

SUPERSUBSTANTIVALISM AND THE ARGUMENT FROM HARMONY

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ABSTRACT. The core doctrine of supersubstantivalism is that material objects are identical to their spacetime locations. One powerful consideration for the view is the argument from harmony – supersubstantivalism, it is claimed, is in a position to offer an elegant explanation of a number of platitudes concerning objects and their locations. However, I will argue that identifying material objects with their locations does not provide a satisfying explanation of harmony. What the supersubstantivalist needs is not a theory about the identity of objects, but another theory about the identity of some relations. This paper proposes such a theory and shows that with it in place, the argument from harmony can be repaired.

What is the relationship between matter and spacetime?¹ Philosophers have typically answered in one of two ways. Some have said that necessarily, material objects are distinct from the spacetime regions at which they are located – call this view *dualism*. Others have said that necessarily, material objects are identical to those locations – call this view *supersubstantivalism*. Admittedly, supersubstantivalism is rather counterintuitive. However, in recent years, there have been a handful of interesting arguments offered on behalf of the view (from parsimony, from modern physics, and so on).²

One interesting argument for supersubstantivalism is *the argument from harmony*, from Skow (2007) and Schaffer (2009). Here is a rough sketch. Why is it that necessarily, a material object is the same size and

¹Let's assume that *spacetime substantivalism* is true: spacetime exists and is not constructed out of (or reducible to, in some way) the spatiotemporal relations between material objects.

²See, for instance, Sider (2001), Skow (2005), (2007), Schaffer (2009), Nolan (2014), Eagle (2016), and Lehmkuhl (2016).

shape as its location?³ And why is it that necessarily, an objects' parts are located at subregions of its location? It is impossible for a spherical object to be located at a rectangular region. And it is impossible for my arm to be a part of my body while my arm's location is not a part of my body's location. But why? It looks as if the dualist has no explanation for these platitudes. The supersubstantialist, it is argued, does have a straightforward explanation: both follow from Leibniz's Law and the thesis that necessarily, material objects are identical to their locations. Though the supersubstantialist has an explanation for these truths, the argument goes, it looks like the dualist is left with a pair of modal mysteries. Of course, there are many competing factors that must be weighed in this debate. But the argument from harmony is a powerful consideration.

However, the argument from harmony suffers from an important and neglected problem – though supersubstantialism does logically imply these platitudes about harmony, the *explanation* for them is not satisfying. In fact, the explanation is merely pushed back a step. But I think the argument from harmony can be repaired. Supersubstantialism is standardly presented as an identification of material objects. I'll suggest that what the supersubstantialist really needs is a second kind of identification (a higher-order identification). With such an identification in place, the supersubstantialist is in a position to offer a satisfying explanation of harmony, after all.

1. SUPERSUBSTANTIVALISM AND HARMONY

Here are Skow and Schaffer:

“Some material objects are spherical. Some regions of space are spherical. And it is necessary that every spherical material object is located at a spherical region of space. But this can't just be a magical, mysterious necessity, a necessity that must be unexplained.” (Skow 2007, p. 116)

“For the dualist, the geometrical and mereological harmonies between material objects and spacetime regions seem an amazing coincidence. What prevents, for instance, my hand from occupying a region with a different shape? Or what prevents my hand

³By *location*, I mean *exact location*. This relation of exact location is also sometimes called *occupation*. See Casati and Varzi (1999), Gilmore (2006), and Parsons (2007).

from occupying a region that is not part of the region my body occupies?” (Schaffer 2009, p. 138)

Skow and Schaffer highlight two facts:

Necessarily, if x is located at y , then x is the same size and shape as y . (G-HARMONY)

Necessarily, if x is located at y , w is located at z , and x is a part of w , then y is a part of z . (P-HARMONY)

(G-HARMONY) is a principle of geometrical harmony and (P-HARMONY) is among the weakest principles of mereological harmony discussed in the literature.⁴

(G-HARMONY) and (P-HARMONY) seem to cry out for an explanation. Why are they true? For the dualist, this looks like a remarkable coincidence. On the other hand, the argument goes, the supersubstantialist has a straightforward explanation. This is because the supersubstantialist claims that necessarily, every material object is identical to its location. Or formally:

Necessarily, x is located at y iff x is a material object and $x = y$. (SS)

(SS) gives us a pair of valid arguments for (G-HARMONY) and (P-HARMONY). Consider (G-HARMONY). If I am located at R , then I am identical to R , by (SS). And by Leibniz’s Law, R and I have the same properties (including geometrical properties). So (G-HARMONY) is true. Parallel reasoning shows that (P-HARMONY) is true.

So we have a pair of valid arguments for (G-HARMONY) and (P-HARMONY) with (SS) as a premise. But do these arguments amount to good *explanations* of (G-HARMONY) and (P-HARMONY)? Recall that

⁴*Mereological harmony* is the rough idea that the mereological structures of material objects and their locations match. To what extent do they match? This is a controversial question. Some think that the structures are perfectly aligned, Schaffer (2009) for instance. And some think that the structures can come apart; for instance, some think that extended simples are possible, that material objects can interpenetrate, that co-location or multilocation is possible, and so forth. But (P-HARMONY) is among the least controversial principles in the literature. See Casati and Varzi (1999: p. 122), Varzi (2007), Uzquiano (2006), (2011), Saucedo (2011), and Leonard (2016).

the supersubstantialist's initial complaint was that the dualist wasn't in a position to explain (G-HARMONY) or (P-HARMONY). But to explain those principles, it looks like the supersubstantialist needs to appeal to (SS), which itself is a necessary truth. Doesn't (SS) also cry out for an explanation? Why is *it* true? The purported explanation for (G-HARMONY) and (P-HARMONY) simply introduces yet another modal mystery. That's hardly a satisfying explanation.

2. THE IDENTITY THEORY AND HARMONY

Supersubstantialism is standardly presented as a view about *the identity of objects* – necessarily, each material object is a certain spacetime region. But as we've seen, this doesn't really give us a satisfying explanation of harmony. I hold that the way forward is to advance a second identity thesis, this time about the identity of *relations*. The supersubstantialist has a theory of what a material object is. What the supersubstantialist needs is a theory of *what location is*.

The supersubstantialist needs to make a certain higher-order identification. Following Rayo (2015) and Dorr (2016), let ' $\varphi \equiv \psi$ ' express the higher-order identification that to be φ is to be ψ . What the supersubstantialist needs to adopt is what I call the *identity theory of location*:

$$\lambda x \lambda y (x \text{ is located at } y) \equiv \lambda x \lambda y (x \text{ is a material object and } x = y)$$

(Identity Theory)

This says that to be located at y is to be a material object that is identical to y . In other words, the relation *being located at* is identical to the relation *being a material object identical to*.⁵ This higher-order identification implies the corresponding necessary biconditional:

$$\text{Necessarily, } x \text{ is located at } y \text{ iff } x \text{ is a material object and } x = y$$

⁵One funny sounding result is that Hesperus is located at Phosphorus. Hesperus is a material object and it is identical to Phosphorus, so it follows from the identity theory that it is located at Phosphorus. More generally, it follows from the identity theory that every material object is located at itself. I think that the identity theorist should just accept this result. Note that this isn't a distinct result for the identity theory. It also follows from (SS). Thanks to an anonymous referee for raising this issue.

which is just (SS). Since the identity theory implies (SS), it also logically implies (G-HARMONY) and (P-HARMONY). But the identity theory, unlike (SS), *does not* cry out for explanation. This is because it is an identity, and identities are not the sorts of things that cry out for explanation. This fact has been highlighted recently by both Rayo (2015) and Dorr (2016).

Here is Rayo:

“Suppose it is agreed on all sides that Hesperus (and Phosphorus) exist. Someone says: ‘I can see as clearly as can be that Hesperus is Phosphorus; what I want to understand is *why*.’ It is not just that one wouldn’t know how to comply with such a request – one finds oneself unable to make *sense* of it.” (Rayo 2015, p. 54)

Identifications are excellent stopping places for explanation. The identity theory is itself an identification: to be located at *just is* to be a material object identical to. As such, it not only explains why (G-HARMONY) and (P-HARMONY) are true, it also explains why (SS) is true. And importantly, it doesn’t itself cry out for an explanation.⁶

3. CONCLUSION

The core doctrine of supersubstantivalism is that material objects are identical to their spacetime locations. As we’ve seen, though this doctrine logically implies (G-HARMONY) and (P-HARMONY), it doesn’t really offer a satisfying explanation for why they are true. What the

⁶One might wonder: why do so many things that stand in the identity relation not stand in the location relation (numbers, functions, properties, relations, and so on)? Why is $2+2$ identical to 4 but not located at it? Why is it the case that, presumably, the property *being a vixen* is identical to the property *being a female fox*, but the former is not located at the latter? For the identity theorist, being located is just the same thing as being a material object identical to something. Since numbers and relations are not material objects, even though they are self-identical, it follows that they aren’t located anywhere. If one is tempted to ask: why? Presumably, the answer is: that’s just *what location is*. Note that, once again, the same question can be asked of (SS). But whereas (SS) doesn’t seem to have a satisfying answer, the identity theorist does: that’s just what location is. Thanks to an anonymous referee for raising this question.

supersubstantialist needs is not an identification of *objects* but an identification of *relations* – she needs the identity theory. It is the identity theory that offers a satisfying explanation of harmony.⁷

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