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Composition, Persistence and Identity

1. Material Objects

Unlike many other metaphysical categories, whether there are material objects is (Idealism aside) uncontroversial. No wonder then that the metaphysics of material objects has become a febrile area of contemporary philosophy as everyone (philosopher and non-philosopher alike) can make sense of, and have an interest in, the issues that are at stake. Three areas are mainly discussed: composition, persistence and identity (not that material objects are the sole subjects of these areas, nor do these areas exhaust the metaphysics of material objects). This chapter concentrates on how these areas help us answer questions about what material objects there are, and specifically examines the relationship, the *consanguinity*, between these areas.

2. Composition

2.1 The Special Composition Question

My hand is a part of me; a star is composed of hydrogen and helium; conjoined twins overlap. These are *mereological* facts i.e. concerning the relation of wholes to their parts: my hand is related to me by parthood; a large number of hydrogen and helium atoms stand in the composition relation to the star; the two twins stand in the overlapping relation to one another.

These mereological relations have been formalised in *temporally relativised mereology*. Take as primitive the relation of temporally relativised proper parthood: ‘__ is a proper part of __ at time __’. Next we can define some mereological vocabulary. It is ‘proper part’ that lines up with the English use of ‘part’, whereas ‘part’ in mereology has a technical meaning. A ‘mereological part’ of a whole is anything that is either a proper part or improper part of that whole, where an improper part of a whole is just the whole itself. Because it is such a historically ingrained term in mereology, we will retain the proper/improper distinction here.

Next, say that things ‘overlap’ iff there is an object they both have as parts (so, given the technical definition, everything overlaps itself). Finally, define:

The y s compose x at time $t =_{df}$ (i) each y is a part of x at t ; (ii) no two of the y s overlap at t ; and (iii) every part of x overlaps at least one of the y s at t . (van Inwagen 1990: 29).

So you are composed of your torso, limbs and head (as well as such pluralities as your top half and bottom half, or all of your atoms); a table is composed of table legs and a table top; an amoeba is composed of organelles and cytoplasm. A question that has become popular amongst contemporary metaphysicians is:

The Special Composition Question (SCQ): Under what circumstances do the y s compose a further object?

In other words, when do little things come to compose bigger things? This intuitively takes place on some occasions (such as with you, the table and the amoeba), and we can say that any answer to the SCQ that misses out such things *underpopulates* our ontology. Similarly, there are cases where things intuitively *don't* compose e.g. intuitively there is no ‘Nikk-Bush’ composed out of myself and George Bush (his atoms compose him, my atoms compose me, but our atoms don't, collectively, compose some four armed semi-Presidential freak of nature). Say that an ontology is *overpopulated* if it includes strange objects like Nikk-Bush.

If you want an answer to the SCQ that neither under nor overpopulates, you will be hard pressed. Take a sample of answers you might wish to consider:

Contact: The y s compose iff they are spatially contiguous.

Contact underpopulates in that, if we take physics seriously, no objects ever truly touch *a fortiori* objects never compose further objects. We could take spatial contiguity to just require objects being relatively close, but then we overpopulate the world. For instance, if I shake hands with George Bush there *would* be a Nikk-Bush object on the grounds that we were now, loosely speaking, spatially contiguous. This is just one sample answer. Other allegedly sensible answers suffer similar counterexamples, failing to get by without either under- or overpopulating (van Inwagen 1990: 56-71; Markosian 2008).

We can get an appropriate answer by making it very disjunctive e.g. that the objects compose iff they are four table legs and a table top arranged tablewise *or* they are limbs, head and torso arranged human-wise *or* they are organelles surrounded by pieces of cytoplasm *or*... well, you get the picture. Such an answer is of this form:

Serial: The y s compose iff either the y s are F_1 s and are R_1 related, or the y s are F_2 s and are R_2 related or the y s are F_3 s and are R_3 related or ...

Most people find *Serial* deeply unsatisfying (although see Lowe 2005*b*; Sanford 2003: 223-4; Thomasson 2007: 126-36). Compare with ethics. Rather than accepting utilitarianism or deontology, we could say an act is wrong iff it was a killing committed with no provocation *or* it was a man cheating on his loving wife *or* it was a non-starving man stealing bread etc. One might reasonably worry that this wasn't an informative *answer* as to what counts as being morally wrong, instead just a list of our intuitions with disjuncts between them. *Mutatis mutandis* we might reasonably worry *Serial* isn't really an answer as to what counts as things composing either.

Given this difficulty of finding an informative answer that meets our population intuitions, many have tried quite different approaches to the SCQ.

2.2 Brutality

One approach is *Brutality*: denying that there is an informative answer, and that instead what composes is simply a matter of brute fact (Markosian 1998). *Brutality* might fail to answer the SCQ but can now capture our intuitions about population: for every object that intuitively composes, brutalists claim that it does (and does so as a matter of brute fact) and then deny that there are any cases of underpopulation or overpopulation (again, simply as a matter of brute fact).

First problem: It would be remarkable if our beliefs about composition matched up with the brute facts. This is compounded as there could be cultural disagreements about what things compose, for instance if a man ignorant of cars and caravans sees one hooked to the other, then where we see only two objects attached to one another, he may instead see a single composite object with those things as parts. If there are just brute facts there is no way to resolve the dispute, and it'd be sheer prejudice to pick our beliefs over his. (One move at this point is to take this epistemic barrier to heart and endorse *Mystery*, that there is no way to determine the correct answer to the SCQ (Markosian 2008: 358-9; Bennett forthcoming) but presumably that is just as unsatisfying an answer as accepting *Brutality*).

Second problem: Brutal explanations are to be discouraged (Hudson 2001: 22-25). Few think moral facts are inexplicably true, and that normative ethical theories are all doomed. We should think similar of composition, accepting it only if all other answers were found wanting (which is, indeed, Markosian's argument for *Brutality*).

2.3 Nihilism and Universalism

An alternative approach is to give up on meeting our intuitions about population, and rely upon other motivations to find an answer to the SCQ. For instance, we might be worried about issues in vagueness, for like most other predicates 'compose' seems to admit of borderline cases. But unlike other predicates, whether things compose directly bears on whether certain things exist. So borderline composition results in vague objects, hovering between being and non-being, which

many balk at. One way to avoid this is to say that nothing ever composes (Hossack 2000: 426-9):

Nihilism: The ys compose iff there is one of them.

Given nihilism there are *no* objects with proper parts – that every object is *mereologically simple*. So the only composition is when an object composes itself (which will never be vague for identity is, allegedly, not vague). Not that this is the only motivation for nihilism e.g. simplicity is a virtue and, trying to avoid the complexity of accounts like *Serial* and *Bruality*, we might be attracted by nihilism’s simplicity (Markosian 2008: 347).

There are two varieties of nihilism. *Microphysical nihilism* is the view that the world is a sea of simples, where those simples are the tiny items of sub-atomic physics (Dorr 2005; Hossack 2000; Williams 2006). The second variety is *monistic nihilism*, whereby the world is just one big mereological simple *and that’s it*. Monistic nihilism has been pinned on both Parmenides and Melissus, and has also had a recent resurrection (Horgan 1991; Schaffer 2007).

First problem: Nihilism *radically* underpopulates for there are no cars, planes, tables etc. To solve this, nihilists introduce a *paraphrasing* strategy. Just as we assent to ‘the average man has 2.4 children’ without thinking there exists some man who is average and has a grisly 40% of a person as a child, nihilists assent to talk about composite objects without committing to those things existing. For instance, ‘There is a table over there’ can be paraphrased (for the microphysical nihilist) as ‘There are simples arranged tablewise over there’ (van Inwagen 1990: 98-114; Merricks 2001: 162-190; see McGrath 2005 and Uzquaino 2004 for problems). The monistic nihilist can make use of their own paraphrasing techniques in terms of the property distribution across the only thing that exists (Schaffer 2007: 181-3).

Second problem: Given nihilism *we don’t exist*. This triggers *cogito* style concerns that nihilism must be false given that we *know* that we exist. There hasn’t been much discussion of this issue (the exception is Olson 2007: 180-210), although one move is to loosen the constraints on nihilism and allow that there are simples *and* composite organisms, such as you and I (van Inwagen 1990). How persuasive you find such a move, I leave up to you.

Third problem: Microphysical nihilism demands the existence of microphysical simples. But are there such things? Perhaps science will discover that the microphysical structure of the world descends forever without ‘bottoming out’ in simples. (Sider 1993; Ladyman and Ross 2007: 19-27; see Williams 2006 for a response).

An alternative to nihilism is to swing the other way:

Universalism: For any ys, (if those ys do not overlap) those ys compose a further object.

‘Overpopulation be damned!’ cries the Universalist, as they overpopulate their ontology with hordes of strange objects like Nikk-Bush. This gross overpopulation has been a sticking point for many (Markosian 1998: 228, 2008: 344-5) for surely, the objection goes, it is just crazy to believe in these things. However, just as nihilists introduce a paraphrasing strategy, the universalist has a similar trick. Imagine you buy a six pack and put it in my fridge. You, truly, state that ‘All the beer is in the fridge’. But imagine I questioned that statement. What of the beer remaining in the supermarket? Or in Estonia? What of the beer drunk throughout the 1800’s? None of *that* beer is in the fridge. To resolve this dispute, note that both assertions contain a universal quantifier. We can say that in your case, context dictated that the quantifier ranges only over the beer you recently purchased. By talking about other countries and other times, I shift to a context where the quantifier in my sentence ranges over far more beer than that you just bought. So what we *both* say is true, but only in certain contexts (of which, the former context is most natural and the latter is a pedantic context). Universalists say the same of composite talk. Nikk-Bush exists, but normal contexts are such that we don’t range over it and can (truly) deny that Nikk-Bush exists (just as you would deny you’d left any beer out of the fridge). When we do serious philosophy, the context changes, the domain of our quantifiers broaden, and it is now *true* that Nikk-Bush exists.

This restriction strategy has proven popular (but see Korman 2008 for a response). Indeed universalism is by far the most popular answer to the SCQ (Armstrong 1989; Heller 1991: 49-51; Hudson 2001; Leonard and Goodman 1940; Lewis 1986: 211-3; McGrath 1998; Rea 1998; Sider 2001).

There are numerous motivations to believe universalism. Like nihilism it guarantees simplicity. It also renders composition non-vague, for it always takes place (Lewis 1986: 211-3; Sider 2001: 120-34; for responses see Effingham Forthcoming; Merricks 2005; Smith 2006). It also goes some way to resolving the concerns about prejudicing culture from §2.3 for it now transpires that as a matter of culturally independent fact, everyone is always right when they make assertions that things compose (and always wrong when they deny this) (Sider 2008: 257-61). Finally, it is motivated on the grounds of the general utility it affords other philosophical theories (Hudson 2006: 636). For instance, in the early 20th century it was traditional to rely upon universalism in order to explain plural predication (Leonard and Goodman 1940; Link 1998; Massey 1976) and to defuse problems in set theory (Goodman and Quine 1947; Leśniewski 1916). Whilst the former is no longer in vogue (Oliver and Smiley 2001; McKay 2006: 19-54), universalism still sees service for the latter (Lewis 1991).

2.4 Historical Approaches

This does not exhaust the extant answers. There has been a surge of work in the connections between the history of philosophy and mereology, and there are now answers that are rooted in the works of Plato (Harte 2002) and Aquinas (Brown 2005: esp. 174). The 18th century philosopher Jonathan Edwards also believed that what objects composed depend in some fashion upon the will of God, suggesting *Divine*: that the ys compose iff God wills that the ys compose (a similar answer is used by van Inwagen in the field of the composition of, not material objects, but organisations (van Inwagen 1995: 191-216)).

Doubtless other answers wait to be discovered, either in historical sources or elsewhere. This is good news, for given the problems we encounter finding an answer meeting our folk intuitions about population, unearthing alternative motivations (and answers to meet them) appears quite desirable.

3. Persistence

3.1 How things persist versus what things exist

Persistence is often phrased as a question about *how* things persist. So phrased, it makes it sound as if there is a deep mystery as to how an object persists from one moment to the next, and certainly it is not obvious that this is mysterious. So the question is somewhat murky. Indeed, the two answers to that question, perdurantism and endurantism, have themselves struggled to find a clear definition, so examining them won't necessarily clear up this murkiness. However, as will become clear in §3.2, the two sides do disagree over *what* things exist, and that is a readily intelligible disagreement. So I will stick to examining perdurantism/endurantism in light of their commitments to material objects. This might not be the end of the matter, for maybe there is more to those theories, but until the proponents of those theories are clear about what that extra ingredient might be, it is perhaps best not worried about.

3.2 Perdurantism/Endurantism

Intuitively, things have spatial parts e.g. one part of you is your heart. Perdurantists think things also have *temporal* parts e.g. a part of you that is all of you from last week, and a distinct part that is all of you from next week. This might not make it clear what a temporal part is, and this was indeed an early objection from many philosophers (Chisholm 1976: 143, Geach 1972: 311; van Inwagen 1981: 133). Fortunately a more exact definition can be given:

x is an instantaneous temporal part of y at t =_{df} (i) x is a part of y at t ; (ii) x exists at, and only at, t ; and (iii) x overlaps at t everything that is part of y at t (Sider 2001: 59)

Perdurantism is then the claim that an object has an instantaneous temporal part at every instant that it exists at. Straightforwardly, this is a claim about what things exist, so perdurantism is a clear and crisp position. Endurantism, however, is less clear. Endurantists are unhappy with objects having temporal parts, often saying that objects must instead be ‘wholly present’. However, just as people demanded we make clear what a temporal part was, the same has been said regarding ‘wholly present’ (Sider 2001: 63-8). Whilst some definitions have been proposed (in terms of being multiply located (Gilmore 2007); in terms of objects being extended (improper) temporal parts (Parsons 2007); or otherwise (Crisp and Smith 2005)) none have, as yet, won popular support. But we can avoid discussion of that debate, for it is enough that endurantists are (generally) united in their opposition to the prolific population perdurantists commit to i.e. the endurantist *denies* that there is an instantaneous object for every instant that a persisting object exists at. Indeed, this apparent overpopulation is itself an objection to perdurantism (Thomson 1983: 213; see Heller 1991: ** and Sider 2001: 216-8 for discussion).

An exception can be found amongst *promiscuous endurantists*, who think they can have the prolific population and still be endurantists (Koslicki 2003: 121-2; Miller 2005a; Lowe 2005a). Given promiscuity, there would be an extra ingredient to perdurantism and/or endurantism. But if there is an extra ingredient, it is not obvious what it is. Moreover, most of those who are promiscuous go on to conclude that endurantism (so conceived) is, in fact, equivalent to perdurantism i.e. the two theories are in fact two different ways of saying the same thing (Miller 2005b; Lowe 2005a; Lowe and Storrs-McCall 2006). Ergo there *can't* be an extra ingredient making them distinct as they're the same! Given this, one might suspect that endurantism plus promiscuity is equivalent to perdurantism solely on the grounds that (as I claim) being promiscuous with regards to what objects exist *is* what it is to be a perdurantist. So let us pass over the promiscuous endurantists, and take perdurantism and endurantism to be commitments to what objects there are.

Numerous arguments are mooted to decide between endurantism and perdurantism, such as using the theories to solve the paradoxes of coincidence (Sider 2001: 140-208; Hawley 2001: 140-75; Wasserman 2002); the argument from temporary intrinsics (see Haslinger 2003; Lewis 1986: 202-4; Sider 2001: 92-8; Wasserman 2003); arguments from special relativity (Balashov 1999; Gilmore 2006; Gibson and Pooley 2006; Hales and Johnson 2003); and even time travel (Effingham and Robson 2007; Gilmore 2007; Sider 2001: 101-9). I won't detail them here, concentrating instead upon how persistence meshes with the rest of the metaphysics of material objects.

3.3 Consanguinity I: Composition and Persistence

We have thus far only discussed composition *at a time*. Perdurantists are a mereologically greedy bunch though, usually demanding more than this, such that things from *different* times can compose e.g. that all of my instantaneous temporal parts compose me. Such composition isn't temporally relativised, and perdurantists conscript in *atemporal* mereological relations to do the job. The relations are analogous in all ways to those introduced in §2.1, except they are only dyadic, and aren't relativised to times. The perdurantist still retains temporally relativised parthood, but analyse it in terms of atemporal mereology:

(P@T) x is part of y at t iff x and y each exist at t , and x 's instantaneous temporal part at t is part of y 's instantaneous temporal part at t . (Sider 2001: 57)

Likewise (to avoid circularity) they offer a revised definition of instantaneous temporal part, equivalent to the one above, in atemporal terms (by simply dropping the temporal relativisations from the first and third conjunct). It is not *necessary* for perdurantists to accept atemporal mereology and make these moves, indeed, Sider's definition of perdurantism was crafted to avoid just such a commitment, but most accept it anyhow. Endurantists, on the other hand, have traditionally claimed not to understand ‘atemporal’ parthood (which is why Sider gave the

definition he did, as a fig leaf to such endurantists). Not that it is impossible for them to do so (McDaniel 2004: 144; Hawley 2001: 29), although obviously they cannot accept (P@T).

First, consider this new addition with regards to the perdurantist. Given (P@T) the answer to the temporally relativised SCQ will drop out of the answer to the atemporal analogue of the SCQ. However, answers to the temporally relativised SCQ don't easily map to answering its atemporal analogue.

Consider the sample 'sensible' answer of *Contact*. Given *Contact* composing objects have to be spatially contiguous, but no temporal parts are *spatially* contiguous so no objects will have temporal parts. Temporal parts are spatiotemporally contiguous, but if we make *that* the criterion then this worsens *Contact's* overpopulation. Consider: you can trace a continuous spatiotemporal path of one of my atoms back to the Big Bang, and from the Big Bang trace a path via an atom that ends up in George Bush. So whilst myself and Bush aren't spatiotemporally contiguous, the two of us plus all the previous temporal parts of our smallest atoms *are* contiguous (so we get a Nikk-Bush-Past Atom composite, which is just as bad as Nikk-Bush).

Microphysical Nihilism doesn't fare so well either. Given nihilism nothing has parts *a fortiori* nothing has temporal parts. All that would exist would be *non-persisting* mereological simples. Whilst, technically, everything would still perdure (for everything would exist for a single instant, and have itself as an instantaneous (improper) temporal part) this is a pyrrhic victory. For instance, Parsons thinks enduring objects are just objects with no proper temporal parts: so the endurantist would say such objects endured. It's difficult to see what is left of the perdurantist enterprise if nothing persists and endurantists are comfortable with the world so described. Similarly, given *Monistic Nihilism*, the universe is a persisting simple, thus it has no temporal parts – sayonara perdurantism.

Universalism, though, is a popular position for perdurantists to accept (a notable exception being McCall 1994). But even it has problems.

First problem: Most perdurantists want to say that the properties an object has at a time are determined by the properties *simpliciter* an object's instantaneous temporal part at that time has e.g. I am sitting now iff my instantaneous temporal part at this instant is sitting *simpliciter*. Now take the object composed of a turnip from throughout the year 1979 and all of Pavarotti's temporal parts from 1980-2007. Given this treatment of properties, that object was, in 1979, a turnip but was, from 1980 onwards, a tenor. So some tenor was once a turnip! In being obviously false, this commitment causes problems (see Varzi 2003 and Parsons 2005 for discussion).

Second problem: We can construct weird objects that breach the laws of physics. For instance, that tenor-turnip managed to teleport instantaneously, being located in a turnip field just before the stroke of midnight on New Year's Eve 1979 and then Italy the second after. But the laws of nature prevent this. Indeed, even weirder objects exist, for instance given perdurantism and universalism we can construct superluminal objects *contra* the laws of Special Relativity (Hudson 2005: 123-36; Hawthorne 2006: 111-43).

One lesson to draw is that we should look again at the less popular answers such as *Divine*, *Mystery*, *Brutality* etc. (notably Edwards believed both *Divine* and perdurantism). Another lesson is that we need a totally new answer, but none is extant in the literature. A third lesson is that there is no univocal answer to the atemporal SCQ. Instead, there is one criterion for what objects compose at a time (using an answer such as *Contact*, universalism etc.) and another criterion for what composes *across* time (Balashov 2005), although it's tricky to see what such a disjunctive answer could be (Hudson *ibid*). In any case, perdurantism has radical consequences for composition. Endurantism is less radical for (even if they accept atemporal mereological notions) most endurantists will deny that any composition takes place other than at a time (for to say otherwise entails the existence of perduring objects, see McKinnon 2002: 294).

4. Identity

4.1 Criteria of Identity

Finally we come to the question of identity: under what conditions is x identical to y ? Identity is tied into the ontology of material objects just as composition and persistence are. For instance, if $x_1, x_2, x_3 \dots$ exist at times $t_1, t_2, t_3 \dots$ then this fact alone won't settle what exists, for if those x s are all *identical* then it turns out that there is but one thing, persisting throughout the interval that has $t_1, t_2, t_3 \dots$ as instants. Whereas, if they are all distinct, we have scads of objects, at least one for every instant just listed.

Problem scenarios about identity are well known from elementary philosophy lessons. If Leo has an accident and suffers total amnesia is he identical to the person after the accident? If Chris and Malcolm have their brains placed in one another's body, who is Chris and who is Malcolm? If Jim is disassembled into his constituent atoms and reassembled on Mars, is the person we reassemble Jim? Nor does it end with people, as scenarios such as the Ship of Theseus demonstrates. I'm not going to get bogged down recapping the literature here, instead turning straight to the relationship between identity, composition and persistence.

4.2 Consanguinity II: Dissolution

There is an interesting way to dissolve these questions about identity if we accept the combination of perdurantism and universalism. Given that combination, for any putative disagreement about whether one object is identical to another there are always enough objects so *both* sides are right and are disagreeing only in what they think their words refer to. For instance, take the case of Leo suffering total amnesia. Given perdurantist-universalism there is an object, A, composed of all of Leo's pre-accident temporal parts. There is also an object, B, composed of all and only the temporal parts of that guy after the accident. Given universalism, there is an object, C, composed out of A and B. We can dissolve the disagreement over whether Leo survives the accident by saying that those who think he doesn't survive (i.e. think that A and B are both distinct people, whilst C is not a person but a composite object like Nikk-Bush that has persons as parts) mean one thing by 'person' whilst those who think he does survive (i.e. think C is a person, whilst A and B are mere temporal parts of a person) mean something else. The dispute is merely over the *meaning* of 'person', and so doesn't involve metaphysics at all. Compare to disputes over whether certain plots of land qualify as political states. There is vicious disagreement over whether Israel counts as a state or not, but that's not a *metaphysical* dispute for all parties agree on the ontology – that the disputed plot of land *exists*. Similarly for the identity of objects, it's a dispute, but not one of metaphysics.

4.3 Consanguinity III: Kind Relativisation

When it comes to identity people have traditionally been willing to relativise the criteria of identity to different *kinds*. So one popular answer for people is that x is identical to y iff there is a chain of psychological continuity between x and y . But that won't work for tables (or mountains, or galaxies etc.) for they have no psychological life, never mind a continuous one. Instead, such things have their own criteria.

But if we are willing to allow a disjunctive answer to the identity question, where the conditions of each disjunct are kind relativised, we come into tension with the reasons to give up on *Serial* wherein relativising composition to kinds was discouraged. There are two lessons we can learn, either to look again at *Serial* (cf Lowe 2005b: 516-7) or to be more critical of the traditional approach to identity (e.g. mimicking the moves in composition and, say, concluding identity facts are brute cf Merricks 1998).

5. Extreme Consanguinity

I have detailed the close association of these three areas. Some philosophers, though, have gone one step further, claiming not just consanguinity between the areas, but that they are one and the same.

5.1 Composition as Identity (CAI)

CAI is the claim that the composition relation is the identity relation i.e. when x is composed of the y s, x is identical to the y s (Baxter 1988a, 1988b). As the whole is not distinct from its parts, CAI captures that intuition that objects are nothing ‘over and above their parts’. But whilst it chimes with that folk intuition, it does violence to other intuitions.

First problem: How can *one* thing be identical to *many* things? Isn’t identity a one-one relation, not a many-many relation? (Merricks 2001: 21-8).

Second problem: We must give up on Leibniz’s Law for if x is one thing and is composed of many things, the y s, then (given Leibniz’s Law) x is both one thing *and* many things – an apparent contradiction. (Lewis 1991: 87).

Third problem: It is suitable only for perdurantists, as endurantists will either see it as trivial (identifying atemporal composition with identity, which for endurantists is uncontroversial as they will say x is only ever *atemporally* composed by itself) or false (as identity is two place and temporally relativised composition is three place, it doesn’t look like they can be identical).

Some philosophers try to avoid some of these problems by weakening CAI, claiming that composition is instead *analogous* to identity in certain ways (Lewis 1991: 81-7; Sider 2007). However, given this move the composite is now distinct from its parts and we’ve lost that respect CAI paid to the intuition that an object is nothing over and above its parts. So a weaker CAI will have to pay its way on some other ground.

5.2 Supersubstantialism

CAI isn’t the only twinning. Whilst it is wrong to think identity is the persistence relation that holds between an object and the interval it persists through (for there could be two *distinct* objects that persist through the *same* interval) there is a plausible claim in the same neighbourhood. We can say that all objects are identical to the regions of spacetime they occupy. This is known as *supersubstantialism* (SS). Even though it has odd consequences, for instance that some spatiotemporal regions walk, talk and pay taxes, SS has found popular support amongst metaphysicians (Field 1984: 75n2; Sider 2001:110; Quine 1995: 259) and scientists alike (Castelvecchi 2006; Sklar 1974: 221-4). Certainly the parsimonious ontology it offers, whereby there is only one category (spacetime, with material objects as a subset of regions) rather than two (spacetime and material objects as distinct sets of things), should make a metaphysician salivate. Again, though, it appears to be available only to the perdurantist as spacetime regions uncontroversially perdure (Sider 2001: 110-3).

5. Further Reading

Markosian (2008) offers a contemporary survey of issues in composition. In persistence, Haslanger (2003) offers an in-depth introduction to the argument from temporary intrinsics; Sider (2001) covers the rest, including an extensive discussion of the paradoxes of coincidence. MacDonald (2005) offers an introduction to identity over time.

Nor are the above issues the only areas of consanguinity between the fields. See Hawley (2006) for more on the relationship between identity and composition, and Sattig (2008) for a critical examination of how perdurantism bears on identity.

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