My intuition is that it does not.

However, weighing theoretical virtues against each other is notoriously tricky, and so my opponent may not share my intuitions. But even if she does not, the Problem of Parsimony will not succeed as an objection to multilocation unless it can be shown, not merely that the single-simple hypothesis is more parsimonious than its rival, but also that this virtue outweighs the positive evidence for its rival. In the absence of any such argument, the objector has not proved her case.¹⁷

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¹⁷ Thanks to Joshua Spencer, anonymous referees, and the editor for comments on earlier drafts. Special thanks to a referee for this journal who, among other things, helped me to clarify key points about the role of anti-skeptical assumptions and the interpretation of empirical data.

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