

## ANALYZING CONSTITUTION

**ABSTRACT:** In this paper I supply two analyses of constitution in terms of grounding and show how they are improvements on a recent analysis offered by Saenz (2015). I identify some points at which one might choose between two resulting analyses.

Abstract: 39 words

Body: 4,000 words

### § 1 A RECENT ANALYSIS OF CONSTITUTION IN TERMS OF GROUNDING

Consider a statue and the clay it is made of. They share many properties. For instance, they weigh the same, they have the same location, and they have the same shape. But they also seem to differ. For instance, it seems that the clay, but not the statue could survive being squashed. So, it seems, the clay and the statue are not identical. Some—those called “multi-thingers”—hold that the statue and the clay are not identical.<sup>1,2</sup> Some of these philosophers hold that the relation that obtains between the clay and the statue is that of constitution: the clay constitutes the statue. These philosophers are constitution theorists.

Constitution theorists owe an answer to the question: what is constitution like? We can say this much right now: constitution is the relation that obtains between the clay and the statue and,

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<sup>1</sup> Multi-thingers include Doepke (1982), Thomson (1998), Baker (2000), Fine (2003 and 2008), Koslicki (2004 and 2008), Saenz (2015), and Korman (forthcoming).

<sup>2</sup> The names “one-thinger” and “multi-thinger” are taken from Bennett 2004, who attributes them to Stephen Yablo. As their name suggests, one-thingers believe that the statue and the clay are identical, i.e. there is just *one thing* there in the statue-shaped region. Meanwhile, multi-thingers believe that there is more than one thing there, i.e. the statue and the clay are not identical.

more generally, between a thing and what it is made of. I'll make this more precise by offering an analysis of constitution. A number of analyses have been offered.<sup>3</sup> A recent analysis is given by Saenz (2015) in terms of grounding.

To understand this analysis of constitution, we need to understand what grounding is. I make these assumptions about grounding's properties. First, grounding is *transitive*: if something grounds another thing, and that second thing grounds a third, then the first grounds the third.<sup>4</sup> Second, grounding is *asymmetric*: for all objects, if one thing grounds another thing, the second does not also ground the first. Finally, grounding is *irreflexive*: nothing grounds itself.<sup>5,6</sup>

I also take grounding to be a distinctively metaphysical form of explanation. If something grounds another thing, the first metaphysically explains the latter. And I take it that grounding resists analysis in modal terms.<sup>7</sup> As for its relata, grounding<sup>8</sup> can hold between entities of different ontological categories like facts, things, and properties.<sup>9</sup> Finally, grounding can take plural arguments: a plurality of facts can ground a single fact.<sup>10</sup>

## § 2 ANALYZING CONSTITUTION

Saenz (2015) offers the following analysis of constitution:

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<sup>3</sup> See Doepke 1982, Simons 1987, Doepke 1996, Thomson 1998, Baker 1997 and 2000, and Koslicki 2008.

<sup>4</sup> The assumption that grounding is transitive is actually somewhat controversial. See Schaffer (2012) for discussion. Nevertheless, many philosophers believe that it is transitive. See Rosen 2010, Audi 2012, and Trogdon 2012.

<sup>5</sup> These are common assumptions. See Rosen 2010, Schaffer 2010, Fine 2012, and Trogdon 2012.

<sup>6</sup> One other assumption sometimes made about grounding is that it is *well-founded*, so that, necessarily, everything that is grounded is such that it is grounded in something that is ungrounded. Schaffer (2010), for instance, makes this assumption. Rosen (2010) is unwilling to make it. Bliss (2013) discusses, and dismisses, some arguments that have been given for thinking that grounding is well-founded. Nothing I say in this paper turns on whether grounding is or is not well-founded, so I do not assume that grounding is well-founded.

<sup>7</sup> This is a widely held assumption. See Schaffer 2009 and 2010, Rosen 2010, and Fine 2012.

<sup>8</sup> I do not treat grounding as a sentential operator. For a view that does, see Fine 2012.

<sup>9</sup> See Schaffer 2010, for instance.

<sup>10</sup> For instance, you might think that the fact that A and the fact that B ground the fact that A and B. See Rosen 2010 and Fine 2012.

(AC.0)  $x$  constitutes  $y$  iff some and only some of the narrow  $x$ -preserving facts ground  $y$ .

A *narrow  $x$ -preserving fact* is a fact about the parts of  $x$  and their possible arrangements such that, necessarily, if it obtains, then  $x$  exists. Consider a lump of clay, Lump. The fact that Lump's parts are in contact is a narrow Lump-preserving fact. It is a fact about the parts of Lump and their possible arrangements such that, necessarily, if it obtains, then Lump exists. On the other hand, the fact that Lump's parts are scattered across the universe is *not* a narrow Lump-preserving fact. If that fact obtains, then Lump does not exist. Lump does not exist when its parts are arranged in that way.<sup>11</sup>

Let's begin with a quotidian case of constitution to see how (AC.0) works.

(0) An artist sculpts a statue of Muhammad Ali out of some clay. Call the statue 'Statue' and call the clay 'Clay'. Intuitively, Clay constitutes Statue.

Barring exotic views<sup>12</sup> about what objects there are,<sup>13</sup> any analysis of constitution will need to deliver the result that Clay constitutes Statue. The relation between a statue and what it's made of is a

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<sup>11</sup> Before criticizing (AC.0), I should note that there may be some worries about my stating Saenz's analysis of constitution as (AC.0). Here is how Saenz states his analysis: " $x$  constitutes  $y$  just in case of all the possible ways of arranging  $x$ 's parts so as to preserve  $x$ , some and only some of those facts involving how  $x$ 's parts are arranged ground  $y$ " (2211).

The main problem facing those who would interpret Saenz's analysis of constitution is that he never tells us what it is for some "possible ways of arranging  $x$ 's parts" to *preserve*  $x$ . I have taken this to be the notion of a narrow  $x$ -preserving fact. The examples that Saenz uses in his paper as facts that preserve objects are ones that are such that, necessarily, if the "possible ways of arranging  $x$ 's parts" obtain, then  $x$  exists. If Saenz means something different here, it is unclear what it could be.

An obvious difference between my (AC.0) and Saenz's official statement of his analysis is that, whereas Saenz talks about "the possible ways of arranging  $x$ 's parts," I talk about  $x$ 's parts and their possible arrangements. That is, whereas I state (AC.0) partly in terms of  $x$ 's actual parts and their possible arrangements, Saenz officially analyzes constitution partly in terms of  $x$ 's possible parts and their arrangements. The difference seems to me to be ultimately unimportant for the purposes of this paper. So I think that (AC.0) is a fair reconstruction of Saenz's analysis of constitution.

<sup>12</sup> One exotic view I have in mind is *mereological nihilism*, which claims that the only objects there are are mereological simples. A *mereological simple* is an object that lacks proper parts. The mereological nihilist denies that there are any fusions of two or more simples, where a *fusion* of  $xx$  is something that has each of  $xx$  as a part and is such that every part of it overlaps one of  $xx$ . Some things overlap iff they have a part in common. See Sider 2013 and Rosen and Dorr 2002.

Burke (1992) defends another exotic view. According to his view, when Clay is formed into Statue, Clay ceases to exist. So Clay does not constitute Statue.

<sup>13</sup> And assuming that multi-thingism is true!

paradigmatic example of constitution. So if an analysis of constitution does not entail that Clay constitutes Statue, then it is not acceptable.

Saenz thinks that, given some plausible facts about Statue and Clay, (AC.0) entails that Clay constitutes Statue (2015: 2211). Narrow Clay-preserving facts are facts like the fact that Clay's parts are in contact. There are many other narrow Clay-preserving facts. For instance, there is the narrow Clay-preserving fact that Clay's parts are in contact as a sphere. Finally, there is the narrow Clay-preserving fact that Clay's parts are in contact in the shape of Muhammad Ali.

Consider the narrow Clay-preserving fact that Clay's parts are in contact as a sphere. This fact does not ground Statue. If that narrow Clay-preserving fact obtained, then, plausibly, Statue wouldn't exist, since Statue could not survive being squashed into a sphere. So the narrow Clay-preserving fact that Clay's parts are in contact as a sphere does not ground Statue.

This argument is sound given some popular assumptions. The first is that Statue cannot survive being squashed into a sphere; if Statue were squashed, Statue would cease to exist. The second assumption is about grounding. Grounding obeys *necessitation*: if facts  $F_1, \dots, F_n$  ground  $x$ , then necessarily, if  $F_1, \dots, F_n$  obtain, then  $x$  exists.<sup>14</sup> Suppose that the narrow Clay-preserving fact that the parts of Clay are in contact as a sphere grounds Statue. Then, by necessitation, Statue could survive being squashed into the shape of a sphere since, if those facts ground Statue, then necessarily, if they obtain, then Statue exists, and they would obtain after Statue is squashed. But Statue cannot survive such a change in shape. So the narrow Clay-preserving fact that the parts of Clay are in contact as a sphere does not ground Statue, by necessitation.

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<sup>14</sup> It has many defenders and probably deserves to be called the orthodox view. For instance, see Rosen 2010, Bennett 2011, Audi 2012, Trogdon 2013, and Markosian 2014. For examples of defenses of the heterodox view, see Wilson 2012, Leuenberger 2014, and Skiles 2015.

That some narrow Clay-preserving facts do not ground Statue does not preclude some other narrow Clay-preserving facts from grounding Statue. Consider the narrow Clay-preserving fact that Clay's parts are in contact in the shape of Statue. This is a narrow Clay-preserving fact since, necessarily, if Clay's parts are so arranged, then Clay exists.

Saenz thinks that this narrow Clay-preserving fact grounds Statue (2015: 2211–2).<sup>15</sup> He motivates this by reflecting on the difference between worlds in which Clay exists without Statue and those worlds in which both Clay and Statue exist. In worlds in which both Clay and Statue exist, the parts of Clay have to be in a particular arrangement: “what grounds [Statue] and what grounds [Clay] are certain *arrangements* of their parts” (2198, emphasis in original). Specifically, the parts of Clay have to be arranged in the shape of Muhammad Ali—or near enough—in order for Statue to exist.<sup>16</sup>

We've found two narrow Clay-preserving facts, only one of which grounds Statue. So of all the narrow Clay-preserving facts, some and only some of those facts ground Statue. By (AC.0), then, Clay constitutes Statue.

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<sup>15</sup> I disagree with Saenz's assessment of this case, as does Wasserman (2004). I'll return to this issue below.

<sup>16</sup> One might worry that Saenz has identified a mere *partial* ground of Statue. Fact  $F$  is a *partial ground* of  $x$  iff there are other facts that, together with  $F$ , ground  $x$ . So the worry is that there are other facts that, together with the fact that Clay's parts are in the shape of Muhammad Ali, ground Statue. For instance, one might think that facts about an artist's intentions, or facts about a broader social milieu in which there is a practice of creating statues, play some role in grounding Statue. For now, I'll grant Saenz that he's identified a full ground of Statue, where, roughly, a plurality of facts  $F_1, \dots, F_n$  *fully grounds*  $x$  iff  $x$  has a ground and  $F_1, \dots, F_n$  fully metaphysically explains  $x$ .

This follows Fine's (2012b: 3) gloss very closely. He writes that “A number of truths will fully ground another when they are sufficient on their own to ground its truth.” Dasgupta (2014: 3) also seems to have this idea in mind. He writes that “By ‘ground’, I mean a full explanation.”

One thing to note here is that the facts that  $P, Q$  fully grounds the fact that  $P \vee Q$ . So does the fact that  $P$ . And so does the fact that  $Q$ . Rosen calls this “a harmless form of metaphysical overdetermination” (2010: 117). Something may have more than one full ground.

It is commonly thought that constitution is asymmetric, i.e. that necessarily, if something constitutes another thing, the second does not also constitute the first.<sup>17</sup> So it had better not be the case that (AC.0) allows Clay to constitute Statue and *vice versa*. (AC.0) doesn't allow this.

For Statue to constitute Clay, it would need to be the case that there are narrow Statue-preserving facts, some and only some of which ground Clay. But no narrow Statue-preserving fact grounds Clay. The reason is that grounding is *non-monotonic*. That is, if  $F_1$  fully grounds  $x$ , then it isn't always the case that  $F_1, F_2$ , for some  $F_2$  not among  $F_1$ , grounds  $x$ .

Consider an example. The fact that P fully grounds the fact that  $P \vee Q$ . If grounding were monotonic, then it would be the case that the facts that P, R ground  $P \vee Q$ . But, intuitively, the facts that P, R do not ground  $P \vee Q$ . The reason, so far as I can tell, is that the fact that P, R contains “too much” information to be a full ground of  $P \vee Q$ .<sup>18</sup>

(AC.0) gets the right verdict about (0). But there are two problems for (AC.0). Consider the following two scenarios.

(1) A strip of paper, Strip, can be attached to itself to form a Möbius strip. Strip forms a Möbius strip when its parts are in arrangement M. The fact that there is a Möbius strip is plausibly grounded in the fact that Strip is in the shape of a Möbius strip, since the former is an existential fact, such facts are grounded in their instances, and Strip is an instance of a Möbius strip.<sup>19</sup> Strip's parts could be in other arrangements and Strip would still exist. So, some, and only some, of the narrow Strip-

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<sup>17</sup> For the purposes of this paper, I'll join orthodoxy and assume that constitution is asymmetric.

<sup>18</sup> The idea behind thinking that grounding is non-monotonic is that grounding is an explanatory relation. So each part of a grounding *explanans* needs to be “explanatorily relevant” to its *explanandum* (Dasgupta 2014: 4). If grounding is monotonic, then if  $F$  grounds  $x$ , then the plurality of  $F$  with any other fact would also ground  $x$ . So it would be the case that, for any fact, the plurality of *every other fact* would ground that fact.<sup>18</sup> But this, intuitively, isn't how grounding works. Grounding is a relation of metaphysical *explanation*, and it just isn't the case that each fact is such that the plurality of every other fact explains it.<sup>18</sup> I'll sometimes appeal to the non-monotonicity of grounding in what follows by saying that this-or-that fact or plurality of facts contains “too much” information to be a ground for something. This is shorthand for saying that the fact or the plurality of facts contains facts or information that isn't explanatorily relevant to the *explanandum*, so that fact or plurality of facts doesn't ground the *explanandum*.

<sup>19</sup> See Rosen 2010.

preserving facts ground the fact that there is a Möbius strip. So, by (AC.0), the fact that Strip is in the shape of a Möbius strip constitutes the fact that there is a Möbius strip.

(2) Suppose that priority monism<sup>20</sup> is true so that everything that is not identical to the cosmos, where the cosmos is the fusion of everything there is, is grounded in the cosmos. I, in particular, am grounded in some arrangement of the parts of the cosmos. If the cosmos's parts were arranged differently enough, I would not exist, but the cosmos would. The fact that the parts of the cosmos are arranged as they in fact are is a narrow cosmos-preserving fact. And so is the fact that they are differently arranged in a way that I do not exist. But only the former grounds me, according to the priority monist. So only some of the narrow cosmos-preserving facts ground me. So, if priority monism is true, then by (AC.0), I am constituted by the cosmos.

## § 2.1 (AC.1)

(1) and (2) are both problematic for (AC.0). Intuitively, no fact constitutes any fact. In particular, the fact that Strip is shaped like a Möbius strip doesn't constitute the fact that there is a Möbius strip. At least, I don't use 'constitutes' in such a way that I think I say anything true when I say that that fact constitutes the fact that there is a Möbius strip. But why's that? As far as I can tell, *constitution* is a relation between material objects.<sup>21</sup> So I think that the problem we see in (1) is that (AC.0) is consistent with this not being the case.

In response, I suggest we amend (AC.0) as follows:

(AC.1)  $x$  constitutes  $y$  iff (i)  $x$  and  $y$  are material objects and (ii) some, but not all, narrow  $x$ -preserving facts ground  $y$ .

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<sup>20</sup> Schaffer (2010) defends priority monism.

<sup>21</sup> I mean to use 'material object' so as to exclude objects that stand in no spatiotemporal relations from being material objects. See Markosian 2000 for a development of a view along these lines.

Granting that facts are not material objects, it cannot be the case that one constitutes another, given (AC.1). If I'm right about what's objectionable about cases like (1) and that the fact that there is Möbius strip is not a material object, then (AC.1) solves the problem I identified in discussion of (1).

It is commonly thought that, in order for an object to constitute another object, they must have all the same proper parts.<sup>22</sup> Granting that intuition, we can see why it would be bad for the cosmos to constitute me in (2). I'm not *that* big; there are proper parts of the cosmos that are not parts of me.

But putting the problem with (2) in terms of the objects' not having all the same proper parts prejudices questions about constitution in objectionable ways.<sup>23</sup> Suppose that you're a type ofhylomorphist who believes that objects have material *and* formal proper parts.<sup>24</sup> Now consider Clay and Statue in (0). If you're a hylomorphist of the stripe I've just described, you probably do not think that Clay and Statue have all the same proper parts. Specifically, you probably think that Statue has a formal proper part—something like *statuehood*, perhaps—that Clay *doesn't* have.<sup>25</sup>

A more neutral account of the problem with (2) is that the cosmos and I don't have all the same *material* proper parts. But this still prejudices some questions that I'd prefer to remain neutral about. For instance, Lowe (2003: 157) argues that, while Statue and Clay are coincident, not every proper part of Statue is a part of Clay.<sup>26</sup> For example, he thinks that the head of Statue, while a proper part of Statue, is not a proper part of Clay.

One way to make room for Lowe's view is to require that an object and what constitutes it have all the same material proper parts *at some level of decomposition*. Let's say that  $x$  and  $y$  have *the same material proper parts at some level of decomposition* iff there are some  $z$  that are material parts of  $x$  and  $y$

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<sup>22</sup> See Wasserman 2004: 694, for instance.

<sup>23</sup> Thanks to [REDACTED] pointing out this particular problem.

<sup>24</sup> For representative examples of this sort of position, see Koslicki 2008 and Fine 2008.

<sup>25</sup> See Koslicki 2008: 176–81 for an argument for this sort of hylomorphism. See Bennett 2011 for discussion.

<sup>26</sup> Johnston (1992: fn. 6) also mentions such a view. And Baker (2000) endorses this view, as well.

and every material part of  $x$  and  $y$  overlaps at least one of  $x$ 's. Suppose that Clay and Statue are fusions of simples,  $x$ 's.<sup>27</sup> We might require that, if Clay constitutes Statue, then each of Clay and Statue have all  $x$ 's as material proper parts. Requiring that objects united by constitution have all the same material proper parts *at some level of decomposition*, rather than that they have all the same material proper parts, makes conceptual space for Lowe's view.

## § 2.2 (AC.2)

Let's say that some objects are *materially coincident* iff they have all the same material proper parts at some level of decomposition. I suggest that we should modify (AC.1) as follows:

(AC.2)  $x$  constitutes  $y$  iff (i)  $x$  and  $y$  are material objects, (ii)  $x$  and  $y$  are materially coincident and (iii) some, but not all, narrow  $x$ -preserving facts ground  $y$ .

(AC.2) allows us to avoid the result that the cosmos constitutes me; the cosmos and I don't have all the same material parts at *any* level of decomposition.<sup>28</sup> Second, (AC.2) is acceptable to the hylomorphist since it doesn't require that Clay and Statue, for instance, share *all* of their proper parts; it only requires that there is some level of decomposition at which they have all the same *material* proper parts. Third, (AC.2) is acceptable to those like Lowe and Baker who deny that an object and what constitutes it need to share all of their material proper parts. So (AC.2) avoids the initial problem cases (1) and (2), and it is theoretically neutral.

I think that these are virtues of (AC.2). (AC.2) obviously retains the virtues of (AC.1), since it rules out constitution's obtaining between objects that aren't material by including (AC.2.i). But I still think (AC.2) is unacceptable.

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<sup>27</sup> If Clay and Statue are both fusions of  $x$ 's, then some things could have more than one fusion. That is, uniqueness of composition fails. This is a natural view to hold if you're a multi-thinger.

<sup>28</sup> I assume, reasonably, that the cosmos has proper parts that aren't parts of me.

There are two problems with (AC.2). First, while it is perhaps plausible that some objects are grounded in facts about the arrangements of their parts, it is implausible that *all* objects are so grounded. For instance, consider our statue of Muhammad Ali, Statue. Suppose, with Saenz, that Statue is grounded in the fact that its parts are arranged in the shape of Muhammad Ali. We could imagine that those very parts came to have that very arrangement through sheer cosmic coincidence; perhaps an enormous explosion manages to rearrange the parts of Clay in just the right way. In such a case, I deny that Statue would exist.<sup>29, 30</sup>

Here's an alternative hypothesis about the grounds of Statue: Statue is at least partially grounded in certain facts about a sculptor's intentions, a social milieu in which there are art objects and recognized ways of creating them, etc.<sup>31</sup> Intuitively, Clay could come to have the qualitative properties that Statue actually has as a matter of coincidence. So here is the first problem with (AC.2): it embodies an implausible account of what grounds what.<sup>32</sup> Specifically, (AC.2) presupposes that objects like Statue are grounded merely in facts about the arrangements of their parts.

Much more seems to be relevant. The fact that Statue's parts are arranged in such-and-such way does not ground the existence of Statue. There are more properties of statue than its *formal properties*.<sup>33</sup> Leaving these properties out of the story of what grounds Statue is to leave out part of the ground of Statue.

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<sup>29</sup> I'm not alone. Johnston (1992: fn. 9), Baker (1997: 620), Wasserman (2004: 700), and Moyer (2006: 417) for instance, all deny that in such a case Statue would exist.

<sup>30</sup> This is an application of necessitation. Suppose that the fact that Clay's parts are arranged in the shape of Muhammad Ali grounds Statue. Then, by necessitation, it couldn't be the case that those parts are arranged that way without Statue's existing. But, I say, those parts could be arranged that way without Statue's existing. So the fact that Clay's parts are arranged in the shape of Muhammad Ali does not ground Statue.

<sup>31</sup> The story obviously gets very complicated very quickly, and ultimately just what exactly is involved is a matter for philosophers of art to decide, but it seems apparent to me and to many others that facts about the mere arrangement of the proper parts of Statue are insufficient to ground Statue.

Saenz is perfectly aware that he endorses a controversial claim when he suggests that Statue could be grounded just by the fact that its parts are arranged in a particular way (2212).

<sup>32</sup> Using the notion of partial ground, I'd say that Saenz identifies at best partial grounds of Statue.

<sup>33</sup> Formalism is widely rejected in the philosophy of art. See Walton 1970 and Levinson 1980 for classic papers.

The second problem with (AC.2) is that there appear to be cases in which an object seemingly constitutes another, but (AC.2) says otherwise.

(3) Suppose an artist makes a gold atom, Goldy, and at the same time places it in a museum in the right cultural context with the right sorts of intentions, etc. I'm inclined to say that our artist has succeeded in producing a very small kinetic sculpture, *Midas*.<sup>34</sup> I'm inclined, also, to think *Midas* can survive some changes, like certain changes in the positions of its parts. It is a kinetic sculpture, after all. But, although it can survive certain changes, *Midas* would not survive abruptly ceasing to be made of gold.<sup>35</sup> For a parallel case, suppose that Michelangelo's *David* were to suddenly become made of butter. I just don't think *David* could survive that change. Similarly, I don't think that *Midas* could survive a change in which it abruptly became made of platinum, for instance. Nor, of course, could Goldy survive such a change; being a gold atom, it is plausible that Goldy is *essentially* a gold atom.<sup>36</sup>

Goldy and *Midas* appear extremely similar. They presumably have the same shape, weight, and location. And, what's more, they both appear to have many of the same *de re* modal properties. For instance, neither can survive being turned into platinum by the annihilation of one of its electrons.<sup>37</sup> So, given that they seem so similar, why think they're distinct? On the face of it, Goldy and *Midas* seem to differ in aesthetic properties. For instance, *Midas* is an artwork, whereas Goldy is

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<sup>34</sup> I assume that our artist intended to do this.

Compare this case to those of 'found' artworks. In such cases, artists take objects and place them, with the right sorts of intentions, in galleries or museums. It is overwhelmingly plausible to think that artists can succeed in creating artworks in such cases.

<sup>35</sup> I don't mean to rule out the possibility that certain artworks could slowly undergo a change of parts during countless hours of restoration over a very long period of time.

<sup>36</sup> Thanks to [REDACTED], [REDACTED], and [REDACTED] for helpful discussion of this case.

<sup>37</sup> A platinum atom has one fewer electron than a gold atom.

not. Perhaps *Midas* is *avant garde*; presumably Goldy, a mere gold atom, is not.<sup>38</sup> So (3) seems to be a case in which there are distinct material objects that are materially coincident.

Now, what are the grounds for Goldy and *Midas*? Restricting our search solely to *narrow* Goldy- and *Midas*-preserving facts, it is hard to see what could ground one but not the other. The best candidate I can see as the grounds for Goldy is that Goldy's parts are arranged in the manner of a gold atom. Similarly, the best candidate I can see as the grounds for *Midas* is that Goldy's parts are arranged in the manner of a gold atom. So it looks as though Goldy and *Midas* have the same grounds, at least if we restrict ourselves to looking at narrow Goldy- or *Midas*-preserving facts for those grounds.<sup>39</sup>

And what about narrow Goldy- and *Midas*-preserving facts? These, too, seem to be the same. Neither would exist if their parts were scattered or, plausibly, in any other arrangement than those that gold atom's parts could be in. So, of all the narrow Goldy-preserving facts, *all* of them ground *Midas*. And of all the narrow *Midas*-preserving facts, *all* of them ground Goldy. According to (AC.2), neither constitutes the other, since (AC.2.iii) fails.

But this is the wrong result. The relation that Goldy and *Midas* seem to stand in is exactly parallel to that relation that Clay and Statue stand in. *Midas* is *made out of* Goldy in just the same way that Statue is made out of Clay. At least, this is how the situation appears to me. So the second problem with (AC.2) is that it misclassifies what appears to be a case of constitution as not being a case of constitution.

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<sup>38</sup> Fine (2003) points to these sorts of aesthetic differences as ways to distinguish some objects from what constitutes them.

<sup>39</sup> Saenz accepts a principle he calls *G-uniqueness*: "For any grounded objects  $x$  and  $y$ , if  $x$  and  $y$  have all the same grounds, then  $x$  is identical to  $y$ " (2210). So he would presumably either hold that Goldy and *Midas* have different grounds or that Goldy and *Midas* are identical. I discuss G-uniqueness below and argue that there's no good reason to accept it and that there is probably good reason to think that it is false.

### § 2.3 (AC.3)

The following plausibly gets the result that Goldy constitutes *Midas*:

(AC.3)  $x$  constitutes  $y$  iff (i)  $x$  and  $y$  are material objects; (ii)  $x$  and  $y$  are materially coincident; and (iii) some, but not all, of the broad  $x$ -preserving facts ground  $y$ .

I define 'broad  $x$ -preserving fact' as follows:  $F$  is a broad  $x$ -preserving fact iff it is a fact about the material parts of  $x$  and their possible properties such that, necessarily, if it obtains, then  $x$  exists.<sup>40</sup>

Expanding our search allows us to get the right sorts of grounds for *Midas*. *Midas* is plausibly partly grounded in facts about certain artistic intentions in addition to facts about the arrangements of its parts. Let's suppose that *Midas* is grounded in the fact that it was the product of certain artistic intentions and that its parts are arranged as a gold atom. Meanwhile, Goldy is plausibly grounded in the fact that its parts are arranged as a gold atom.

As for broad Goldy-preserving facts, we have facts like the fact that its parts are arranged as a gold atom and the fact that its parts are arranged as a gold atom and are the objects of certain artistic intentions. The former preserves Goldy, as does the latter. But the latter, and not the former, grounds *Midas*.<sup>41</sup> So of all the broad Goldy-preserving facts, some and only some of them ground *Midas*. So by (AC.3), Goldy constitutes *Midas*.

(AC.3) is extensionally adequate to the cases I've considered up to this point. But recall that constitution is typically taken to be asymmetric, transitive, and irreflexive. (AC.3) is consistent with this, but doesn't entail that constitution has those logical properties. If we wanted an analysis that

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<sup>40</sup> Note that, whereas narrow  $x$ -preserving facts are facts about the parts of  $x$  and their possible *arrangements*, broad  $x$ -preserving facts are facts about  $x$ 's parts and their possible *properties*. The latter facts include facts like the fact that  $x$ 's parts are the objects of creative intentions, whereas the former are facts only about  $x$ 's parts and their possible arrangements.

<sup>41</sup> Why think this? Well, here's an argument that appeals to necessitation: Goldy's parts could be so arranged without *Midas*'s existing. But, if the fact that Goldy's parts are so arranged grounds *Midas*, then *Midas* would exist. But *Midas* won't exist just when its parts are in the right sort of arrangement; more needs to be the case.

entails that constitution has at least some of these logical properties, we could replace (AC.3) with a very similar analysis.

## § 2.4 (AC.4)

**(AC.4)**  $x$  constitutes  $y$  iff (i)  $x$  and  $y$  are material objects; (ii)  $x$  and  $y$  are materially coincident; (iii) some, but not all, of the broad  $x$ -preserving facts ground  $y$ ; and (iv) no broad  $y$ -preserving facts ground  $x$ .

There are two main virtues of (AC.4). First, (AC.4) gets right answers in the case of Statue and Clay given some plausible assumptions about them. Clay constitutes Statue. Let's suppose that Clay is grounded in the fact that its parts are in contact. And let's suppose that Statue is grounded in the fact that it was created with certain artistic intentions and the fact that its parts are arranged so that they are in contact in the shape of Muhammad Ali.

Both Clay and Statue are material objects and are materially coincident. Of all the broad Clay-preserving facts, some and only some of those facts ground Statue. For instance, the fact that Clay's parts are arranged in contact in the shape of a sphere preserves Clay, but doesn't ground Statue, because the fact that Clay's parts are so arranged doesn't explain the existence of Statue. But other broad Clay-preserving facts ground Statue. For instance, the fact that Clay's parts were the object of certain artistic intentions and the fact that they are arranged in contact in the shape of Muhammad Ali grounds Statue.

Meanwhile, none of the broad Statue-preserving facts ground Clay. Clay is plausibly grounded in the fact that its parts are in contact. And any broad Statue-preserving fact would need to include additional facts, e.g. facts about certain artistic intentions. Broad Statue-preserving facts

include “too much” information to be a ground of Clay. From all of this, we can conclude that Clay constitutes Statue and also that Statue does not constitute Clay.

Finally, (AC.4) doesn’t allow material objects to constitute objects that are not material (nor *vice versa*), nor does it allow objects to constitute objects with which they are not mereologically coincident. So, (AC.4) avoids the problems facing (AC.1) and (AC.2) as analyses of constitution.

The second main virtue of (AC.4)—and one not shared by any of the analyses I’ve so far considered—is that it entails that constitution is asymmetric and irreflexive. Suppose that constitution is not asymmetric, and there are materially coincident material objects  $x$  and  $y$  such that  $x$  constitutes  $y$ , and  $y$  constitutes  $x$ . By (AC.4), it would have to be the case that (i) some but not all of the broad  $x$ -preserving facts ground  $y$ ; (ii) no broad  $y$ -preserving fact grounds  $x$ ; (iii) some, but not all, of the broad  $y$ -preserving facts ground  $x$ ; and (iv) no broad  $x$ -preserving facts ground  $y$ . Of course, (i) and (iv) are contradictory, as are (ii) and (iii). So constitution is asymmetric if (AC.4) is true.

Now suppose that constitution is not irreflexive, and a material object  $x$  could constitute itself. In such a case,  $x$  would be coincident with what it constitutes,  $x$ , since an object has the same material proper parts at every level of decomposition as itself. By (AC.4), it would have to be the case that (i) some, but not all, of the broad  $x$ -preserving facts ground  $x$  and (ii) no broad  $x$ -preserving facts ground  $x$ . (i) and (ii) are contradictory. So if (AC.4) is true, constitution is irreflexive.<sup>42</sup>

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<sup>42</sup> There are at least two reasons we should care about (AC.4)’s entailing that constitution has these logical properties. First, one might wonder *why* constitution has these logical properties. If the analysis *entails* that it does have these properties, then the answer is readily available: constitution has these properties because it’s a consequence of the correct analysis of constitution that constitution has these properties. That is, it is part of the nature of constitution that it has these logical properties.

Second, a number of other analyses of constitution seem to entail that, in some cases, these logical properties of constitution fail. This has been thought to be a problem with those analyses. Wasserman (2004), for example, uses the

So (AC.4) gets the right answers about what constitutes what in a variety of cases. I conclude that a *prima facie* strong case has been made for (AC.4) over (AC.0) – (AC.3).<sup>43</sup> Meanwhile, those who wish to remain neutral about whether constitution is asymmetric and irreflexive are advised to accept (AC.3) as it, too, seems to be extensionally inadequate.<sup>44</sup>

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failure of these analyses to ensure asymmetry, for instance, to argue that the analyses are unacceptable. It is a virtue of (AC.4) that it doesn't allow for these sorts of cases; (AC.4) simply entails that constitution is asymmetric, for instance.

Perhaps (AC.4) does too much in entailing that constitution has these logical properties. After all, one might want the analysis to remain neutral on the logical properties of constitution.<sup>42</sup> But I do not have this desire. And I am unsure why anyone else would. It seems to me to be a conceptual constraint on how I'm using 'constitution' that it is asymmetric and irreflexive.

<sup>43</sup> Are there any other revisions to make? Perhaps. I've not explicitly required that an object and what constitutes it be located in the same region of spacetime. You might think that this is required for one object to constitute another, like Wasserman (2004: 694). But it isn't clear to me that an object and what constitutes it need to be co-located. Why couldn't they have different locations? See Saucedo 2011 for reasons for thinking that an object and its parts need not be located at the same region. If Saucedo's arguments are sound, then we could imagine that some things,  $xx$ , have more than one fusion—Clay and Statue, say—and Clay is located at one region while Statue is located elsewhere, perhaps along with the  $xx$ s.

If you're concerned that (AC.4) doesn't explicitly require that, if  $x$  constitutes  $y$  then  $x$  and  $y$  are located at the same region of spacetime, there is an easy fix. Simply amend (AC.4) as:

(AC.5)  $x$  constitutes  $y$  iff (i)  $x$  and  $y$  are material objects; (ii)  $x$  and  $y$  are materially coincident; (iii)  $x$  and  $y$  are co-located (iv) some, but not all, of the broad  $x$ -preserving facts ground  $y$ ; and (v) no broad  $y$ -preserving facts ground  $x$ .

If you prefer (AC.5) to (AC.4), feel free to substitute it for (AC.4) below. Nothing I say hinges on the difference between (AC.4) and (AC.5) as far as I can tell.

<sup>44</sup> In a longer draft of this paper, I attempt to set up a case that, given (AC.3), seems to have the result that constitution is not asymmetric. I find that result unacceptable, and so I accept (AC.4) over (AC.3). Discussion with [REDACTED], [REDACTED], and [REDACTED] suggests to me that not everyone is convinced by the case I consider. I do not discuss this case in this paper since I lack the space. And in case, I think that (AC.4) supplies a response to the paper while being independently motivated by considerations about the logical properties of constitution.