THE ARGUMENT FROM ADDITION FOR THE ELIMINATION OF ORDINARY OBJECTS

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ABSTRACT: If tables exist, then a table is one more object in addition to the atoms that compose it. For example, if one billion atoms compose it, then there would be a total of one billion and one objects. But this seems wrong. Intuitively, a table should not be counted as one more object in addition to its parts. So, by *modus tollens*, it follows that tables do not exist. After presenting this eliminativist argument, I indicate why it should be distinguished from the problem of material constitution. Next I examine a series of strategies for resisting the argument, highlighting their strengths as well as their weaknesses. Finally, I present a new solution to this problem.

KEYWORDS: Metaphysics; Ordinary objects; Eliminativism; Conservatism; Double counting.

1. INTRODUCTION

Conservatism in the metaphysical sense is the view that ordinary objects such as rocks and tables exist, but that extraordinary objects such as trogs (an object composed of a tree and a dog) do not. By contrast, permissivism is the view that both ordinary and extraordinary objects exist, while eliminativism is the view that neither do. There are several arguments that have been advanced against conservatism, either to deny the existence of ordinary objects or to affirm the existence of extraordinary ones. The most famous and widely discussed arguments in the literature are the following eight: the sorites paradox, the argument from vagueness, the argument from material constitution, the problem of indeterminate identity, the debunking argument, the arbitrariness argument, the overdetermination argument, and the problem of the many.[1] Here I would like to suggest that this list should be expanded, to include what I will call "the argument from addition". It can be formulated as a *modus tollens*:

(AFA1) If tables exist, then a table is one more object in addition to the atoms that compose it.
(AFA2) A table is not one more object in addition to the atoms that compose it.
(AFA3) So, tables do not exist.[2]

The argument is evidently not limited to tables. Other composite objects, such as rocks and trees, can be eliminated in a similar way.[3] For this reason, I believe that the argument from addition should be recognized as one of the most powerful weapons in the eliminativist's arsenal. In the next section, I will explain how it should not be confused with the argument from material constitution, which it closely resembles.

2. THE ORIGINS OF THE ARGUMENT AND HOW IT DIFFERS FROM THE PROBLEM OF MATERIAL CONSTITUTION

The idea that a whole should not be counted as one more object in addition to its parts is usually found in discussions on two other topics: the problem of material constitution and the thesis of Composition as Identity. For example, in his classic example of the dishpan and the piece of plastic, Lewis says the following:

> "It reeks of double counting to say that here we have a dishpan, and we also have a dishpan-shaped bit of plastic that is just where the dishpan is, weighs just what the dishpan weighs (why don't the two together weigh twice as much?), and so on. This multiplication of entities is absurd on its face; and it only obfuscates the matter

[1] See Korman (2020) for an overview of these eight arguments, and Korman (2015) for a conservative take on six of them.

[2] The question of how this argument should be formalized using first-order logic is controversial, because the concept of existence can be treated either as a quantifier or as a first-order predicate. That being said, if it is treated as a quantifier, then the logical form of the argument is the following one: 1) $\exists xTx \rightarrow \exists xAx$, 2) $\neg\exists xAx$, 3) $\neg\exists xTx$. This should be parsed as: 1) If there exists an x, such that x is a table, then there exists an x, such that x is one more object in addition to the atoms that compose it, 2) It is not the case that there exists an x, such that x is one more object in addition to the atoms that compose it, 3) So, it is not the case that there exists an x, such that x is a table. I won't provide the logical form of the argument if the concept of existence is treated instead as a first-order predicate, I'll leave that to the reader.

[3] But, as I will explain in the section on extended simples, parthood is inessential to the argument.

> if we say that the plastic and the dishpan are 'relatively identical' while implying that they are absolutely *not* identical." (Lewis, 1986: 252-253; emphasis in the original)

Other thinkers agree with Lewis that material constitution is problematic not only because it involves the spatial co-location of physical objects, but also because it involves double-counting. As Thomasson says:

> "It is sometimes suggested that co-location is implausible in itself: how (critics ask) could there be two physical objects in the same place at the same time; is it really plausible to think that there is a table *over and above*, or *in addition* to the collection of particles composing it?" (Thomasson, 2010: 593-594; emphasis in the original)

Yet, as I will argue in a moment, the issue of double-counting is not exclusive to the problem of material constitution. In order to see this point clearly, it will be useful to take a look at Korman's version of the argument from material constitution:

> "Here is an argument from material constitution for the elimination of clay statues. Let Athena be a clay statue, and let Piece be the piece of clay of which it's made.
>
> (MC1) Athena (if it exists) has different properties from Piece.
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> (MC2) If so, then Athena ≠ Piece.
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> (MC3) If so, then there exist distinct coincident objects.
>
> (MC4) There cannot exist distinct coincident objects.
>
> (MC5) So, Athena does not exist." (Korman, 2015: 9-10)

As Korman explains, monists can resist this argument by denying the first premise, MC1. What this means is that Athena would be identical to Piece. There would only be one ordinary object, a piece of clay that also happens to be a statue. That being said, it's possible to raise some objections against the denial of MC1. But even if we assume that Athena is identical to Piece, the following argument shows why the argument from addition is problematic even if the argument from material constitution has been resisted in a monist way:

(AFA4) If Athena (i.e., Piece) exists, then it is one more object in addition to the atoms that compose it.

(AFA5) Athena (i.e., Piece) is not one more object in addition to the atoms that compose it.

(AFA6) So, Athena (i.e., Piece) does not exist.

In other words, suppose that a billion atoms compose Athena (i. e., Piece).

Then there are a billion and one objects in total: a billion atoms, plus one statue-shaped piece of clay. But the latter does not seem to be the case, we are still double-counting, even if we say that Athena is identical to Piece. So, by *modus tollens* it follows that Athena (i.e., Piece) does not exist. The upshot is that even if we grant that monists successfully manage to elude one instance of doube-counting by resisting the argument from material constitution, they do not succeed in eluding this other instance of double-counting, the one raised by the argument from addition. For this reason, I believe that the argument from addition is not a mere variation of the argument from material constitution. It's a different argument altogether.

In principle, one could also distinguish these two arguments by saying that they involve different relations, as well as different *relata*. Specifically, it can be argued that constitution and composition are not the same relation. The idea would be that Piece *constitutes* Athena, while a certain collection of atoms *composes* Piece as well as Athena. So, one could go on to say that constitution is a one-to-one relation, while composition is a many-to-one relation. Constitution involves two objects that fully coincide (or are co-located) with each other, such as a lump of clay and a clay statue, while composition involves many objects (such as atoms), each of which coincides only partially with the object that they compose. But even though this line of thought might be pursued, this is not how I would prefer to distinguish the two arguments under consideration. To be sure, I certainly believe that constitution and composition are different relations. But I don't think that the argument from addition necessarily involves composition. If it did, then it could be resisted by claiming that tables exist as extended simples. Yet, as I will explain later, the argument from addition still works even if one omits any and all references to composition.

The issue of double-counting also appears in discussions about the thesis of Composition as Identity, or CAI for shot. The *locus classicus* is Baxter's example of the six-pack of orange juice. As he says:

> "Someone with a six-pack of orange juice may reflect on how many items he has when entering a 'six items or less' line in a grocery store. He may think he has one item, or six, but he would be astonished if the cashier said 'Go to the next line please, you have seven items'. We ordinarily do not think of a six-pack as seven items, six parts plus one whole." (Baxter, 1988: 579)

Baxter's point here is that the six-pack exists and that it can be counted either as one thing or as six things. In other words, he is not advancing an eliminativist argument. But eliminativists can weaponize his example of the six-pack for their own purposes, by turning it into an argument from addition, like so:

(AFA7) If six-packs of orange juice exist, then a six-pack of orange juice is the seventh object composed by six individual bottles.

(AFA8) A six-pack of orange juice is not the seventh object composed by six individual bottles.

(AFA9) So, six-packs of orange juice do not exist.

The argument from addition can also be wielded against non-nihilistic eliminativists, such as van Inwagen (1990), who makes an exception for organisms. Here is an argument from addition for the elimination of organisms:

(AFA10) If organisms exist, then an organism is one more object in addition to the atoms that compose it.

(AFA11) It is not the case that an organism is one more object in addition to the atoms that compose it.

(AFA12) So, organisms do not exist.[4]

Let's now consider the cases of water molecules and hydrogen atoms. It is an open question if entities such as those are ordinary objects or not. Either way, the argument from addition can target them just as well. For example, the existence of H_2O molecules can be challenged in the following way:

(AFA13) If water molecules exist, then a water molecule is the fourth object composed by three atoms.

(AFA14) A water molecule is not the fourth object composed by three atoms.

(AFA15) So, water molecules do not exist.

A similar argument could be advanced for the elimination of hydrogen atoms. It would go like this: If hydrogen atoms exist, then a hydrogen atom is the third object composed by a proton and an electron. But since the latter is not the case, it follows by *modus tollens* that hydrogen atoms do not exist.

Although the argument from addition, as I have presented it, aims to eliminate ordinary objects, this should not give the impression that the extraordinary objects that permissivists countenance are off the hook. The argument from addition can target them as well. For example:

[4] A similar argument can be wielded against Merricks (2001), who makes an exception for conscious beings.

(AFA16) If trogs exist, then a trog is the third object composed by a tree and a dog.
(AFA17) A trog is not the third object composed by a tree and a dog.
(AFA18) So, trogs do not exist.[5]

The upshot is that the argument from addition is a powerful weapon against conservatives, non-nihilistic eliminativists, and permissivists alike. Only the most radical eliminativists should accept it. Everyone else needs to find some way to resist it.

With the preceding examples in mind, we can see that the general form of the argument is the following one:

(AFA19) If the ordinary object x exists, then x is the $(n+1)$th object composed by n parts.
(AFA20) It is not the case that x is the $(n+1)$th object composed by n parts.
(AFA21) So, the ordinary object x does not exist.[6]

The first three strategies for resisting the argument are: the thesis of Composition as Identity, the thesis of disguised plurals, and the thesis of extended simples. All of them deny AFA19 in the general form of the argument, and consequently they all deny the first premise in each specific version of the argument. In other words, they claim that tables do indeed exist, but that this does not entail that a table is one more object in addition to the atoms that compose it. On this last point, the first three strategies differ. The first option is to say that a table is identical to the parts that compose it. The second option is to claim that a table is not a single composite thing, it is instead a plurality of mereological atoms, and the word "table" is a disguised plural. The third option is to claim that tables exist but they have no parts, they are medium-sized extended simples. An entirely different strategy is to deny AFA20, the second premise of the general form of the argument, and of every one of its instances. Whoever chooses this option will be committed to the claim that the ordinary

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[5] Alternatively, one might say: 1) If trogs exist, then a trog is one more object in addition to the atoms that compose it, 2) A trog is not one more object in addition to the atoms that compose it, 3) So, trogs do not exist.

[6] The term "ordinary object" here is a placeholder, since, as we have seen, the argument can target entities such as water molecules and hydrogen atoms even if one would not be willing to characterize them as "ordinary", and the argument works equally well against the extraordinary objects that permissivists countenance, such as trogs.

object x is indeed one more object in addition to its parts. If a billion atoms compose a table, then it is true that the table is the billionth-and-one object. If six bottles of orange juice compose a six-pack, then the six-pack itself is indeed the seventh object. A molecule of H_2O is indeed the fourth object composed by two hydrogen atoms and an oxygen atom. Proponents of this option will then have to explain away the counter-intuitiveness of their position. Still a different strategy is to adopt a case-by-case approach. The idea would be that there is no universal solution to the general form of the argument, since in some cases one should deny the first premise, while in other cases one should deny the second premise. After examining each of these strategies I will present my own solution to this problem.

2. COMPOSITION AS IDENTITY

Recall that the first premise of the general form of the argument, AFA19, says that if the ordinary object x exists, then x is the $(n+1)$th object composed by n parts. That premise can be denied by claiming that the antecedent is true but that the consequent is false. The idea here is that ordinary objects certainly exist, but an ordinary object should never be counted as one more object in addition to its parts, because the ordinary object in question is *identical* to those parts. Such is the thesis of Composition as Identity. Consequently, a six-pack of orange juice can be counted either as six bottles or one six-pack, but never as a seventh item. A table can be counted either as a billion atoms or as one table, but it will never be one more object in addition to its parts. A molecule of H_2O can be counted either as three atoms or as one molecule, but not as a fourth object.

That being said, there are several objections that can be raised against the CAI thesis.[7] I won't discuss all of them here, but there is one that I find especially troublesome. Recall the example of the table. By Leibniz's Law, if the table is identical to the collection of atoms that compose it, then they should have the same properties, because they would be the same object. But, as Korman (2015: 22) argues, the table and the collection of atoms have different persistence conditions. For example, if the table is sent through the wood-chipper, it would cease to exist, but the collection of atoms would not. If this is so, then they have

[7] See Cotnoir (2014) for an overview of the objections against the CAI thesis.

different properties, which means that they are different objects. Thus, contrary to the CAI thesis, it can be argued that the table is not identical to the atoms that compose it. So, we need to look elsewhere if we want find a solution to the argument from addition. One way of doing so is to deny AFA19 by accepting the thesis of disguised plurals.

3. DISGUISED PLURALS

Unlike the CAI thesis, the idea here is that the tables exist but not as composite objects, they exist instead as pluralities of atoms that do not compose anything at all. According to this view, the word "table" should be treated as a term that is grammatically singular but referentially plural. As Contessa explains:

> "According to non-eliminative nihilists, expressions such as 'the cat', 'the apple', or 'the table' are, thus, to be understood along the lines of more familiar expressions such as 'the crowd', 'the team', 'the convoy', 'the forest', or (to take an old philosopher's favorite) 'the heap', which are grammatically singular and yet seem to have plural referents." (Contessa, 2014: 202)

While the word "crowd" refers to many individual people, the word "table" refers to many individual atoms. Neither word refers to an individual composite object. They both refer to pluralities that do not compose anything. But, while eliminative nihilists argue that neither crowds nor tables exist, non-eliminative nihilists like Contessa argue that they do.[8] AFA19 would be false because ordinary objects exist, but they are not composite objects, they are pluralities of atoms that do not compose anything. If this is so, then the argument from addition has been successfully resisted.

But the claim that a table is just a plurality of atoms, as opposed to being a single composite object, is controversial. One may argue that if the table were to lose just one atom, then it would no longer be the same table, because it would no longer be the same plurality of atoms. If on Monday the table is a plurality of 1.000.000.000 atoms, and if on Tuesday it is instead a plurality of 999.999.999 atoms, then it follows that they are not the same table, since these quantities are not identical to each other. Contessa is aware of this objection, and his response to it is that non-eliminative nihilists do not need to claim that the two pluralities

[8] Liggins (2008) defends a similar point of view.

in question are identical. Instead, one can resort to the concept of sameness, which is less strict than the concept of identity. So, one can say without contradiction that the two pluralities of atoms are the same table even if they are not identical, since sameness and identity are two different relations.[9]

But there is another problem that the thesis of disguised plurals faces. Tables fail Korman's diagnostics for being pluralities instead of composite objects. The diagnostics consist of four tests: the single object test, the "in" test, the growth test and the transitivity test. In particular, according to the single object test, a composite object has "all of the features that it should have if it were a single object" (Korman, 2015: 145). For example, if the Supreme Court were a single object, then it would be a fleshy composite object that has nine tongues and eighteen elbows. Intuitively, such is not the case, so there is reason to believe that the Supreme Court is not a single object, but rather a plurality of nine judges that do not compose anything at all. By contrast, the table is indeed a single wooden object that has a surface and four legs. Intuitively, then, the table is not a plurality of objects, it is instead an individual composite object.[10]

Since the thesis of disguised plurals can be challenged, AFA19 still stands. In the next section, we will examine yet another strategy for denying that premise.

4. EXTENDED SIMPLES

Some non-eliminative nihilists may wish to deny AFA19 by making a different claim. The idea now is that tables exist, but they are not composite objects, they are instead extended simples. As such, they don't have parts, even though they have an extension in space. AFA19 would be false because the consequent assumes that atoms compose tables, but according to the view under consideration, tables are not composed of atoms, nor of anything else. Tables exist, and so do atoms, and both of them are mereologically simple. As Williams[11]

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[9] However, this idea has been challenged by Long (2019), who also raises other objections against Contessa (2014).

[10] I believe that the single object test is the strongest criterion for distinguishing pluralities from composite objects, but I won't develop this idea here, I'll leave that for a future article.

[11] It is important to note that Williams (2006) does not actively endorse such a view, he only discusses it and argues that it is conceivable. This is because he is countering an argument against mereological nihilism, known as the argument from gunk. What Williams suggests is that the mere conceivability of gunk does not

says:

> "The world, according to this nihilist, may contain table, chair and dog shaped and sized simples; and the table-like simples may share their location with four leg-shaped simples and a tabletop-shaped simple, as well as with many micro-particles." (Williams, 2006: 504)

I would like to suggest here that the thesis of extended simples manages to resist the argument from addition only when the latter is formulated in such a way that it takes parthood for granted. But the argument can be reformulated in a different way, one in which parthood is omitted. For example, eliminativists can advance the following argument:

(AFA19*) If the ordinary object *x* exists, then *x* is the (*n*+1)th mereologically simple object that is merely co-located with *n* atoms.

(AFA20*) It is not the case that *x* is the (*n*+1)th mereologically simple object that is merely co-located with *n* atoms.

(AFA21) So, the ordinary object *x* does not exist.

In other words, even if nihilists manage to deny AFA19, AFA19* still stands, and it is just as problematic. To see this point more clearly, consider an alternative version of the case of the six-pack:

(AFA7*) If six-packs of orange juice exist, then a six-pack is the seventh extended simple that is merely co-located with six individual bottles that are also extended simples.

AFA8*) A six-pack is not the seventh extended simple that is merely co-located with six individual bottles that are also extended simples.

(AFA9) So, six-packs of orange juice do not exist.

The idea here is that even if the six-pack is an extended simple, it would be wrong to count it as a seventh object. The problem of double-counting persists even if parthood is omitted. The upshot is that the thesis of extended simples cannot disarm the argument from addition when the latter is formulated in a way that excludes parthood.

An entirely different option for resisting the argument from addition in its general form is to deny the second premise, AFA20, instead of the first one, AFA19. We will now examine that strategy.

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prove that mereological nihilism is false, because one may well conceive that tables (and other objects) exist as extended simples.

5. EMBRACING THE ADDITION

Recall that AFA20 says that it is not the case that *x* is the (n+1)th object composed of *n* parts. Whoever chooses to deny that premise is effectively claiming that a whole is indeed one more object in addition to the parts that compose it. So, for example, a table is indeed the billionth-and-one object composed by a billion atoms, a six-pack of orange juice is indeed the seventh object composed by six individual bottles, and a molecule of H_2O is indeed the fourth object composed by two hydrogen atoms and an oxygen atom. Whoever chooses this strategy might go on to say that the whole is always greater than the sum of its parts, as the slogan for holism goes. If this slogan is taken literally, then it means that whenever there are *n* parts that compose a whole, there are at least n+1 objects in total: the *n* parts plus one whole.

But eliminativists can ask if the holistic slogan in question should be understood as a statement of psychology or of metaphysics. If it is merely a statement of psychology, then eliminativists can suggest that even if it were true that our perceptual and cognitive faculties operate in such a way, this does not prove that composite objects or wholes exist by themselves out there in the world, independently of our ways of perceiving and thinking. In other words, the holistic slogan under consideration should be understood as a statement of metaphysics, not merely as a statement of psychology.

With that in mind, eliminativists can respond by advancing a new argument, in which AFA20 is deduced from other premises:

> (AFA22) If it is counterintuitive that *x* is one more object in addition to the atoms that compose it, then it is not the case that *x* is the (n+1)th object composed by *n* parts.
>
> (AFA23) It is counterintuitive that *x* is one more object in addition to the atoms that compose it.
>
> (AFA20) So, it is not the case that *x* is the (n+1)th object composed by *n* parts.

Those who wish to deny AFA20 have two options for resisting this new argument. On the one hand, they can deny the first premise, AFA22, by conceding that the antecedent is true, but also suggesting that the consequent is false. The idea here would be the following: just because something is counterintuitive, it does not mean that it is not the case. Or, to put it as a slogan: counterintuitiveness does not entail falsehood. On the other hand, one might deny the second premise, AFA23, by arguing that it is not counterintuitive that a composite object is one more object in addition to the atoms that compose it. Accordingly, it might be argued that intuitions are not universal: what seems counterintuitive to you might not seem counterintuitive to me. The debate will then be about whether or not intuitions are universally shared.

That being said, eliminativists might wish to support AFA20 in a different way. They might appeal to parsimony, like so:

> (AFA24) If it is unparsimonious that *x* is one more object in addition to the atoms that compose it, then it is not the case that *x* is the (n+1)th object composed by *n* parts.
>
> (AFA25) It is unparsimonious that *x* is one more object in addition to the atoms that compose it.
>
> (AFA20) So, it is not the case that *x* is the (n+1)th object composed by *n* parts.

Once again, this argument might be resisted by denying either the first or the second premise. In the first case, it will be conceded that it is unparsimonious to countenance composite objects in addition to their parts. But just because something is unparsimonious, it does not mean that it is not the case. For example, the Universe would be much more parsimonious if there were just a handful of atoms instead of billions upon billions of them, but that does not mean that there actually *are* just a handful of atoms. Alternatively, one might instead deny that composite objects are unparsimonious. Unnecessary complications should be avoided, but not necessary ones. If a table and the collection of atoms that compose it do not have all of the same properties, then by Leibniz's Law there is good reason to accept the existence of tables, and it would not be unparsimonious to do so. The debate will then be about parsimony and its relevance to metaphysics.

But there is a different problem that the strategy of denying AFA20 faces: it is not always the case that we are dealing with composite objects instead of pluralities. Consider the following argument:

> (AFA26) If the Supreme Court exists, then the Supreme Court is the tenth object composed of nine judges.
>
> (AFA27) The Supreme Court is not the tenth object composed of nine judges.
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> (AFA28) So, the Supreme Court does not exist.

It would be in the spirit of holism to deny AFA27. But this would be highly problematic. The reason has already been indicated in the section on disguised plurals: the Supreme Court fails Korman's diagnostics for being a single composite object. Everything seems to indicate that it is instead a plurality of nine judges. On that note, here is an argument in support of AFA27:

(AFA29) If the Supreme Court is the tenth object composed of nine judges, then the Supreme Court is a single fleshy object with nine tongues and eighteen elbows.
(AFA30) The Supreme Court is not a single fleshy object with nine tongues and eighteen elbows.
(AFA27) So, the Supreme Court is not the tenth object composed of nine judges.

With this in mind, it is better to deny A26 instead of A27. What this means is that the Supreme Court exists, but this does not entail that it is a single composite object. If it is not, then there are two options: either it is an extended simple, or it is a plurality of nine judges. Since I already argued that the thesis of extended simples is incapable of resisting the argument from addition, the only sensible option here is to claim that the Supreme Court is a plurality of nine judges.

These considerations lead us to the next possible strategy for resisting the argument from addition, the case-by-case approach. Indeed, those who opt for this new strategy will suggest that there is no universal answer to the general form of the argument. In some cases, like the one involving the Supreme Court, one should deny the first premise. In other cases, like the one involving tables, one should instead deny the second premise instead. Let us examine this approach in more detail.

6. THE CASE-BY-CASE APPROACH

One might claim that composition occurs in some cases but not in others, and in the cases in which it does, the whole is one more object in addition to its parts. With this in mind, those who favor the case-by-case approach can suggest that there is no universal answer to the general form of the argument from addition. In the case involving tables, we should deny AFA2, because the table is indeed one more object in addition to the atoms that compose it. By contrast, in the case of the Supreme Court, we should deny AFA26 instead, because the Supreme Court exists as a plurality of nine judges, not as a single composite object. This seems to be Korman's position.

As we have seen, Korman proposes some diagnostics for distinguishing composite objects from pluralities that do not compose any further object.[12] Yet, as Korman himself notes, in some cases they deliver mixed results. For example, the solar system passes some tests for being a disguised plural but it fails others. Stated differently, in some respects it seems to be a single composite object, while in other respects it seems to be a plurality of objects. The Universe is another case that yields mixed results.[13] That being said, one might say in Korman's defense that hard cases such as those are comparatively rare. The diagnostics seem to work just fine for the vast majority of cases.

Fairchild & Hawthorne (2018) provide a different critique of Korman's diagnostics. A puddle, for example, seems to be a single composite object instead of a mere plurality, since an expression like "that puddle" passes all of the tests for being a term that is referentially singular instead of plural. Yet, puddles seem to lack the kind of cohesive unity that paradigmatic composite objects such as tables have. If you grab the side of a table and you pull it, the entire table will move in the direction in which you are pulling. But in the case of a puddle, that does not happen, it is not possible to grab the side of the puddle in order to pull it. Given that the same is true of all bodies of liquid or gas, and given that many of them can arguably be characterized as ordinary objects, one may wonder if Korman's diagnostics do indeed work for the vast majority of cases. Perhaps they work for the majority of cases involving *solid* objects. Or perhaps one might even argue, in Korman's defense, that bodies of water or gas are not objects, they're instead masses or portions of stuff. Whatever the case may be, the point here is that the proposed diagnostics are not infallible, and it is an open question if they work in most cases or not.

A different problem with the case-by-case approach is that since it combines elements of two previous strategies (disguised plurals and embracing the addition), it also inherits their respective problems. On the one hand, the case-by-case approach makes the counter-intuitive claim that a table is indeed one more object in addition to the atoms that compose it. On the other hand, it faces the problem of explaining how a plurality of objects can be the same plurality even when the number of objects changes, for example it must explain how the

[12] Alternatively, one might wish to provide a moderate answer to van Inwagen's (1990) Special Composition Question. See Carmichael (2015) for an example of a moderate answer to the SCQ.

[13] See Korman (2015: 152) for these examples.

Supreme Court composed of nine judges can be the same Supreme Court if it were expanded to include ten judges. After all, recall that in the section about disguised plurals, we saw that if a table is a mere plurality and it losses one atom, it is no longer the same plurality, and hence it would no longer be the same table. If this is so, then it would be necessary to explain why matters should be different when the Supreme Court gains a new judge.[14]

In the next section, I will propose a new strategy for resisting the argument from addition.

7. THE PROPOSED SOLUTION

Here I will present the solution that I endorse, at least for the time being. In the general form of the argument from addition, I reject the first premise, AFA19. Here is the idea: the ordinary object x is not the (n+1)th object composed by n parts, because each part should be counted as a fraction of a whole.

The example of the six-pack of orange juice will help to clarify this. Six-packs of orange juice exist, but a six-pack is not the seventh object composed of six individual bottles. Instead, each bottle should be counted as 1/6th of the whole that they compose. Clearly, if each bottle is 1/6th of a whole, and if there are 6 bottles, it follows that it is not true that the whole is a seventh object. So, AFA7 is false, and the argument from addition for the elimination of six-packs of orange juice fails. Furthermore, if you separate the six bottles, then there is no six-pack anymore. It has been destroyed, and each bottle is no longer 1/6th of a pack.

Consider now the case of a table. I claim that tables exist and that they are composite objects. But this does not entail that a table is one more object in addition to the billion atoms that compose it, because each atom should be counted as 1/1.000.000.000th (one-billionth) of the whole that they compose. If the table loses a single atom, it is still the same table. Not merely in the sense of the concept of sameness that Contessa (2014) utilizes, but rather in the sense that the table on Monday, composed of 1.000.000.000 atoms, is *identical* to the table on Tuesday, composed of 999.999.999 atoms. What about the atom that the table lost? Is it still one-billionth of a whole? No, it is not, because although the table

[14] Perhaps this can be explained by Korman's (2015: 137-138) ideas on roles, especially his diagnostics for determining whether or not we're dealing with a role term or a singular term.

still exists, that atom is no longer one of its parts.

Perhaps a metaphor might help to make this solution seem less strange. From the point of view of cell theory, there are two kinds of organisms: unicellular and multicellular. A bacterium, for example, is both a single cell as well as an independent organism. By contrast, a skin cell or a neuron is indeed a single cell, but it is not an independent organism. If I lose a skin cell, that cell does not keep on living by itself as bacteria do. So, metaphorically speaking, just as the cells of multicellular organisms are not themselves organisms, the parts of a whole are not themselves wholes in relation to the object that they compose.[15] This last point is important, because one foreseeable objection to my proposal is that each part of a composite object is itself a whole. For example, -the objection goes- an individual bottle of orange juice, which is part of a six-pack, has its own parts, such as the lid or cap and a sticker with the brand's label. My reply to that possible objection is that the bottle itself is not a whole in relation to the six-pack, but it is indeed a whole in relation to its own parts. And each of the bottle's own parts should be counted as a fraction in relation to that individual bottle. So, it is possible to say of a certain object, without contradiction, that it is a whole and that it is not a whole, because it is a whole in relation to its parts, and it is not a whole in relation to the composite object of which it is itself a part.

The case of an H_2O molecule, and the case of a hydrogen atom, can be dealt accordingly. If three atoms compose a water molecule, then instead of saying that there are four objects in total, we should instead say that there are $1/3 * 3 = 1$ objects in total, because in this case, each atom is counted as one third of the molecule that they compose. In the case of a hydrogen atom, the electron and the proton that compose it are counted as mereological halves of the whole atom. Does this mean that if some other molecule has four atoms, such as H_2O_2 (hydrogen peroxide), each atom should be counted as one fourth of the whole molecule? I believe that the answer is yes. Suppose that you have a molecule of water, H_2O, and you add another oxygen atom, so that it turns into H_2O_2. The

[15] The metaphor ends there, though. While the skin cell that I have just lost will not become an independent organism, if a composite object loses a part, then that part becomes a whole on its own. If I separate an individual bottle from a six-pack, that bottle is no longer 1/6th of a six-pack, because it is no longer one of the six-pack's parts. So, a part can become an independent whole, while a skin cell cannot become an independent organism.

original oxygen atom was one third of the water molecule. That very same atom is now one fourth of the new molecule. To be sure, it is the same *atom* in both cases. But it is not the same *part* in both cases. Its status in terms of parthood has changed, both qualitatively as well as quantitatively. Qualitatively, it used to be part of a molecule of water, and now it is part of a molecule of hydrogen peroxide. Quantitatively, it used to be 1/3rd of a molecule, and now it is 1/4th of a different molecule.

In the example of the Supreme Court, is the Supreme Court a single composite object, and should each judge be counted as 1/9th? This is an open question, but I believe that the answer is negative. The Supreme Court is not a single composite object, because it fails Korman's diagnostics for being a composite object. Although his diagnostics can be criticized, I believe that his single object test is nevertheless an especially strong criterion for distinguishing composite objects from pluralities of objects.

8. CONCLUDING REMARKS

I have presented the argument from addition for the elimination of ordinary objects as a *modus tollens*. I then indicated the origins of the argument, and I argued that it should be distinguished from the problem of material constitution. Next, I stated the argument from addition in its general form. I then reviewed different strategies for resisting the argument.

The strategy that I favor avoids the pitfalls of the other approaches. Unlike the CAI thesis, my proposal is not vulnerable to Leibniz's Law arguments, since I can clearly distinguish a composite object from the collection of atoms that compose it. Unlike the thesis of disguised plurals, my proposal is not vulnerable to the objection that if the atoms change then the ordinary object that they compose changes. In contrast to the thesis of extended simples, the advantage that my approach has is that it preserves the plausible claim that composite objects such as tables have proper parts. As for the strategy of embracing the addition, my proposal has the advantage of respecting what is intuitive in the argument from addition, namely the second premise. Lastly, in relation to the case-by-case approach, my proposal has the advantage of being able to provide an answer to the general form of the argument from addition, instead of focusing solely on each individual case.

Having said this, I'm aware that my proposed solution might not be optimal, and there are surely objections against it that have not occurred to me. But I believe that, as matters currently stand, I have shown that it is better than its alternatives.

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