An argument against the necessity of unrestricted composition

EINAR DUENGER BOHN

Many metaphysicians accept the view that, necessarily, any collection of things composes some further thing. Necessarily, my arms, legs, head, and torso compose my body; necessarily, my arms, my heart, and the table compose something $y$; necessarily, my heart and the sun compose something $z$; and so on.¹ Though there have been a few recent attempts to argue against the necessity of this principle of unrestricted composition the consensus is that if it is true, it is necessarily true.²

In what follows I will join the few dissenters and argue that this principle of unrestricted composition is not necessarily true. If I am right, it follows that either some principle of restricted composition is necessarily true or the existence of composite objects is a contingent matter. I will end by indicating why the latter option seems the most plausible.³

I proceed by reductio. Assume the following:

(1) Unrestricted composition is necessarily true.

That is, assume that necessarily, any collection of things composes something. Then, necessarily, the collection of everything composes something. That is, necessarily, there exists a universal object $U$ having all things as parts, not itself being a proper part of anything. Hence, by our assumption, we get:

(2) There must be a universal object $U$.

¹ One finds this view scattered throughout the metaphysical literature mostly as a theoretical assumption, but some of the most prominent explicit defenders of the view are perhaps Armstrong (1997), Lewis (1986), and Sider (2001).

² Note that the necessity involved is a de dicto necessity, not de re. For the few dissenters, see Rosen 2006, Cameron 2007, and Parsons ms.

³ Note that though I argue for the contingency of the existence of composite objects, I don’t argue for the contingency of any mereological principle whatsoever. There is a natural distinction to be drawn between the principles that have existential import and the ones that don’t. I assume at least some mereological principles without existential import are analytically true, and in virtue of that are necessarily true too. I don’t assume mereological principles with existential import are thus analytically true. Though we need not here say exactly where to draw this line, it suffices to say that the system Simons 1987: 31 calls Minimal Extensional Mereology is a minimum of mereological necessary truths. This system includes (among other things) the asymmetry and transitivity of proper parthood, as well as a weak supplementation principle. This excludes the most obviously unintended models. For details see Simons 1987: ch.1. See also Rosen 2006.
It is important to note that this is so whether the world is finite or infinite. Holding that in worlds of finite cardinality there is a universal object $U$ while in worlds of infinite cardinality there is no universal object $U$ amounts to accepting a restricted form of composition.\footnote{The universal object $U$ is logically guaranteed in any model of a merological system that accepts unrestricted composition. See Leonard & Goodman 1940 and Simons 1987:15–16.}

Now consider the following scenario. Everything in this world is spatially extended and just one half of something else that is also spatially extended. That is, for any thing in this world, there is something else of which it is a spatial proper part. Or consider this scenario. Our universe is a miniature replica universe housed in a particle of a bigger replica universe, which is again a miniature replica universe housed in a particle of an even bigger replica universe, and so on ad infinitum. Conceiving of these scenarios amounts to conceiving of worlds in which everything is a proper part. Let’s call such worlds, junky worlds. Official definition: world $w$ is junk \textit{iff} anything in $w$ is a proper part.\footnote{I have adopted the term ‘junk’ from Schaffer forthcoming. Schaffer briefly mentions what he calls worldless junk just to dismiss it as impossible, but as I show in Bohn forthcoming there is no reason to think junk has to be worldless and Schaffer’s reasons for dismissing it as impossible all fail.}

Having thus conceived of junky worlds, we seem provided with some prima facie reasons to think such worlds are possible. I am of course not alone in thinking so. For example, early Leibniz thought the material world was junky:

For, although there are atoms of substance, namely monads, which lack parts, there are no atoms of bulk, that is, atoms of the least possible extension, nor are there any ultimate elements, since a continuum cannot be composed out of points. In just the same way, there is nothing greatest in bulk nor infinite in extension, even if there is always something bigger than anything else, though there is a being greatest in the intensity of its perfection, that is, a being infinite in power. (Leibniz 1698: 162)\footnote{Today many of course believe that a continuum can be composed of points. But why does Leibniz say: ‘nor infinite in extension’? Because he believes that there is no one chunk of bulk (primary matter) that is infinite in extension, even though there is always something bigger than something else. Strictly speaking, Leibniz is here talking about worlds that are not only junky, but gunky as well: everything material in the world both is and has a proper part. Let’s call such worlds, hunky worlds. The possibility of hunk of course implies the possibility of junk. For a general discussion of hunk, see Bohn forthcoming.}

Later Leibniz is even clearer about this:

...for there is never an infinite whole in the world, though there are always wholes greater than others ad infinitum. As I have shown...
elsewhere, the universe itself cannot be considered to be a whole.
(Leibniz 1996: 151)

Another prominent proponent of the possibility of junky worlds is
Alfred North Whitehead. His second mereological axiom of events reads:
‘Every event extends over other events and is itself part of other events’,
where ‘part’ here means ‘proper part’ (1919: 101) and ‘x extends over y’
means that y is a proper part of x. According to Peter Simons, ‘that the world
is “open” both above and below seems to have been something which
Whitehead found self-evident, for he gives no argument for it’ (1987:83).7

Note also that the idea of a junky world is logically consistent in the sense
that there are junky models of many non-classical mereologies.8 That is, there
are no logical contradictions lurking in the background.

But if we can conceive of junky worlds, and several prominent philoso-
phers have taken the idea seriously, and there are no logical contradictions
lurking, then we are hard pressed to deny the mere possibility of the world
being junky.9 Hence:

(3) The world might be junky.

Note that a junky world w cannot contain a universal object U because if it
did there would exist something at w that was not a proper part of anything,
namely U, and that would contradict the world’s being junky. Thus, in order
for the world to be junky, it cannot contain U, but rather an infinite plurality
of objects such that each thing in the plurality is a proper part of something
else in the plurality. Hence, by (3), we get:

(4) There might not be a universal object U.

But (2) and (4) is a contradiction. Hence, (1) must be false. Unrestricted
composition is not necessarily true.10

There are three ways to go from here, the first two of which seem less
plausible. First, one might attempt to argue directly against (3) by trying to
come up with reasons that trump the above justifications for it. I don’t have
space to discuss all such attempts here, but I merely note that I doubt there
will be a non-question begging way of doing this.11 Second, one might simply
accept the necessary truth of some principle or other of restricted composi-
tion compatible with (3). The following principle seems to be the most

7 Whitehead too is thus thinking of a hunky world. But again, hunk implies junk.
9 I have adopted this three-step test for possibility from Schaffer 2003.
10 Note that (2) is a logical consequence of (1) while (4) is a logical consequence of (3), so the
only option for resistance amounts to denying (1) or (3).
11 I believe a plausible such attempt is to argue that composition is a form of identity – the
whole is its parts collectively. See Lewis 1991: 81–87.
simple, intuitive, and plausible such candidate: necessarily, all and only finite pluralities compose something. That means that if the world is finite, it contains a universal object $U$, while if the world is infinite with mereological atoms, it is junky. The problem with this principle is that it is incompatible with the world being gunky. A gunky world is such that everything in it has a proper part. If everything in the world has a proper part, then every fusion in the world is infinitely divisible,\[12\] which means that every fusion in the world is of infinite cardinality, which again means that no fusion in the world is of finite cardinality. Since our principle implies that necessarily all fusions are of finite cardinality, it must therefore be incompatible with the possibility of gunk. But that the world might be gunky is plausible for very similar reasons it is plausible that the world might be junky.\[13\] Hence, our justification for (3) seems to preclude the necessity of the above principle of restricted composition. And as far as I can tell there is no other necessary and sufficient principle of restricted composition compatible with (3) that is even remotely plausible as a necessary truth.\[14\]

It thus seems more plausible to go down the third and final route: conclude that which fusions exist and which don’t is a contingent matter, varying from world to world.\[15\]

References


Bohn, E.D. Forthcoming. Must there be a top level? Philosophical Quarterly.


12 Assuming one can divide in accordance with proper parthood.

13 For the possibility of the world being gunky, see e.g. Sider 1993 and Schaffer 2003. The possibility of gunk and the possibility of junk also provide reasons not to accept the necessary truth of a principle of absolutely restricted composition: necessarily no two or more things compose something.

14 Though of course, if one comes up with some such principle, and it’s compatible with the possibility of gunk and hunk, and it’s well motivated, that’s fine as far as our main argument above is concerned. The conclusion that unrestricted composition is not necessarily true due to the possibility of junk still stands.

15 Thanks to Lynn Rudder Baker, Phillip Bricker, Jeffrey Dunn, Edward Ferrier, Jonathan Schaffer, Kelly Trogdon, and an anonymous referee for Analysis.
Desire-as-belief revisited

RICHARD BRADLEY AND CHRISTIAN LIST

1 Introduction

On Hume’s account of motivation, beliefs and desires are very different kinds of propositional attitudes. Beliefs are cognitive attitudes, desires emotive ones. An agent’s belief in a proposition captures the weight he or she assigns to this proposition in his or her cognitive representation of the world. An agent’s desire for a proposition captures the degree to which he or she prefers its truth, motivating him or her to act accordingly. Although beliefs and desires are sometimes entangled, they play very different roles in rational agency.¹

In two classic papers (Lewis 1988, 1996), David Lewis discusses several challenges to this Humean picture, but ultimately rejects them. We think that his discussion of a central anti-Humean alternative – the desire-as-belief thesis – is in need of refinement. On this thesis, the desire for proposition \( p \)