

A Grounding Solution to the Grounding Problem

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Abstract

The statue and the lump of clay that constitutes it fail to share all of their kind and modal properties. Therefore, by Leibniz's Law, the statue is not the lump. Question: What grounds the kind and modal differences between the statue and the lump? In virtue of what is it that the lump of clay, but not the statue, can survive being smashed? This is *the grounding problem*. Now a number of solutions to the grounding problem require that we substantially revise our view of reality. In this paper, I provide a solution to the grounding problem that does not require such a revision. I then show how my solution to the grounding problem can solve a related problem and answer a related question. The upshot is that the solution I offer is not only non-revisionary, but also fruitful.

Consider what is now a familiar problem concerning the statue and the lump of clay that constitutes it. Both fail to share all of their kind and modal properties and are therefore, by Leibniz's Law, not identical. They are, however, very much alike. They share all of their proper parts (at least at the microphysical level) and have the same shape, weight, mass, etc. Question: What grounds the kind and modal differences between the statue and the lump? In virtue of what is it that the lump, but not the statue, can survive being smashed? This is *the grounding problem*.¹

Borrowing terms from Karen Bennett's 2004 paper, when it comes to the grounding problem, there are the *no-things*, the *one-things*, and the *multi-things*. The

¹Kit Fine (2003) has developed a number of new Leibniz's Law arguments in favor of thinking that the statue is not the lump that do not rely on the traditional kind and modal differences. Call the kind of differences Fine relies on 'Finean-differences'. In §2.5, I show why my solution to the traditional differences between the statue and the lump is also a solution to these Finean-differences.

no- and one-thingers solve the problem by denying that there are two things.² The multi-thingers disagree. They think that both the statue and lump exist and that they are not one, but two. The grounding problem is therefore their problem. Unfortunately, many multi-thinger solutions to the grounding problem require accepting a metaphysic that demands we revise how reality appears to be. Here are three such examples.

Some multi-thinger solutions have it that material objects have non-material parts (McDaniel 2001; Paul 2002; Fine 2008; Koslicki 2008). But this is surprising. In breaking down a material object, such as a chair, into all of its material parts (at least at some level of decomposition), we do not expect to have left some part of the chair out. We find it hard to believe that we are missing a part, and that the part we are missing is non-material (a trope or a form). Chairs are material objects, and the only kinds of parts that material objects have are material as well.

Another solution argues that it is just brute that the statue and lump differ in their kind and modal properties (Bennett 2004). But, at least for complex objects, such bruteness is bizarre.³ Perhaps the kind and modal properties of simple objects are brute, simple objects being such that they depend on nothing for their existence. But complex objects depend on their parts and how those parts are arranged, and so, it would seem, have the kind and modal properties they do in virtue of their parts and how those parts are arranged.⁴

²Some no-thingers are van Inwagen (1990), Merricks (2001), and Rosen and Dorr (2002). Some one-thingers are Lewis (1986), Burke (1994), Gallois (1998), Rea (2000), Sider (2001), and Wasserman (2002). (Wasserman's case is unique in that he claims that the statue and the lump are identical if they temporally coincide, and not identical if they don't. Wasserman is what Fine (2003) calls a *moderate monist*.)

³Bennett tries to show why it is not so bizarre by appealing to a principle of plenitude: for any region of space that is occupied by an object, there is an object for each possible combination of modal properties. And, or so the thought goes, "because each region is full in this way, there is nothing in virtue of which any particular object has the modal properties it does" (2004, 355). So, according to Bennett, the apparent bizarreness is just that, apparent. Here is a worry I have. That modal properties are not brute is perfectly compatible with Bennett's principle of plenitude. For suppose that her principle is true, that *a* and *b* are coincident, that *a* has modal profile M1 and *b* modal profile M2, and that M1 and M2 exhaust the possible combinations of modal properties in the region of space that *a* and *b* occupy. All this is consistent with *a* having M1 in virtue of N1 (where N1 is a non-modal profile of *a*), and *b* having M2 in virtue of N2 (where N2 is a non-modal profile of *b*). So that modal properties are not brute is perfectly compatible with Bennett's principle of plenitude. But then in what way does this principle make the bruteness of modal properties palatable? Given that Bennett's principle is consistent with non-brute modal properties, whether or not a modal property is had brutally does not depend on the number of instantiated combinations of modal properties. But then why should Bennett's principle make the brute-modal-property pill easier to swallow?

⁴This claim is surely plausible if we restrict it to kind properties. After all, I belong to the kind *Human* in virtue of my parts being arranged such that DNA materials, a heart, lungs, a nervous

Finally, a kind of modal property fictionalism has been invoked in order to solve the grounding problem concerning modal differences (Sider 2008). The thought here is that, strictly speaking, there are no monadic modal properties and therefore, strictly speaking, it is not true of the statue that it cannot survive being smashed and of the lump that it can. Rather, there are relational modal properties that (i) are consistent with the supervenience of the modal on the non-modal and (ii) justify speaking as if there are monadic modal properties. But that it is not (stamp the foot, bang the table!) true that the lump can survive being smashed seems false. So this solution requires that we revise how we think the lump modally is.

Now some think that multi-thingers must make some revisionary claim or other if they are to have a satisfactory solution to the grounding problem. Here is Wasserman (2002, 212):

But it does strike me as obvious that if such a theorist rejects counterpart theory and holds that [the statue] and [the lump] are distinct even in cases where they materially coincide (in the strong sense) throughout their careers, then radical claims must be made.

I disagree. And so what I will now do is provide a solution to the grounding problem that does not demand that we revise our view of reality.⁵ I will begin by making two reasonable assumptions about grounding and quickly argue in favor of a natural way of grounding wholes in their parts (§1). I will then show how to solve the grounding problem (§2), list some advantages of the present solution to a similar solution (§3), and show how this solution can solve a related problem and answer an important question (§4).

system, etc. are all parts of me. Therefore, the fact that I am human is not a brute fact about me.

⁵There are solutions that, though I find them implausible, are not revisionary. For example, deRosset (2011) appeals to the identity of the statue and the lump in order to ground their different kind and modal properties, and such an appeal is not revisionary. However, I cannot accept it. For even if the identity of the statue does ground its kind and modal properties, it would seem that something grounds its identity. For the identities of dependent objects (which statues and lumps are) depend on the identities of what they depend on. But now we have a grounding problem concerning the difference in identities between the statue and the lump.

Baker (1995, 1997) has also provided a multi-thinger solution to the grounding problem by appealing to the surroundings of the statue and the lump. I do not think that this solution is revisionary. I do, however, find it unsatisfactory. For my reasons why, see Olson (2001, 346-348).

1 Grounding

I take grounding to be a distinctively metaphysical dependence *relation* that resists analysis in terms of modal notions (Schaffer 2009; Rosen 2010; Audi 2012; Fine 2012). It is the relation that is appealed to in order to articulate a layered view of reality, with the more fundamental entities on the bottom and the less fundamental on the top. It is the kind of relation that is referred to in the following kinds of claims: truth is grounded in reality, wholes in their parts, moral properties in natural properties, modal properties in categorical properties, etc. This commits me to saying that the logical form of grounding statements is best captured by the *predicate view*, which treats 'ground' as a predicate. This is opposed to the *operator view*, which has it that statements of ground are best captured with a non-truth-functional sentential connective such as 'because'.⁶ I also take grounding to be *cross-categorical*, able to hold between entities of different ontological categories (Schaffer 2009, Bennett 2011, deRosset 2013). And finally, I accept a *worldly view* of facts where, to put it roughly, a fact is worldly just in case it has individuals, properties, and relations as constituents. Think of these facts as Armstrongian states of affairs. Such facts are not, as a *conceptual view* of facts is, individuated by the concepts involved in our descriptions of them.

This is how *I* understand grounding. You may understand it differently. Many do. But this should not bar too much progress, at least with respect to this paper. For one, there are translation procedures that allow us to go from how I understand grounding to how others do. If you accept *factualism*, which affirms that grounding holds, and only holds, between facts, there is a translation procedure that allows you to move from grounding holding cross-categorially to it holding just between facts (deRosset 2013). If you accept the operator view, there is a translation procedure that allows you to move from predicate talk, where the names that flank the predicate refer to facts, to operator talk (Correia 2010).⁷ For two, the majority of philosophers who accept that facts can stand in the grounding relation accept a worldly view of facts. And so my acceptance of these kinds of facts will not, even if it alienates some, alienate many.

⁶For an introduction to this debate, see Trogon (2013, 97-122).

⁷Here then is the procedure you should employ when you want to translate predicate talk, where at least one of the names that flank the predicate refers to an individual, to operator talk. First translate such predicate talk to factualist talk, where the names flanking the predicate refer to facts. Then translate factualist talk to operator talk.

1.1 Two Principles

Now my aim here is not to give a theory of grounding. In fact, besides my above assumptions, the following two principles on grounding are the only ones I make heavy use of. Where the x s and y range over entities of different ontological categories, these principles are

Necessitation If the x s ground y , then necessarily, if the x s exists, then y exists.

Link If the x s ground y , then facts about the x s ground facts about y .⁸

Necessitation is, admittedly, not accepted by everyone (Wilson 2012, Leuenberger 2014, Skiles forthcoming), though those who reject it are in the minority.⁹ Though I think it true, it is not part of my aim to defend it. Rather, I will merely ask that you assume its truth, as is *prima facie* reasonable, and see what we can do with such an assumption.¹⁰

⁸Given the popularity of factualism, it is worth stating these principles in factualist friendly language:

Necessitation_{fact} If the facts Γ ground the fact that q , then necessarily, if all the facts in Γ exist (or obtain), then the fact that q exists (or obtains).

Link_{fact} If the facts Γ ground the fact that y exists, then facts about the facts in Γ ground facts about y .

⁹For those who accept it, or accept principles that entail it, see Correia (2005), deRosset (2010; 2013), Rosen (2010), Bennett (2011) Audi (2012), Trogon (2013), Dasgupta (2014), Markosian (2014), and Cameron (forthcoming).

¹⁰Skiles's (forthcoming) interesting paper bears directly on this paper. For Skiles uses, as one of his examples where Necessitation fails, cases involving parts and wholes. One of those cases (though not the case Skiles standardly uses, which involves a Theseus-style scenario) involves a *recycling scenario* (McKay, 1986). Skiles says

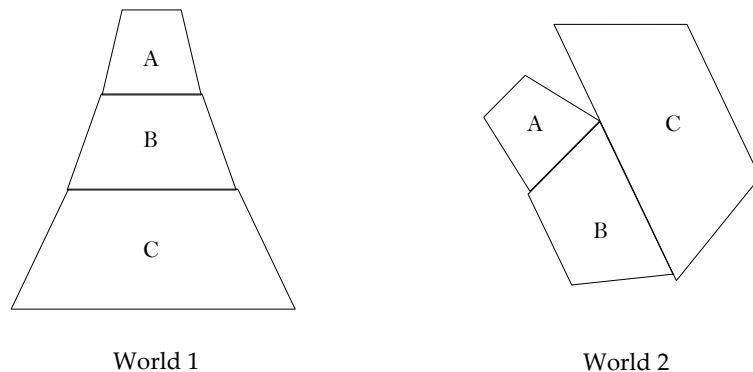
Suppose that in an earlier epoch the existence of o [a sandwich] is grounded in Γ . Afterward, o rots and as a result permanently ceases to exist as the as [the parts of o] scatter throughout the environment. But millennia afterward in a later epoch, the as come back into the arrangement they were once in during the earlier epoch, composing a new sandwich distinct from the original. Here again, it seems plausible to say that even though all the facts in Γ obtain during this later epoch, [o exists] does not.

Consider though my moving across town in my car. And suppose that, in order to properly fit everything in my car, I have to disassemble my bike. So my bike ceases to exist during the move, its parts not arranged in the right manner to compose it. After my drive across town, I put the parts of the past bike together again exactly as they were before. Do I now have a brand new bike? It would seem not. The bike I now have before me is the very bike I had prior to the disassembly. Or at least, this is quite reasonable. But then why should we think that even though all the facts in Γ obtain during this later epoch, [o exists] does not? The cases are exactly analogous, minus one case taking place over years and years and the other over, at most, hours. But why is this at all relevant?

Link is what, in large part, generates the grounding problem. For the grounding problem is a problem because what seems to ground the statue also seems to ground the lump. That is, the statue and the lump appear to have the same grounds because they have the same parts arranged in the same ways. But then what explains their different kind and modal properties given the seeming identity of their grounds? If they have the same parts arranged in the same way, and therefore the same grounds, then they should have the same kind and modal properties since they have these properties in virtue of facts about their grounds. But this last sentence requires something like Link. So Link (or something quite close) is needed in order to generate the grounding problem. This justifies my using it.

1.2 Grounding Wholes in their Parts

Consider the two figures below, which represent, respectively, a pyramid shaped statue (henceforth *Pyra*) constituted by a lump (henceforth *Lumpy*) in World 1 and *Lumpy*, but not *Pyra*, in World 2:



Pyra is not identical to *Lumpy* despite the fact that they have the same proper parts. For *Pyra* has kind and modal properties that *Lumpy* lacks. *Pyra*, unlike *Lumpy*, belongs to the kind *Statue* and cannot survive being squashed. Now it cannot be that *all* complex wholes are grounded in their parts. For if wholes like *Pyra* and *Lumpy* are grounded in their parts, then according to Necessitation, if A, B, and C exist, then both *Pyra* and *Lumpy* exist. But it is not the case that *Pyra* and *Lumpy* exist if A, B, and C exist since if A, B, and C were wildly scattered across space, then neither *Pyra* nor *Lumpy* would exist. What then is needed in order to

ground Pyra and Lumpy?

In order to answer this, let's look at the relations that obtain between A and B and B and C in World 1. One of the first things we notice is that A is in contact with B and B is in contact with C. But that A is in contact with B and B is in contact with C is not enough to ground Pyra. For notice that World 2 is such that A is in contact with B and B is in contact with C and yet Pyra does not exist. Lumpy, on the other hand, does. Indeed, it is plausible to think that in order for a lump to continue to exist, every one of its proper parts has to stand in the ancestral of the contact relation to any other disjoint part. The thought then is that a lump can survive any arrangement of its proper parts so long as each of these parts stands in the ancestral of the contact relation to any other disjoint part. So it is natural to think that what grounds Lumpy is not A, B, and C, but rather that A is in contact with B and B is in contact with C.¹¹

How about Pyra? As we just saw, it is not enough that Pyra's parts are in contact. What we need here are Pyra's parts to be in contact *in a certain way*. Something like the wider base of A is roughly in full contact with the narrow base of B, and the wider base of B is roughly in full contact with the narrow base of C.¹² Let's call this relation that stands between A, B, and C in World 1 'kontakt' and define it as follows: *x* is in kontakt with *y* if and only if the wider base of *x* is roughly in full contact with the narrow base of *y*. So what grounds Pyra is A's being in kontakt with B, and B's being in kontakt with C. And observe that this relation holds between A and B and B and C no matter how Pyra is positioned (right side up, up side down, on its side, etc.). This relation is invariant with respect to Pyra's position, and this is precisely the kind of relation we should be looking for in seeking a ground for Pyra.

So what grounds Pyra and what grounds Lumpy are certain *arrangements* of their parts.¹³ So, since it is plausible to identify arrangements of objects with facts which have objects and relations as constituents, it follows that what grounds wholes like statues and lumps are certain facts involving their parts. And so what grounds Lumpy are the following two facts: [A is in kontakt with B] and [B is in

¹¹This is, of course, to simplify matters a bit. For notice that what A, B, and C are is important. Suppose that A, B, and C are each dry bits of dirt. Then their being in contact with one another would not seem to ground their composing a lump. This is not so if A, B, and C are bits of clay.

¹²I say 'roughly' since Pyra could survive A (B) moving slightly to the side in such a way that A's (B's) wider base is no longer in full contact with B's (C's) narrow base.

¹³For someone who thinks that, ultimately speaking, wholes do not exist in virtue of how their parts are arranged, see Schaffer (2010).

contact with C].¹⁴ And what grounds Pyra are the following two facts: [A is in contact with B] and [B is in contact with C]. And notice that we get the right result if we apply Necessitation to these facts: once these facts exist, then so do Lumpy and Pyra.¹⁵

Now that there is this difference between the grounds of Pyra and the grounds of Lumpy is a good thing. For the mereological structure of a lump is less rigid than the mereological structure of a statue. No matter how you arrange the parts of a lump, the lump continues to exist so long as its parts stand in the ancestral of the contact relation. Not so for statues. Statues need to be arranged in precise ways in order to continue to exist, and so their mereological structure is more fragile than that of a lump. Now for my solution to the grounding problem.

2 Solving the Grounding Problem

2.1 What is the Grounding Problem?

I think it is easy to confuse the grounding problem with another problem. Focusing on Pyra and its modal properties, the other problem is the problem of showing *how* the grounds of Pyra ground Pyra's modal properties. Generalizing, the other problem is the problem of how to ground the modal properties of objects by appealing to the grounds of those objects. Now it needs to be stressed that I am not going to attempt to show how to ground the modal properties of Pyra, and therefore I am not going to attempt to show how Pyra's modal properties are grounded in Pyra's grounds. And I do not need to do this in order to solve the grounding problem. For the grounding problem is not the problem of how to ground the modal properties of objects by appealing to their grounds. This is everybody's problem and it is a hard one. Rather, the grounding problem is the problem of specifying the relevant difference between, say, the statue and the lump such that this difference explains *how it can be* that the statue and the lump differ with respect to their kind and modal properties. But in order to solve this problem, all that needs to be shown is that the statue and the lump have different grounds. If the statue and the lump have different grounds, then that they have different modal and kind

¹⁴I am using '[p]' to stand for 'the fact that p'.

¹⁵Some may be inclined to think that statues are essentially artifacts, and so we should include among the grounds of Pyra *being made by such and such*. But I argue in §4.2 that artifacts are not essentially artifacts, and so statues are not essentially artifacts.

properties is no longer mysterious. For their having different grounds is relevant with respect to whether they have different kind and modal properties since the kind and modal properties of objects is grounded in how those object's grounds are (this is Link). This is so even if *how* these grounds ground their kind and modal properties is mysterious. And so to show that they *do* have different grounds for their kind and modal properties, and therefore to show how they can have different kind and modal properties, is not to show *how* these properties are grounded. This is something else altogether and it is not my present project.

2.2 Pyra and Lumpy

How then can Pyra and Lumpy, in World 1, differ in their kind and modal properties? We've already seen that what grounds Pyra is not what grounds Lumpy. For [A is in kontakt with B] and [B is in kontakt with C] is a different plurality from [A is in kontakt with B] and [B is in kontakt with C]. Now as I stressed above, this is enough to claim that whatever it is that grounds Pyra's kind and modal properties is not what grounds Lumpy's kind and modal properties. For given Link, how the grounds an object are grounds what that object is (its kind properties) and how that object can be (its modal properties). And so there is no longer the problem of explaining how Pyra and Lumpy can have different kind and modal properties. Since Pyra and Lumpy have different grounds, then given Link, Pyra and Lumpy do not have the same, but different, grounds for their kind and modal properties. So that they have different kind and modal properties is no longer mysterious. Problem solved.¹⁶

A worry. Consider the relations *being-in-kontakt-with* and *being-in-contact-with*. I defined the former, in part, in terms of the latter, saying that *x* is in kontakt with *y* if and only if the wider base of *x* is roughly in full contact with the narrow base of *y*. And in light of this, it is plausible to identify the relation between these two relations with the *species-genus* relation. For we explain why something is in kontakt (the species) with something else by showing that the two are in contact (the genus)

¹⁶Though my project is not to show *how* these different grounds explain their kind and their modal properties, it would be nice if I could. Here then is a try: Focusing on their modal properties, Lumpy can survive Pyra being smashed because were Pyra smashed, Lumpy's grounds, [A is in kontakt with B], [B is in kontakt with C], would still exist. But then, given Necessitation, Lumpy would still exist. And Pyra cannot survive being smashed because were Pyra smashed, then nothing resembling what Pyra's grounds are — [A is in kontakt with B] and [B is in kontakt with C] — would exist. At best we would be left with a partial, and not a full, ground of Pyra. And if Pyra is not fully grounded, then Pyra does not exist.

in a certain way (the differentia). So *being-in-kontakt-with* is the species and *being-in-kontakt-with* the genus. Now since we can explain the existence of the species in terms of the existence of the genus and the differentia, which I take to be another way of saying that the existence of the species is grounded in the existence of the genus and differentia (Rosen 2010), then we should say that *being-in-kontakt-with* is grounded, at least in part, in *being-in-kontakt-with* and not vice-versa. And so [A is in kontakt with B] and [B is in kontakt with C] is grounded, at least in part, in [A is in kontakt with B] and [B is in kontakt with C]. But since the former facts ground Pyra, then one might think that the latter facts ground Pyra as well. But if so, then it follows that what grounds Lumpy grounds Pyra, thereby losing the difference we needed in their grounds in order to solve the grounding problem.

But this objection involves sleight of hand. For Pyra is *fully* grounded in [A is in kontakt with B] and [B is in kontakt with C], whereas [A is in kontakt with B] and [B is in kontakt with C] are only *partially* grounded in [A is in kontakt with B] and [B is in kontakt with C].¹⁷ And in order for this to create a problem, the following principle would have to be true

If x partially grounds y , and y fully grounds z , then x fully grounds z .

But it is not. My right hand partially grounds me. I fully ground the singleton whose sole member is me. But my hand does not fully ground this singleton. And so that Pyra is fully grounded in some plurality of facts, which is in turn partially grounded in another plurality of facts, is perfectly unproblematic with respect to explaining how Pyra and Lumpy can have different kind and modal properties.

2.3 Lumpy and Sumy

We can extend the above reasoning to cases involving mereological sums. Consider Lumpy and the mereological sum, Sumy, that constitutes it. Both Lumpy and Sumy have the same parts (A, B, and C) arranged in the same fashion (A is in kontakt with B, which is in kontakt with C). But Sumy, unlike Lumpy, belongs to the kind *Mereological Sum* and can survive being scattered. What grounds this difference between Lumpy and Sumy? Let's begin answering this question by first saying what a mereological sum is: S is a mereological sum of the x s just in case the x s compose S simply in virtue of existing. Notice that this definition makes no appeal

¹⁷In addition to [A is in kontakt with B] and [B is in kontakt with C], we need the differentia in order to fully ground [A is in kontakt with B] and [B is in kontakt with C].

to the relations that hold between the *x*s. No matter how the *x*s are related, once you have them, you have them composing *S*, and therefore have *S*. Assuming, as we are, that proper parts play some role in grounding the wholes they are parts of, it therefore becomes natural to identify the grounds of sums with the pluralities that are their parts. So the *x*s alone ground *S*. So *A*, *B*, and *C*, and not facts about how they are arranged, ground Sumy.

Now we've already seen that *A*, *B*, and *C* do not ground Lumpy (§1.2). So what grounds Sumy does not ground Lumpy. Alternatively, [*A* is in contact with *B*] and [*B* is in contact with *C*] does not ground Sumy *even if it necessitates its existence*. Why? For one, the relation *in-contact-with* that holds between *A* and *B* and *B* and *C* has nothing to do with grounding Sumy. As we just saw, the manner in which *A*, *B*, and *C* are related is not relevant to whether Sumy exists. What *is* relevant is that *A*, *B*, and *C* exist. But then [*A* is in contact with *B*] and [*B* is in contact with *C*] includes something that is not relevant to the existence of Sumy, and therefore does not ground Sumy (grounding is not monotonic). For another, it does not follow that if some facts necessitate the existence of *y*, then these facts ground *y*. [*A* is in contact with *B*] and [*B* is in contact with *C*] necessitate that 2 exists and yet 2 is not grounded in them. So that [*A* is in contact with *B*] and [*B* is in contact with *C*] necessitates the existence of Sumy gives us very little reason to believe that they ground Sumy. So, in light of all this, it is reasonable that what grounds Lumpy does not ground Sumy.

Now if Lumpy and Sumy have different grounds, and therefore have different grounds for their kind and modal properties (see Link), then that they have different kind and modal properties is no longer mysterious. They have different grounds. No wonder then that they have different properties. Problem solved.¹⁸

Notice what this solution brings out: that it is not merely what parts an object has and how those parts are arranged that is relevant to what it is and how it can be. What is relevant to what an object is and how it can be is, many times, *some and only some* of the arrangements of its parts. For objects like statues and lumps, there are some arrangements of their parts that are relevant with respect to what kinds of objects we have and how those objects can be, and there are some arrangements of their parts that are irrelevant with respect to what kinds of objects we have and how those objects can be. It is precisely because of this that we can have two objects

¹⁸Very similar reasoning shows why it is not mysterious that Pyra and Sumy have different kind and modal properties.

with all the same parts, arranged in precisely the same way, that differ in their kind and modal properties.

2.4 Two Worries

Here is a worry. In appealing to the grounds of Pyra and Lumpy in order to explain how it is that they can have different kind and modal properties, I am appealing to kind properties of Pyra and Lumpy. Which ones? The kind properties *being grounded in such-and-such* (call them 'G-Properties'). Pyra has the G-Property *being grounded in [A is in kontakt with B] and [B is in kontakt with C]* while Lumpy has the G-Property *being grounded in [A is in kontakt with B] and [B is in kontakt in C]*. But if I am appealing to these G-Properties in order to explain how it is that Pyra and Lumpy can have different kind and modal properties, then I have not explained how it is that Pyra and Lumpy can have *these* distinct G-Properties. And so how Pyra and Lumpy can differ in *these* G-Properties still needs explaining.¹⁹

My response to this worry is simple. I have not appealed to the G-Properties of Pyra and Lumpy in order to explain how it is that Pyra and Lumpy can have different kind and modal properties. I have, instead, appealed only to their grounds and that these grounds differ.²⁰ Now admittedly, these grounds of Pyra and Lumpy entail that Pyra and Lumpy have the G-Properties they do. Indeed, it may be that these grounds ground that Pyra and Lumpy have the G-Properties they do.²¹ But their having these properties is consistent with merely appealing to a difference in the grounds of Pyra and Lumpy in order to explain how it is that they can differ in their kind and modal properties. This first worry, therefore, disappears.

The second worry questions whether the present solution to the grounding problem is in fact non-revisionary.²² Consider A, B, and C. In World 1, A stands in both the contact and the kontakt relation to B, and B stands in these relations to C. But surely these do not exhaust the relations that obtain between them. For example, A stands in the above-than relation to B, and B stands in this relation to C; A stands in the above-or-smaller-than relation to B, and B stands in this relation to C;

¹⁹I would like to thank both Kathrin Koslicki and Alexander Skiles for raising this objection.

²⁰Of course, in referring to their grounds I used the word 'grounds'. But this no more commits me to referring to G-Properties than referring to someone by means of the phrase 'the wife of' commits me to referring to W-Properties, where something is a W-Property just in case it is the property *being the wife of so-and-so*. In both of these cases, I am *using* a property, not *mentioning* it.

²¹For two philosophers who accept this, see Bennett (2011) and deRosset (2013).

²²Thanks to an anonymous referee for raising this worry.

A stands in the more-pointy-than relation to B, and B in the less-flat-than relation to C. And so on and so forth. Now given these pairs of facts, why not think that each such pair grounds a distinct object? After all, if [A is in contact with B] and [B is in contact with C] ground Lumpy, and if [A is in contact with B] and [B is in contact with C] ground Pyra, then why doesn't [A is above B] and [B is above C] ground some other object, Abovy? And why doesn't [A is above or smaller than B] and [B is above or smaller than C] ground yet some other object, Smally? The worry here is obvious. The present solution may well require the existence of a great many objects that materially coincide with Pyra and Lumpy. This is, admittedly, revisionary.

Can anything be said to alleviate this worry? I think so. First, notice that it is not a part and parcel feature of this solution that A, B, and C stand in a myriad of relations to each other. This becomes evident when we notice that acceptance of a *sparse* theory of relations is consistent with this solution.²³ If one were to accept such a theory (and many do), then, at least in comparison to the number of facts an *abundant* theory of relations would generate, the number of facts involving the arrangements of A, B, and C is significantly small (unlike an abundant theory of relations, a sparse theory would not admit the existence of [A is above or smaller than B] and [B is above or smaller than C]). From this it follows that the number of objects that materially coincide with Pyra and Lumpy is much smaller on a sparse theory of relations than it would be on an abundant theory (unlike an abundant theory of relations, a sparse theory would not admit the existence of Smally).

Second, suppose we accept what Peter van Inwagen (1990) calls 'Contact' — the *x*s compose something in virtue, and only in virtue, of being in contact — as an answer to the Special Composition Question — in virtue of what is it the case that the *x*s compose something? So we only have an object when the parts of that object are in contact. Now the grounds of Pyra and Lumpy require that A, B, and C are in contact, and so Contact gives us no reason to deny that Pyra and Lumpy exist. However, Contact entails that neither Sumy, Abovy, nor Smally exist since their grounds do not require that their parts are in contact. That is, if Contact is true, then it is a necessary condition on any object that its parts are in contact. But, and focusing on Abovy, the grounds of Abovy — [A is above B] and [B is above C] — can exist without A being in contact with B and B being in contact with C

²³I would like to thank an anonymous referee for suggesting a sparse theory of relations as a way to alleviate the present worry.

(A can be above B, and B can be above C, without A, B, or C being in contact). So [A is above B] and [B is above C] do not ground Abovy since their existence is not sufficient for the existence of Abovy (since their existence is not sufficient for A, B, and C to compose an object) as it should be if Necessitation is true.

The strategy here can be used for anyone who prefers moderate answers to the Special Composition Question. Suppose that the *x*s compose something in virtue, and only in virtue, of standing in some relation to each other. Insofar as we want this relation to be a relation that yields the existence of composite objects that are, by and large, consistent with our pre-theoretical beliefs about composition, then it will not, and cannot, be that for any relation that A, B and C stand in, their standing in that relation grounds an object. So insofar as the grounds of Sumy, Abovy, and Smally do not require that their parts stand in R, then neither Sumy, Abovy, nor Smally exist since their grounds are not sufficient for their parts to compose an object, as they should be if Necessitation is true.

Or suppose we accept Ned Markosian's (1998) brutal composition answer — for any *x*s, if there is an object composed of the *x*s, then it is a brute fact that there is an object composed of the *x*s — to the Special Composition Question. One of brutal composition's main virtues is its being consistent with our pre-theoretical beliefs about composition. As Markosian (1998, 233) says

[brutal composition] alone is consistent with my pre-theoretical views about the world's composite objects.

Now suppose, for sake of argument, that brutal composition is not only consistent with our pre-theoretical beliefs about composition, but that what composite objects exist according to it and what composite objects exist according to our pre-theoretical beliefs largely coincide. Now in World 1, we have [A is above B] and [B is above C]. Do these facts ground Abovy? Not if brutal composition, under its present characterization, is true. That A is above B and B is above C is not sufficient, according to our pre-theoretical beliefs about composition, and therefore according to brutal composition (under its present characterization), to guarantee an object composed of A, B, and C (as it should be if Necessitation is true). Generalizing, if brutal composition (under its present characterization) is true, then there will be many facts involving relations that obtain between A, B, and C that will not ground an object. And what explains why some facts fail to ground an object composed of A, B, and C while others do not is simply that, according to brutal

composition (under its present characterization), the former facts, unlike the latter, do not necessitate (as they should if Necessitation is true) that A, B, and C compose an object.²⁴

Therefore, what answer to the Special Composition Question we opt for can restrict which facts ground objects in a principled, non-arbitrary, manner. Indeed, anyone who favors a non-revisionary answer to the Special Composition Question will favor an answer that does not allow all sorts of objects to exist. But then there will be many facts involving relations that obtain between A, B, and C that simply fail to ground an object since they fail to require that A, B, and C compose an object.

So, unlike the two-thinger solutions mentioned at the beginning of this paper, where it is part and parcel of such theories that one accept a revisionary metaphysic, it is not (or at least not obviously) part and parcel of the present solution that one accept a revisionary metaphysic. And this is what I claimed on behalf of my solution at the beginning of this paper. Now, one will get a revisionary metaphysic if they combine the present solution with either an abundant theory of relations or a liberal answer to the Special Composition Question. But in these cases, the source of having a solution to the grounding problem that is revisionary is in large part due to accepting something other than the present solution; it

²⁴An anonymous referee voiced the following worry. If Brutalism is true, and so if there is nothing in virtue of which the *x*s compose something, then how is it that how the *x*s are arranged ground the whole they do? As the referee made clear, what we have here are two questions. They are

In virtue of what is it the case that the *x*s compose something?

In virtue of what is it the case that some composite object (a pyramid) exists?

These questions are surely distinct. One is asking for the ground of a relational fact — the fact that the *x*s compose something. This is the Special Composition Question. The other the ground of a composite object. Call it 'the Composite Objects Question'. And it is coherent to think that an answer to one of these questions will not influence an answer to the second. For example, suppose you think that, in some cases, wholes are prior to their parts and that, in other cases, parts are prior to their wholes. So you must think that neither composition nor decomposition determine the direction of grounding (Schaffer 2009 seems to hold this view). But then your answer to the Special Composition Question can come wildly apart from your answer to the Composite Objects Question. According to this view, composition and grounding are two very different relations.

Or, to take the other extreme, suppose you think that composition determines the direction of grounding because you think that composition is itself a kind of grounding relation (Wilson 2014; Bennett manuscript). Still, it is coherent to think that facts about grounding (and therefore facts about composition if composition is a kind of grounding) are brute even though it trivially follows from all this that composite objects are grounded (since composition is itself a kind of grounding relation). In short, it is coherent to think that answers to the Special Composition Question can come apart from answers to the Composite Objects Question. But then one can, in principle, accept brutal composition and still think that composite objects are grounded in how their parts are arranged (in fact, this is exactly what Paul (forthcoming) thinks, though for her the parts of such objects are properties).

is in large part due to accepting either an abundant theory of relations or a liberal answer to the Special Composition Question, neither of which is essential to the present solution.²⁵

2.5 Finean Differences

Fine (2003) has showed us that the kind and modal differences between Pyra and Lumpy do not exhaust their differences.²⁶ For example, Pyra is well-made but Lumpy is not. Pyra is admired but Lumpy is not. Pyra is beautiful but Lumpy is not. Can appealing to the grounds of Pyra and Lumpy explain why they have these Finean-differences? I think so. Let me begin showing why I think this by showing why some might think that if Pyra is well-made, admired, and beautiful, then so is Lumpy.

Pyra is well-made because of certain feature of Pyra's parts. So, Pyra is well-made because Pyra's parts were arranged by hand, attention was given to details, the ratios of the sizes of the parts are as they should be, etc. But of course, the same is true of Lumpy. When Lumpy constitutes Pyra, Lumpy's parts were arranged by hand, attention was given to details, the ratios of the sizes of the parts are as they should be, etc. But then it should be equally true of Lumpy that Lumpy is well-made since Lumpy has those properties that Pyra has in virtue of which Pyra is well-made. Similar things can be said with respect to the other Finean-differences. For example, suppose that Pyra is admired because it is both well-made and molded by some famous sculptor. But it is equally true of Lumpy, when Lumpy constitutes Pyra, that Lumpy is well-made (as I just argued) and molded by some famous sculptor. So it would seem that if Pyra is admired, then so is Lumpy since Lumpy has those properties that Pyra has in virtue of which Pyra is admired.

However, Lumpy is not well-made, admired, and beautiful. Pyra, of course, is. But if so, then it is not entirely correct to say that Pyra is well-made because Pyra's parts were arranged by hand, attention was given to details, the ratios of the sizes of the parts are as they should be, etc. After all, these are all true of Lumpy. What then is needed in order to make it the case that Pyra, but not Lumpy, is well-

²⁵It is worth noting that someone who accepts a liberal answer to the Special Composition Question will, in all likelihood, have no problems with a revisionary metaphysic since such a positions already commit one to metaphysically revisionary claims.

²⁶Fine argues that one-thingers have to adopt implausible positions in the philosophy of language in order to resist these other differences between statues and lumps. See both Frances (2006) and King (2006) for a response to Fine, and Fine (2006) for a counter-response.

made? Something along the following lines: Pyra is a statue and Lumpy a lump, and statues, unlike lumps, are the kinds of things that can be well-made. We can meaningfully predicate of statues that they are well-made. But the meaningfulness of such predications are at best strained, and at worst non-existent, when applied to lumps. There is, at the very least, a kind of oddity in saying that lumps are well-made that does not exist when we say that statues are well-made. So the relevant difference between Pyra and Lumpy in virtue of which one is, but the other is not, well-made is that one is, but the other is not, the kind of thing that can be well-made. So Pyra is well-made because Pyra's parts were arranged by hand, attention was given to details, the ratios of the sizes of the parts are as they should be, *and because Pyra is a statue*. Since Lumpy is not obviously the kind of thing that can be well-made, and therefore not a statue (since statues are obviously the kinds of things that can be well-made), then what, in large part, explains why Pyra is well-made but Lumpy is not is that Pyra is a statue and Lumpy a lump. The same goes for why Pyra is, and Lumpy is not, admired or beautiful. Since Lumpy is not obviously the kind of thing that can be admired or beautiful, and therefore not a statue (since statues are obviously the kinds of things that can be admired or beautiful), then what, in large part, explains why Pyra is admired or beautiful but Lumpy is not is that Pyra is a statue and Lumpy a lump. So it would seem that these Finean-differences between Pyra and Lumpy depend, in large part, on their kind differences.

In light of this, it can be shown that appealing to the grounds of Pyra and Lumpy can explain why they have these Finean-differences. As I showed above, what grounds the kind of thing Pyra is does not ground the kind of thing Lumpy is. But then what, in large part, explains these Finean-differences is the non-identity of their grounds. Since that their grounds are different explains why they belong to different kinds, and since their belonging to different kinds, in large part, explains why they have these Finean-differences, then given the transitivity of partial explanation, the difference in their grounds, in large part, explains why they have these Finean-differences. And so that they have these differences is no longer mysterious. Again, problem solved. Finean-differences between Pyra and Lumpy are, just like the traditional differences, explained by appealing to their grounds.

3 An Improvement on Similar Solutions

Those familiar with the literature on the grounding problem will notice that the present solution to this problem is a variant of previous attempted solutions (Levey 1997; Rea 1997). What I wish to do in this section is show why my solution is an improvement on these solutions and is therefore to be preferred.

Consider Rea's (1997, 371) description of his solution:

No one will deny that the stuff filling the region occupied by Socrates is arranged both humanwise and lumpwise ... Some of those properties and relations [of the stuff filling the region] make it the case that the stuff in that region is arranged lumpwise; others make it the case that the stuff in that region is arranged humanwise. Thus, it is quite reasonable to suppose that the properties that supervene on these properties and relations are distributed accordingly. Since the human being in the region supervenes on the humanwise arrangement of the microparticles ... his properties are just those that supervene on the human-determining properties and relations exemplified by those particles; and since the lump in the region supervenes on the lumpwise arrangement of the microparticles ... its properties are those that supervene on the lump-determining properties and relations exemplified by those particles. On this view, the human being and the lump will share some of their intrinsic qualitative properties ... but there will be others that they won't share ... The explanation for the differences lies simply in the fact that the two objects supervene on different events.

Notice that Rea's solution appeals to supervenience in order to solve the grounding problem. But appealing to supervenience here is problematic in large part because supervenience is not grounding (Zimmerman 1995; Bennett 2004; deRosset 2011). And if supervenience is not grounding, then it is not clear why anyone should expect the subvening properties to ground the supervenient ones.²⁷ Better than, and hardly surprising, that we focus on grounding, and not supervenience, in order to solve the grounding problem.

Rea's solution to the grounding problem does not tell us what those humanwise and lumpwise arrangements of microparticles are that Socrates and the lump

²⁷This is no mark against Rea. He was using the tools of the day, supervenience, whereas I am using the tools of today, grounding.

supervene on. That is, Rea does not describe in any detail what these human and lump-determining properties and relations are and how they are different. Now this might seem like a rather insignificant omission on Rea's part. As an anonymous referee pointed out, if you grant the underlying metaphysics of Rea's solution, then it would be crazy to deny that there are different arrangements of the microphysical stuff on which Socrates and the lump supervene on. And so the fact that Rea fails to say anything about the nature of these arrangements is neither here nor there. I agree. However, not everyone does.²⁸ For example, here is what Bennett (2004, 365) has to say about Rea's solution

Rea wants to solve the 'which is which' problem by combining a version of coincident-friendly supervenience and an appeal to 'lump-determining' and 'statue-determining' microproperties. However, without further elucidation of just what those properties are supposed to be, I do not see how this move counts as saying that nonsortalish [non-modal, non-kind] properties are doing the work.

In other words, what Bennett wants from Rea is a description of what those humanwise and lumpwise arrangements of microparticles are in order to be in a better position to assess his solution. My solution should go some way in satisfying Bennett's worry since it *does* go into detail on what exactly the grounds of Pyra, Lumpy, and Sumy are (and it does so without appealing to sortalish properties).²⁹

Rea is concerned with *microphysical* supervenience, which involves the intrinsic qualitative properties of macrophysical objects supervening on their microphysical structures. I did not concern myself with microphysical supervenience, and with good reason. For telling a detailed story about how microphysical objects have to be arranged in order to get the macrophysical objects and their properties is too difficult. (This, perhaps, explains why Rea did not tell such a story.) Telling such a story would involve a myriad of complex multi-grade relations holding between a plethora of microparticles. It would require that we have to do some serious

²⁸Rea himself told me, in conversation, that when his 1997 solution was discussed with other philosophers at the time, a number expressed, in discussion, skepticism over the claim that there are these humanwise and lumpwise arrangements of microparticles that Socrates and the lump, respectively, supervene on.

²⁹Indeed, even though I did not use a human and a lump of tissue in order to illustrate the grounding problem, I have, by going into some detail on what exactly grounds Pyra, Lumpy, and Sumy, shown that there is no in principle problem for cases that involve a human and a lump of tissue coinciding. A solution of the same *kind* (albeit one that is much more complex) can be given for a human and a lump of tissue that was given for Pyra, Lumpy, and Sumy.

biology and chemistry (and perhaps physics) in order to satisfy a Bennett-style skeptic who, as we saw above, claims that not enough has been said about what these human and lumpwise arrangements of particles are. But we do not have to tell such a story. For the real issue does not have to do with explaining the kind and modal differences of macrophysical objects by appealing to their *microphysical structures*. Rather, the real issue has to do with explaining the kind and modal differences of macrophysical objects by appealing to *some structure or other* of their parts. But then we are not required to ask questions about their microphysical structure. We are only required to descend to some level of decomposition and show that, at that level, we can explain their kind and modal differences. And this is much easier to do since it is much easier to describe how large proper parts of wholes have to be arranged in order to ground the wholes than it is to describe how microphysical parts of wholes have to be arranged in order to ground the wholes. So starting with the microphysical structure of wholes in order to explain why macrophysical objects differ in their kind and modal properties is to start at the wrong end. Better that we start, as I did, with their macrophysical structure.

4 Material Coincidence and Constitution

I have argued that the present solution constitutes an improvement on similar solutions. But, and this has not been pointed out before, this kind of solution is also fruitful. Why? Because the materials needed for this solution can solve a problem, and answer a question, related to the grounding problem.³⁰

4.1 The Problem of Material Coincidence

In addition to the grounding problem, there is also the problem of how two objects, the statue and the lump, can share all of their proper parts. This is the problem of material coincidence. Many think that material coincidence is impossible because it would violate the following mereological principle:

Uniqueness. For any complex material objects x and y , if x and y have the same proper parts, then $x = y$.

I admit to finding Uniqueness appealing. But we can see why it is both false and not implausible to reject by showing how the statue and the lump can share all of

³⁰For an overview of problems and questions related to the grounding problem, see Paul (2010).

their proper parts. In §1.2 I argued that we should ground complex wholes in facts involving how their parts are related. Now notice that there is nothing problematic in saying that two or more facts can share their *material* constituents. For example, [the ball is red] and [the ball is round] unproblematically have the same material object, the ball, as a constituent. Or [Obama is sitting] and [Obama is thinking] have the same material object, Obama, as a constituent. Say then that facts materially coincide when they have the same material constituents. Taking a look again at the facts that ground Pyra, [A is in kontakt with B] and [B is in kontakt with C], and the facts that ground Lumpy, [A is in contact with B] and [B is in contact with C], we can see that the grounds of Pyra and Lumpy materially coincide, having the same material constituents A, B, and C. And now we have a straightforward explanation for why Pyra and Lumpy materially coincide: they materially coincide because their grounds do. Pyra and Lumpy share their proper parts because their grounds share their material constituents. And since there is nothing objectionable in saying that two or more facts share their material constituents, then appealing to these facts in order to explain how Pyra and Lumpy materially coincidence should be unproblematic. So we have the following principle:

If material objects x and y are grounded in facts that materially coincide, then x and y materially coincide.

We therefore have an explanation for why Pyra and Lumpy materially coincide that also shows why it is not implausible to reject Uniqueness.³¹

Can we go further and also explain why Uniqueness is so appealing? Yes. Consider the following principle:

G-Uniqueness. For any grounded objects x and y , if x and y have all the same grounds, then $x = y$.

I think this principle is extremely plausible.³² And it helps explain why Uniqueness is accepted by so many. Since it is natural to think that the proper parts of a whole

³¹Unsurprisingly, we also have a straightforward explanation for why Pyra and Lumpy are co-located. For what grounds Pyra and what grounds Lumpy are co-located. And given the following principle,

If material objects x and y are grounded in facts that are co-located, then x and y are co-located,

it follows that Pyra and Lumpy are co-located.

³²Priority monists (Schaffer 2010) will most likely reject it since they think that everything that is grounded is grounded in the cosmos. But of course, this does not entail that this principle is implausible.

are what ground the whole, then of course, if two complex wholes, x and y , have the same proper parts, then according to the above principle, they must be identical. So really (or so I am boldly conjecturing), the intuition that Uniqueness is getting at is just G-Uniqueness. However, with just one exception (see fn. 33), the proper parts of a whole do not ground the whole. They, at best, partially ground the whole. What we need, in addition to the parts, are facts involving how those parts are. But once we see this, we can see why there is nothing problematic in rejecting Uniqueness.³³

That my solution to the grounding problem can explain why material coincidence is unproblematic counts in its favor. Looking back at some of the two-thinger solutions, we can see that some of them do not have the resources to explain this. For appealing to brute kind and modal properties or modal property fictionalism seems to have nothing to do with how two objects can share all of their proper parts. Accepting that material objects have non-material parts is able to explain how material coincidence is unproblematic since it allows us to deny that the statue and the lump share *all* of their parts. So both my solution to the grounding problem and the non-material parts solution have the resources to explain why material coincidence is not much to worry about. This counts in their favor. Of course, my solution, and not the non-material parts solution, does not require that we believe that material objects have non-material parts. This counts in favor of my, but not the non-material parts, solution.

4.2 The Constitution Question

Here is a good question: What is constitution? Here is an intuitive answer:

x constitutes y just in case y is made out of x .

Pyra is a statue and Lumpy a lump. So Lumpy constitutes Pyra just in case Pyra is made out of Lumpy. But this answer is not very informative. For now we want to ask “what does it mean to be made out of something?” Here is my answer:

y is made out of x 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 .

³³Mereological sums are the only kinds of wholes that Uniqueness is true of. Why? Because mereological sums are grounded in their parts. And so for any two mereological sums, x and y , if x and y have all the same proper parts, and therefore all the same grounds, then, given G-Uniqueness, $x = y$.

So we have

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 .³⁴

This answer satisfies the following three conditions on constitution: *transitivity*, *ir-reflexivity*, and *asymmetry*. Consider Sumy, Lumpy, and Pyra. Sumy constitutes Lumpy and Lumpy constitutes Pyra. By the transitivity of constitution, Sumy constitutes Pyra. And my answer says it does since of all the possible ways of arranging Sumy's parts so as to preserve Sumy, some and only some of those facts involving how Sumy's parts are arranged ground Pyra.

My answer does not allow Pyra to constitute itself. For it is not true that of all the possible ways of arranging Pyra's parts so as to preserve Pyra, some and only some of those facts involving how Pyra's parts are arranged ground Pyra. For all the possible ways of arranging Pyra's parts so as to preserve Pyra are such that *all* of those facts involving how Pyra's parts are arranged ground Pyra.

My answer does not allow Pyra to constitute Lumpy and Lumpy to constitute Pyra. For if Pyra were to constitute Lumpy, then of all the possible ways of arranging Pyra's parts so as to preserve Pyra, some and only some of those facts involving how Pyra's parts are arranged ground Lumpy. But none of these facts involving Pyra's parts that preserve Pyra ground Lumpy. We've already seen some of these facts: [A is in kontakt with B] and [B is kontakt with C]. And we saw that they do not ground Lumpy (see §2.2). Are there other facts involving how Pyra's parts are arranged that preserve Pyra and appear to ground Lumpy? How about [A is in kontakt with B] and [B is in kontakt with C]? These facts ground Lumpy and involve how Pyra's parts are arranged? But they do not *preserve* Pyra. For these facts can exist even if Pyra does not (recall, in §1.2, the figure of Lumpy in World 2). Are there other facts involving Pyra's parts that both preserve Pyra and ground Lumpy? I cannot think of any. And so, somewhat reasonably, according to my answer to the constitution question, Pyra does not constitute Lumpy.

Ryan Wasserman (2004, 700) has presented a potential counter-example to my answer to the constitution question. He says

One might, for example, suggest that [Lumpy] is accidentally statue-shaped and that this fact explains the existence of [Pyra]. But this can-

³⁴This answer is similar to an answer Doepke (1996) gives.

not be right. [Lumpy] could have gained its particular shape by the perfectly natural processes of erosion, for example. In such a case, [Pyra] would certainly not exist. So [Lumpy's] shape is clearly not *sufficient* for the existence of [Pyra]. And, on any ordinary notion of explanation, the *explanans* must be sufficient for the *explanandum*. So [Lumpy's] shape cannot be the property we are looking for. (brackets mine)

The thought here is that one of a number of ways of arranging Lumpy's parts ground Pyra. But such facts involving how Lumpy's parts are arranged could have taken place naturally, without the aid of a human agent. And according to Wasserman, if this had happened, then Pyra would not have existed. And so these facts involving how Lumpy's parts are arranged do not ground Pyra since they do not necessitate Pyra.

Wasserman's point is that statues are artifacts, and artifacts are essentially the creation of human agents. But I disagree. I do not think that artifacts are essentially artifacts. Consider Michelangelo's *David* and a possible lump of clay whose parts are numerically identical to David's parts and where David and the lump are qualitative duplicates. Now suppose that the lump took the shape it did naturally. Would that incline us to say that the lump, in this possibility, does not constitute David? It should if Wasserman is right. But these are not my intuitions. For it seems that we do have David in this possibility even though, in this possibility, David is not an artifact. And why think that David has to be shaped by a human agent in order to exist? Indeed, with respect to whether David exists or not, why does it matter if David is shaped by a human, a robot, or nature? Would David not exist if, say, it was da Vinci, and not Michelangelo, who molded the lump? This seems false. Is it then that a human has to shape the lump in order for the lump to constitute David? But why favor humans here over robots and nature? Is there an argument for this?

Let's take this further. Assume that God actually exists and that, therefore, every material object is, ultimately speaking, the result of God's handiwork. Call something that is created by God a 'deofact'. So every material object is a deofact. Consider a different world, World 3, where God does not exist but where the simples that compose the objects in the actual world exist and are arranged in precisely the same manner.³⁵ So, presumably, in World 3 we have composite objects even if

³⁵Given that, if God exists, then God necessarily exists, it follows that with respect to the actual

we don't have deofacts. Question: are the composite objects in World 3 the very same composite objects in the actual world? Or, to put it differently, is it plausible to think that the atheist and theist have to disagree on the identity of every composite object? I can only give you autobiography — it is not plausible that the atheist and theist have to disagree on, for example, the identity of Mount Everest. What the atheist and theist disagree on is whether Mount Everest is a deofact. They do not, and need not, disagree on whether it is *this* thing or *that* thing, where this thing and that thing are two different things. Notice that the reasoning here bears on whether objects that are artifacts are essentially so. Artifacts are just like deofacts except for being the creation of humans, not deities. But this difference is not a relevant difference. If you think it implausible that the atheist and theist have to disagree on the identity of every composite object, then you should think it implausible that David has to be an artifact. If you think that the identity of composite objects does not depend on whether they are deofacts, then you should think that the identity of artifacts does not depend on whether they are artifacts. In short, you should think that David is not essentially an artifact.³⁶

5 Conclusion

I have given a solution to the grounding problem that does not require that we substantially revise our view of reality. In this respect, I claim that my solution fares better than the others mentioned at the beginning of this paper. Of course, that a solution is revisionary is not a decisive blow against it. And that a solution is non-revisionary is not a decisive reason in its favor. Other theoretical virtues need to be taken into account. One of them is fruitfulness. Is a solution to the grounding problem able to solve problems, and answer questions, in related areas? If so, then it is fruitful. The solution offered in this paper is able to solve a related problem and answer an important question. So in addition to not requiring a revisionary metaphysics, it is also fruitful. We therefore have an attractive solution to the grounding problem.³⁷

world, World 3 is impossible. That's fine. When talking about necessary matters, we can, and do, reason about the impossible.

³⁶See Rea (1998, 353–4) for a different reason to think that artifacts are not essentially artifacts.

³⁷I would like to thank the audience at the 2012 Jentzsch Prize Winner Colloquium in Boulder Colorado, especially Kelly Vincent and Michael Huemer. I would also like to thank the University of Notre Dame's Center for Philosophy of Religion, where I was on fellowship for the 2012/2013

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