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Properties as parts of ordinary objects

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abstract

The so-called constituent ontology says that the properties of a concrete particular are constituents of it: parts, or something like parts. This is supposed to account for its character. I argue that the constituent ontology cannot account for things' character, and entails the existence of immaterial minds and of objects with an impossible character. One could avoid some of the problems by denying that constituency is like parthood, but this amounts to rejecting the constituent ontology.

1. The constituent ontology

According to the so-called constituent ontology, concrete particulars are made up of things other than concrete particulars. Dogs are made up of atoms. But the constituent ontology says that dogs also have parts that are nothing like atoms--so unlike them as not to be concrete particulars at all.

The claim is not that dogs are made up partly of atoms and partly of these other things, in the way that my desk is made up partly of metal pieces and partly of wooden ones. A dog is made up entirely of atoms. Take away the atoms and nothing is left. But it is also made up entirely of things that are neither atoms nor concrete particulars of any other sort, so that taking away those things (whatever that might amount to) would leave nothing. The atoms and the other things occupy different levels of composition. On one level, a dog is made up of atoms, but on another level--a metaphysically deeper one--it is made up of the other things.

The concrete particulars making up a dog and the way they relate to one another are sometimes called its mereological structure. The things other than concrete particulars making up a dog are called its constituents, and they and the way they relate to one another are its logical or ontological structure.

The principal constituents of things, on the constituent ontology, are properties. These might be shareable universals, so that the same property of being human is a constituent of both you and me; or they might be nonshareable "tropes", such as my very own humanity: a thing numerically different from yours, though perhaps exactly like it.

No one, to my knowledge, thinks that concrete particulars are made up of both tropes and universals, or that some are made of tropes and others of universals. But some say that they are made up of tropes or universals together with another constituent--just one--that is not a property at all but rather a special sort of particular: "the particular in abstraction from its properties" (Armstrong 1997: 123)

or “thin particular” or “substratum”. It does not itself have properties as constituents. It bears or supports properties, but does not exemplify them. The properties “inhere in” without characterizing it, like feathers stuck into clay. It is only because of their inhering in a common substratum, the idea goes, that they are exemplified by a single concrete particular--though that concrete particular is not the substratum itself but something made up of the substratum and the properties. (There is dispute about whether a substratum could exist without supporting any properties, as a “bare particular”.)

That makes four species of constituent ontology: that concrete particulars are made up of universals, of tropes, of universals and a substratum, or of tropes and a substratum.

The constituent ontology is not the view that properties are parts of certain abstract objects: facts or states of affairs or propositions, say.[1] Perhaps what makes it true that the Eiger is steep is the existence of a fact composed of that mountain and the property of steepness. Or maybe the proposition that the Eiger is steep has those things as parts. But such an entity would not be visible or climbable or made of ice-covered limestone. I am talking about the view that steepness is a part of the Eiger itself--that large, cold, dangerous physical object.

So the constituent ontology says that concrete particulars are made up of properties (and perhaps substrata) in the way that they are made up of atoms, only on a more fundamental level. The alternative is that concrete particulars are made up only of concrete particulars. A dog is made up of atoms, and at a physically deeper level it is made up of elementary particles. It is not in any sense made up of properties, or these together with a substratum. There are no substrata at all. There may be properties, but they are never parts, or anything like parts, of concrete particulars. Concrete particulars simply have no ontological structure. (Armstrong says they would be mere “blobs”.) This is sometimes called the relational ontology (Loux 2006: 208), the idea being that properties are removed from the particulars exemplifying them, and bear to them only an abstract and bloodless relation utterly unlike that of part to whole. Because someone could reject the constituent ontology by denying the existence of properties altogether, ‘relational ontology’ is not the best name for this view. But good or bad, that’s the name it has.

Constituent and relational ontologies are not just two competing views, but radically different ways of thinking about the metaphysics of concrete objects. Relationalists are concerned with the way material things relate to their parts--their concrete, particular parts, that is. They think about what changes of parts a thing can survive, if any--think of the ship of Theseus, the puzzle of Dion and Theon (or

[1] Some object to my claim that states of affairs are abstract (Armstrong 1997; see also Wolterstorff 1970: 111, though this is not his view). They say that ordinary concrete objects such as mountains are states of affairs. This is not a substantive disagreement, but merely a different use of the technical term ‘state of affairs’.

amputation paradox), and the problem of increase (or growing paradox). They ask whether the same parts can compose two different, "coinciding" objects at once, and when smaller concrete particulars compose a larger one.[2] For the most part, constituent ontologists ignore these questions and ask entirely unrelated ones: whether concrete particulars conform to the identity of indiscernibles, what it is for several properties to belong to the same thing, whether there is "more to" a particular than its properties, and how to avoid Bradley's regress, for instance[3]--questions of no interest to most relationalists. The result is separate debates about the metaphysics of concrete objects with little common ground. This can be frustrating, because participants in these debates often presuppose a constituent or a relational ontology without saying so, leaving readers to guess, on the basis of the moves they make, which rules they're playing by.

I cannot hide the fact that I was brought up as a relationalist. The idea that such things as dogs have their properties as parts has always seemed to me deeply confused--like the view, attractive to certain undergraduates, that dogs <u>are</u> properties. But I won't make that point here (see van Inwagen 2011). Let us suppose, if we can, that the constituent ontology is coherent and intelligible. I want to explore problems that it seems nevertheless to face--problems for the most part very different from the ones constituent ontologists typically worry about. It may be that the problems are only apparent and the appearance is based on a misunderstanding. In that case I hope someone will be able to clear things up. Or maybe the problems are real but solvable. In any event, I hope to say something useful to both sides.

2. Basic principles

Let me try to state the basic principles of the constituent ontology. It may help to start by asking how anyone could be led to suppose that ordinary things had properties as parts. The usual answer is that it would tell us what it is for a thing to have a nature or character (Loux 2006: 207, Wolterstorff 1970: 112). What is it, for instance, for the book on my desk to be red? More precisely, what does its being red <u>consist in</u>? What accounts for or explains it? What is its metaphysical ground? The question is not only about being red: we could just as well ask what it is for the book to be rectangular or solid or interesting. What accounts for <u>any</u> concrete particular's being <u>any</u> way?

Constituent ontologists answer that a thing has a character by having or exemplifying properties. It may be too simple to say that a thing is red by having the

[2]On the amputaton paradox, see van Inwagen 1981; on the problem of increase see Olson 2006; on coinciding objects see Baker 2000, and on composition generally see van Inwagen 1990.

[3]Rea 1997 consists of debates among relationalists. Some typical constituentist papers are collected in the second half of Loux 1976; Simons 1994 gives a useful history of the view.

property of redness. There might be no such property, but only a lot of precise wavelengths, and mixtures of different wavelengths, that make light red to human beings. But the book's being the way it is consists in its having some properties or other. This consisting in or grounding is asymmetric: a thing's properties account for its character and not vice versa. So

1. Concrete particulars have their character <u>because</u> they have the properties they have.[4]

In fact this looks like the only way of saying what accounts for a thing's character. What could account for a thing's character if not its properties?

If a thing's character consists in its having properties, then things with the same properties will have the same character. If things could have a different character but the same properties, their properties would not entirely account for their character, contrary to 1. So

2. Concrete particulars with the same properties have the same character.

(If the properties in question are tropes, their sameness will be exact resemblance.) Constituent ontologists may also accept the converse principle:

2*. Concrete particulars with the same character have the same properties.

That is, when concrete particulars are exactly the same, this sameness consists in their sharing all their properties. If those properties are universals, this would explain qualitative sameness in terms of numerical sameness. It's not clear whether constituent ontologists <u>have</u> to say this. Maybe different ontological structures could produce the same character, in something like the way that different combinations of wavelengths can produce the same color or different neural properties can give rise to the same mental property. There might be "multiple realizability" of character by properties, so that a thing's properties fix its character but not vice versa.

If a thing's character consists in its properties, then just as things with <u>all</u> the same properties will have exactly the same character, things sharing <u>some</u> properties will have a similar character:

3. Concrete particulars that share properties are alike in some respect.

If the book and the chair share the property of being red, that makes them alike in color.

Here the converse principle is far more doubtful:

[4] Relations may come into the story as well; see §5.

3*. Concrete particulars that are alike in some respect share properties.[5]

Even if things' properties fix their character, the book might be red by virtue of having one property while the chair is red by having another. Or there might be concrete particulars so different that they share no properties at all, yet still alike in some respect: in being concrete particulars, for instance.

And some aspects of a thing's character may consist not in its having certain properties, but in its not having them. However different you and I may be, we are alike in not being prime numbers. If this consisted in our sharing the property of not being a prime number, it would make that property a common constituent of all objects apart from prime numbers. And if a thing's being distinct from the number 42 consisted in its having the property of not being 42, then every entity would be made up of as many properties as there are numbers. Constituent ontologists generally deny that there are any such properties as not being a prime number or not being the number 42. They say that only an elite minority of predicates correspond to properties.[6] A thing's not being a prime number will presumably consist in its lacking properties. So our being alike in this respect cannot consist in our sharing properties.

Suppose all this is right: concrete particulars have their character because of the properties they have (or lack). How does this suggest that particulars are made up of properties? Well, if things have their character because of the properties they have--if their character depends on their properties--then the relation between a thing and its properties must be close and intimate. This intimacy is not a sort of inseparability, since it applies to properties accidental to a thing as well as those essential to it. We can get some idea of what it is by contrasting it with the Platonistic view that properties are abstract objects not in space and time. This makes the relation between a concrete particular and its properties as abstract and bloodless as the relation between the Martian moons and the number two (van Inwagen 2011: 392). It may be that a thing is red, necessarily, if and only if it relates in a certain way to a timeless object in Plato's heaven, just as the Martian moons are two, necessarily, if and only if they relate in a certain way to the number two. But the character of a thing cannot be grounded in that way. The book may exemplify a Platonic universal because it is red, but it cannot be red because it exemplifies a Platonic universal. The book's bearing a Platonic universal can no more account for its being red than the truth of the proposition that grass is green

[5]Though Armstrong appears to accept it, under the slogan 'resemblance is partial identity' (1989: 15).

[6]This is another deep difference between the two schools. Relationalists typically see no reason to suppose that properties are "sparse": see e.g. van Inwagen 2004. The connection between properties' being parts of ordinary objects and their being sparse is an underexplored topic.

could explain why grass is green (van Inwagen 2011: 398).

If a thing is red because it exemplifies the property of being red and not vice versa, then the property must somehow be, as the constituent ontologists say, in the thing. It must be "down here" where the red things are, not up in Plato's heaven with the numbers and the propositions. This relation has to be something more than mere spatial coincidence: even if the book coincided with a portion of a magnetic field, that would not make it magnetic. The book's properties, or at least its intrinsic properties, must be somehow built into its structure. (Armstrong compares them to layers in a cake.)

But what is it for a property to be in something? What is this close and intimate relation between things and their properties, and how does it differ from the one that features in the relational ontology? This is a notoriously hard question. The proposed answer is that a thing's properties are constituents of it--that is, parts. They are of course not the same sort of parts as atoms. Maybe a thing's properties and its atoms stand in different parthood relations to it. Or maybe they stand in the same parthood relation and the difference is simply that between properties and atoms. But a thing's properties are parts of it in some sense or other. Not just any part of a thing, or even any part that is a property, is a constituent of it. I have electrons as parts, and each electron has as a constituent the property of having a mass of approximately 9.11×10^{-31}kg. Since the parts of my parts are also my parts, this property too must be a part of me. But not a constituent, as I don't exemplify it: my mass (take my word for it) is far greater.[7] So we can say at least this:

4. A concrete particular has a property iff (and because) the property is a constituent of it.
5. x is a constituent of y iff x is a part of y and x is in y.

Assuming that every concrete particular has some character or other, and that no concrete particular can have a character by having no properties at all, it follows from these principles that all concrete particulars have properties among their parts.

These are the basic principles of the constituent ontology. Relationalists, by contrast, may accept 2 and 3, but not 1, 4, and 5. They may say that for a thing to have a certain character is for it to exemplify certain properties, but not that the second fact grounds or explains or otherwise accounts for the first.

3. Constituency and parthood

The constituent ontology says that properties are constituents of concrete particulars, and I have taken constituency to be a sort of parthood. What could it mean to say that dogs are bundles of properties if this did not imply that properties

[7] As Chad Carmichael has pointed out to me, it follows that my skin color is in me but the masses of my electrons are not, reminding us that 'in' is a technical term.

were parts of dogs? (It can hardly mean that dogs are sets, in the mathematical sense, having properties as members.) Constituent ontologists say that concrete particulars are composed of properties (and perhaps substrata), and composition is defined in terms of parthood: the xs compose y $=_{df}$ each of the xs is a part of y, and every part of y shares a part with at least one of the xs.[8] And constituency appears to share these characteristic features of parthood[9]:

Inheritance of intrinsicness: If being F is intrinsic, then having a part (constituent) that is F is also intrinsic.
Inheritance of location: If x is a part (constituent) of y, then y is located where x is.
Transitivity: If x is a part (constituent) of y and y is a part (constituent) of z, then x is a part (constituent) of z.
Weak supplementation: If x is a part (constituent) of y and $x \neq y$, then y has a part (constituent) that does not overlap (i.e., share a part [constituent] with) x.
Strong supplementation: If y is not a part (constituent) of x, then y has a part (constituent) that does not overlap x.
Dependence of whole on part: If all the parts (constituents) of a thing did not exist and other things were equal, then that thing would not exist either.

If constituency is not a sort of parthood, we can only wonder what it might be.

But perhaps a thing's constituents are not parts but only something like them, and constitutive composition cannot be defined in terms of parthood.

Someone might say this on the grounds that constitutive composition violates some of the principles of classical mereology (Armstrong 1989: 91f.). One such principle is that composition is universal and unrestricted: any things whatever compose something. But not just any things are constituents of something: nothing has as constituents both the property of being human and that of being an electron. Classical mereology also says that composition is unique--things can compose only one object--whereas some constituent ontologists say that things can constitutively compose two different objects at once (see §5).

But this is a poor reason to deny that constituents are parts. Many non-constituentists reject the uniqueness of composition, and even more reject universal composition. They deny that there is any sense of 'part' in which things must always be parts of something bigger. The mere existence of my left foot and the planet Mars does not compel us to accept that there is also something composed of those two objects--a large material thing with two parts a hundred million miles apart. Whether these philosophers are right to reject the principles is of course disputed. But if the very idea of parthood presupposed them, this

[8] Most definitions also specify that no two of the xs share a part. Omitting this clause enables some of the points in §§7 and 10 to be made more simply.

[9] The first two are from Sider (2007: 70); the third to the fifth are fairly uncontroversial principles of classical mereology.

rejection would amount to denying that there are any parts. Yet these philosophers don't deny that there are parts. They are talking about the same parthood and composition that classical mereologists speak of. They simply disagree with them about the truth of certain metaphysical principles concerning parts, namely the universality and uniqueness of composition. Even if those principles are true, they don't appear to be true by the definition of 'part'. Constitutive composition need not conform to them in order to count as a parthood relation.[10]

A better thought is that parts must be independent of wholes. The atoms composing a dog can exist without being parts of that animal or any other ordinary object. By contrast, constituent ontologists typically say that things' constituents depend for their existence on those things: a universal cannot exist without being a constituent of something, and a trope cannot exist without being a constituent of the particular thing it is in. Whether this is a good reason to deny that constituency is parthood depends on whether a thing's parts, just by being parts, must be able to exist independently--that is, without being parts. Aristotelian hylomorphists say no: they deny that a dog's heart can exist without the dog, but not (usually) that it is a part of the dog. They say only that hearts are not substances.

Or one might say that constituency cannot be parthood because parthood is reflexive: everything is a part of itself, but not everything is a constituent of itself. Otherwise every property would exemplify itself: the property of being red, being a constituent of itself, would be red, just as my book is. But although the reflexivity of parthood simplifies mereology (much as the principle that every set is a subset of itself simplifies set theory), it may be negotiable.

I will return to this theme in §11. Until then I will take constituents to be parts.

4. Brute character

Let me now examine the constituent ontology more critically. Its main virtue is supposed to be that it tells us what it is for a concrete particular to have a character.[11] This presupposes that there is something that a concrete particular's having a character consists in: a metaphysical ground or explanation. There has to be an illuminating and nontrivial answer to the question of what it is for a thing to be F, an answer having the same form for all values of 'F'. Why accept this? Why couldn't a thing's having a character be a brute and unanalyzable fact, with no deeper metaphysical ground? The constituent ontology is proposed as an answer--indeed the only possible answer--to a certain metaphysical question. But why suppose that the question has any answer?

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[10] Another assumption of classical mereology disputed by both relational and constituent ontologists is that parthood is timeless: things have their parts without temporal qualification. For virtues of classical mereology and its differences in many ways from "traditional" versions. I won't discuss her view.

[11] Paul (2002), Fine (1999), and Simons (1987) offer variations on this theme.

The likely reply is that the constituent ontology would be a good answer if it were true. If a good answer to a question is available, that makes it reasonable to suppose that the question has an answer. But I doubt whether the constituent ontology is a good answer.

For one thing, it doesn't tell us what it is for things in general to have a character. It does not enable us to complete the schema

x is F iff....

The property of being red has a character. It's a property, specifically a color. Its being a color is as much an aspect of its character as being red is an aspect of the book's character. But the constituent ontology says nothing about what it is for red to be a color. All it could say is that red's being a color consists in its having the property of being a color (or some other property or combination of properties) as a constituent. But constituent ontologists don't say this. If any thing's having any character consisted in its having a certain property as a constituent, all properties would be made up of further properties. The property of being red would be made up of such properties as being a color, which would in turn be made up of yet further properties; and so it would go on. And the character of every property would be grounded in the character of some other property. There would be no ultimate metaphysical ground of the book's being red: it would consist in something else, which in turn would consist in something further, and so on without end, like a building with no lowest floor. (Relationalists, by contrast, can happily say that every property has other properties, generating an endless chain in which each link exemplifes the next, because they don't say that a thing's character is grounded in its properties.)

Constituent ontologists say that the property of being red has no properties as constituents, and thus no ontological structure.[12] Either there are no "higher-order" properties that a property can have, or else such properties are not in their instances, and properties have properties in a different way from that in which concrete particulars have them. Yet every property has a character. It follows that some things have a character without having properties as parts. And because different such things have different characters, their character cannot consist in their lacking such parts either. (The character of a substratum might consist in its having no properties as parts, but this is a special case.) So a thing's character is not always grounded in its ontological structure, or presumably in anything else. Some

[12] Armstrong appears to say that complex properties have their character by virtue of being composed of simpler properties, and thus resemble each other by having common constituents (1989: 106). Simple properties, though, have brute character. (He says they never resemble each other, even though any two of them are both properties, both simple, and more like each other than like a dog. This is an odd use of the word 'resemble'.)

character is “brute”.

But then why suppose that concrete particulars have properties as parts? Why isn’t their character brute? You might say that some things must have a brute character because not everything can have its character derivatively (Loux 2006: 207f.). If my book has its color by having redness as a part, it derives or “borrows” its character from that property. And not everything can borrow its character. Borrowing has to come to an end somewhere. Some things must have a character in their own right, nonderivatively. But even if this explains why not all things have properties as parts, it does nothing to explain why some do. Nor does it tell us which do and which don’t, or why.

5. Relations

Not only does the constituent ontology give no account of the character of properties, but it appears unable to account for the entire character even of concrete particulars. Their having properties as constituents is normally taken to imply that every property is a constituent of something: properties are in their instances, and every property has to be somewhere (Armstrong 1997: 38, Loux 2006: 233-39). This will hold for relations as well: if the book’s being red is grounded in its having as a constituent the property of being red, then the book’s resting on the desk must be grounded in something’s having as a constituent the relation of resting on. At least this will be so for external relations, the holding of which is not grounded in the properties of the relata.

This something--the thing of which the resting-on relation is a constituent--cannot be either the book or the desk. Its being a constituent of the desk could only account for some of the desk’s parts resting on others--its top resting on its legs, for instance (and likewise for the book). The something has to include both book and desk, taking up the whole of the book and the desk but not their surroundings: not the carpet beneath the desk or the sandwich on top of the book. But it won’t be composed only of the book and the desk either, as such a thing would not have the resting-on relation as a constituent (though it might have that relation as a part, if it’s a constituent of the desk). We need an object having the book, the desk, and the resting-on relation as constituents--a concrete particular like the book and the desk. This suggests an analog of principle 4:

4*. Concrete particular x bears an external relation to concrete particular y iff (and because) there is a concrete particular having as constituents x, y, and the relation.

(Similar principles would hold for relations of more than two places.)

But the existence of a “relational complex”[13] having as constituents the book, the desk, and the resting-on relation cannot make it the case that the book rests on

[13] I take the term ‘complex’ from Price (1998: 24).

the desk: it could just as easily make it the case that the desk rests on the book. It may be that the book rests on the desk because the book bears the resting-on relation to the desk. But this cannot consist in the resting-on relation's being a constituent of anything. The mere existence of something made up of the book, the desk, and the resting-on relation cannot determine whether the book is on the desk or the desk on the book.

Someone might say (as Armstrong does, 1997: 121) that the book's resting on the desk is grounded in one sort of object composed of the book, the desk, and the resting-on relation, whereas the desk's resting on the book (if I were to rearrange my office furniture) would be grounded in a different sort of object composed of the same three entities arranged differently. By analogy, we could glue a red Lego brick to a blue one either with red on top and blue underneath or vice versa. If this would create an object composed of the two bricks and the glue, it would create a qualitatively different object depending on how we arranged them. That looks like the only way for the constituent ontology to account for things' relational character.

But this works badly with relations that are neither symmetric (like touching) nor asymmetric (like resting on). Suppose Alex loves Leo. The proposal is that this is because there is a concrete particular composed of Alex, Leo, and the loving relation, arranged, so to speak, in that order. Were those things arranged otherwise, they would compose a different particular that would make it the case that Leo loves Alex. Well, suppose Leo loves Alex too, so that the things are also arranged in this other way. Then there are two objects--two concrete particulars--composed of Alex, Leo, and the loving relation. One, the "Alex-to-Leo complex", accounts for Alex's loving Leo; the other, the "Leo-to-Alex complex", accounts for Leo's loving Alex. They differ in that their constituents are differently arranged. (Here the analogy fails: if bricks are arranged with red above and blue below, they cannot at the same time have blue above and red below.)

But this looks incoherent. The two complexes would be composed of the same three constituents, and since each person loves the other, the constituents would be arranged both Alex-to-Leo and Leo-to-Alex. If two objects are composed of the same parts, and those parts are arranged in the same way, nothing about the way the parts are arranged can make the objects qualitatively different. Of course, we know what it is for Alex to love Leo, what it is for Leo to love Alex, and how these propositions differ. But that does nothing to account for the difference between the Alex-to-Leo and Leo-to-Alex complexes.

Someone might say that the Alex-to-Leo complex exists because Alex loves Leo, whereas the Leo-to-Alex complex exists because Leo loves Alex. Were Alex to stop loving Leo, there would cease to be an Alex-to-Leo complex, though a Leo-to-Alex complex may remain. Despite the fact that they have the same parts arranged in the same way, the two complexes differ by having different metaphysical grounds. But this gets the grounding the wrong way round: the constituent ontology says that Alex loves Leo because there is an Alex-to-Leo

complex, not vice versa.

Now there are philosophers--"constitutionalists"--who think that concrete particulars can and do compose qualitatively different objects at once: my atoms, for instance, now compose both a person who is thinking about philosophy and an organism or "body" that is not. Both have the same parts, arranged in the same way. What makes them different is not the way their parts are arranged, but something else. If this is so, it may also be possible for concrete particulars and relations arranged in the same way to compose qualitatively different objects. But others find this aspect of constitutionalism deeply mysterious, and its advocates have done nothing to dispel the apparent mystery (see Bennett 2004, Olson 2001). Apparently the constituent ontology can account for the character of relational complexes (and the relational character of things generally) only by embracing the same mystery.

6. How the constituent ontology leads to substance dualism

I have argued that the relational ontology offers no good account of what gives ordinary objects their character, undermining the main reason for accepting it. (There may, of course, be other such reasons I haven't considered.) I turn now to reasons to think the view is false. They arise even if the worries I have been considering can be answered. The problems have to do with objects that are more "abstract" than ordinary concrete particulars in that they have fewer properties as constituents. We might call them quasi-abstract objects. ('Quasi-abstract things' or 'entities' would be an equally good name: I don't mean anything special by 'object'.)

Consider the thing composed of all my constituents except my physical properties: shape, size, mass, temperature, atomic structure, and so on. (I ask in §9 whether there has to be such a thing.) According to the constituent ontology (principle 4), it will lack any physical properties. It will be a wholly nonphysical or immaterial thing. Yet all my mental properties will be constituents of it, making it (by 4 again) psychologically indistiguishable from me. It will be an immaterial mind.

This is not quite Cartesian dualism, as it doesn't imply that all thinking beings are immaterial or that physical and mental properties are incompatible. In a way it is less mysterious than Cartesian dualism, since it allows that mental phenomena might arise out of physical ones. But in another way it's more mysterious: it implies that even if all mental phenomena have a physical basis, some of their subjects--some conscious, thinking beings--are wholly immaterial. It would mean that there are both material and immaterial human thinkers, and that for every human being there is one of each. It is an absurd amalgam of dualism and materialism.

The problem would not arise in this form if all mental properties were physical properties. But it would arise in another form: consider the thing composed of all my constituents except my nonmental properties. It will have only those of my physical properties that are also mental properties. Since mass, shape, and color

will not be mental properties even if some physical properties are, it would be a massless, shapeless, colorless mind.

7. Things composed of atoms

Maybe we should expect a thing composed of all my constituents except my physical properties to be a strange sort of object. But the constituent ontology would make any object composed of material things equally strange. Consider the thing composed of my atoms: the thing such that each of my current atoms is now a part of it, and every part of it now shares a part with one or more of those atoms. Call it O. O may have parts that are not atoms. The negative charge that is a constituent of each of my atoms' electrons might be one. My liver might be another, since each of its parts would overlap one or more of my atoms. (Any atom that is a part of my liver shares a part with it, since each is a part of itself.) But any part of O other than an atom would have to be either a part of one of O's atoms or else composed of parts distributed across several of those atoms.

If O's properties are parts of it, then each of them must also share a part with one or more of O's atoms. There are two cases. First, a property might be a part of one or more of O's individual atoms. Presumably any property that is a part of an atom is a constituent of it, and thus a property it exemplifies. So any property of O's that is a part of one or more of its atoms will be a property it shares with those atoms. But O will have many properties that it doesn't share with any of its atoms: its human shape and size, for instance, its atomic structure or chemical makeup, and its having a solid surface.

Alternatively, a property might, like my liver, be composed of parts distributed across several of O's atoms without itself being a part of any of them. But O's shape could not be like this either. A small plaster figurine could have the same shape. So could a thing composed of the figurine's atoms. Its shape, like O's, would have to be composed of parts of its individual atoms. But its shape would have far fewer parts than O's shape has, or at any rate fewer atom-sized parts. So they could not be the same shape (or qualitatively identical shape tropes).

It appears, then, that O's shape could be neither a part of one of its atoms nor composed of parts distributed across several of its atoms. But because O is composed of atoms, every part of it must be either an atom, a part of an atom, or composed of things that are parts of atoms. It follows that O's shape cannot be a part of it. Yet the constituent ontology requires a thing's shape to be a part of it. We can only conclude that O has no shape.

Likewise, O's size or volume cannot be a part of any atom. Nor could it be composed of parts of O's atoms. If it were, those parts would presumably be the atoms' sizes: how could a size be composed of anything other than sizes? And if the sizes of each of O's atoms composed a size, it would be the sum of those sizes. But O's size is far greater than the sum of the sizes of its atoms, since most of its volume consists of the empty space between the atoms. It follows that O cannot

have any size property as a part. If properties are parts, O can have no size.

Or consider O's atomic structure. It will have to include relations among O's atoms. But those relations cannot be either parts of individual atoms or composed of such parts. Because O is composed of atoms, such relations cannot be parts of it, and thus on the constituent ontology it cannot have an atomic structure. But how could a thing composed of close-knit atoms have no atomic structure?

The constituent ontology appears to imply that the object composed of my atoms could have no shape or size or atomic structure. And this goes for all things composed of atoms. But ordinary material things have a shape, size, and atomic structure. It follows that ordinary material things--human beings, stones, pieces of furniture--are not composed of atoms. They may have atoms among their parts, but they need other parts as well, which don't overlap their atoms. They have to be composed of atoms together with certain properties (and probably relations). It is metaphysically impossible for an ordinary material thing to be made up entirely of smaller material things: atoms, bricks, pieces of yarn, or what have you.

You could still make a material thing out of bricks in the sense that you would not literally need to "add" the properties to the bricks in order to construct one. All you would have to do is arrange bricks, and that action would generate the necessary further ingredients. But the resulting material thing would not be made up entirely of bricks.

This makes the nature of objects composed of material things mysterious. The thing composed of my atoms could not be a person or a human being or even a material thing. It would have no shape or size or atomic structure. What character it would have is anyone's guess.

This is trouble. For one thing, it puts the mystery in the wrong place: it makes what ought to be familiar things mysterious, and what ought to be mysterious things familiar and ordinary. We expect familiar things to be made up of atoms. If anything is mysterious, it ought to be something were made up partly of concrete and partly of abstract entities--a compound of certain atoms and the number 42, say. Yet the constituent ontology implies that things made up partly of atoms and partly of properties and relations are the ordinary and familiar ones, and the weird things are those made of atoms.

For another, it's incompatible with the usual statement of the constituent ontology. Constituentists say that ordinary objects are composed entirely of atoms, as well as being entirely composed, on another level, of properties and relations. It now appears that this cannot be right. At best familiar objects could be composed of atoms together with properties and relations, much as a desk is composed of wooden pieces together with metal ones.

But the real trouble is that it is impossible for a thing made up entirely of things with shape and size to lack any shape and size of its own. How could things that individually take up space add up to something that takes up no space? Consider a thing composed of bricks. It will not typically have the shape of any of the bricks.

Nor could it have one composed of the shapes or other parts of the individual bricks, for whatever shape it has could be shared with an object having a completely different composition. If its shape would have to be a part of it, then it simply cannot have a shape. Putting bricks together might produce something with a shape--a thing composed of bricks together with a shape and perhaps other properties--but the thing composed of the bricks would have none. For that matter, a thing composed of the bricks and a certain shape would apparently have shape but no size, whereas a thing composed of the bricks and a certain size would have size but no shape. If ordinary things had properties as parts, there would be impossible objects.

8. Brute character again

Can the problem be solved? Someone might say that quasi-abstract objects have a brute character not determined by their constituents. So the object composed of all my parts except my physical properties, though it has no physical properties as constituents, nevertheless has a physical character. Likewise, the thing now composed of my atoms is physically just like me, even though my shape, size, and atomic structure are not constituents of it. So there are no impossible objects. If this appears to contradict the central claim of the constituent ontology, namely that the character of a concrete particular consists in its constituent properties, we could make it consistent by denying that quasi-abstract objects are concrete particulars.

But this would be like saying that if our theory of dogs doesn't apply to terriers, that only shows that terriers aren't dogs. A thing composed of bricks is a paradigm case of a concrete particular, just as a terrier is of a paradigm case of a dog. How could a thing made of bricks not be concrete? How could it not be a particular?

You might say that concrete particulars are those things whose constituent properties account for their character: those satisfying principles 1-5. But that would make the constituent ontology into the harmless tautology that those things with properties as constituents have properties as constituents. It would remain an open question whether there are any such things. If things composed of atoms, whether concrete particulars or not, have a brute character not fixed by their constituents, why not say that all things do?

9. Restricting composition

Or one might deny the existence of quasi-abstract objects.[14] My argument from the constituent ontology to substance dualism assumed that there was something composed of all my parts except my physical properties. And my argument that objects composed of atoms could have no shape or size assumed that my atoms compose something. But why assume this? Maybe there is nothing composed of

[14] Simply denying that they can exist independently of ordinary, "complete" objects is no help.

all my parts except my physical properties, and nothing composed of my atoms, or of any other atoms. Maybe none of the problematic entities exist. There would then be no problem of quasi-abstract objects. This would of course mean that composition is restricted rather than universal: some things compose something bigger and others don't. But unrestricted composition is controversial, and there is no reason why constituent ontologists must accept it (even if many do, e.g. Armstrong 1997: 13).

If quasi-abstract objects were always arbitrary and gerrymandered, so that we had no reason to believe in their existence apart from the principle of unrestricted composition, this would be a promising thought. Unless I believe that any things whatever must compose something, it's reasonable for me to doubt whether there is anything composed of Peru, the Thirty Years War, and the key of B flat. Challenged to say why those things don't compose anything, I should be within my rights to reply, "Why suppose that they do?"

But there is nothing arbitrary about a thing composed of my atoms. It seems possible for atoms to compose something, even if not all things do, or even all atoms. If composition is not universal, it would be surprising if there were a thing composed of Peru, the Thirty Years War, and the key of B flat. It would not be surprising if there were things composed of atoms. In fact it would be surprising if there were no such things. If any things ever compose anything, surely certain atoms do.

It doesn't help that the constituent ontology requires an otherwise generous ontology of composite objects. Recall that whenever one concrete particular stands in an external relation to another, there must be a further concrete particular composed of those things together with the relation--two of them if the relation is nonsymmetric and each bears it to the other. Because my left foot is gravitationally attracted to Mars, there must be something composed of those two things together with the attraction relation, and perhaps also a second such object to account for my foot's attracting Mars. That makes a lot of objects besides the familiar ones that we have names for. Combining this with the claim that atoms can never compose anything looks unprincipled at best.

10. Mereological and constitutive composition

You may think the problems arise from conflating two different senses of parthood. Constitutive parthood and composition are one thing; mereological parthood and composition are something else. They are not only different, but independent, in that a thing can be a constitutive part of something without being a mereological part, or a mereological part without being a constitutive part. So I am mereologically composed of certain atoms: each atom is a mereological part of me, and every mereological part of me shares a mereological part with one or more of those atoms. But my atoms are not constituents of me. I am not constitutively composed of atoms, but rather of properties (set aside relations and substrata):

each of my properties is a constituent of me, and every constituent of me shares a constituent with one or more of those properties. And a thing's being mereologically composed of atoms is perfectly compatible with its being constitutively composed of properties that share no parts with those atoms. The idea is that there is nothing "quasi-abstract" or otherwise problematic about objects mereologically composed of atoms: they are ordinary things, with just the shape, size, and atomic structure we should expect.

Now if constituents are parts of any sort, there will be a more general notion encompassing both constitutive and mereological parthood, and a similarly broad notion of composition. We might call them PARTHOOD and COMPOSITION, and define them like this (where 'part' means 'mereological part'):

> x is a PART of y $=_{df}$ x is a part or a constituent of y.
> The xs COMPOSE y $=_{df}$ each of the xs is a PART of y, and every PART of y shares a PART with one or more of the xs.

And the problem of quasi-abstract objects can be restated using these generic notions. Consider the object now COMPOSED of my atoms. By the definition of COMPOSITION, every PART of it that is not an atom must be either a PART of an atom or COMPOSED of PARTS of several atoms. Yet that object's shape and size could be neither PARTS of any individual atom nor COMPOSED of PARTS of several atoms. So they could not be PARTS of the object, and therefore not constituents of it. It could have neither shape nor size, which is impossible.

But constituent ontologists will turn this reasoning on its head.[15] They will deny that my atoms COMPOSE anything. Otherwise (by the definition of COMPOSITION) everything that was either a part or a constituent of such a thing would have to share a part or constituent with one or more of the atoms. That would rule out its having a size or a shape, for the reason just given. Yet it would have to have a size and shape. It follows that my atoms cannot COMPOSE anything. At most the atoms together with my size and shape could COMPOSE something. Presumably atoms could never COMPOSE anything (except in the degenerate case where there is only one atom that COMPOSES itself). Yet atoms could still compose something. In fact the proposal is compatible with universal composition, though not of course with universal COMPOSITION. But no one ever endorsed universal COMPOSITION.

The proposal may seem confusing. A thing's being a part of something (in the mereological sense) entails its being a PART of it; so it may appear that things' composing something entails their COMPOSING it. But the proposal denies this. It says that my atoms compose a thing by being its parts (at a certain level of decomposition). And they are also PARTS of it. Yet they do not COMPOSE that thing. This is because not all its PARTS share a PART with one or more of the atoms. Specifically, its shape and size are PARTS of it--constituents--but do not share a PART

[15] I thank Chad Carmichael for helping me to see this.

with any of the atoms.

This looks like the best way for constituent ontologists to respond to the problem of quasi-abstract objects. Remember, though, that mereological parthood is not a special technical concept invented by metaphysicians. It's just ordinary, unqualified parthood. "Mereological" parts are simply parts. (As we saw earlier, this need not entail conformity with all the principles of classical mereology.) So the proposal amounts to denying that a thing's constituents are parts of it. Constituency is not parthood, but only something like it. Ordinary objects are "made up" of properties, but not in the sense of having them as parts.

11. What if constituents aren't parts?

Suppose, then, that constituents are not parts. Because this is an important departure from the views we have considered so far, we had better call it the modified constituent ontology.

The proposal will have to go beyond denying that constituency is a sort of parthood. Being a constituent of something has to rule out its being a part of it. Constituency and parthood must be incompatible. This is for at least two reasons.

First, suppose a constituent of something could be a part of it. Suppose my size were a part of me (as well as a constituent). Then I could not be composed of atoms, but at best of atoms together with a size property. But my atoms would still compose something--mereologically compose, that is--or at least they would if atoms can ever compose something. We might once again call that the thing they would compose O. What would O be like? Seeing as it would be composed entirely of things with a size, it too would have to have a size: the same as mine. But that size, once again, could not be a part of it, as it would not be composed of parts distributed across O's atoms. So there would be two objects with the same size, and this size would be a part of one of them (me) but not of the other (O--though it would be a constituent of O). Yet no difference in our properties would account for the difference in how we relate to our sizes, violating the claim that a thing's character consists in its properties (principle 2).

Second, if a thing's constituents could be parts of it but needn't be, we should expect some of things' properties to be parts of them and some not to be. (It would be surprising if properties could be parts of their instances, but they never are.) But which? In what circumstances would a property of a thing be a part of it? Without some answer to this question, however incomplete, there will be no solution to the problem of quasi-abstract objects. And it's hard to see what the answer might be.

These problems would not arise if constituency ruled out parthood. But this avoids the trouble only by lapsing into obscurity. That a thing stands to its properties in a way at least analogous to that of whole to part was the central claim of the constituent ontology. Even if constituents aren't parts exactly, they were supposed to be like parts. If constituency is actually incompatible with parthood, what remains of this claim?

The point becomes more acute when we consider the thing composed of my atoms together with my properties. Call it O*. Given that constituency rules out parthood, O* will not have any of my properties: since those properties are parts of it, they cannot be constituents, which (by principle 4) rules out its exemplifying them. And things sharing no properties are utterly dissimilar. It will probably not even count as a concrete particular. This will be due entirely to the difference between constituency and parthood--between my properties' being constituents of me rather than parts, and parts of O* rather than constituents. That makes constituency and parthood very different relations.

Someone might deny that there is anything composed of my atoms together with my properties, rejecting the existence of O*. This would be a restriction on mereological composition. Suitably generalized, it would rule out properties' being parts of any ordinary object--even properties the object doesn't exemplify. Not only are a thing's constituents never parts of it, but no properties could be, again reinforcing the difference between constituency and parthood.

The urgent question at this point is whether the modified constituent ontology is any different from the relational ontology. How does constituency differ from the "abstract and bloodless" relation that properties bear to their instances according to relationalism? What could it mean to say that dogs are composed of properties if no property is anything like a part of a dog? What is there in the view for relationalists to object to?

There is still the claim that a thing's properties ground or explain its character (with the exceptions noted in §§4 and 5). This was supposed to rule out things' relating to their properties in the abstract way of the relational ontology: a thing's properties have to be constituents of it. But what is it to be a constituent? The original answer was that a thing's constituents are in it--built into its structure. And to be in a thing was to be a sort of part of it, or something like a part. Though that leaves many questions unanswered, it would clearly rule out the relational ontology. It's no help, though, if properties are not like parts. Relationalists are unlikely to quarrel with the claim that properties are in their instances in a sense that is indefinable and unrelated to parthood.

Until we're told more about the modified constituent ontology, it's hard to know what to make of it.[16]

References

Armstrong, D. M. 1989. Universals: An Opinionated Introduction. Westview Press.

---. 1997. A World of States of Affairs. Cambridge University Press.

Baker, L. R. 2000. Persons and Bodies. Cambridge University Press.

Bennett, K. 2004. Spatio-temporal coincidence and the grounding problem.

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Philosophical Studies 118: 339-371.
Loux, M., ed. 1976. Universals and Particulars. University of Notre Dame Press.
---. 2006. Aristotle's constituent ontology. In D. Zimmerman, ed., Oxford Studies in Metaphysics 2: 207-250. Oxford University Press.
Olson, E. T. 2001. Material coincidence and the indiscernibility problem. Philosophical Quarterly 51: 337-55.
---. 2006. The paradox of increase. Monist 89: 390-417.
Paul, L. A. 2002. Logical parts. Noûs 36: 578-596.
Price, H. H. 1998. Universals and resemblances. In P. van Inwagen and D. Zimmerman, eds., Metaphysics: The Big Questions. Blackwell. (Originally published as chapter 1 of Thinking and Experience,1953.)
Rea, M., ed. 1997. Material Constitution. Rowman and Littlefield.
Sider, T. 2007. Parthood. Philosophical Review 116: 51-91.
Simons, P. 1987. Parts: A Study in Ontology. Oxford University Press.
---. 1994. Particulars in particular clothing: Three trope theories of substance. Philosophy and Phenomenological Research 54: 553-575.
van Inwagen, P. 1981. The doctrine of arbitrary undetached parts. Pacific Philosophical Quarterly 62: 123-137. Reprinted in Rea 1997.
---. 1990. Material Beings. Cornell University Press.
---. 2004. A theory of properties. In D. Zimmerman, ed., Oxford Studies in Metaphysics, vol. 1, Oxford University Press.
---. 2011. Relational vs. constituent ontologies. Philosophical Perspectives 25 Metaphysics: 389-405.
Wolterstorff, N. 1970. Bergmann's constituent ontology. Noûs 4: 109-134.