Conceptual conservatism and contingent composition

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1 Introduction

"Under what circumstances do things add up to or compose something?" This is what Peter van Inwagen (1990, p. 31) calls the Special Composition Question. Everyone, it seems, has a different answer. Van Inwagen's, famously, is "when the activities of those things constitute a life". Other people — nihilists about composition — say "never!" Other people — universalists about composition — say "always!". Yet other people — brutalists about composition — say that there is no answer.

I want to propose a new answer. But it is not a very new one. In some respects I agree with what the brutalists have said about composition. In other respects I agree with the universalists. The main novel feature of my answer is the insight I think it gives into what the debate over the Special Composition Question is about.

The respect in which I agree with the brutalists is as follows. Van Inwagen, and those who take his question seriously, add the following constraint on what can count as a good answer: the answer must consist of a necessary, apriori truth of the form "there is something that the *X*es compose iff ..." where the "..." contains no mereological vocabulary. But, says the brutalist, how can there be such a apriori truth, given that are no apriori truths of the form "*x* is part of *y* iff ..." (where, again, "..." contains no mereological vocabulary). I feel a lot of sympathy with this position. The respect in which I agree with the universalists is this: I think that their answer is right, and for more-or-less the reasons they give. But these reasons do not elevate their answer to the status of apriori or necessary truth.

What I am mainly going to do here is to argue that the universalist's answer is not a *conceptual* truth. It is not related to the concept of part-whole, or to the

concept of composition, in the same way that "All bachelors are unmarried" is related to the concept of a bachelor. That argument will take place in sections 4 of this paper. It has an important premise that I expect to be controversial about what kinds of conceptual truths there can be, which I call *conceptual conservatism*. However, I also want to draw an analogy between realism about composite objects and realism about the external world. I do this in sections 2 and 3. The analogy, if cogent, suggests that universalism is a contingent, empirical, truth. Though thaty will also no doubt be controversial, I think it is a seductive view if you buy into a certain kind of metaphysical realism and naturalism.

2 Realism about the external world

I'll start by putting forward a kind of dialectical scenario involving realism about the external world, viewed from a very realist perspective. Nothing I'll say here will be news, or even very convincing to anti-realists. The purpose rather, is to draw an analogy with a corresponding dialectic involving realism about composite objects.

Suppose I'm confronted by a *simple nihilist about the external world*. The simple nihilist says "The external world is an illusion. There are no extra-mental objects, only ideas and sense-impressions. You are just mistaken to think that there are chairs, tables, human bodies, or electrons." I would reply in this way: "No, there are extra-mental objects, and I have good reason to believe in them, because they form part of the best explanation of my experiences." That answers the simple nihilist, because he thinks that my explanation of table-appearances is just false and mistaken, and has no better explanation to offer in its place.

Now suppose I'm confronted by a *sophisticated nihilist about the external world*. This character might remind us of Berkeley, Mill, Schlick or the early Carnap. She says: "There's no question of whether the external world exists. Talking of the external world *just is* another way of talking about ideas or experiences — talk of tables *just is* talk of the permanent possibility of table-appearances." The sophisticated nihilist produces a complicated semantical theory of table-talk couched in phenomenalistic terms. My reply to the simple nihilist can't work here, because the sophisticated nihilist will agree with my explanation of table-appearances, but deny that it is incompatible with her nihilistic doctrines.

I must reply to the sophisticated nihilist in a different way: "The view that talking of tables *just is* another way of talking about table-ideas or table-appearances is bad semantics. Semantic theories are good insofar as they explain and predict the behavior of language users. Your semantic theory does a very bad job

of this, as it predicts that no two people who understand their own words would disagree over the existence of the external world. This, however, is manifestly not the case." What I think is wrong-headed about sophisticated nihilism is its anti-naturalism — it gives a theory of the meanings of people's words not to explain their actual behaviour, but to prescribe the behaviour the nihilist would like. I find this particularly annoying coming from empiricists.

Throughout this paper I am speaking as a realist about the external world speaks to other realists about the external world, and as a realist about composite objects speaks to other realists about those. A really sophisticated nihilist might not like being called a nihilist. Afterall, her view is that all the realist says about chairs and tables is true. So, for example, at the end of the third *Dialogue*, Berkeley describes his views as those of "common sense", and the "opposite" of "philosophical scepticism". In *Positivism and Realism*, Schlick insists that his positivism is not a "renewal of idealism". "Logical positivism and realism are... not opposed; anyone who acknowledges our principle must actually be an empirical realist". (Schlick 1932, p. 283)

That's how some sophisticated nihilists like to describe their own views, and such a description would be appropriate if they were right about what "realism", "external world" and "table" mean. However, we are all realists here (or so I will assume) so I will continue to speak as though sophisticated nihilism is mistaken about what those terms mean. Given what I mean by "realism", "external world" and "table", it would be inaccurate of me to report that Schlick is a realist, that or that Berkeley believed that there were trees and tables.[1]

(There are varying degrees of sophistication among nihilists. Some might insist that they are not nihilists — that nihilism is false as a matter of conceptual truth; less sophisticated nihlists might say that nihilism and realism go with different, equally good, conceptual schemes; still less sophisticated ones that there is a privileged conceptual scheme in which we can state the empirical truth of nihilism, though perhaps one that is only used in metaphysics classrooms).

The realist about the external world, and the simple and sophisticated nihilists make up an interesting trio. Consider their respective attitudes to the following principle:

> *Table-Appearance Principle (TAP).* There is a table iff there are suitably robust table-appearances.

This principle should be imagined to be capable of more detailed formulation. Think of "suitably robust table-appearances" as a kind of schematic stand-in for a specification of just what would count as suitably robust, and what would count

as a table-appearance. And imagine that this specification does not mention the word "table", or any cognate of it. The sophisticated nihilist will help us out here, as they need such a specification in order to fill in the details of their semantic analysis of table-talk.

The simple nihilist might say something like this about TAP: "TAP is *contingent* and *false*. That it is contingent is shown by the possibility of sceptical scenarios in which I am only dreaming that there are tables, or which I am a brain in a vat or plaything of an evil demon who is deceiving me into thinking that there are tables. Since those skeptical scenarios cannot be falsified empirically, we have a free choice as to whether to believe TAP or not. If, like me, you have a taste for desert landscapes and small ontologies, you'll say that it's false".

The realist and the sophisticated nihilist each have their own ways of saying what is wrong with the simple nihilist's argument. According to the sophisticated nihilist, it's a mistake to suppose that TAP is contingent — once we see what the "empirical meaning" of table-talk is, we'll see that sceptical scenarios ask us to imagine the impossible. In fact, the sophisticated nihilist will hold that TAP is an analytic truth — a consequence of the meaning of "table".

According to the realist (or at least, to the kind of realist I am), it's a mistake to think that if TAP cannot be conclusively verified (which would require that the sceptical scenarios be falsified) then there is no reason to believe it. The reasons are, as I suggested earlier, abductive — TAP is a consequence of the best explanations available of what happens when I go to interact with what appears for all the world to be a table. The realist should agree with the simple nihilist that TAP is contingent — to say otherwise we would have to refute the sceptic! Indeed, my argument against the sophisticated nihilist is precisely that their semantical theory can't make sense of sceptical scenarios.

An important feature of the realist position I wish to hold is a distinction between what I will call strong and weak underdetermination of theory by data. Two theories are *weakly* underdetermined by data iff no experiment could verify or falsify one without also verifying or falsifying (respectively) the other. Two theories are *strongly* underdetermined by data if they are weakly underdetermined, *and* in addition, no considerations of theoretical virtue, quality as an explanation, or respect for the canons of non-demonstrative inference, could decide between them. Typically, the central doctrines of modern science are weakly, but not strongly, underdetermined relative to their rejected rivals.

I think that TAP is like those. It should be thought of as having the same status as the thesis that we inhabit a spacetime of variable curvature (as opposed to a spacetime of constant curvature in which complicated forces act on objects to produce the appearances of variable curvature) or that the Earth was created some

billions of years ago (as opposed to in 4004 BC, complete with fossils to deceive the faithless).

3 Realism about composite objects

For me, at least, realism about composite objects is a lot like realism about the external world. Chairs, tables, molecules, and protons form part of the best explanation of my experiences. When I thump a table, the noise produced and the feeling of resistance I feel are best explained by positing a middle-sized physical object that my fist has encountered.

Just as there are simple nihilists about the external world, so there are simple nihilists about composite objects. They claim that there are no composite objects; no chairs, no tables, no molecules, no protons. There are quarks and leptons, at least if current physical science is correct in regarding those things as mereologically simple. According to the simple nihilist, when ordinary people say 'there is a table' or scientists say 'there is a proton', they are speaking falsely, making a philosophical mistake.

Just as there are sophisticated nihilists about the external world, so there are sophisticated nihilists about composite objects. They claim that, at least when non-philosophers are speaking, talk about composite objects *just is* talk about simple objects. For example, talk about protons just is talk about quarks; talk about tables just is talk about the simple constituents of tables. Sophisticated nihilists can produce semantic theories of table talk which quantify only over simple objects (though perhaps in irreducibly plural ways).

(Nihilists about composite objects tend rather more towards the simple end of the spectrum than nihilists about the external world. I think that is this due to institutional factors — that people who consider the question of nihilism about composite objects tend to be philosophers who work in metaphysics, and are as a result less likely to take a deflationary attitude towards their own subdiscipline. Cian Dorr, is, I think, a straightforward simple nihilist; modulo the fact that he believes in persons, Trenton Merricks is a simple nihilist; modulo the fact that he believes in living things, Peter van Inwagen is a sophisticated nihilist of the kind who admits a privileged context in which the truth of simple nihilism can be stated; Eli Hirsch and other neo-Carnapians are of course thoroughly sophisticated nihilists).

Just as, in the case of the external world, we have principles like TAP, in the case of composite objects we have principles like the Table Constituent Principle:

> *Table-Constituent Principle (TCP).* There is a table iff there are suitably arranged table-constituents.

As before, I ask you to imagine that "suitably arranged table-constituents" is a schematic stand-in for a phrase that does not use the word "table" or any cognate of it.

Simple nihilists of course think that TCP be false. According to them there are suitably arranged table-constituents, but there are no tables. Sophisticated nihilists think that TCP is a kind of conceptual truth (at least when non-philosophers say it). A realist who thinks the way I do will say that it is a contingent, empirical truth, of the same status as TAP and the scientific theories mentioned earlier.

Metaphysicians interested in the part-whole relationship are more used to talking about principles more general than TCP, such as this one:

> *General Sum Principle (GSP).* There is a mereological sum of the Xes iff there are the Xes.

GSP is a lot like a highly generalised version of TCP. Tables are a particular kind of mereological sum, and table constituents are a particular kind of thing. So GSP is like TCP with all of the content specific to tables stripped out. Clearly a simple nihilist will deny GSP. Realists and sophisticated nihilists might or might not affirm it — but a realist of the kind I like will say that, like TCP, GSP is contingent and empirical if true; a sophisticated nihilist will say that GSP is necessary and conceptual if true.

As a matter of raw sociological data, this is a very unusual view. Many metaphysicians believe GSP, but few think that it is contingent, none that I am aware of besides me think that it is empirical (even in the very extended sense of "empirical" that I mean here). I find it hard to see how it could fail to be empirical, without some form of sophisticated nihilism being true. How could the mereological concepts alone ensure that GSP is true, unless there is some devious reinterpretation of "there is a mereological sum" involved that shows how GSP can be true even if all that there really is is atoms and the void? The following section develops this argument against realists about composite objects who think that GSP is a conceptual truth. In the remainder of this section, I explain why I think that GSP is true.

Let's start by returning to the views of the nihilists about composite objects. I reject simple nihilism because, it seems to me, composite objects play a crucial role in the best explanations of my experience. Folk scientific explanations

cite thrown rocks as part of the explanation of broken windows; biological explanations are far gone in talk of organisms, to say nothing of lineages and clades; astronomical explanations speak of galaxies, stars, and solar systems.

Those who have read Merricks (2001) will not be impressed by this argument. For it seems that the explanations I'm citing are redundant — couldn't we just as well explain what happens to a window shattered by the impact of a rock by appeal to the particles of which the rock is composed?

Perhaps. But I'd like to see the explanation given in purely subatomic terms — and I'm quite sure that none will be forthcoming. A bunch of quarks and leptons (even the very ones of which the rock is composed) might as easily pass straight through a window as break it. What someone like Merricks has in mind, of course, is that if the particles arrive at the window arranged as they in fact are — arranged rock-wise, we might say — then they would break the window. But to turn this into a real explanation of the window's breaking, we need to turn "arranged rock-wise" into a real microphysical description. Even if we could do that, we might not get any useful prediction or explanation out of physical theory, for the system of the rock and window would be turned into an intractable many-body problem.

It's a striking fact that scientific — and proto-scientific "rocks and windows" — explanations citing the existence of macroscopic objects work pretty well. This surely is reason to believe that there are macroscopic objects. There are also some striking reductionistic explanations of the behavior of macroscopic objects in terms of their microscopic parts, and these give us reason to believe that macroscopic objects are indeed composed of those sorts of parts. These explanations are *compatible* — otherwise we would have established some kind of emergentism — but that does not mean that either style of explanation is redundant. For reductionistic explanations to render macroscopic ones redundant, they would have to be better explanations in every case. But they are not — in most cases they are more complex, even to the point of being intractable.

Given that there are composite objects, are there as many as GSP would have us say? There is a good reason to be a realist about composite objects — is there good reason to be a universalist? I think there is. For there is no limit to what kinds of things compose other things that is both adequate and acceptable. To be adequate, a limit on composition must not rule out any objects that are cited in scientific explanation; to be acceptable, it must not be unacceptably anthropocentric. For example, the thesis that there are all and only the composite objects cited in actual scientific explanation is the adequate composition thesis *par excellence*, but it is hopelessly anthropocentric. What a grand stroke of luck that the universe provides us with just those objects that we actually cite in our explanations. If there was some non-anthropocentrically specifiable feature that the composite ob-

jects cited in our explanations had — if, for example, the only objects that ever played any role in our explanations were perfectly continuous — that would be a reason for thinking that those were all the composite objects. But there is no such feature that I know of.

4 Conceptual conservatism

I now want to return to the question of whether principles like GSP, TCP, and TAP can be regarded as conceptual truths. I think that they should not be — I find the idea that there could be a conceptual truth about what there is reminiscent of ontological argument for the existence of God. Like the ontological argument, however, it is hard to say exactly what would be wrong with this. In this section I try to do so. I argue, largely by example, that well-behaved concepts should be "conservative" in a sense I'll describe; I'll then show that a concept of part-whole of which GSP was a conceptual truth would fail this test.

> A concept C is *conceptually conservative* relative to a set of background concepts B iff there is no consequence of the conceptual truths of C and B together that is (a) expressible using the conceptual resources of B alone, and (b) is not a consequence of the conceptual truths of B alone.

The idea of a conceptually conservative concept is related to the logical notion of conservative extension. A formal system S' is said to be a conservative extension of S iff S' has no theorems expressed in the vocabulary of S that are not also theorems of S. So I could say that C is *conceptually conservative* relative to B iff the system of conceptual truths of C plus B is a conservative extension of the system of conceptual truths of B.

I am going to argue for what I will call conceptual conservatism — that concepts that are not conceptually conservative relative to a background of other concepts we could acquire and use independently are *ill-behaved*, and thus not concepts we would wish to have. Usually the background I have in mind is that of pure logic with quantification and identity. Some might go further, and say that there are not really any such concepts. I would be happy with that conclusion too. Then I will show that, if a principle like GSP is a conceptual truth of the concept of part-whole, then either some form of nihilism is true, or the concept of part-whole is not conceptually conservative. That gives me an argument for the form of realism that I prefer: the realism that holds that GSP and TCP are, if true, not conceptually so.

The attraction of conceptual conservatism is best illustrated by a rogue's gallery of non-conservative concepts:

- **Boche.** According to Dummett, it is a conceptual truth of the concept "Boche" both that "all Germans are Boche" and that "all Boche are cruel". Anyone who deploys "boche" has to be prepared to accept "all Germans are cruel". (Dummett 1973, p. 454)

- **Descartes' God.** In the fifth *Meditation*, Descartes makes a striking psychological claim about himself: "I can't think of God without existence, just as I can't think of a mountain without a valley". As I read Descartes, he is claiming that his thought "God exists" is a conceptual truth of his concept "God". He also thinks, presumably, that "God is omnipotent, omniscient, and omnibenevolent" are conceptual truths of "God".

- **The Remartian.** Parodying Descartes, J.L. Mackie suggests that "Remartian" be understood so that "Remartians exist" and "Remartians are intelligent inhabitants of the planet Mars" are conceptual truths of "Remartian". (Mackie 1982, p. 43)

- **Tonk.** All instances of the schemas ⌜If α, then α tonk β⌝, and ⌜If α tonk β then β⌝ are conceptual truths of "tonk". (Prior 1960)

Here is a way of saying what is bad about these concepts: someone who has all it takes to consider the hypothesis "All Germans are cruel" — who lacks nothing in their understanding of what a German is and what cruelty is — but lacks the concept "Boche", knows that if you want to know whether all the Germans are cruel, you have to look at what they have been getting up to. The user of "Boche" must disagree — for him "All Germans are cruel" is a conceptual truth. But, what according to the Boche-user, is lacking in the non-Boche-user's understanding of her own concepts that prevents her recognising this conceptual truth? How can anything be lacking — by hypothesis, our non-Boche-user lacks nothing in their understanding of what a German is and what cruelty is. It seems that the Boche-user must say that somehow you can fully understand the concepts "German" and "cruel", but yet not know that "All Germans are cruel" is a conceptual truth. Similarly, Descartes must say that someone who has all it takes to consider the hypothesis "An omnipotent being exists" — who lacks nothing in their understanding of omnipotence or of existence — could fail to recognise that this hypothesis is a conceptual truth.

This is because both "Boche" and Descartes' "God" are non-conservative concepts. "All Germans are cruel" is expressible given conceptual resources not including "Boche", and is not a consequence of any conceptual truths about those

resources. “An omnipotent being exists” is likewise expressible given conceptual resources not including “God”, and is not a consequence of any conceptual truths about those resources.

A nice consequence of this is that even someone in the grip of an ill-behaved concept ought to be in principle able to recognise its ill-behavior — even an English jingoist should be able to see, on sober reflection, that there’s something suspicious about the concept “Boche”, and even a Cartesian theist can agree that there’s something suspicious about the Definitional Ontological Argument. Non-conservative concepts would straitjacket us into closing off possibilities that we could otherwise have left open, and if you find yourself in such a straitjacket, the best thing to do is to try to escape. Ask yourself: am I in the grip of a non-conservative concept? Do I recognise as conceptual truths principles the concept of which they are conceptual truths is not needed to express the truth in question?

If you believe that all the theorems of classical mereology, including GSP, are conceptual truths of the relation concept “is part of”, you are in the grip of a non-conservative concept. For you will regard “For any x and y, if x is not identical to y, then there is something not identical to either of x or y” as a consequence of a conceptual truth. But it is not a consequence of quantificational logic with identity, which is all that’s needed to express it.[2]

A couple of disclaimers before I proceed further: First, conceptual conservatism is *not* the view that all the *truths* of mereology (or of any other theory) must be a conservative extension of the truths of pure logic. We might call this view *alethic conservativism* It’s very hard for a theory to be conservative in that sense — certainly scientific theories are not. The claim is only that the *conceptual truths* of mereology should be a conservative extension of pure logic. This is a standard that scientific (and even mathematical) theories can meet.[3] Second, the issues I’m bringing up here are particularly relevant to people who think that grasping conceptual truths, or grasping conceptually valid inferences is constitutive of grasping a concept. But I’m not endorsing that view of concepts. I’m simply putting forward conceptual conservativism as a constraint on any theory of conceptual truths.

There is an important kind of escape from the style of argument that I used in the previous section. For example, intuitionistic logicians will lose no time in telling you that classical negation is non-conservative relative to the background of the other truth-functional logical operators. For logical principles such as Pierce’s law, $(((p \to q) \to p) \to p)$, are expressible using only the background (in this case, only implication) but can only be proved in a classical proof system by a detour through formulas containing negation.

The intuitionist is quite right that classical negation is non-conservative relative to the background of the other operators. But they need to look again at the definition of conceptual conservatism I gave above. For classical negation to be ill-behaved must be non-conservative relative to a conceptual background we could acquire and use independently. The classical logician should say — as indeed they often do — that all the truth-functional connectives are a package deal: none of them can be understood without understanding the conceptual connections to the others. If you've managed to acquire the concept of implication without that of negation, then you haven't quite understood implication yet (or the implication you've understood is not classical implication).

Suppose you wanted to defend the idea that GSP is a conceptual truth of the concept of part-whole by saying that part-whole is a package deal with some concept represented in GSP and its problematic non-conservative consequences. What could that concept be?

Recall that the non-conservative consequence of classical mereology was this: "For any *x* and *y*, if *x* is not identical to *y*, then there is something not identical to either of *x* or *y*". There are two likely candidates in that sentence: identity, and the quantifiers. Someone who wanted to hold onto the view that GSP is a conceptual truth could do so by claiming that you can't fully understand identity without without grasping its conceptual connections to the concept of part-whole. Or they could do so by claiming that the quantifers can't be understood without grasping their conceptual connection with the mereological concepts.

Both of these claims might sound outlandish on a first pass, but I think that there are people who would endorse them.

In the case of identity, some people, notably Donald Baxter (1988b, 1988a) and David Armstrong (1997, pp. 14–18), hold that in some non-trivial sense, composition is identity.[4] They will presumably say that you can't *fully* understand the concept of identity until you grasp it in its full generality — many-one identity (Baxter) or partial identity (Armstrong). Both of those are supposed to be mereological concepts, which might have GSP as an associated conceptual truth. So according to the composition-as-identity theorists, you haven't fully understood identity until you find "For any *x* and *y*, if *x* is not identical to *y*, then there is something not identical to either of *x* or *y*" to be a conceptual truth.

In the case of the quantifiers, some people hold that the quantifier used in asserting GSP is a kind of plural first order (PFO) quantifier. Though we pronounce it "there is a", it really means "there are some". Moreover, they'll also hold that the part-whole relation is a special logical predicate pronounced "is part of" but really meaning "are some of the". This predicate is part of the machinery of PFO quantification, and cannot be seperated from it. Furthermore, GSP (and the other

theorems of classical mereology) when translated in this way come out to be tautologies of PFO quantification. These people are sophisticated nihilists. Their theory that mereological talk is really PFO talk is one way of formulating the type of nihilist semantics that I discussed in section 3.

Both of those views escape the charge of non-conservatism. But both are radical and unpopular positions — not what is wanted by the typical realist about composite objects. If you want to be a realist about composite objects, don't want to be the grip of a non-conservative concept, and don't want to believe that composition is identity, then the only option left is to agree with me that GSP is not a conceptual truth.

5 Conclusion

I'll finish with two disclaimers.

First, I hope that I've managed to at least communicate the sense of unease I feel at the widespread view among realists that GSP is necessary, and if not a conceptual truth, then a truth capable of justification on an entirely apriori basis. Communicating that sense of unease was the burden of my analogy between the two forms of nihilism.

I'm pretty confident that conceptually true bridges between the microscopic and macroscopic worlds sit ill with view that both are equally real. I would like however, to be able to say something about why this is. What is it about conceptually true principles like GSP that gives them the sulphurous reek of anti-realism? I've conjectured that it has to with a failure of conceptual conservatism. I think it's striking that this predicts that people who want GSP to be conceptual would be attracted to Baxter's "composition is identity" thesis, if not to sophisticated nihlism. But I'm not nearly so confident that this is the right diagnosis, as I am that some diagnosis is needed.

Second, I've played very fast and loose with the distinction among distinctions between conceptual vs. empirical truths on the one hand, and necessary vs. contingent truths on the other. Even if I'm right that GSP (and TCP and TAP) are empirical truths, does it follow that they are contingent? Really the more popular view among realists about composite objects is that GSP expresses a necessary, but not conceptual truth. If I had to argue against that, I would do by showing that it fits none of the usual Kripkean models for the necessary a posteriori (it does not follow from a true identity statement concerning rigid names). I claimed that GSP is a kind of generalisation of TCP; and TCP seems to have the character of

a bridge law. Perhaps the next step forward for this project is to see what views about bridge laws would fit best with it.

Notes

[1]On this point, I am in agreement with Lewis (1990). Other aspects of my defence of realism, especially in the idea of the justification of realism as a best explanation owe a debt to the work of J.J.C. Smart and of Michael Devitt.

[2] Here is a proof of the non-conservative consequence of classical mereology:

Suppose there's x and y and $x \neq y$.

Perhaps x is a proper part of y. Then there is a proper part of y disjoint from x, call it z. $z \neq x$ (because they are disjoint) and $z \neq y$ (because z is a proper part of y). Here I am appealing to what Peter Simons (1987) calls the Weak Supplementation Principle — an uncontroversial theorem of classical mereology. Perhaps y is a proper part of x. In that case, there is a proper part of x distinct from both, for the same reasons.

Perhaps neither of them is a proper part of the other. Then there must be a part of x disjoint from y, call it x' (though x' might be x itself) and a part of y disjoint from x, call it y' (though y' might be y itself. The sum, z, of x and y has to have both x' and y' as parts, but since x is disjoint from y', $z \neq x$, and since y is disjoint from x', $z \neq y$. This reasoning appeals to GSP.

Since this dilemma is exhaustive, and on every horn we find that there is a z not identical to either x or y, we can conclude that if x is not identical to y, then there is something not identical to either of x and y.

There is another way out, which was pointed out to me by Gabriel Uzquiano. A non-extensional mereologist might prefer to retain WSP and GSP, but deny the validity of the move from "neither x nor y is a proper part of the other" to "there is a part of x disjoint from y". For that matter, what should I make of someone who attempts to deal with the non-conservativeness of classical mereology by dropping WSP and retaining GSP?

In the latter case, what's left is a consistent conservative extension to first order logic. However, without WSP there is nothing recognisably mereological about it. Not every set of conceptual truths that passes the conservativeness test corresponds to a concept (much less a mereological one). I'd say the same about non-extensional mereology. Though I understand formal systems of non-extensional mereology, and can see that they are conservative extensions to first order logic, their theorems do not correspond to the conceptual truths of any ordinary mereological concept I am acquainted with.

[3]There is a certain kind of philosophy of mathematics that makes it hard for mathematical theories to meet the standards of conceptual conservatism. If you thought, for example, that the truths of mathematics — or even just of some part of mathematics, perhaps arithmetic — were analytic, then, since arithmetic is not a conservative extension of pure logic, you would have to say that some mathematical concepts are not conceptually conservative.

[4]Here is a novel argument against the composition-as-identity thesis. The thesis claims at least that "strict" identity — identity in the traditional sense —- is a special case of a more general relation, where this more general relation is mereological in character. So, for example, Baxter

might say that general identity is summation — the many-one relation between a plurality of summands and their sum — and strict identity is the special case where we have only one summand. Armstrong might that say that general identity is overlap — the relation between objects that share a part — and strict identity is the special case where objects share *all* their parts.

If this were right, then we ought to be able to use what Armstrong or Baxter say about strict identity to define it in purely mereological terms — terms that do not appeal any any prior notion of identity — and we should expect that the logical features of identity would be exhausted by what can be derived from this definition. If that did not work, then surely strict identity would more than just a mere special case of general identity.

So we should expect that the substitution of identicals should be a derivable rule in a formal mereology that does not assume identity, and does not include the substitution rule as one of its primitive rules. But this doesn't work. You can formulate classical mereology with identity as a defined relation, and even do it in such a way that the substitutivity of identicals is an eliminable rule, but you won't be able to derive substitutivity from a mereological basis alone. To illustrate this, no amount of pure mereology without identity is going to entail "if *x* and *y* share all their parts, then *x* is red iff *y* is red".

I omit David Lewis (1991) from my list of composition-as-identity theorists, as he does not hold the view that Baxter and Armstrong do, that numerical identity is a mereological relation. Lewis's view that mereological overlap is *like* identity in certain ways, not that it *is* identity.

References

Armstrong, D. M. (1997). *A World of States of Affairs*. Cambridge: Cambridge University Press.

Baxter, D. L. M. (1988a). Identity in the loose and popular sense. *Mind 97*(388), 575–582.

Baxter, D. L. M. (1988b). Many-one identity. *Philosophical Papers 17*, 193–216.

Berkeley, G. (1954). *Three dialogues between Hylas and Philonous*. New York: Liberal Arts.

Descartes, R. (1968). *Discourse on Method and the Meditations*. London: Penguin.

Dummett, M. (1973). *Frege: Philosophy of Language*. London: Duckworth.

Lewis, D. (1990). Noneism or allism. In *Papers in Metaphysics and Epistemology*, pp. 152–163. Cambridge: Cambridge University Press.

Lewis, D. (1991). *Parts of Classes*. Oxford: Blackwell.

Mackie, J. L. (1982). *The Miracle of Theism*. Oxford: Oxford University Press.

Merricks, T. (2001). *Objects and Persons*. Oxford University Press.

Prior, A. N. (1960). The runabout inference ticket. *Analysis 21*, 38–39.

Schlick, M. (1932). Positivism and realism. In H. Mulder and B. F. van de Velde-Schlick (Eds.), *Philosophical Papers*, Volume 2. Dordrecht: D. Reidel.

Simons, P. (1987). *Parts: a Study in Ontology*. Oxford: Clarendon Press.
van Inwagen, P. (1990). *Material Beings*. Ithaca, NY: Cornell University Press.