

# Against mereological nihilism

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**Abstract** I argue that mereological nihilism fails because it cannot answer (what I describe as) the special arrangement question: when is it true that the *x*s (the mereological simples) are arranged *F*-wise? I suggest that the answers given in the literature fail and that the obvious responses that could be made look to undermine the motivations for adopting nihilism in the first place.

**Keywords** Mereological nihilism · Composition · Special composition question · SCQ

## 1 Introduction

Mereological nihilists do not think that there are composite objects—they claim that there are no chairs, that there are no tables. Our everyday talk, that may seem to be about such entities, is false. For this reason, the view is extreme. Further, for the same reason, there is a common-sense objection to nihilism: it is perfectly *obvious* that there are composite objects. I'm typing this on a computer—so there exists a computer and a computer is a composite object. Similarly, *I* am typing. I am a composite object (for I am using parts of my hands—my fingers—to type this). This threatens to show that the nihilist position is false.

This objection meets with the following response.

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Common sense as we have construed it claims that A and B together make up a further thing. The compositional nihilist denies this. But of course he doesn't deny that A and B are stuck together, that together they exhibit behaviour that neither would exhibit on its own, that together they contrast with their surroundings, and so on. In short, he denies the existence of the molecule but agrees that there are some things arranged 'molecule-wise'. (Rosen and Dorr 2002, p. 157)

Thus, the deliverances of common-sense are false. However, these deliverances are assertable because they are relevantly similar to particular true proposition. So, ⟨there are tables⟩ is false, but ⟨there are simples arranged table-wise⟩ is true. Merricks (2003, p. 171)—though not himself a nihilist—describes the strategy in the following way:

I commend false folk-ontological beliefs for being—here I shall introduce a technical expression—'nearly as good as true'. Any folk-ontological claim of the form 'F exists' is *nearly as good as true* if and only if (i) 'F exists' is false and (ii) there are things arranged F-wise. So, for example, 'the state *David* exists' is nearly as good as true because (it is false and) there are some things arranged Davidwise.

In perfectly general terms, then, the sentence 'there is an *F* composed of the *x*s' expresses a false proposition, but such sentences are assertable because of the truth of propositions of the form ⟨there is a collection of simples—the *x*s—arranged *F*-wise⟩. The truth of the latter suffices for the assertability of the former.

At least, this is the way that nihilism is normally described. In addition to those references given above, see, *inter alia*, Schaffer (2007, p. 176), Sider (2009, p. 384; 2013, p. 2), and Van Cleve (2008, p. 327) for those who at least *appear* to describe nihilism as the union of the two claims that: (i) there are no composite objects; (ii) we should offer paraphrases for our ordinary language talk that *seems* to be about composite objects. I call this union of (i) and (ii) the 'standard nihilist' view.

But it's not at all clear the nihilist *must* endorse (ii). For instance, Cameron 2008 offers an account according to which there is a distinction between what *really* exists and what exists. Such a picture may then allow us to be nihilists about what *really* exists, whilst adopting another view about what exists. As Cameron (2008, p. 5) puts matters: 'the nihilist is right about the ontology but that the universalist is right about what sentences are true.' Similarly, Bennett (2009, p. 58) suggests that one could adopt an 'hermeneutic nihilism', according to which 'claims about composite objects are strictly and literally true—but, *contra* appearances, they do not carry ontological commitment to composite objects.' Call these versions of nihilism *atypical nihilism*, to mark the fact that they constitute a move away from the mainstream interpretation of the nihilistic thesis.

There is also another option available. Simply: hold (i) and treat nihilism as an error theory. I'll call this 'extreme nihilism' Such a view would certainly be extreme. In fact, it *may* even be implausible. For instance, Sider (2013, forthcoming, p. 2—my italics) says the following:

Similarly, denying the existence of persons, animals, plants, and the rest is *not* absurd *if* one accepts subatomic particles that are “arranged person-wise” (to use van Inwagen’s phrase), animalwise, plant-wise, and so on.

In the absence of the kinds of paraphrase described in (ii) there is certainly a worry that what remains for the extreme nihilist may simply be an absurd view.

In any case, my focus is on the ‘standard’ or ‘mainstream’ versions of nihilism, ubiquitous in the literature, that treat the view as the union of (i) and (ii). I have nothing of any substance to say *against* either *atypical nihilism* or *extreme nihilism*. My narrow focus on the ‘standard nihilist’ is explained by the ubiquity of the view in the wider literature.

My challenge to the ‘standard’ nihilist is to spell-out what is meant by: ‘the simples are arranged *F*-wise’.<sup>1</sup> In pressing this issue I am asking a question analogous to Van Inwagen’s special composition question (SCQ). Where Van Inwagen (1990, p. 30) asks, ‘when is it true that ‘ $\exists y$  the *x*s compose *y*?’’, I ask, ‘when is it true that ‘ $\exists x$  the *x*s are arranged *F*-wise?’’ With a nod to the SCQ, let us call this new question the Special Arrangement Question: the SAQ.

I’m not the first person to ask this question. Bennett (2009, p. 66) also asks it, and thinks that attempts to answer (what I’m calling) the SAQ are salient to our *metaontological* deliberations. I’ll return to Bennett’s line of argument, briefly, in Sect. 3. However, although I’m not the first person to ask the question, I think that I *am* the first person to suggest that the nihilist lacks a good answer to it. To stay with Bennett, for instance, she remarks that:

... the nihilist *equally* needs to say something about what the world has to be like to contain simples arranged tablewise. If the believer should tell us when and how some simples compose a thing of kind *F*, the nihilist should tell us when and how some simples are arranged *F*-wise. (2009, p. 66)

However, a little later on she notes:

... let me be very clear that I am neither claiming that then nihilist is in a worse position than the believer on any of these fronts, nor that there are no decent responses for either of them to make. All I am saying is that the same basic problems arise. (2009, p. 70)

In contrast to Bennett, in this paper I’m claiming that the nihilist is in a very bad position. I am claiming that there are, in fact, ‘no decent responses’ for them to make to the SAQ. In the absence of a good answer to the SAQ, the nihilist lacks a paraphrase of our talk of composite objects and it is the promise of this paraphrase that enables them to defuse the concern that it is simply absurd to deny that there are composite objects. Because there are no decent responses to the SAQ, I’m claiming that (ultimately) nihilism fails.

Thus, the SAQ is an important question *for the nihilist*. Nihilists think that it is true that, for instance, ⟨there are simples arranged molecule-wise⟩. The fact that these

<sup>1</sup> From this point on I revert to describing ‘standard’ nihilism as simply ‘nihilism’ since it’s no part of this paper to critique the *other* statements of nihilism.

propositions are true is used to *explain* why sentences like ‘there are molecules’ are assertable. The truth of propositions like ⟨there are simples arranged molecule-wise⟩ are used in order to ameliorate the charge that nihilism is flat-out inconsistent with our best physics.<sup>2</sup> If we cannot say what it is for it to be true that (for instance), ‘the mereological simples are arranged person-wise’, then we are missing a central component of the nihilist’s theory.

## 2 What is already said?

In this Sect. 1 draw on remarks from Rosen and Dorr, Merricks and Van Inwagen. I argue that the discussions in which they engage do not generate the paraphrase required by the nihilist.

### 2.1 Dorr, Rosen and Merricks

Let us begin with an offering from Rosen and Dorr (2002, pp. 157–158):

This arrangement is not merely a matter of disposition in space. For some things to be arranged house-wise they must cohere; they must collectively possess a certain mass, a certain shape, and so on. If we put some things arranged house-wise on the corner, they would look and feel and act just like a house, whether or not they constituted a single thing

I do not suggest that Rosen and Dorr intend these rather informal remarks to constitute an answer to the SAQ or an analysis of what it is to be ‘arranged *F*-wise’. What interests me in this case is whether we can start with their example of the house and how it is the simples may be arranged ‘house-wise’, formalise a little, and then generalise from that result. In what follows I try to carry out this task.

#### 2.1.1 BEHAVIOUR

‘The simples are arranged house-wise’ is true iff there are simples, the *x*s, such that: the *x*s (collectively) behave in the way that they would, were they to compose a house

The idea captured by BEHAVIOUR is that the simples may be said to be arranged house-wise, provided they behave in the right kinds of ways. BEHAVIOUR includes a counterfactual.<sup>3</sup> More perspicuously rendered, BEHAVIOUR says: ‘the simples—the *x*s—are arranged *F*-wise’ is true iff, the *x*s behave in a given way at the actual world,

<sup>2</sup> For instance, see Rosen and Dorr (2002, p. 163) for what they describe as a ‘canonical way of eliminating the ontological commitments of almost any theory’ [Rosen and Dorr (2002, p. 162)]. See, also, Bennett (2009, pp. 59–60).

<sup>3</sup> One issue worth just clearing up, here, is whether or not BEHAVIOUR enshrines a counterfactual or counterpossible. One might think the latter if one thought that the facts of composition are necessary. I don’t mean to make a stand on this issue. For what (little) it’s worth, I find myself persuaded by Cameron (2007—see esp. p. 120) that we ought to think the facts of composition merely contingent, or at least remain agnostic about their modal status. Because of this, I treat BEHAVIOUR as a counterfactual.

@; were the  $x$ s to behave in that way at a world,  $w$ , at which composition occurs, then the  $x$ s would compose an  $F$ .<sup>4</sup>

Consider, also, Merricks' (2003, p. 4) account of how we should best answer the SAQ. Since Merricks' account relies on supervenience, I call this account 'SUP'.

### 2.1.2 SUP

Atoms are *arranged statuewise* if and only if they both have the properties and also stand in the relations to microscopica upon which, if statues existed, those atoms' *composing a statue* would non-trivially supervene.

As with BEHAVIOUR, SUP includes a counterfactual claim about how the world would be *were there* to exist composite objects. Such views face a problem. To see the scope of the problem, let us turn our attention away from an instance of an artifactual kind—a house—and focus our attention on an instance of a (putative) naturally occurring entity: a cat.

I borrow from Williams (2006, p. 498). The concern that Williams raises is that if *actual* living creatures do not exist—as per the nihilist's claim—then our talk of 'cats' and 'dogs' will not succeed in talking about cats and dogs—even merely possible ones. The reason for this is that we cannot fix the referents of such terms.

The absence of (actual) cats and dogs means that our usual meaning fixing practices will misfire. For example, the pointing that accompanied the introduction of the word 'cat' did not single out an object falling under an appropriate natural kind, but only some particles arranged cat-wise. But if the meaning-fixing practices misfire in such a serious way, plausibly the word introduced will suffer the analogue of reference failure. If meaning-fixing practices do not succeed in associating an intension with "cat", then "possibly, cats exists" will be just as false as "cats exist".

The plausibility of this argument stems from a general principle, that Williams dubs GLOBALISATION.

GLOBALISATION: If  $F$  fails to apply to anything in the actual world, then  $F$  has no intension.

Of course, as Williams notes, there are counterexamples to GLOBALISATION. For instance, there are no helepaults. Nonetheless, it is easy enough to see that the term can be ascribed an intension. I hereby decree that the term 'helepault' be understood in the following way: the term describes any entity that flies in the same way a helicopter does (via the use of a rotor) and fires munitions in the way that a catapult does. There are no helepaults, of course. But, by describing the functional role that would be fulfilled by any instance of the artifactual kind, we fix the intension of the term.

But, Williams (2006, p. 498—my italics) claims, there are cases where GLOBALISATION seems far more plausible.

<sup>4</sup> Merricks (2003, p. 4) defends something similar to BEHAVIOUR. I'll come onto this in a moment.

However, there are predicates for which the relevant instances of GLOBALIZATION seem more reasonable. Putative terms for natural kinds are the most familiar cases: ‘unicorn’, ‘water’, ‘cat’, ‘dog’ and so forth. *What makes globalization seem compelling in such cases*, is the thought that actual-world interaction with things falling under the predicate, or actual-world satisfiers of descriptions associated with the predicate, are required in order to fix an intension for the predicate.

Williams’ argument seems plausible to me. As Williams notes (2006, p. 498), it is natural to view this as an extension of Kripke’s (1980, p. 24) claim that—issues of mereology to one side—if there don’t in fact exist any such things as unicorns, then, ‘we cannot say under what circumstances there would have been unicorns’. After all, it’s not at all clear how we could fix the referent of a term that purports to pick out a living creature using a merely functional specification, and reference cannot be fixed by ostension, since the referents have never existed.

I shall assume that Williams is right about our reference fixing practices.<sup>5</sup> And, if he is, then the nihilist who wishes to adopt either SUP or BEHAVIOUR is in trouble.<sup>6</sup> If what Williams says about artifactual and natural kind terms is correct, then this strategy cannot be generalised to include talk about simples that are arranged instance-of-naturally-occurring-entity-wise. To bring this out, let us try to give the paraphrase for ‘there exists a cat’. Deploying SUP, that would give us:

Atoms are *arranged cat-wise* if and only if they both have the properties and also stand in the relations to microscopica upon which, if cats existed, those atoms’ *composing a cat* would non-trivially supervene.

Notably, ‘cat’ appears on the right hand side of the analysis. But, as per the Williams/Kripke argument, we cannot say under what conditions there would be cats. Thus, we have no paraphrase. Matters will be the same with regards to people, dogs, and all other living creatures.

So let me press home the concern. In the introduction I noted a Moorean concern: it seems obvious that *I* have a hand; that *I* am typing. If I exist, I am a human—a composite object that is an instance of a natural kind. As we saw, the nihilist’s response is to claim that although it’s false that ‘I have a hand’ it’s true that ‘there is a collection of simples arranged Jonathan-having-a-hand-wise’. We can use this truth to explain away concerns about the false ‘I have a hand’. As we have now seen, we cannot execute that strategy for we cannot preserve the truth of ‘there is a collection of simples arranged Jonathan-having-a-hand-wise’. So, BEHAVIOUR and SUP *cannot* be used as a general strategy to explain what it is for a collection of simples to be ‘arranged F-wise’ and the Moorean argument remains untouched.

<sup>5</sup> I don’t replicate the whole of Williams’ argument, here. I realise that this is something of a lacuna in the current argument, and so recommend Williams’ paper to the interested reader. In defence of the Kripkean strategy, see (Reimer 1997).

<sup>6</sup> As, I assume, is someone who adopts Merricks’ (2003, pp. 5–8) strategy and tries to maintain that we can understand what it is to be a composite object even in the absence of any such things.

## 2.2 From Van Inwagen

A different answer to the SAQ is available; one that does not explicitly trade upon a counterfactual claim about how the world would be *were* composition to occur. It is due to Van Inwagen (1990, pp. 105–109).

### 2.2.1 REGION

‘The *xs* are arranged chair-wise’ is true iff they fill a chair-receptacle and ‘satisfy certain other conditions (Inwagen 1990, p. 109).

According to Van Inwagen (1990, pp. 104–105), we should understand the concept of a receptacle in the following way:

let us suppose that chairs—if there are any—are made entirely of wood and let us suppose that (though nothing remotely like this is true) that any object that is “made entirely of wood” is composed of simples called ‘wood particles’. Now consider those regions of space that, according to those who believe in the existence of chairs, are occupied by chairs. Call them chair-receptacles.

The structure of this move is, I think, as follows. Begin with the concept of a chair. Imagine that there is a thing that corresponds to the concept. It occupies some space. Whatever space it occupies, is a chair-receptacle.

I think that we should reject REGIONS. Suppose, for instance, that we wished to say that there is a collection of simples arranged ‘cat-wise’. The truth-conditions for this sentence will, according to REGIONS, make reference to the existence of a cat-receptacle. We must understand ‘cat-receptacle’ in terms of the terms ‘cat’ and ‘receptacle’. But the term ‘cat’ has no intension (if there are no cats). Since REGIONS is stated in terms of the existence of such receptacles, so it turns out that the nihilist cannot generalise the strategy described in REGIONS. We will face the Moorean argument once again.

There are other discussions of the claim that there are such things as ‘collections of *xs* arranged *F*-wise’. But, to the best of my knowledge, there are no other attempts to explicate what it is to be ‘arranged *F*-wise’ that go into any greater detail or offer a different insight. In the absence of anything more in the literature, I now turn my attention to what the nihilist *might* say in response to the argument presented here.<sup>7</sup>

## 3 Different answers

In response to Van Inwagen’s SCQ, a range of putative answers have been put forward. To give a flavour:

<sup>7</sup> One might suggest that some of these attempts to defend the nihilist are obviously doomed since Merricks and Van Inwagen do not intend to use these paraphrases to defend nihilism. According to the views defended by Merricks and Van Inwagen, there are living creatures in addition to artifacts.

Unrestricted Answer (UA):

If the  $x$ s are disjoint, something is such that the  $x$ s compose it [(cf. Van Inwagen (1990, p. 74)]

Normal Intuiter Answer (NIA):

Metaphysically necessarily, for any (non-overlapping) objects  $O_1, \dots, O_n$ , there is an object  $O$ , such that  $O_1, \dots, O_n$  compose  $O$  iff  $O_1, \dots, O_n$  are disposed to elicit in most normal intuiters under normal forced-choice conditions the intuition that there is an  $O$ . [cf. Kriegel (2008, p. 367)]

Brutal Answer (BA):

There is no true, non-trivial, and finitely long answer to SCQ. [cf. Markosian (1998, p. 214)]

Mystery Answer (MA):

There must be a true answer to SCQ, but it is a mystery [cf. Markosian (2008, p. 358)]

One might be tempted, in the face of these answers to the SCQ, to attempt a modification. We might, for instance, offer up the following answer to the SAQ:

Unrestricted Answer (UA):

If the  $x$ s are disjoint, then the  $x$ s are arranged  $F$ -wise, for some  $F$

On the view imagined, simply by disjoint  $x$ s existing those  $x$ s satisfy the description that they are arranged  $F$ -wise, for *some*  $F$ ; be that table-wise, Eiffel-tower-wise, or something more ‘gruesome’, such as ‘Eiffel-tower-spoon-on-my-desk-wise’. Indeed, we might offer nihilist analogues of any of the above, as answers to the SAQ.

I do not think that we should endorse this *kind* of answer to the SAQ—an answer that simply mimics an answer to the SCQ. There is a general worry. We are seeking to provide a paraphrase of our ordinary language claims about composite objects. To succeed, this paraphrase will have to deliver very particular results. The paraphrase provided should be such that for every (false) ordinary language claim that purports to be about a composite object (and that we—the folk—describe as ‘true’), there is a true sentence in the paraphrase of the form ‘simples arranged  $F$ -wise’; a true sentence that we can use to explain why such talk of composites is assertable if it is in fact false.

Well, suppose that the nihilist satisfied that condition. In that case, for every instance of a sentence that affirms ‘there is a composite object’ there is a *true* sentence ‘there is a collection of simples arranged  $F$ -wise’.

What good reason do we then have for thinking that the answer to the SAQ does not generate an answer to the SCQ? For instance, the answer given in UA might be the basis for an answer to the SAQ *and* the SCQ. Thus:

UA\* If the  $x$ s are disjoint, then the  $x$ s are arranged  $F$ -wise, for some predicate ‘ $F$ ’, and thereby compose an  $F$

The nihilist must resist this. They must deny that such answers to the SAQ can ‘double up’ as an answer to the SCQ in the manner described. But this will be hard. For every allegedly false sentence of ordinary English that purports to be about composite



objects, there is a true sentence of the paraphrase. It certainly looks a lot like an answer to the SAQ would give us the truth-conditions for talk about composite objects. Given the intuitive lure of the Moorean arguments, why not simply acquiesce and allow that an answer to the SAQ *is* an answer to the SCQ?

(The failed answers to the SAQ that we considered in Sect. 2 delivered an answer to this: they would be terrible, trivial, answers to the SCQ. For instance, suppose that we revised SUP to have it generate an answer to the SCQ.

SUP\*

Atoms are *compose a statue* if and only if they both have the properties and also stand in the relations to microscopica upon which, if statues existed, those atoms' *composing a statue* would non-trivially supervene.

Roughly, this would amount to the claim that some atoms—the *as*—compose a statue iff the *as* stand in the properties and relations that atoms would stand in *were* they to exist. But since atoms *do* exist, this is just to say that the atoms compose a statue iff they have the properties that atoms that compose statues have. This is not a good answer to the SCQ.)

There are, plausibly, two reasons to not acquiesce. The first is to say that there are good reasons to be a nihilist and that these reasons imply that we ought to stand fast. We have some reason, *R*, for thinking that nihilism is true and *R* is independent of whether or not we can find a satisfactory answer to the SCQ. I'll deal with this concern in 3.1. The second response that the nihilist might offer is that it's simply not the case that for every seemingly true sentence of English that seems to be about composite objects there is a paraphrase to be given in terms of the *xs* arranged *F*-wise. This response will be rejected in 3.2.

### 3.1 Nihilism is true, so an answer to the SAQ is not an answer to the SCQ

My concern is as follows. Let us assume (here, at least) that for every true sentence of English that makes apparent reference to a composite, there is a nihilistic paraphrase. This guarantees that in every case where we think of composition occurring, we have a nihilistic paraphrase. I think that this fact undermines one of the three motivations one *might* have for believing in nihilism. As I shall explain in a moment, I think that the other putative motivations one might have for believing in nihilism fail.

There are a range of motivations sometimes adduced for believing in mereological nihilism. Some of these putative motivations fail, for reasons already given by Bennett (2009, pp. 66–70). In particular, Bennett considers three arguments, over and above those that I'll discuss here, for thinking that nihilism is true: the problem of the many; the problem of causal overdetermination and that nihilism generates a ready solution to the problem of co-location in a way that the non-nihilist cannot. I won't repeat the details of Bennett's arguments, here. The arguments are readily available to the interested reader. Her general line—that I accept—is that each of the imagined arguments against non-nihilistic views has an analogue that threatens nihilism.

To illustrate, briefly, consider the problem of the many as Bennett (2009, p. 66) presents it.

Take any table  $t$ , and any of its constituent molecules  $m$ . Because  $t$  would survive the loss of  $m$ , and because an object *elsewhere* that was a duplicate of  $t$  except for  $m$  would also be a table, it looks as though  $t$  minus  $m$  must also count as a table. That entails that there are an awful lot of tables in almost the same region.

Compare this with what Bennett's (2009, p. 67) nihilist must say about collections of simples arranged  $F$ -wise.

But the nihilist endorses his own version of these claims as well. He thinks that (a) *being arranged  $F$ -wise* just is a relational property of simples, and thus trivially supervenes on the properties of and relations among simples, and (b) that certain minute differences in the properties of and relations among the simples cannot make a difference to whether or not *being arranged  $F$ -wise* is instantiated.

As Bennett (2009, p. 67) concludes:

Where the believer [in composition] has many mostly overlapping objects of the same kind, the nihilist has many mostly overlapping instantiations of the same property.

Thus, according to Bennett, for each of the problems facing a non-nihilist view of composition, there is an analogous problem facing the nihilist in their account of what it is to be arranged  $F$ -wise. As a consequence, I suggest, the nihilist must look elsewhere to motivate their view, for it seems that they must face the same problems that the non-nihilist faces and that they will therefore garner no obvious motivation for their view.

The three (other) motivations for nihilism that I am aware of, within the literature, are: ontological parsimony, ideological simplicity and an argument from elimination. Let me begin with the last of these. I do not think that the argument has been presented *explicitly* anywhere, but it would be easy enough to construct something like it from Van Inwagen's writings.<sup>8</sup> In any case, here is the thought.

The SCQ asks us a question to which it is reasonable to think there is an informative answer. When does composition occur? All of the putative answers to the question fail; all, that is, except nihilism. To introduce some terminology that I borrow from Markosian (1998), let us say that an answer to the special composition question is too liberal iff it counts too many collections of  $x$ s as composing; too conservative iff it counts too few collections of  $x$ s as composing. All of the putative answers to the SCQ are either too conservative or too liberal, and so should be rejected—so says my imagined nihilist.

Now, of course, the nihilist's view is *extremely* conservative. And so we might be of the view that it, too, should be ruled out. But my imagined nihilist repeats the claim made at the outset of the paper, and argues that we may give a suitable paraphrase of

<sup>8</sup> The argument is effectively that deployed by Markosian (1998) in favour of Brutal Composition, but altered slightly so's to eliminate all views other than nihilism, rather than all views other than Brutal.

talk that appears to be about composition. The paraphrase delivers the result that our ordinary language claims that appear to be about composite objects are all assertable, even if they are false. This, they claim, undermines the objection that the nihilistic view is too conservative.

But, if we then require that for every case of composition, there is a paraphrase that can be given in terms of the *x*s being arranged *F*-wise, then, contra the argument from elimination, we *do* have a paraphrase that will suffice to describe all of the cases in which composition occurs. After all, for every putatively true sentence about the *x*s composing an *F*, there is a paraphrase to be given in terms of the *x*s being arranged *F*-wise. There is, thus, a 1:1 match between cases in which we think of composition occurring and cases that our paraphrase describes as being ones where the *x*s are arranged *F*-wise. Given the presence of such a match, why not treat the latter as an answer to the SCQ? Certainly, this would give us a putative answer to the SCQ that is *neither* too liberal, nor too conservative. It will be just right.<sup>9</sup>

Given the strong intuition that there *are* composite objects, such a position would be dialectically treacherous for the nihilist. The situation would be this: for every *apparently* true sentence of English that purports to be about a composite object, there is in fact a true sentence of the paraphrase. If that answer to the SAQ delivers those results—a true sentence in all and only cases where we intuit it to be true that there are composite objects—then we have a resource that would seem to give us truth-conditions for all of our putatively true sentences of English about composite objects. This, it seems, is just to provide a way of answering the SCQ.

As a consequence, we would have to motivate nihilism in some other fashion. One way to attempt this would be to appeal to consideration of quantitative parsimony. The argument from quantitative parsimony is premised on the assumption that it is, in general, a theoretical virtue of a view if it minimises the number of existents in our ontology. Since mereological nihilism is committed to only the mereologically simple elements, so it denies the existence of tables, chairs, atoms and the like. And, because of this, mereological nihilism is *extremely* ontologically parsimonious. There are, simply, very few objects; this is a good thing.

Be that as it may, we should not try to motivate nihilism in this way for, if we take this demand for ontological parsimony seriously, we will end up with Schaffer's Existence Monism. Indeed, one of Schaffer's (2007, pp. 187–8) arguments in favour of Existence Monism is largely the one that I have just given. According to the Existence Monist there is only one object: the world. It has no parts; it instantiates distributional properties that account for all variation in that object. As Schaffer has things:

When we folk talk about tables and their ilk, the monist invokes her own paraphrases and fictions, different from those of the ... nihilist... When we say that there is a table, the monist holds that what exists is the world aspected table-ishly. Here talk of tables is paraphrased in terms of the world and its modes. The monist also holds that what we say is true according to the fiction of decomposition, which is the 'fiction' that the world decomposes into proper parts. As with nihilism, the paraphrase and the fiction prove complementary. The fiction

<sup>9</sup> With a nod to a very famous children's story, it is the 'baby bear' answer.

of decomposition earns its keep by nominalizing the aspects of the world. Table talk is less clumsy than talk about the table-ish aspects of the One. (2007, p. 179)

Thus, Schaffer claims, the Existence Monist can deliver a theory that is as explanatorily powerful as that of the nihilist.

But, Existence Monism is parsimonious in the extreme. Rather than make appeal to the many, mereologically simple objects that the nihilist postulates, the Existence Monist posits only one; the world. It is thereby far more parsimonious than the nihilist view. Whatever motivates nihilism, then, it had better not be an appeal to ontological parsimony, for nihilism will come off second-best when contrasted against Existence Monism. The Existence Monist posits only one object; the nihilist posits many—all of the mereologically simple entities.<sup>10</sup> Thus, it would seem that if quantitative parsimony is our concern, we ought to not endorse nihilism.

Indeed, it's worth noting that at least some nihilists think that this is right and that appeal to ontological parsimony is a poor way to argue in favour of nihilism. Here is Sider (2013, forthcoming, p. 3).

Many agree that simply cutting down on the number of entities isn't particularly important. Also, many defenders of parts say that there is something distinctive about parthood which makes commitment to mereologically complex entities somehow "innocent", a thought which perhaps defends against the argument from ontological parsimony<sup>11</sup>

Instead of making an appeal to ontological parsimony, then, let us explore the possibility that we might motivate nihilism by appeal to ideological simplicity. What is ideological simplicity?

The argument presupposes an epistemic principle: ideologically simpler theories are more likely to be true. The intuitive basis of the principle is the vague but compelling idea that simplicity is a guide to truth, together with the thought that eliminating primitive notions makes a theory "structurally" simpler. A theory's one-place predicates correspond to the kinds of things it recognizes, and its multi-place predicates to the kinds of connections between things that it recognizes; cutting down on kinds or connections is one way of making a theory structurally simpler. (Sider 2013, forthcoming, p. 3)

This allows Sider (2013, forthcoming, p. 4) to argue in favor of nihilism, 'on the grounds that it does not require a relation of parthood in ontology'.

<sup>10</sup> Technically, Existence Monism is a form of nihilism: it claims that there are no composite objects. However, the nihilistic view that I have been attacking in this paper is the one that Schaffer identifies as 'minimal nihilism', according to which the mereological simples are 'minimal' in size—presumably, point-sized (cf. Schaffer 2007, p. 181). The whole of this paper should be read as an attack on *minimal* nihilism and all mentions of nihilism in the paper should be read as mentions of *minimal nihilism*—unless otherwise specified. I take it that when metaphysicians typically speak of mereological nihilism, minimal nihilism is the view that they have in mind. Certainly, minimal nihilism is the kind of view that is discussed in (e.g.) Williams (2006) and the papers cited therein.

<sup>11</sup> Those who think that cutting down sheer numbers of object are not that important include Lewis (1973, p. 87). Those who defend the innocence of parthood include Lewis (1991, Sect. 3.6) and Armstrong (1997, Sect. 2.12).

Of course, there is an obvious objection to this line of argument, and whilst Sider anticipates it, he doesn't do enough to block it. The objection is that the nihilist *does* require just as much ideological complexity as someone who believes that there is composition because the nihilist replaces talk of 'the *x*s compose an *F*' with talk of 'the *x*s arranged *F*-wise'. Thus, this is simply a case of replacing one predicate with another and so does not obviously generate any greater ideological simplicity.

As I say, Sider (2013, forthcoming, p. 4) anticipates this concern.

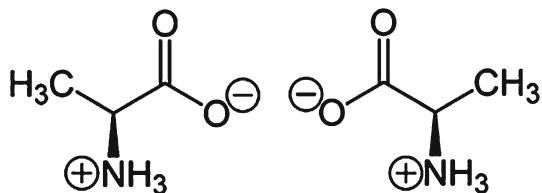
The epistemic principle should be restricted to theories about the fundamental nature of the world (such as physics and, by my lights, mathematics and fundamental metaphysics). Only for fundamental theories does simple ideology directly correlate with worldly simplicity; and it is far less clear that lean ideology is truth-conducive in biology, economics, and geology, let alone in everyday non-scientific contexts. Thus it is no objection that nihilists must use ideology like 'arranged plantwise', 'arranged dollar-bill-wise', 'arranged riverwise', and so forth to describe reality's biological, economic, and geological features—these predicates are not part of the nihilist's theory of fundamental matters.

My concern with Sider's claim is this. According to Sider (2013, forthcoming, p. 6), talk of 'parts' plays no explanatory role in our fundamental physical theories. As he puts it: '[p]hysics, for example, makes predictions based on laws governing simple entities like subatomic particles. Deleting 'part of' and all reference to composite objects in these theories does not weaken their predictive power'. The implication, I assume, is that if we delete talk of 'parts' and there *is* a loss of explanatory power from our theories of physics, then we should treat the relation of part-hood as an element of our fundamental theory. In what follows I present a case where, I suggest, our physics *does* require us to talk about composite objects or else '*x*s arranged *F*-wise'. Absent talk of *x*s arranged *F*-wise, our physics loses predictive power.

### 3.1.1 Chirality

A Chiral Molecule is a type of molecule that forms a non-superimposable mirror image. The familiar example of chirality from every-day life is handedness: a left hand and a right hand are a non-superimposable mirror image of one another. In chemistry, the most common way of generating a Chiral Pair is via the inclusion of an asymmetric carbon atom. An example represented by an image appears in Fig. 1 with the right-hand and left-hand instances of Alanine shown (left on the left; right on the right).

**Fig. 1** Alanine enantiomers



Where we have a pair of molecules that have different chiralities, we may call them ‘enantiomers’. The two molecules pictured are enantiomers of Alanine. Crucially, they have different properties. Specifically, I want to focus on the issue of optical rotation. Let us say that an electrodynamic wave is circularly polarised when the electric field vector of the wave describes a helix along the direction of propagation. Enantiomers of different chirality will absorb left- and right- handed circularly polarised light to different degrees. If we project an electrodynamic wave of circularly polarized light towards a solution that includes a relatively high proportion of left-handed chiral molecules, then we may predict that the wave will be absorbed in one way; if we project an electrodynamic wave of circularly polarized light towards a solution that includes a relatively high proportion of right-handed chiral molecules, then we may predict that the wave will be absorbed in another way. I concede that the case is a little complex. For our purposes all that matters is that this seems to be a case involving the enantiomers where the *arrangement* of their component parts matters to our physics.

So, here is the thought. The study of polarisation and the behaviour of electromagnetic waves is a part of the study of physics. Physics is a part of our fundamental theory. To adequately describe the behaviour of electromagnetic waves in the presence of chiral compounds it is not simply enough to say *that* there exist some simples. Normally, in order to predict the behaviour of the circularly polarized light, as in the case described above, we must know something about the composition of the solution into which the electrodynamic wave is projected, and, also, know what kind of enantiomer we have in the solution: left-handed or right-handed.

In other words: to describe and predict the behaviour of circularly polarized electromagnetic waves, we will need to talk of chiral molecules—in either their left-handed or right-handed form. For the nihilist to make sense of this kind of language, they will need to talk of entities arranged chiral-molecule-wise, in either their left- or right-handed forms. Thus, in predicting the behaviour of electromagnetic waves it becomes essential, in certain contexts, to talk of the specific arrangements of the mereological simples. In order to make the predictions that it does, our physical theory requires us to talk of, for instance, ‘simples arranged chiral-molecule-left-hand-wise’ and ‘chiral-molecule-right-hand-wise’.

In our present study this is crucial. What we find is that in our best physics—our fundamental theory—we must replace talk of chiral molecules (which would be composite) with talk of simples being arranged either chiral-molecule-left-hand-wise or chiral-molecule-right-hand-wise. Thus, contra Sider, our most fundamental theory *does* need to replace talk of composites with talk of ‘arrangements of simples *F*-wise’. As a consequence, there is just as much ideological complexity in nihilism as there is in non-nihilism: both theories require that we posit a multiple predicate in our fundamental theory. There is no advantage here for the nihilist.

We have come full-circle. Earlier in Sect. 3 I raised a concern: it is hard to see why the suggested answers to the SAQ might not double as an answer to the SCQ. In that case we need some principled reason to think that an answer to the SAQ doesn’t give us the truth-conditions for an answer to the SCQ. The reason we have been exploring,

here, is that there is good motivation to think that composition does not occur, and that nihilism is true. As we have seen, such a reason does not look to be forthcoming.

### 3.2 Cases where the *x*s composing and the *x*s being arranged *F*-wise are different

So far the structure of the argument has been this: if, for every sentence, ‘there is a *y* composed of the *x*s’, we have a paraphrase given in terms of ‘the *x*s being arranged *F*-wise’, and we are also obliged to give an account of what it *is* to be arranged *F*-wise, then there seems to be no good reason to not treat the answer to the SAQ as an answer to the SCQ.

One obvious line of response would be to argue that it’s not true that there is a paraphrase in *every* instance; there are some sentences of English that we take to be true, that appear to be about composite objects, but for which there is no adequate paraphrase of the form ‘simples arranged *F*-wise’. In that case, we have a clear response to the line of argument presented. The reason that we cannot view an answer to the SAQ as an answer to the SCQ is the list of cases that we think of as being ones in which composition occurs are very different from the list of cases that we think of as being ones in which we think of there being simples ‘arranged *F*-wise’.

This is perhaps the boldest of the responses available to the nihilist. It requires them to say that, in effect, *at least some* (though not all—else they become ‘Extreme nihilists’) of our talk that purports to be about composite objects is false, and there is no paraphrase of that talk available. Such a view is a simple error theory about a portion of our talk about composite objects. Of course, just how much revision is required will be a matter to be determined by the nihilist: nothing that has been said here has done anything to specify the range of cases in which there is no appropriate paraphrase available.

But herein lies the problem. The nihilist view just sketched is that some seemingly true sentences that are about composite objects are false and should not be asserted (because there is no paraphrase available). Of course, some other sentences that are seemingly true and that purport to be about composite objects are false but assertable (because there *is* a paraphrase to hand). We then require three things from the nihilist.

The first is a way of weeding the assertable from the non-assertable. The nihilist should tell us which of our sentences they think are false and that should also not be asserted. Absent that, their theory is simply incomplete. We cannot properly evaluate this nihilistic, revised theory without a comprehensive list of the sentences that are *simply false* and so not be asserted.

The second is a *principled* explanation of why we should think of those sentences described as being false and not assertable. It isn’t enough to just list some sentences at random and declare that these sentences are not to be asserted. We should be given some *principle reason* to think that this answer is the right result.

The final thing that we require from the nihilist is some damage limitation. Depending upon what these sentences are, matters may get complex. For instance, suppose that it turns out that sentences about enantiomers are simply false and cannot be paraphrased and so should not be asserted. Suppose, also, that it turned out that most of our other sentences about composites in science turned out to be true. How, then, are we



to make predictions concerning the behaviour of light? How, *exactly*, will we explain the seeming success of scientific prediction *in this case*? In most cases we will explain the success of science because scientific claims about composite objects are very close approximations to true propositions about simples being arranged *F*-wise—for various values of *F*. But in the case of the enantiomers, in this imagined scenario, we need some *other* explanation for the success of our predictions of the ways in which circular polarisation will occur. How will these two modes of explanation mesh together? Simply, we need to be told the details.

The example that I've discussed in this last paragraph is obviously arbitrary and nothing hinges on the choice of enantiomers. Any putative composite would do. The general point is that we will have to have two explanations of why and how our talk about composites seems so successful in science: one that trades upon 'simples being arranged *F*-wise'; one that does not. So not only must we be told what this other explanation is, we must be told how the two explanations, between them, generate a coherent picture. I don't say that this cannot be done, but I do say that it needs to be done.

#### 4 Conclusion

Nihilists face-down the objection from common-sense by paraphrasing our talk that seems to be about composite objects in terms of 'simples being arranged *F*-wise'. But, as we have seen, the nihilist does not make it at all clear what it takes for simples to be arranged in such a fashion. Absent that, it seems we lack a complete theory. I don't see how we can either endorse or reject nihilism without being told exactly what it would take for simples to be arranged in the way that they describe. More worryingly, I've argued that there isn't any obvious way to meet this challenge in a satisfactory fashion. Of course, the nihilist may think that this is wrong. In that case, they owe us a complete theory. The collection of simples arranged *me*-wise looks forward to reading it, and understanding what is meant by the first portion of this sentence.

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