Against Grounding Necessitarianism

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Abstract   Can there be grounding without necessitation? Can a fact obtain wholly in virtue of metaphysically more fundamental facts, even though there are possible worlds at which the latter facts obtain but not the former? It is an orthodoxy in recent literature about the nature of grounding, and in first-order philosophical disputes about what grounds what, that the answer is no. I will argue that the correct answer is yes. I present two novel arguments against grounding necessitarianism, and show that grounding contingentism is fully compatible with the various explanatory roles that grounding is widely thought to play.

1 Introduction

A fact is **grounded** when there are metaphysically more fundamental facts that it non-causally derives from—that make it the case; that bring it about—as when the fragility of a vase is said to be grounded in facts about its crystalline microstructure, or when the wrongness of lying is said to be grounded in facts about the physical and psychological harm it causes. Although distinct, grounding is similar to causation insofar as they are both relationships of *production*: just as an event may occur wholly in virtue of events that cause it, a fact may obtain wholly in virtue of facts that ground it. Or as Jonathan Schaffer has put it, "grounding is something like metaphysical causation. Roughly speaking, just as causation links the world across

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time, grounding links the world across levels", producing facts upward from the more fundamental levels to the less (2012a, p. 122).[1]

A fact, $[p]$, is **necessitated** by a collection of facts, Γ, just when any time and (metaphysically possible) world at which all the facts in Γ obtain is also a time and world at which $[p]$ obtains.[2] The question I wish to address in what follows is this: can there be *grounding without necessitation*? Most philosophers answer this question with a resounding *no*, and thus endorse the thesis I call **grounding necessitarianism:** that for any time t and world w, if $[p]$ is grounded in Γ at t and w, then $[p]$ is necessitated by Γ. The minority who answer *yes* endorse the thesis I call **grounding contingentism**. Contingentists do not make the radical claim that *no* fact is necessitated by the facts that ground it: for instance, they typically agree with their necessitarian rivals that the conjunction $[p \wedge q]$ is both grounded in and necessitated by the collection of its conjuncts, $[p]$ and $[q]$. Rather, contingentists merely deny that *every possible instance* of grounding carries such strong modal import.[3]

In this paper I challenge the necessitarian orthodoxy, and give the contingentist alternative its proper due. After discussing some preliminaries about the notion of grounding I will be working with in §2, I argue that there are at least two varieties of grounding without necessitation. In §3, I argue that scenarios familiar from literature on the metaphysics of material composition—namely, those modeled on the infamous 'ship of Theseus'—constitute one variety. In §4, I argue that a certain class of accidental generalizations constitutes another. In §5, I consider the best arguments in favor of necessitarianism in existing literature on the metaphysics of fundamentality, and show how the contingentist is able to resist them. Finally, in §6 I conclude by briefly outlining how taking the contingentist perspective seriously can substantively impact a number of important philosophical disputes in which grounding plays a central role.

2 Some Preliminaries on Grounding

Although my topic is grounding, a comprehensive treatment of the competing accounts of its nature and of the proper regimentation of grounding statements is

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[1] For influential discussions of the relevant sense of "ground", its role in philosophical inquiry, and defense of its coherence, see Fine (2001), Correia (2005), Schaffer (2009), and Rosen (2010). For a more pessimistic take, see Wilson (forthcoming).

[2] I adopt formalism from Rosen (2010). Brackets indicate facts: for any true sentence "p", let "$[p]$" rigidly denote the fact that p. If "Γ" is a plural term rigidly denoting one or more facts, then a fact is **in** Γ iff it is identical to one of the facts that "Γ" rigidly denotes. (I will say more about what facts are and how they interlock with grounding in §2.) I interchange statements about necessity and possibility with statements about worlds purely for convenience.

[3] Explicit proponents of necessitarianism include Correia (2005), Witmer et al. (2005), deRosset (2010, 2013a, b), Rosen (2010), Audi (2012a, b), Trogdon (2013), and Dasgupta (2014), while Barker (2012), Bennett (2011) and Cameron (forthcoming) endorse principles that entail it. Fine (2012) is subtly different: although he claims that every variety of grounding requires necessitation, the variety of necessity required need not be *metaphysical* necessity. Explicit contingentists include Dancy (2004), Bricker (2006), Schnieder (2006), Zangwill (2008), Schaffer (2010a), Leuenberger (2013), and Chudnoff (2013, manuscript).

beyond what I can carry out here. Since differences between these accounts subtly effect how necessitarianism and contingentism are stated and appraised, instead I will briefly sketch a 'default' framework—one amenable to necessitarians—and note how my arguments apply within alternative frameworks elsewhere in the paper.[4]

What is it for a fact to be grounded? A answer to this question would clearly be useful for adjudicating the necessitarian/contingentist debate, yet it is another orthodoxy about grounding that no reductive analysis can be given. (Like necessitarianism, this is an orthodoxy I ultimately reject—I return to this matter when addressing an objection to contingentism in §5.) Nonetheless, we can instead rely upon our intuitive judgments about what grounds what. Just as our intuitive judgments about what causes what provide defeasible evidence for and against claims about how the relation of causation is distributed, similarly with the relation of grounding. The judgments I have in mind are characteristically elicited by familiar philosophical queries like "What is it *in virtue of which* lying is immoral?", or "What *makes it the case* that a true belief is also knowledge?", where causal, epistemic, or agential readings are either understood to be off-topic (as when questioner and audience both know that lying *is* immoral, contrary to an epistemic reading), or explicitly canceled (as when the questioner emphasizes that she is querying about the *metaphysically more fundamental* facts that turn a true belief into knowledge, contrary to a causal or agential reading).

To illustrate the framework I will work within, consider two grounding statements that meet the intuitive 'smell test', where s is the shirt I am now wearing (cf. Rosen 2010, pp. 117 and 129):

(1E) [s is blue] is grounded at t and w in [s is cyan] and [*being cyan* is a determinate of *being blue*]

(2E) [Obama is a Democrat $\wedge$ Romney is a Republican] is grounded at t and w in [Obama is a Democrat] and [Romney is a Republican]

As I understand it, grounding is **factive**: (1E) is true, for instance, only if each fact entering into this relationship obtains at t and w (for short: **on this particular occasion**). The reason I take grounding to be indexed to a time and a world is that a single fact may have different grounds on different occasions, and may lack grounds altogether on other occasions. Were my shirt turquoise rather than cyan, the grounds of [s is blue] would differ accordingly; if it were maroon, then [s is blue] would not obtain, and therefore would not be grounded on that occasion (assuming, again, that grounding is factive).[5] And what goes for (1E) goes for (2E) as well. In general, I

will assume that there is a single relation of grounding between facts ascribed by grounding statements regardless of which ontological categories the facts related by grounding happen to concern: mental, moral, and modal facts—or facts regarding any other subject matter—are grounded in the very same way (if, that is, they are grounded at all).[6]

At times I will employ the notion of **partial** grounding: when a collection of facts *contributes* to the grounding of another fact, as when [Obama is a Democrat] contributes to the grounding of [Obama is a Democrat ∧ Romney is a Republican]. I will assume that [p] is partially grounded in Γ iff Γ is a subcollection of some collection of facts, Γ*, that *fully* grounds [p]. Clearly, necessitarianism is not to be understood as a claim about partial grounding: barring unexpected necessary connections between party affiliations, [Obama is a Democrat] fails to necessitate [Romney is a Republican] and thus fails to necessitate their conjunction.

I will construe statements of the form "[p] is grounded in [q_1], [q_2], etc." as ascribing a *relational predicate*, the relata of which are entities I have been calling *facts*. I wish to remain neutral about what kinds of entities facts are. But for reasons of space, I will treat facts as true 'Russellian' propositions with individuals, properties, relations, quantifiers, logical connectives, and so forth as constituents, structured in the manner depicted.[7] These two assumptions will play no essential role in the arguments to come, however. To avoid ontological commitment to facts, some take "it's being the case that __ is grounded in its being the case that ..., its being the case that ..., etc." to be a *sentential operator* that, when combined with a sequence of statements "p", "q_1", "q_2", etc., yields a truth-evaluable grounding statement. Proponents of this view may apply standard paraphrase procedures throughout the following discussion.[8]

I will not assume that grounding *only* relates facts: grounding may well hold between the members of any one or more ontological categories. The necessitarian versus contingentist dispute as I have formulated it is silent about the modal implications of grounding beyond the realm of facts (if grounding extends beyond the realm of facts at all). Nonetheless, since most necessitarians deny that grounding

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[6] See Trogdon (2013) for a discussion of different varieties of grounding pluralism.

[7] On a rival view, grounding instead holds only between worldly 'states-of-affairs' that serve as truthmakers for true propositions: cf. Audi (2012a, b).

[8] Cf. Correia (2010, §1.1).

relates anything other than facts, I will set aside arguments that build on putative cases of grounding between other kinds of entities.[9]

Finally, I will make a couple of assumptions about the logical form of grounding statements: namely, that "…is grounded in…" is a *non-contrastive* predicate that must be flanked by a *single* fact on the left-hand side. At points I will briefly discuss how my arguments are affected when these assumptions are relaxed.[10]

3 Against Grounding Necessitarianism: Theseus-Style Rearrangement

It is natural to think of **ordinary composites**—macroscopic items of everyday experience like trees, tables, and tigers—as somehow 'ontologically dependent' on the existence and features of the many parts that compose them.[11] For instance, Conee and Sider (2005, p. 68) point to this phenomenon to help convey what ontological dependence is more generally:

> The idea eludes precise definition, but it has one clear sort of illustration. Consider a tuna salad sandwich. At any given time, the sandwich derives its existence from the existence of the bread, the tuna salad, and any other ingredients that compose it. Without them, it would be nothing. The sandwich's ingredients do not *cause* it to exist. Rather, they give it existence directly. The sandwich 'ontologically depends' on its ingredients.

The relevant variety of ontological dependence is notoriously slippery to capture. It is too strong a constraint to say (as Conee and Sider do here) that it "would be nothing" without the existence of these *particular ingredients*: destroying the tomatoes, e.g., does not destroy the sandwich. Yet it is too weak a constraint to say that the sandwich "would be nothing" without the existence of *some or other* ingredients of the relevant kinds: it ontologically depends upon *its own* ingredients, not those of a distinct yet similarly constructed sandwich. To capture ontological dependence of this variety, an attractive strategy instead appeals to grounding: for x to ontologically depend upon the ys is for there to be a collection of facts about the ys that the existence of x is grounded in.[12]

In this section, I will argue that the ontological dependence of ordinary composites on their parts is a case of grounding without necessitation. I will make use of some terminology. Suppose that o is an ordinary object composed of a collection of objects, the as, at time t. Say that a collection of facts, Γ, is **an arrangement of the as** iff each fact in Γ solely concerns the intrinsic properties of, or causal and spatial relations holding between, the as. Say that the as are **in** this arrangement at t iff all facts in Γ obtain at t. Finally, say that a **scenario of**

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[9] Schaffer (2010a, §4) constructs such an argument.

[10] Schaffer (2012) and Dasgupta (2014) criticize the first and second assumptions respectively.

[11] By "part" I mean **proper part**: x is a part that is *distinct* from y. By "composes" I mean **properly composes**: each of the xs is a proper part of y, and each part of y shares a part in common with ('overlaps') some of the xs.

[12] See Correia (2005) and Schnieder (2006) for accounts of ontological dependence along these lines.

rearrangement with respect to such a Γ is any temporal interval during the history of a world at which the as are in an arrangement at some initial short duration t of that interval, in that arrangement at a concluding short duration t^* of that same interval, but are *not* in that arrangement between t and t^*. The argument against necessitarianism may then be formulated as follows, where o is some ordinary composite composed of the as:

The rearrangement argument against grounding necessitarianism:

(P1)   The existence of o is grounded in Γ, some arrangement of the as, at t.
(P2)   There are scenarios of rearrangement with respect to Γ at the end of which o does not exist.
Thus: Grounding necessitarianism is false.

Call this **the rearrangement argument**. The thought behind it is simple: even though the existence of at least one possible ordinary composite is grounded in the arrangement of its parts at one time, it is possible for these parts to 'scatter' and come back into that arrangement at another time without that ordinary composite existing as a result. Since necessitarianism entails that it must exist if its parts are in that arrangement, the view is false.

The scenario of rearrangement I will focus upon—call it **the sandwich of Theseus**—is a spin on a widely discussed case in literature on the metaphysics of material composition. Let "o" pick out a particular tuna sandwich. Suppose that in an earlier epoch, the existence of o is grounded in an arrangement of its parts, the as (call this arrangement "Γ"). At a later epoch, one of the as (call it "a_1") is sloughed off and replaced with a duplicate (call it "b_1"). There is now a sandwich composed of $b_1, a_2,$ ..., a_n; this sandwich (call it "o_1") is presumably identical to o. Suppose this process of gradual replacement repeats so that eventually in a later epoch, we are left with two sandwiches: one (call it "o_n") identical to o and composed of $b_1, b_2, ..., b_n$, but also another sandwich (call it "o_R", for *replacement*) composed of $a_1, a_2, ..., a_n$ and placed in the same arrangement, Γ, they were in when they composed o in the *earlier* epoch. Finally, o is destroyed, leaving o_R unscathed. Although all the facts in Γ obtain during this later epoch, [o exists] does not; hence although the existence of o was *grounded* in these facts about its parts, they do not *necessitate* o's existence.[13,14]

In setting up this Theseus-style scenario, I have assumed that the existence of an ordinary composite is grounded in an arrangement of its *spatial* parts, which compose it not atemporally but rather relative to a given time.[15] But similar

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[13] DeRosset (2013b) independently discusses a version of this argument, but takes it to undermine the claim that o is grounded in an arrangement of its parts. He considers several strategies for supplementing these facts in order to yield necessitating grounds that I will discuss momentarily.

[14] Another scenario of rearrangement is **the recycling scenario** (cf. McKay 1986). Suppose that in an earlier epoch the existence of o is grounded in Γ. Afterward, o rots and as a result permanently ceases to exist as the as 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 all the facts in Γ obtain during this later epoch, [o exists] does not.

[15] I will also assume that composition fails to be contingent in the following sense: if the as are in some arrangement when they compose o, then necessarily, the as compose at least *some* object whenever they

scenarios can be constructed if instead it is assumed that its existence is grounded in facts about the *temporal* parts that compose it atemporally. Instead of imagining the replacement of *spatial* parts across a sequence of *times*, we imagine the replacement of *temporal* parts across a sequence of *worlds*. Suppose that in world w, the existence of o is grounded in an arrangement of its temporal parts, the as (call this arrangement "Γ"). Next consider a world w_1 at one of the as (call it "a_1") has been replaced by a duplicate (call it "b_1"). Hence in w_1, there is a sandwich composed of $b_1, a_2, \ldots, a_n$; this sandwich, call it "o_1", is presumably identical to o. Suppose this sequence of worlds has as its final member a world w_n that contains two sandwiches: one (call it "o_n") identical to o and atemporally composed of the bs, but also another (call it "o_R") atemporally composed of the as in the same arrangement, Γ, as they were when composing o in the *first* world of the sequence. Finally, imagine a world exactly like the previous in the sequence except that o and the bs that compose it do not exist, with no other differences to o_R and the as. Although all the facts in Γ obtain at this world, [o exists] does not. Hence, although the existence of o would have been *grounded* in these facts at one world, they do not *necessitate* o's existence.[16] That said, given the clear structural similarities between the two cases, for simplicity's sake I will focus on the first Theseus-style case and the mereological assumptions used to state it (and suppress time/world indexing mereological notions whenever possible).

Broadly speaking, the necessitarian can resist the rearrangement argument in one of two ways. One strategy is to reject that there is *any* arrangement of an ordinary composite's parts that its existence could be grounded in: facts about the intrinsic properties of and causal and spatial relations between its parts are just not enough. This is to deny (P1). The other strategy is to claim that the relevant ordinary composite *does* exist at the end of the scenario of rearrangement described above. This is to deny (P2). In the following two subsections, I will defend the rearrangement argument against both kinds of response.

3.1 In Defense of (P1)

One obvious way to reject (P1) is to deny that o exists. If o does not exist, then the existence of o cannot be grounded in an arrangement of the as, contrary to (P1).

This response is available to only the most extreme proponents of **compositional nihilism**—the thesis that there are no composites—whereas less extreme (and more popular) theses in the neighborhood of compositional nihilism do not escape. One way to be less extreme is to deny the existence of ordinary composites except for *living organisms* (cf. van Inwagen 1990), or except for those possessing *non-redundant causal powers* (cf. Merricks 2001). But if there are scenarios of

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Footnote 15 continued

are in that arrangement. This is a friendly concession to the necessitarian: if composition were contingent, then one could argue that [o exists] is not necessitated by the arrangement of the as without recourse to scenarios of rearrangement. For defense of the contingency of composition, see Cameron (2007).

[16] Note as well that this 'cross-modal' Theseus-style case also poses a challenge for the necessitarian who opts for a world-indexed but not time-indexed grounding relation, regardless of whether temporal indices are embedded in the relevant facts (see fn. 5).

rearrangement involving sandwiches, then there will also be scenarios that involve trees, dolphins, or human bodies.

Another less extreme way to deny (P1) by appeal to compositional nihilism is to claim that although composites do not exist, propositions expressed by ordinary statements about the existence of composites are nonetheless strictly and literally true.[17] However, let p be the proposition ordinary expressed by the sentence "o exists". Presumably, the fact that p is true is grounded in some arrangement of the as.[18] If so, then rather than considering scenarios of rearrangement at the end of which o does not *exist*, one can consider instead scenarios of rearrangement at the end of which p is not *true*. The rearrangement argument may then proceed exactly as before.

A more subtle way to deny (P1) is to claim that even though o exists, there is no such fact as [o exists]. For instance, one might deny that there are 'haecceistic facts' about particular individuals such as this one. Audi (2012b, pp. 700–701) adopts a different tactic, and argues that there are no facts about existence in general to be grounded, since there is no such property as *being an existent thing* to be a constituent of such facts.

I have two replies. The first is to note that I do not (or at least need not) assume that *being an existent thing* is a genuine property that is a constituent of the fact [o exists]. I need only assume that for o to exist is for there to be something that is o; I need not also assume that for something to be o involves the instantiation of a distinctive property of some kind by o. The second reply is to again note that even if there is no such fact as [o exists], presumably there is such a *proposition* as the one expressed by ordinary utterances of "o exists" that the argument may be run with instead, in just the manner I described before.[19]

Yet another way to deny (P1) is to claim that the existence of an ordinary composite is grounded not in the arrangement of its parts, but rather in facts of some other sort. One extreme extrinsic way to deny this is to claim that every fact (and thus every fact about the existence of an ordinary composite) either is or is ultimately grounded in features of the *entire universe as a whole*. That is, one may

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[17] For discussion of the motivations of 'reconciliatory' compositional nihilism and their varieties, see van Inwagen (1990, ch. 10–11), Cameron (2008), Bennett (2009), Williams (2012), and Sider (2013).

[18] An alternative view would take the fact that p is true to be grounded in some arrangement of the as plus various facts about the representational properties of *p*. Since these latter facts will (presumably) remain fixed throughout the scenario of rearrangement, adopting this view will make no substantive difference to the case at hand.

[19] Elsewhere, Audi argues that although there are facts about the truth of particular propositions, these facts are not grounded. If Audi is correct, then one cannot reformulate the rearrangement argument in terms of propositions, as I have claimed. According to Audi, the fact that p is true *just is* the conjunctive fact that (*i*) p corresponds to a worldly state-of-affairs and (*ii*) this state-of-affairs obtains, and "where there is identity, there is no grounding" (2012a, pp. 16–17). However, Audi's argument is not valid. At best, it follows that the fact that p is true is not grounded in *the conjunctive fact* that these two conditions hold. It does not follow that the fact that p is true is not grounded in *anything at all*. In particular, presumably if Audi is correct that this is a conjunctive fact, it is grounded in *its conjuncts*, as conjunctive facts are grounded in general (recall our discussion in §2; also cf. Audi 2012b, fn. 23). If so, then the arguments in the past two paragraphs apply.

reject (P1) by endorsing a view similar to a much-discussed one that Schaffer (2010a, b) calls **priority monism**.

Rather than attempting to appraise the truth of priority monism, I wish to take a different approach. I instead argue that even if priority monism were true, there is no non-objectionable way to appeal to priority monism in order to evade the rearrangement argument. Although priority monism is an exotic thesis to consider, it will be instructive: less extrinsic strategies for resisting (P1), it turns out, are subject to similar difficulties.

The priority monist claims there to be but one ontologically independent (actual, concrete) entity: the unique composite that has every other (actual, concrete) entity as a part. Call this entity "u". In order to reject (P1), the priority monist has one option available. The priority monist must claim that there is at least one obtaining fact with the following two features: (*i*) it specifies some relation that u bears to *that particular ontologically dependent individual*, and (*ii*) is **fundamental** (i.e., not itself grounded in further facts). Why? The remaining two options—to either take [o exists] to be grounded only in **derivative** (i.e., non-fundamental) facts, or else grounded in facts that do not specify how u relates to o in particular—fail to evade Theseus-style scenarios. Suppose first that Γ contains only facts that do not involve o. Since one can construct the scenario so that these are the same at end of the rearrangement as they are at the beginning (e.g., by taking care to locate o_R in the later epoch exactly where o once was in the earlier epoch), a difference in whether o exists at the beginning and end of the rearrangement cannot be accounted for by a difference in facts such as these. But these o-involving facts must also be fundamental. Suppose one were to account for the difference in whether o exists at the beginning and end of the rearrangement by noting that o is composed of the as at the beginning of the rearrangement but not at the end. If this compositional fact were derivative, it would be as much in need of a necessitating ground, one that (by reasoning as above) must include facts that involve o. Since the o-involving fact must be fundamental, and if priority monism is true only if every fundamental fact is a fact about the features of u, then this fundamental fact in particular must concern how u relates to o in particular.

However, at least two difficulties emerge if the monistic necessitarian is forced to reject (P1) in this manner. The first is that it opens her up to all manner of objections for positing a massive amount of antecedently undiscovered fundamental facts concerning every tree, rock, bridge, lizard, or other ordinary composite subject to a scenario of rearrangement. Some would reject such posits by appealing to the principle that no ontologically dependent entity be involved in any fundamental fact; though controversial, the principle is widely held.[20] Less controversially, rejecting (P1) may be *consistent* with priority monism, but seems to undermine one of its main *motivations*: namely, that it requires only a relatively sparse inventory of entities in order to characterize what reality is like at the fundamental level. Finally, even if there is nothing *intrinsically* objectionable with rejecting (P1) in this

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[20] Bennett (2011), Sider (2012), deRosset (2013a), and Cameron (forthcoming) all endorse principles that entail that there are no fundamental facts about non-fundamental entities (which, presumably, would extend to ontologically dependent entities).

manner, it is a count against the monistic necessitarianism *relative to the contingentist*, who need not posit this immense array of fundamental facts.

The second difficulty is this. Suppose the monistic necessitarian grounds the existence of *o* in the fact that *o* is part of *u*. Then the monist necessitarian is committed to saying that *o* plays a role in grounding its *own* existence. But this I find incoherent. It seems no more plausible to say that *o* plays a role in *causing* its own existence in virtue of how I interacted with *o* prior to pushing the bread, tuna, and tomatoes together, than it is to say that *o* plays a role in *grounding* its own existence in virtue of how *u* relates to *o* at lower levels of metaphysical fundamentality. (If anything, it is the reverse: what makes *o* capable of bearing relationships to other entities is at least partly the fact that *o* exists, not *vice versa*.) Just as *o* can only be caused to exist by *temporally prior* entities, *o* can only be grounded in facts about *more fundamental* entities. But no entity is more fundamental than itself. Thus the monistic necessitarian cannot evade (P1) by asserting that the existence of *o* is grounded in facts involving *o* itself.

So far I have only raised difficulties for the monistic necessitarian's response to (P1). Yet essentially the same problems afflict other necessitarian attempts to deny (P1).

First, one might take the existence of *o* to be at least partially grounded in *fundamental facts involving o*. There are a number of options available: perhaps the partial ground is the fact that the *a*s compose *o*, or the fact that the *a*s are exactly co-located with *o*, or the fact that the *a*s instantiate the 'individual form' of *o*. But all these options are subject to the same two objections the monistic necessitarian faced: they posit an immense array of fundamental facts that the contingentist can do without, and entail that a particular could play a role in grounding its own existence.

Second, one might take the existence of *o* to be at least partially grounded in *derivative facts involving o*. However, this maneuver not only fails to avoid *o* 'bootstrapping into being', but has the additional problem that this new derivative fact about *o* is as in want for necessitating grounds as the fact that *o* exists, while merely forestalling the very same unattractive options when faced with Theseus-style scenarios. For instance, a difference in whether the *a*s compose *o* at the beginning and end of the rearrangement cannot be accounted for by a difference in fundamental facts about how *o* is related to the *a*s (since this involves illicit 'bootstrapping into being"), nor in fundamental facts that do not involve *o* at all (since these facts are preserved throughout the scenario).

Third, and building on the previous observation, taking the sought-after partial ground to be *any facts not involving o* will be a wash. For example, if the existence of *o* is taken to be grounded in the arrangement of the *a*s plus the fact the *a*s compose *a tuna sandwich*, this supplemented ground for the existence of *o* faces scenarios of rearrangement no less than one gets from taking its existence to be grounded in the arrangement of the *a*s alone.

What about facts about how *o* *originated* in the relevant scenario? Although there has been extensive discussion of what Thomas McKay (1986) calls "constitutional sufficiency principles", which aim to specify what is sufficient for a particular composite to exist by appeal to facts regarding its material origin, a growing

consensus has emerged that they succumb variations on Theseus-style reasoning.[21] Facts that specify the *time and place* at which o happens to originate do not necessitate its existence. (Suppose it originates at time t. Then consider a scenario of rearrangement that begins with an *earlier* time than t, but then *concludes* at t. Of course, one might respond that o's exact time and place of origin is essential to it, but this is *prima facie* implausible.) Nor do facts that specify the *manner* in which o originated necessitate its existence. (Suppose o originates due to the creative intentions and recipe of a particular chef. Then consider a scenario of rearrangement in which the chef prepares o_R from the same recipe and with the same creative intentions.) Nor do facts that specify *how many* sandwiches originated before o did. (Suppose that o was preceded by an infinite number of similarly constructed sandwiches—or, if this is impossible for sandwiches, for ordinary composites of another sort. Then o_R would have been preceded by the same number of sandwiches as o.) Even if there is no general argument against all conceivable principles of constitutional sufficiency, the continual failure to devise a true one has led Guy Rohrbaugh and Louis deRosset, among many others, to conclude that the project is "deeply problematic" (2006, p. 458). It would likewise be deeply problematic for the necessitarian were she to commit herself to supplying such a principle.

This completes my defense of (P1). I have not attempted to argue that the existence of an ordinary composite *must* be grounded in the arrangement of its parts, nor that there is no plausible strategy for rejecting this claim while maintaining necessitarianism. However, what I have shown is that the prospects of responding to the rearrangement argument on this basis look grim.

3.2 In Defense of (P2)

What about (P2), which entails that o does not exist at the end of a scenario of rearrangement? An argument in defense of this claim can be constructed as follows. (Recall from the previous subsection that o is composed of $a_1, a_2, \ldots$ at the start of the scenario, that o_n is composed of $b_1, b_1, \ldots$ after the gradual replacement of $a_1, a_2, \ldots$ and before its annihilation, and that o_R is composed of $a_1, a_2, \ldots$ as they are reassembled.)

The assured destruction argument in defense of (P2):

(P2a) $o, o_1, o_2, \ldots, o_n$, and o_R all exist.
(P2b) $o, o_1, o_2, \ldots, o_n$ are pairwise identical.
(P2c) o_n is distinct from o_R.
(P2d)   If o is identical to o_n, and o_n is distinct from o_R, then o is distinct from o_R.
(P2e)   If o exists at the end of the sandwich of Theseus scenario, then o is distinct from o_R.
Thus: o does not exist at the end of the sandwich of Theseus scenario.

Call this **the assured destruction argument.** The necessitarian who rejects its conclusion must commit to at least one extremely implausible claim about the

metaphysics of ordinary composites. One who denies (P2a) must claim either that none of $o, o_1, o_2, \ldots, o_n$, and o_R exist, or claim that the loss of just one individual as a part (even if replaced with a qualitative duplicate that retains all internal causal and spatial relations) would make the difference as to whether any given ordinary composite exists. One who denies (P2b) yet rejects counterpart theory—which does not help escape (P2) anyway, or so I argue below—must claim either that at least one of $o, o_1, o_2, \ldots, o_n$, goes out of existence when a qualitatively duplicate part is replaced, or claim that they all exactly coincide with o_n, or claim that it is impossible for ordinary composites to persist through the exchange of a single part for a qualitative duplicate. One who denies (P2c) must claim that o_n is not only wholly located at one sandwich-shaped region, but *also* wholly located at the sandwich-shaped region that o_R is wholly located at. One who denies (P2d) must claim that the relation of identity fails to be both symmetric and transitive.[22] And finally, one who denies (P2e) must claim, regardless of whether o is identical to o_n or coincident with it, that even if one vaporizes everything in the sandwich-filled region o occupies, o would survive and come to be exactly coincident with o_R. I take it that it would be a serious cost for necessitarianism if it were forced into any of these claims, which are either *ad hoc* or intrinsically implausible (or both), and at any rate are not commitments that the contingentist is forced to take.

An initially promising alternative strategy for the necessitarian is to instead appeal to *temporal counterpart theory*.[23] On this view, ordinary composites are 'stages' bound to a single instant, yet exist and have properties at different times in virtue of having counterparts at earlier or later instants with those properties. The counterparts of o at a time t, if it has any, are those stages that exemplify the highest degree of comparative overall similarity to o at t, where the respects of similarity and how they are weighted depends on how o is referred to or described in contexts in which the relevant *de re* ascriptions are evaluated.[24] Appealing to temporal counterpart theory can help one evade the assured destruction argument in at least two ways. First, one may reject (P2b) by noting that even though o has o_1 as a counterpart, o_1 has o_2 as a counterpart, …, it does not follow that o has o_n as a counterpart. Second, one may reject (P2d) by claiming that o has *both* o_n and o_R as counterparts during the penultimate epoch, and that o_R is the counterpart of o in the last epoch.

However, there is a serious difficulty with the necessitarian appealing to this response. Recall that necessitarianism is *itself* a temporal *de re* statement; if so, the thesis must be reformulated to fit the counterpart-theoretic framework, and the reformulation itself must be true across every relevant context. Say that $[…x…]$, a fact that obtains at t, has $[…y…]$ as a **counterpart fact** at time t^* relative to context

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[22] Suppose for *reductio* that $o = o_n$, that $o_n \neq o_R$, and yet that $o = o_R$. Since identity is symmetric, $o = o_n$ entails $o_n = o$. But since identity is transitive, $o_n = o$ and $o = o_R$ jointly entail $o_n = o_R$ (contradiction).

[23] See Sider (2001) for defense.

[24] Or at least, according to the version of the view I will consider here. Variants that postulate other semantic or pragmatic mechanisms for selecting from the multiplicity of relevant counterpart relations, face variants of the problem I raise for the version I discuss in the text, so I set them aside here. Thanks to Ghislain Guigon for discussion about this point.

C iff (*i*) x has y as a counterpart at t^* relative to C, (*ii*) for any open formula 'φ', […x…] is identical to the fact that $\varphi(x)$ iff […y…] is identical to the fact that $\varphi(y)$, and (*iii*) […y…] obtains at t^*. Then necessitarianism is true relative to C only if the following thesis is true at C as well:

> **Grounding necessitarianism (counterpart-theoretic)**
> For any time t, if [p] is grounded in Γ at t, then for any time t^*, if the facts in Γ have counterpart facts at t^*, then [p] has a counterpart fact at t^*.

Now, the necessitarian cannot say that this thesis is true with respect to *all* contexts, no matter how disjunctive and gerrymandered the kind of comparative overall similarity selected as relevant by that context. It is too easy to generate contexts in which the arrangement of the as have counterpart facts at a later time, yet [o exists] does not. (For instance, just allow C to be the highly unselective context that takes the xs to have the ys as counterparts at a later time t^* iff there are no tuna sandwiches and the ys are any arbitrary group of things that exist at t^* we please.) Yet if counterpart-theoretic necessitarianism is only required to be true relative to *some* contexts, presumably the restricted class at least includes *ordinarily salient* contexts. But here again, it is not hard to find contexts in which the thesis is false. (For instance, suppose that o, o_n, and o_R are human bodies rather than tuna sandwiches, and let C be a context that requires there to be a high degree of psychological continuity and connectedness between o and its later counterparts. Then even though o_n counts as a counterpart of o in the penultimate epoch of the scenario of rearrangement relative to C, o_R does not count as a counterpart of o in the last epoch of the scenario relative to C, since o_R lacks the relevant psychological continuity and connectedness with o.) But if counterpart-theoretic necessitarianism cannot even be required to be true in all ordinarily salient contexts, then it is unclear how the class of contexts can be delineated in a manner that is neither *ad hoc* nor falsifies the view. It is a challenge, at any rate, that the contingentist completely evades.

This completes my defense of (P1) and (P2). Since (P1) and (P2) entail that necessitarianism is false, I conclude that necessitarianism is false. In the following section, I consider another case of grounding without necessitarianism.

4 Against Grounding Necessitarianism: Restricted Accidental Generalizations

A longstanding philosophical puzzle is to identify which facts could serve to ground the countless *general facts* about the world. (By a **general fact**, I include 'positive' facts with the logical form [$\forall x\varphi$], as well as 'negative' facts that take the logical form [$\neg\exists x\varphi$], with "φ" an open formula in which "x" occurs unbound; however, I will focus on positive general facts throughout.) The primary source of this puzzlement is that any general fact that only *contingently* obtains is neither logically entailed, nor metaphysically necessitated, by any collection of non-general facts about the particular individuals that happen to fall under it. Let F be the property *being less than 30 billion years old*, and let $a, b, \ldots$ exhaustively list everything there is in $w_@$ (i.e., the actual world). Then even the unfathomably large collection of facts [Fa], [Fb], … fails to necessitate that there is nothing besides a, b, …, and

thus fails to necessitate that there is nothing besides a, b, … that does not have F.[25] (To convince yourself, consider a world just like $w_@$, yet that contains a single particle older than 30 billion years.) But it would be bizarre to say that $[\forall x Fx]$ is not grounded *at all*. Yet if every fact is necessitated by the facts that ground it, what could serve as its ground? Thus the puzzle.[26]

In this section, I argue that the grounding of a specific class of general facts poses a problem for necessitarianism. Before delving into the details, I should note that I am not the first to argue that general facts pose this trouble. What is novel about my approach is *which class* of general facts it focuses upon. Anti-necessitarians, reflecting on instances of the puzzle above, have typically focused solely upon what I call **unrestrictedly general facts**—facts with the form $[\forall x Fx]$, which intuitively concern *absolutely everything*—and argue that at least some are grounded in, but not necessitated by, the collection of their factual instances.[27] Although I am sympathetic to this spin on argument, these critics overlook a stronger argument that instead concentrates upon what I call **restrictedly general facts**—facts with the form $[\forall x(Fx \rightarrow Gx)]$ which intuitively concern only the restricted domain of things that have F.[28] In what follows I argue that restrictedly general facts pose a tougher difficulty for necessitarians than unrestrictedly general facts because the former are resistant to the standard countermeasures that necessitarians use to deal with the latter.

4.1 The *w*-Instance Proposal

The restrictedly general facts I focus upon are more colloquially known by philosophers as *accidental generalizations*. For our purposes, let us say that $[\forall x(Fx \rightarrow Gx)]$ is an **accidental generalization** iff it obtains in $w_@$, yet fails to obtain in a world that both has the same laws of nature as $w_@$ and contains an F.[29] There is an immense number of such facts regarding myriad kinds of things. Here are just three:

(3E) $[\forall x(x$ is a swan in Switzerland $\rightarrow x$ is white$)]$
(4E) $[\forall x(x$ is a tree on Notre Dame's campus $\rightarrow x$ is less than 105 feet tall$)]$

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[25] I will assume the falsity of **necessitism:** the view that it is necessarily the case that everything necessarily exists, *pace* Williamson (1998) and Linsky and Zalta (1994).

[26] For proto-instances of this puzzle, see Russell (1985) and Wittgenstein (1990).

[27] For example, see Bricker (2006) and Leuenberger (2013).

[28] An alternative take on the logical form of restrictedly general facts is that they are expressed with sentences generated by prefixing an open formula with a restricted quantifier expression, i.e. sentences like "$[\forall x: Fx]Gx$" (the brackets are standard for restricted quantifier notation, not meant here to refer to facts). One may work with this alternative view instead without affecting the arguments to come.

[29] The second clause corrects a problem with how 'accidental generalization' is defined by Chudnoff (manuscript), who independently offers these as counterexamples. If F, and thus any fact that has F as a constituent, does not exist at worlds in which F is not instantiated, then if this second clause is not included, non-accidental generalizations such as $[\forall x(Fx \rightarrow \neg\neg Fx)]$ do not obtain, since they do not exist, at nomologically possible worlds in which *nothing* is F. I explain why I find Chudnoff's use of accidental generalizations against necessitarianism unconvincing in fn. 33. Heil (2003) and Mellor (2003) argue that accidental generalizations undermine *truthmaker* necessitarianism; however, neither author considers the full range of responses nor do they extend their arguments to grounding necessitarianism.

(5E) [∀x(x is a solid gold sphere → x is less than a kilometer in diameter)]

The necessitarian's difficulty is the following. Suppose $[\forall x(Fx \rightarrow Gx)]$ is an accidental generalization that obtains at $w_@$. If a, b, … are exactly the things that are F at $w_@$, then say that the collection of facts $[Ga]$, $[Gb]$ … comprise the **instances** of $[\forall x(Fx \rightarrow Gx)]$ at $w_@$. Now, assume momentarily that this accidental generalization exists and is grounded at $w_@$. Then a natural proposal is to take it to be grounded in the collection of all its instances at $w_@$. Call this **the *w*-instance proposal**.[30] (Note that this leaves open whether this fact is also grounded in *other* collections of facts.) If this proposal is true, then necessitarianism is false. Take (3E): although this accidental generalization is grounded in its instances at $w_@$, its instances also all obtain at a world, w, that is just like $w_@$ except that I have smuggled a bevy of black swans from Australia into Geneva, and thus they all obtain at a world in which not every swan in Switzerland is white.

Why believe that the *w*-instance proposal *is* true? My defense proceeds in two steps. First, I will motivate the *w*-instance proposal against several initial objections. Second, I will argue against rival proposals designed to be necessitarian-friendly, and against those who reject my presupposition that accidental generalizations not only exist but are also grounded. Since these exhaust the options, I conclude that the *w*-instance proposal is true and necessitarianism is false.

Initial support for the *w*-instance proposal derives from what may be called *the metaphysical primacy of the particular to the general*. Happenstance patterns of regularity seem neither brute nor inexplicable; rather, they seem to derive from particular facts about the individual swans, trees, and chunks of gold they concern. Assuming these facts are ultimately grounded in particular facts about fundamental entities, the *w*-instance proposal preserves this natural thought about what anchors reality at rock bottom.[31] A helpful way to test this intuition is to imagine which facts would be minimally sufficient for a God to decree in order to create the rest of reality from the ground up. In order to thwart the temptation of His creatures towards false idolatry and excessive greed, suppose the God decides to make it the case that every solid gold sphere (call this property "*F*") be less than a kilometer in diameter (call this property "*G*"). The God considers the following two divine directives:

(1D) God first decrees that a, b, … be F
      Then for every x that is F, God decrees that x also be G

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[30] For reasons I get into later in fn. 38, I actually endorse what could be called **the augmented *w*-instance proposal**, which adds as a partial ground the second-order fact that $[Ga]$, $[Gb]$, … are instances of $[\forall x(Fx \rightarrow Gx)]$. However, the difference between the two will not matter for what follows.

[31] The intuition is expressed most audaciously in Lewis's classic statement of *Humean supervenience*: "It is the doctrine that all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another […] we have an arrangement of qualities. And that is all. There is no difference without a difference in qualities" (1986, pp. ix–x). However, I wish to remain neutral about whether it extends *beyond* accidental generalizations, which *kinds of properties* appear in the fundamental facts (for Lewis, these "need nothing bigger than a point at which to be instantiated"; *ibid.*, p. xi), and which kinds of individuals these properties are ascribed *to*.

(2D)   God first decrees that *a*, *b*, … be *F*. Then God decrees that *a*, *b*, … be the *only* things that are *F*. Then, finally, for every *x* that is *F*, God decrees that *x* also be *G*

To make $[\forall x(Fx \rightarrow Gx)]$ obtain, all the God has to do is decree that *a* be *F*, that *b* be *F*, and so forth—*and then just stop*—and to then decree that *a* be *G*, that *b* be *G*, and so forth—and again, *then just stop*. It is of course true that if the God acts in this manner, this will also be the case that every *F* is *G*. Given the pattern in the God's decrees creating particular matters of fact, the God does not need to issue a special *additional* decree to this effect. The second decree listed in (2D) thus seems to be entirely superfluous to guaranteeing a minimally complete base. Since *every* fact is grounded in a collection of facts from the minimally complete base, the second decree listed in (2D) therefore also seems to be entirely superfluous to grounding $[\forall x(Fx \rightarrow Gx)]$.

It is tempting to infer that the God's acting in accordance with (1D) somehow implicitly relies on its also acting in accordance with (2D). The temptation begins with a correct observation: that $[Ga]$, $[Gb]$, … do not ground $[\forall x(Fx \rightarrow Gx)]$ unless *a*, *b*, … exhaust the things that are *F*. The temptation is to then infer that $[Ga]$, $[Gb]$, … therefore must be supplemented by the fact that *a*, *b*, and so forth *do* exhaust all the things that are *F* in order to yield the full ground for $[\forall x(Fx \rightarrow Gx)]$. So even though the God's acting in accordance with (1D) *necessitates* that this holds (so the thought goes), the God must act in accordance with (2D) in order to genuinely *make it the case*.

Tempting as it is, this inference should be resisted. First, it fails in corresponding cases in which a collection of events *causally* makes an accidental generalization the case. Suppose that there are two lamps in my office. I can causally make it the case—all by myself—that every lamp in my office is on by flicking on one lamp and then the other—*and then just stop*—without *also* making it the case that they are the only lamps in my office. (My officemate was causally responsible for this.) But if the inference fails when a collection of events *causally* makes some accidental generalization the case, it is hard to see why it would be valid when a collection of facts *non-causally* makes an accidental generalization the case without substantive further argument. Second, it does not follow in general that if Γ does not ground $[p]$ unless the facts in Γ have a certain feature, then they must be supplemented by *the fact that these facts have that feature* to yield a ground for $[p]$. For instance, since grounding is factive, a trivial necessary condition for $[p]$ and $[q]$ to partially ground $[p \wedge q]$ is that $[\neg p]$ and $[\neg q]$ *not* obtain. But it does not follow that $[p]$ and $[q]$ must be supplemented with a further fact, i.e., $[[\neg p]$ and $[\neg q]$ do not obtain], to yield a ground for $[p \wedge q]$: $[p]$ and $[q]$ suffice.

So far I have only argued that the *w*-instance proposal is intuitively motivated and defensible. But are there alternatives to the *w*-instance proposal that are not only equally attractive but also compatible with necessitarianism? In the next section, I will argue that the answer is no.

4.2 Alternatives to the *w*-Instance Proposal

Rosen ([2010](#), §8) suggests three strategies that the necessitarian can pick and choose between when grappling with general facts. The first two strategies certainly will not help deal with accidental generalizations. The first is to claim that $[\forall x(Fx \rightarrow Gx)]$ is grounded in relationships that hold between F and G in virtue of the *essential nature* of the two properties, such as when the nature of triangularity is plausibly said to ground the fact that triangles all have three angles (*ibid.*, p. 120). Call this **the essentialist proposal**. The second is to claim that $[\forall x(Fx \rightarrow Gx)]$ is grounded in facts about the *laws of nature* linking F with G, such as when Newton's law of gravitation is plausibly said to (or at least would plausibly be said to, had it obtained) ground the fact that massive bodies attract each with a force inversely proportional to the square of their distance (*ibid.*, pp. 119–120). Call this **the nomic proposal**. Even ignoring the implausibility of saying that there *are* essential or nomological relationships between the properties described in (3E)–(5E), the problem with both of the proposals is that the postulated grounds would obtain at all nomologically possible worlds at which the relevant properties are instantiated. So if necessitarianism were true, the accidental generalizations these facts ground would obtain at all nomologically possible worlds as well. But then (3E)–(5E) would not be *accidental* generalizations. Both proposals are therefore non-starters.

The third strategy Rosen proposes is the more promising one of positing as fundamental what Armstrong ([1997](#)) famously calls a *totality fact*. Philosophers have called many different kinds of facts "totality facts"; for the moment, by "totality fact" I simply mean a specific kind of general fact. Just as one should distinguish between restricted and unrestricted general facts, one should also distinguish between restricted and unrestricted totality facts. An **unrestricted totality fact** is one that takes the logical form $[\forall x(x = a \lor x = b \lor \ldots)]$, where $a, b, \ldots$ are everything there is at a given world w, while a **restricted totality fact** takes the logical form $[\forall x(Fx \rightarrow (x = a \lor x = b \lor \ldots))]$, where $a, b, \ldots$ are everything that is F at w. To make the discussion more compact, some terminology: let "$[\Omega(w)]$" and "$[\Omega_F(w)]$" pick out unrestricted and restricted totality facts, respectively.

As Rosen notes, *unrestricted* general facts pose no difficulty for necessitarianism if each is grounded in its instances at a world w plus an *unrestricted* totality fact, $[\Omega(w)]$. If $a, b, \ldots$ are all F, and $a, b, \ldots$ are everything, then this collection of facts necessitates that everything is F.[32] However, this proposal—call it **the unrestricted totality fact proposal**—fails to work with accidental generalizations. Let F be the property *being a tree on Notre Dame's campus*, and let G be the property *being less than 105 feet tall*. Suppose $[Ga]$, $[Gb]$, ... obtain for everything that is F. And finally, suppose that $[Ga]$, $[Gb]$, ..., along with $[\Omega(w_@)]$, together ground $[\forall x(Fx \rightarrow Gx)]$ at $w_@$. Then $[\forall x(Fx \rightarrow Gx)]$ still fails to be necessitated by its grounds. For let w be a world just like $w_@$, except that Notre Dame has annexed the Sequoia National Forest. Since everything that is F and G at $w_@$ is also F and G at w, it follows that $[Ga]$, $[Gb]$, ..., all obtain at w. Furthermore, $[\Omega(w_@)]$ obtains at w as well. For the exact same inventory of things exist at $w_@$ and w. The only difference is that there are things that are F at w but not in $w_@$ (namely, the trees in

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[32] Rosen ([2010](#), pp. 120–121); cf. Trogdon ([2013a](#), §4).

the Sequoia National Forest), and facts that are obtain at $w_@$ but do not at w (namely, the fact that every F is G). So it follows that $[Ga]$, $[Gb]$, …, along with $[\Omega(w_@)]$, all obtain at w but not $[\forall x(Fx \rightarrow Gx)]$. Thus supplementing the instances of $[\forall x(Fx \rightarrow Gx)]$ with an *unrestricted* totality fact does not bridge the gap between grounding and necessitation.

A natural proposal is to claim that an accidental generalization is grounded in its instances plus a *restricted* totality fact, $[\Omega_F(w_@)]$. This is the **restricted totality fact proposal**. There are many implementations of this proposal, each differentiated by which property F is taken to be. I will focus on perhaps the most natural implementation: namely, to take F to be the property the accidental generalization requiring a necessitating ground is restricted by. Consider (3E); let F be the property *being a swan in Switzerland* and let G be the property *being white*. Then if a, b, … are only the things that are F, one may take the ground of $[\forall x(Fx \rightarrow Gx)]$ to be the collection of facts consisting of $[Ga]$, $[Gb]$, … plus the fact that a, b, … are, in fact, the only Fs. However, there is an immediate problem with this implementation: the fact that these are the only things that are F is *itself* an accidental generalization, one in need of a necessitating ground. (I take it to be undesirable in the extreme to say that it is a *fundamental* fact that these particular individuals are the only swans in Switzerland, and even more so—if the proposal is generalized—to say the same for accidental generalizations about trees, tables, cats, etc.) This proposal thus needs a necessitating ground for $[\Omega_F(w_@)]$ in order to provide a necessitating ground for $[\forall x(Fx \rightarrow Gx)]$.

However, the one obvious way to do so—that does not simply press the need another step back—problematically reverts back to the *unrestricted* totality fact proposal. That is, one may say that $[\Omega_F(w_@)]$ is grounded in the immense collection of facts specifying which things are F, which things are *not* F, and which things there are altogether. Although this collection necessitates $[\forall x(Fx \rightarrow Gx)]$, it does so only by virtue of introducing facts that seem entirely irrelevant to making it the case. Facts about the Eiffel Tower, about each particular zebra in Zaire, and about pieces of rock buried deep within the Moon's surface intuitively play no role at all in making it the case that every swan in Switzerland is white. (Here I assume that partial grounding is *transitive*—i.e., that what partially grounds what partially grounds an accidental generalization also partially grounds that accidental generalization. More on this claim momentarily.) Moreover, the fact that the Eiffel Tower is not a swan in Switzerland *itself* requires a necessitating ground. (I take it that there are no fundamental facts about the Eiffel Tower, let alone about which properties it *lacks*.) Presumably, the necessitating grounds of *this* fact have to do with facts about the essential nature of iron statues; but again, *these* facts intuitively play no role whatsoever—let alone an *essential* role—in making it the case that every Swiss swan is white. The only facts that seem to play an essential role in making this accidental generalization the case are facts about *swans*.[33]

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[33] My criticism of the restricted totality fact proposal thus differs from that in Chudnoff (2013, manuscript). First, Chudnoff argues that a restricted totality fact is *explanatorily* irrelevant to what makes an accidental generalization the case, and concludes from this that the former fact is not a partial ground for the latter fact. However, as I will argue in §5.4, even if the restricted totality fact were explanatorily relevant, it would not follow that it partially grounds the fact at issue. Second, Chudnoff's tests for

What should the proponent of the restricted totality fact say in response? First, consider the property *being either white or not a swan in Switzerland*. One response available is to note that the *unrestricted* general fact that everything has this property is *logically equivalent* to the fact that every swan in Switzerland is white. Since it is reasonable to say that facts about the Eiffel Tower partially ground this unrestricted general fact—so the response goes—it is also reasonable to say that facts about the Eiffel Tower partially ground the accidental generalization it is logically equivalent to.

The problem with this response is that the inference is invalid. Even if every accidental generalization is logically equivalent to an unrestrictedly general fact that is grounded in Γ, it does not follow that the accidental generalization is grounded in Γ too. Logically equivalent facts may differ with respect to their grounds. For instance, $[p]$ seems to at least partially ground logically complex facts such as $[\neg\neg p]$ and $[p \wedge [p \vee \neg p]]$ that it is logically equivalent to, but $[p]$ does not even partially ground itself. There might be some *other* reason to that accidental generalization has the same grounds as its unrestricted correspondents, but to claim that logically equivalent facts have the same ground will not do.

A second response is to reject my assumption that partial grounding is *transitive*. However, this assumption, although it makes the objection more vivid, is inessential for at least two reasons. First, it seems just as implausible to say that facts about the Eiffel Tower are essential to partially grounding the fact that a, b, … exhaust the swans in Switzerland as it is to say that that facts about the Eiffel Tower are essential to partially grounding the fact that every swan in Switzerland is white. Second, the proposal fails even if one grants the only extant framework capable of explaining failures of partial grounding, due to Jonathan Schaffer ([2012a](#)). In Schaffer's framework, the relation of grounding is *doubly contrastive*: it relates not just $[p]$ and $[q]$, but rather takes the following form:

$[p]$ rather than $[p^*]$ is grounded in $[q]$ rather than $[q^*]$,

where $[p^*]$ and $[q^*]$ are non-obtaining alternatives to $[p]$ and $[q]$ respectively. However, as Schaffer argues, even though failures of transitivity occur when the contrast facts (usually left implicit) are shifted when grounding relations are chained together, partial grounding remains transitive when the contrast facts are held *fixed*. So, suppose a and b are white Swiss swans, and that c is a white polar bear. And suppose one said $[\forall x(Fx \rightarrow Gx)]$ rather than $[\neg\forall x(Fx \rightarrow Gx)]$ is partially grounded in $[\forall x(Fx \rightarrow (x = a \vee x = b))]$ rather than $[\neg\forall x(Fx \rightarrow (x = a \vee x = b))]$. Granted, it does seem that $[\forall x(Fx \rightarrow (x = a \vee x = b))]$ rather than $[\neg\forall x(Fx \rightarrow (x = a \vee$

Footnote 33 continued

explanatorily irrelevance leave some implementations of the restricted totality fact proposal unscathed. Consider $[\#(F) = n]$, i.e. the restricted totality fact that there are exactly n things that are F. This fact is not *vacuous* in Chudnoff's sense: $[\forall x(Fx \rightarrow Gx)]$ does not contain information about how many things are F, nor *vice versa*. Moreover, $[\#(F) = n]$ is no more *unnatural* than $[\forall x(Fx \rightarrow Gx)]$ is: that the collection of Swiss swans has n members seems no more heterogeneous and disjunctive that that every member of the collection is white. My objection to the restricted totality proposal outperforms Chudnoff's because it applies to this implementation of the proposal as well: presumably, $[\#(F) = n]$ itself needs a necessitating ground, but the only obvious candidates either require necessitating grounds as well, or introduce facts that seem entirely irrelevant to grounding the accidental generalization we began with.

$x = b$))] is partially grounded in the fact that c is a polar bear rather than a Swiss swan. But it seems false to say that [$\forall x(Fx \rightarrow Gx)$] rather than [$\neg \forall x(Fx \rightarrow Gx)$] is partially grounded in the fact that c is a polar bear rather than a Swiss swan. c is, recall, *white*. So c's being a polar bear rather than not makes no difference to whether every swan in Switzerland is white. Regardless of whether c was a polar bear or a Swiss swan, every swan in Switzerland would still have been white. Thus even within Schaffer's doubly contrastive framework, which retains the transitivity of partial grounding under *fixed* contrasts, my objection stands.

A final response is to claim that even though restricted totality facts *necessarily co-obtain* with general facts of the form [$\forall x(Fx \rightarrow (x = a \vee x = b \vee \ldots))$], they are distinct. That is, one may posit a new fundamental atomic fact, [$\text{Tot}_F(\ldots)$], for each accidental generalization, where "Tot" picks out a primitive property expressible by saying that the named entities 'total' the things that are F. This is an extension of a thought due to David Armstrong (1997, ch. 13) and Kit Fine (2012, §7), who both argue that a single such fact, where F is the property *being everything there is*, should be posited to help ground the truth of unrestricted totality facts.

This final response is problematic as well. The first problem has to do with its motivation. Do we have any reason to believe that there are such fundamental facts? As both of Armstrong's and Fine's arguments for positing this *sui generis* fundamental fact both take the truth of necessitarianism as a premise, one cannot claim any *antecedent* justification for doing so. The second problem is that in order to constitute a comprehensive response, one must extend the proposal to every accidental generalization. This results in an absolutely immense increase in primitive ideology—one reductively unanalyzable Tot-property for accidental generalizations concerning swans in Switzerland, another for accidental generalizations concerning gold spheres, and so forth—as well as an immense increase in fundamental facts about the holding of each of these patterns. The contingentist easily avoids such profligacy by opting for the w-instance proposal instead.

5 In Defense of Grounding Contingentism

In §3 and §4, I considered a number of *prima facie* implausible ways to escape the purported cases of grounding without necessitation (e.g., claim that ordinary composites cannot survive replacement of a single part). Of course, the dogged necessitarian may respond simply by claiming that the case for necessitarianism is strong enough that one has no other choice but to pick which bullet to bite. In this section, I will show that the best arguments for necessitarian do not succeed.

5.1 The Supplementation Argument

Like *grounding* necessitarianism, the doctrine of **truthmaker necessitarianism**—that a collection of entities makes a proposition true only if their existence necessitates its truth—has become orthodoxy (more about their relationship later:

§6). In a widely cited passage, Armstrong (1997, p. 116, my emphasis) presents the following argument for this thesis:

> If [a] truthmaker for a truth could have failed to make the truth true, then we will surely think that the alleged truthmaker was *insufficient by itself* and requires to be supplemented in some way. A contingently sufficient truthmaker will [make it] true only in circumstances that obtain in this world. But then these circumstances, whatever they are, must be added to give the full truthmaker.

One might similarly argue for grounding necessitarianism in the following way. Suppose that [p] is grounded in, yet not necessitated by, the facts in Γ at some world w. Then there is a class of worlds in which the facts in Γ obtain yet [p] does not; call these **the U-worlds** ("U" for *unsupplemented*). Intuitively, the facts in Γ are insufficient by themselves to ground [p] at w, for one must also include as partial grounds of [p] whatever facts necessitate *that w is not a U-world*. But these facts, along with the facts in Γ, necessitate [p]. And so it goes for every other putative counterexample to grounding necessitarianism. Thus, grounding necessitarianism is true.

This argument—call it **the supplementation argument**—trades on an equivocation in the phrase "the facts in Γ are insufficient by themselves to ground [p]"; once resolved, the argument dissolves. First, "insufficient by itself" could be read *modally*. On this disambiguation, what is said is that the obtaining of all the facts in Γ does not constitute a metaphysically sufficient condition for the obtaining of [p]. But that is just another way of saying that [p] is not *necessitated* by Γ. But to infer that Γ must therefore be supplemented with further facts in order to ground [p] is to assume the truth of grounding necessitarianism. A second way to read "insufficient by itself" is *explanatorily*. On this reading, the facts in Γ *are* sufficient by themselves, by supposition and contrary to what Armstrong asserts. Absent independent reason to believe that they are not, the supplementation argument cannot get off the ground.

5.2 The Divine Decree Argument

Ross Cameron (forthcoming, p. 7, my emphasis) claims that although the following reasoning does not "prove" truthmaker necessitarianism, it suggests that it is "a pretty attractive doctrine":

> The truthmaker thought is that explanation only bottoms out at existence facts: *for God to give a complete plan of the world* He needs only make an inventory of what is to exist. But if necessitarianism is denied this doesn't seem to be the case; I can list everything there is and it still be an open question what is true. […] That goes against the whole spirit of truthmaker theory; explanation stops at what there is—the ontological inventory as it is should not leave the truth-value of any proposition undecided.

One might similarly argue for grounding necessitarianism in the following way. Suppose for *reductio* that it is false. Then to ground every fact, God would have had to do more than command His angels to specify the fundamental facts. Yet this goes against their being the *fundamental* facts—that "explanation stops" only at these. For if there is a derivative fact left undecided by them, there would be something further

requiring explanation that is left unsettled by the fundamental facts, which are supposed to settle every fact. Thus by reductio, grounding necessitarianism follows.

Call this **the divine decree** argument. The problem with this argument is that it invalidly infers grounding necessitarianism from another thesis linking grounding with necessitation that is compatible with grounding contingentism. By speaking of God's angels specifying "an ontological inventory" to "give a *complete* plan of the world" that settles every fact, the argument seems to be putting forth the claim that every fact *globally supervenes* upon the totality of fundamental facts:

> **The global supervenience of every fact on the fundamental facts**
> If w and w^* are any two worlds that are duplicates with respect to which fundamental facts obtain, then w and w^* are duplicates with respect to which facts obtain *simpliciter*.

The argument above (insofar as I can understand it) is sound only if (i) every fact globally supervenes on the fundamental facts and (ii) this wouldn't be so were contingentism true. But even if we waive worries that one might well have with (i), the argument still falters at (ii), which can be seen by reflecting on the cases of grounding without necessitation I offered earlier. For instance, take cases with accidental generalizations: any world differing from our own with respect to whether every swan in Switzerland is white presumably will also differ in whatever fundamental facts are ultimately responsible for this otherworldly swan's being another color. Thus even if contingentism were true, any world differing from our own with respect to whether this accidental generalization holds will differ from our own with respect to some fundamental facts, just as the global supervenience principle requires. Since grounding contingentism is therefore compatible with the global supervenience of every fact on the fundamental facts, there is no direct link from the truth of the second thesis to falsity of the first.

5.3 The Differentiation Argument

An argument often hinted at in literature on the metaphysics of fundamentality is that the truth of grounding necessitarianism is at least part of what differentiates grounding from other relationships of production such as causation or nomological entailment. For instance, here is Gideon Rosen (2010, p. 118):

> [That grounds necessitate] is one respect in which the grounding relation, which is a relation of metaphysical determination, differs from causal and other merely nomic forms of determination. There is a difference between the materialist who holds that facts about phenomenal consciousness are grounded in (hence necessitated by) the neurophysiological facts directly, and the dualist who think that facts about the brain cause or generate conscious states according to contingent causal laws.

Thus one might argue that if [p] were not necessitated by Γ, one cannot say what differentiates materialism from emergent dualism. Since part of the utility of the grounding idiom is that it should allow one to articulate such distinctions, one might conclude that necessitarianism is true.

Call this **the differentiation argument**. There are several responses to Rosen's version of the argument; here are two. First, even if it is correct that facts about necessitation distinguish grounding from causation, necessitarianism need not follow. For the distinction between the two might simply be that *in at least some cases* a fact is necessitated by its ground, while an effect is *never* necessitated by its causes, given that the metaphysically contingent laws of nature governing causal interaction could have differed. Since the contingentist merely denies that *all* facts are necessitated by their grounds, distinguishing the two in terms of facts about necessitation is compatible with contingentism.

Second, grounding and causation differ in various *other* ways that the contingentist may point to. However, one must take care to point to the correct differentia. In response to the differentiation argument, it is sometimes said that grounding is a *synchronic* relation yet causation is not.[34] However, emergent dualists typically claim that mental facts *are* synchronically caused by their physical grounds; moreover, arguably it is possible for a fact to be partially grounded in facts that obtain at other times.[35] Rather, what contingentism should point to are the different implications of grounding and causation for *relative metaphysical fundamentality*. If a fact is grounded, then it must also be metaphysically less fundamental than each of the facts that partially ground it; yet an effect may be more, less, or equal in relative fundamentality with respect to its causes.

If there is a way of arguing from differentiation to necessitarianism, then it ought to proceed by showing that there is *another* difference-maker between grounding and causation that entails the view. An interesting argument along these lines starts from a common suggestion throughout the literature on grounding: that a derivative fact is in some sense 'nothing over and above' the facts that ground it—to borrow Armstrong's famous expression, a 'free lunch' (1997, §2.12). For instance, Fine (2012, pp. 6–7) gestures at this argument in the following passage:

> The history of analytic philosophy is littered with attempts to explain the special way in which one might attempt to 'reduce' the reality of one thing to another. But I believe that it is only by embracing the concept of a ground as a metaphysical form of explanation in its own right that one can adequately explain how such a reduction should be understood. For we need a connection as strong as that of metaphysical necessity to exclude the possibility of a 'gap' between the one thing and the other; and we need to impose a form of determination upon the modal connection if we are to have any general assurance that the reduction should go in one direction rather than another.

Elsewhere, Fine refers to grounding as the "tightest" and "ultimate" explanatory relation, and that "it is perhaps for this reason that we are not inclined to think of the truth of a grounded proposition as a *further fact* over and above its grounds, even though it may be distinct from its grounds and even though it may itself be a real fact" (2001, pp. 15–16, his emphasis), even if we *are* inclined to think this about the relata of relationships of causal production. Perhaps, then, necessitarianism could be

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[34] For example, see Leuenberger (2013, pp. 6–7).

[35] For instance, see Hazlett (2006, 2011).

established by claiming that if [p] were *not* necessitated by Γ, it would follow, incorrectly, that the obtaining of [p] is a "further fact" over and above the obtaining of the facts in Γ.

Is this variation on the differentiation argument successful? Although it is common, many take Fine's suggestion as an optional commitment, while others explicitly reject it for reasons such as the following.[36] If 'nothing over and above' means *identical to*, necessitarianism would follow directly from the necessity of identity—but then this would violate the widely held view that no fact grounds itself.[37] Even if *some* facts could be identical to their grounds, in cases in which one fact is grounded in many (e.g., when an accidental generalization is grounded in many instances), the result would be an instance of the kind of 'one-many identity' many find suspicious at best and incoherent at worst. But if 'nothing over and above' does not mean *identical to*, it is unclear at best why it would be incompatible with a contingent link between a derivative fact and its grounds.

Although one may therefore reject the differentiation argument by rejecting its premise that a fact is 'nothing over and above' its grounds, my own view is that there is a way to interpret this elusive phrase that is *compatible* with contingentism. Indeed, Fine himself comes tantalizingly close to stating it in "The Question of Realism", which was largely responsible for inspiring recent interest in grounding. When first glossing what grounding is, Fine writes:

> I recommend that a statement of ground be cast in the following 'canonical' form: "Its being the case that S consists in nothing more than its being the case that T, U, …", where "S, T, U, … are particular sentences. […] As [a] particular example of such statements, we have: "Its being the case that Britain and Germany were at war in 1940 consists in nothing more than …", where "…" is a compendious description of the warring activity of various individuals. (Fine 2001, p. 15)

Read literally, and in light of the fact-based grounding framework under consideration in this paper, similar problems emerge as before. Presumably, the obtaining of [p] 'consists in nothing more than' the obtaining of [q_1], [q_2], … only if [p] *itself* 'consists in nothing more than' [q_1], [q_2], … *themselves*; yet this would preclude the contingentists from treating the elusive phrase 'consists in nothing more than' as ascribing the unmysterious relation of identity.

A way out of this predicament is to recall that [p] is grounded in Γ not simpliciter, but rather *on a particular occasion*. This temporal and modal relativity must in some way be encoded into these 'consists in nothing more than' statements. The obvious way to do this is instead to say that if [p] is grounded in Γ on a particular occasion, then the obtaining of [p] *on this occasion* 'consists in nothing more than' the obtaining of the facts in Γ *on this occasion*. Saying as much is

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[36] See Jenkins (2011), Raven (2013), and Wilson (forthcoming) for discussion of the irreflexivity of grounding.

[37] For instance, Chudnoff (manuscript) suggests that it may only in some cases; Audi (forthcoming) rejects it entirely.

completely compatible with contingentism, since what it is for [p] to obtain on *one* particular occasion may differ from what it is for [p] to obtain on *another* particular occasion.

To evade the other problem—which was that 'consists in nothing more than' talk identifies a fact with its grounds—one must take care to distinguish the proposal I intend to offer from a subtly different one that I think is false. On the unintended *non-distributive* reading, one takes statements like "[p] is grounded in [q_1], [q_2], … at t and w" to entail identities of the following form:

$$[[p] \text{ obtains at } t \text{ and } w] = [[q_1 \wedge q_2 \wedge \ldots] \text{ obtains at } t \text{ and } w]$$

This reading is problematic: given the previously mentioned principle of fact identity, this reading of the proposal entails that [p] is identical to the *conjunction* of its grounds. Rather, I have in mind the *distributive* reading, which instead takes grounding statements to entail identities of the following form:

$$[[p] \text{ obtains at } t \text{ and } w] = [[q_1] \text{ obtains at } t \text{ and } w \wedge [q_2] \text{ obtains at } t \text{ and } w \wedge \ldots]$$

Unlike the non-distributive reading, the distributive reading does not imply that [p] is identical to (the conjunction of facts) in Γ, yet does so while faithfully capturing the elusive sense in which [p] 'consists in nothing more than' the facts in Γ.

In other work, I argue that the presence of identities of this form is *what it is* for a fact to be grounded.[38] But even if one resists this account of what grounding is, the contingentist may still believe that there *are* such identities in instances of grounding, and note (as I have above) that their presence is compatible with contingentism.

5.4 The Confounding Case Argument

Another way to argue for necessitarianism is to first draw a link between grounding and *explanation*, and to then show that the link breaks if a fact fails to be necessitated by its

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[38] See Skiles (2012). Two additional wrinkles with the account are worth briefly canvassing. First, those who wish to evade ontological commitment to facts may paraphrase by employing the 'just is' operator for expressing generalized identities discussed by Agustín Rayo (2013) and Øystein Linnebo (2014), supplemented with a sentential operator 'for it to be the case at t and w that __" capable of discriminating claims like "… just is for it to be the case at t and w that $q_1 \wedge q_2 \wedge$__" from claims like "… just is for it to be the case at t and w that $q_1 \wedge$ for it the case at t and w that $q_2 \wedge$ __". To avoid trivialization, though, one would need to reject Rayo's assumption that modal covariation is sufficient for the holding of 'just is' statements of the relevant kind. Second, one might object that the account cannot be generalized to *all* grounding: for instance, if [p] is *only* grounded in [q], then the proposal leads to the identification of [p] with [q] that it was supposed to evade. One response is to note the presence of various *linking principles* between a derivative fact and its grounds. For instance, my own view is that $[\forall x(Fx \rightarrow Gx)]$ is grounded in [a is G] together with the fact that this fact is an instance of $[\forall x(Fx \rightarrow Gx)]$, that $[p \vee q]$ is grounded in [p] together with the fact that [p] is a disjunct of $[p \vee q]$, and so on. Rather than adding linking principles into the derivative fact's grounds, another response instead includes them in the identifications that instances of grounding give rise to. For instance, one might say that even though $[p \vee q]$ is not partially grounded in the fact that [p] is a disjunct of $[p \vee q]$, nonetheless this disjunctive fact's being the case partially consists in this linking principle's being the case. For a fuller discussion of these and other putative difficulties, see Skiles (2012, ch. 5).

grounds. Louis deRosset ([2010](#)) offers a sophisticated version of this style of argument.[39] Say that a **confounding case** for an explanatory proposal of the form "p because $q_1, q_2, \ldots$" is any possible scenario in which "p" is false yet "q_1", "q_2", $\ldots$ are all true. Say that an explanatory proposal is **good** only if it is true and complete. According to deRosset, no explanatory proposal is good unless it has no confounding cases: to say that a given atom has a stable nucleus because it is an *oxygen* atom, for instance, is to fail to offer a good explanatory proposal, given the existence of short-lived radio-active oxygen isotopes (*ibid.*, p. 80). But if contingentism were true, explanatory proposals entailed by true grounding statements would have confounding cases. More precisely, deRosset's argument is this:

The confounding case argument:

(P1)   If $[p]$ fails to be necessitated by $[q_1], [q_2], \ldots$, then there is a confounding case for the explanatory proposal "p because $q_1, q_2, \ldots$".

(P2)   If there is a confounding case for the explanatory proposal "p because $q_1, q_2, \ldots$", then it is not good.

(P3)   If $[p]$ is grounded in $[q_1], [q_2], \ldots$, then the explanatory proposal "p because $q_1, q_2, \ldots$" is good.

Thus: Grounding necessitarianism is true.

Call this **the confounding case argument.** It is clearly valid, and (P1) follows from two plausible claims: that $[p]$ is obtains at a world w iff the proposition p is true at w, and an explanatory proposal is good only if the propositions expressed by the *explanans* and *explanandum* clauses are all true.

The key premises, then, are (P2) and (P3). What I will do now is pose a dilemma for the conjunction of (P2) and (P3). The dilemma hinges upon what it takes for an explanatory proposal to be *complete*. Although deRosset does not say what it is for an explanatory proposal to be complete, one may begin by asking whether explanatory proposals entailed by *causation* are complete. Take an effect (say, the eight-ball ricocheting off the pool table) caused by a collection of some other events (say, involving the momentum and trajectory imparted on it with a cue stick). And say that the explanatory proposal "p because $q_1, q_2, \ldots$" associated with this occurrence is **bare** iff "q_1", "q_2," $\ldots$ solely and exhaustively describe the collection of events that jointly cause the event reported by "p". Suppose first that this bare causal explanatory proposal *is* complete. If so, then (P2) is clearly false for familiar reasons. If there had been a sufficiency large differences in the laws governing the system or in the surrounding circumstances, then the eight-ball would have stuck to the cue stick, or quantum tunneled through the table, or … even if the momentum and trajectory I imparted on the eight-ball with my cue stick had been precisely the same. The occurrence of causes need not necessitate the occurrence of their effect; bare *causal*

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[39] The argument I will discuss is slightly different than deRosset's, but not in any way that matters for what follows. DeRosset's argument serves as a step in a broader case against the view that the ontological commitments of a theory are determined not by what the theory's quantifiers must range over for it to be true (cf. Quine [1948](#)), but rather by which entities appear in facts it takes as fundamental. If my case against deRosset's argument for necessitarianism is successful, then it also undermines his argument against this view about how to calculate ontological commitments. For a defense of this view against deRosset that is compatible with necessitarianism, see von Solodkoff ([2012](#)).

explanatory proposals can have confounding cases. But if it possible for bare causal explanatory proposals to be complete while having confounding cases, then (P2), which states that *no* complete explanatory proposal has confounding cases, is false.

The obvious response available to the proponent of the confounding case argument would be to say that (P2) only applies to *non-causal* explanatory proposals. One problem with this response is to motivate the alleged distinction between causal and non-causal explanation—which, as we saw from our discussion of the differentiation argument in §5.3, is a tall order. But set this problem aside, and let us grant that to turn a causal statement into a complete explanatory proposal, further supplemental information regarding the antecedent surrounding circumstances and the relevant laws of nature governing the system must also be added to the *explanans*. That is, let us grant that a bare causal explanatory proposal is *not* complete. The problem now with the confounding case argument is that there appears to be no compelling reason to accept (P3). Recall that (P3) claims, in effect, that every bare explanatory proposal about *grounding* must be complete. But if this constraint does not hold for relationships of production such as *causation*, why believe that it is true for relationships of production such as grounding? Just as with causation, the contingentist may well hold that to bridge the gap between grounding and a complete explanatory proposal, supplemental information about the antecedent surrounding circumstances (e.g., that a, b, … are everything that is F, when non-causally explaining why every F is G), or about the relationships between the entities involved (e.g., that the tuna sandwich is composed of a_1, a_2, …, when non-causally explaining why the tuna sandwich exists) must be added to the *explanans* in order to complete it. To hold that additional information is required in order to link grounding with explanation seems no more problematic than to hold the same for the link between causation and explanation.[40]

What, exactly, is the explanatory role of this supplemental information, such that some bare grounding statements need not themselves be complete grounding explanations? A full discussion of the relationship between grounding and grounding explanation is beyond the scope of the paper, but one can see the explanatory role that this supplemental information might play by analogy with requirements on *causal* explanation. For instance, consider the explanatory proposal: "Every F is G because a is G, b is G, …", where a, b, … are the only things that are F. Then the supplemental information that a, b, … are the things that are F can help yield a complete grounding explanation by virtue of a combination of the following:

1. The supplement helps to display how the explanatory proposal has *stability under a relatively fixed range of counterfactual interventions*. The range might

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[40] One might claim that it is objectionable to non-causally explain why the sandwich exists partly in terms of the fact that it is composed of a_1, a_2, … (recall our discussion in §3.1). But this is no more objectionable than *causally* explaining why the sandwich exists partly in virtue of the fact that it was the outcome of placing together the bread, tomatoes, and so forth that are its ingredients. There is only an objectionable circularity if one claims that the tuna sandwich played a role in *causing* itself to exist (since entities are caused to exist only by temporally prior entities). And similarly, there is only an objectionable circularity if it plays a role in *grounding* its own existence (since entities ontologically depend only upon metaphysically more fundamental entities).

be highly robust (if. for instance, it is impossible for an *F* to be a non-*G*). Or it might be very fragile (if, for instance, even the slightest variation in the world's history undercuts the generalization). Either way, its bounds may be further illuminated by providing further information about the connection between the instances of the generalization and the properties themselves.

2. The supplement helps to display why these facts about *a*, *b*, … are *relevant* to addressing the explanatory demand. This may be unneeded if the audience possesses enough background knowledge about the distribution of *F*, or if the audience is only concerned with identifying how general facts are ultimately grounded in particular facts (as opposed to possessing a fully satisfying explanation, which will itself bring in yet more non-fundamental general facts).

3. The supplement helps to *differentiate* how this accidental generalization was brought about, in contrast to counterfactual alternatives. Along with further supplemental information, one can see that the fact that a certain mutation preventing the birth of swan *a* would have led the fact that every swan in Switzerland is white to have been grounded in a subcollection of the facts that actually ground it, while a certain other mutation would have led to *a* being black, undercutting the generalization altogether.

4. Finally, the supplement helps display that the explanatory proposal is *systematic* by indicating underlying "laws of metaphysics" or (a bit less grandiosely) by indicating that the explanatory proposal is an instance of an interesting pattern of dependence. It might be a 'topic-neutral' pattern such as the one encapsulated by the *w*-instance proposal in §4, or be a more specific (yet still not nomologically necessary) pattern involving the properties at issue.

Stability under a fixed range of circumstances, relevance of *explanans* to *explanandum*, difference-making, and systematicity are widely and quite plausibly taken to be reliable indicators that a given *causal* explanatory proposal is complete. If these indicators can be extended to explanatory proposals undergirded by relationships of grounding—I have only briefly sketched how that extension might be effected, although the project looks promising—then (P3) would be mistaken for the same reason that drawing too close a link between causation and causal explanation is mistaken.

However, one may worry that distinguishing between grounding and grounding explanation plays into the hands of the necessitarian in the following way.[41] Suppose that we introduce a new relational predicate "…is grounded$^+$ in…", that is satisfied by [*p*] and Γ iff a subcollection of facts in Γ brings about [*p*] by virtue of the relation *I* have been calling "grounding" while the remaining facts in Γ provide supplemental information that (at least in the case I considered above) bridges the gap between grounding and necessitation. The worry is that even if the contingentist is correct that what *I* have called "grounding" does *not* entail necessitation, *the broader philosophical literature* seems all along to have meant "grounding" to refer to grounding$^+$, which arguably *does*. One might reasonably believe this because "grounding" talk is frequently introduced, as Fine famously does, by designating it

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[41] Thanks to Fabrice Correia and Louis deRosset for pressing me to address the following worry.

as "a form of explanation; in providing the ground for a given proposition, one is explaining, in the most metaphysically satisfying manner, what it is that makes it true" (2001, p. 22). Since it is allegedly only after citing the grounds$^+$ of a fact that one explains it in the "most metaphysically satisfying manner", the necessitarian may therefore claim that the relation that philosophers meant to pick out by "grounding" talk is one that requires necessitation.

There are two points that the contingentist should make in response. The first is to note that the tight connection Fine and others draw between grounding and explanation in *second-order* discussions (which concern the nature of grounding in abstraction from *first-order* discussions about which facts are grounded in which) is far from uniform or uncontroversial. Many follow Schaffer and explicitly "distinguish the worldly relation of grounding from the metaphysical explanations between facts that it backs, just as one should distinguish the worldly relation of causation from the causal explanations between facts that it backs" (2012a, p. 124). The second point is to note that in first-order discussions, usage tends to go *against* taking "grounding" discourse to refer to grounding$^+$. One piece of evidence is that grounding is standardly taken to be relation of relative metaphysical fundamentality: if [p] is grounded in Γ, then [p] is metaphysically less fundamental than the facts in Γ. But as we have seen before, grounding$^+$ does not satisfy this constraint: if one cites the fact that an ordinary composite is grounded in such-and-such parts in the course of explaining why *o* exists, one does not 'drop down' a level of fundamentality (and if anything, it is the reverse). Given that the grounds$^+$ need not play a role in bringing about the target fact, it seems more natural to say that their role in a grounding explanation is not as partial grounds (in the standard sense of "grounds") but rather as ancillary material useful for illuminating why the facts in Γ brought about [p] to the explanatory proposal's audience—useful, that is, to the extent that the connection is not obvious or irrelevant given the audience's background knowledge and interests.[42]

I thus conclude that the confounding case argument for necessitarianism does not succeed. It is no more problematic to believe that the grounds of a fact help explain it without necessitating it than it is to believe that the causes of an event can help explain it without necessitating it.

5.5 The Open Question Argument

The last argument I will consider is due to Kelly Trogdon, who argues that necessitarianism follows from a "broadly epistemic feature […] characteristic of grounding in general" (2013a, p. 10). To understand this argument, it is best to begin with a concrete example. Following Trogdon, suppose the fragility of a particular Fabergé egg is grounded in facts about the crystalline bonding between its molecules. According to Trogdon, the question "Why should this Fabergé egg be fragile, given the crystalline bonding between its molecules?" **lacks cognitive significance**: "it's possible that being fully informed about the natures of the relevant entities suffices for the question to lack substantive content for some rational individual" (*ibid.*, p. 7).

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[42] See deRosset (2013a, §3) for an application of this distinction to other instances of grounding.

Such a question **lacks substantive content** for a rational individual in Trogdon's sense just in case different answers to this question are epistemically possible for this individual (*ibid.*, p. 5). According to Trogdon, the reason that this question about the Fabergé egg and its molecules lacks substantive content for some possible rational individual, and therefore the reason that it lacks cognitive significance, is that it is part of the nature of the relevant entities that anything made of molecules with weak crystalline bonds is fragile (*ibid.* p. 15). Given Trogdon's assumption that every truth about the nature of the relevant entities holds with metaphysical necessity (*ibid.*, §3), it follows that it is metaphysically necessary that anything made of molecules with weak crystalline bonding is fragile, and *a fortiori* anything made of these particular molecules. Thus it follows that these facts about the Fabergé egg's molecules not only ground but also necessitate that it is fragile.

According to Trogdon, what holds true of the Fabergé egg is inductively generalizable to every possible instance of grounding. Terminology: if [*p*] is grounded in Γ, say that these facts **satisfy the epistemic constraint** iff the question "Why should [*p*] obtain, given that the facts in Γ obtain?" lacks cognitive significance, and say that that they **satisfy the essence constraint** iff it is part of the nature of one or more of these facts, or the entities these facts have as constituents, that [*p*] obtains if the facts in Γ all obtain. Terminology in tow, Trogdon's argument can be formulated as follows:

The open question argument for grounding necessitarianism:

(P1) If [*p*] is grounded in Γ, then [*p*] and Γ satisfy the epistemic constraint.
(P2) If [*p*] and Γ satisfy the epistemic constraint, then they satisfy the essence constraint.
(P3) If [*p*] and Γ satisfy the essence constraint, then [*p*] is necessitated by Γ.
Thus: If [*p*] is grounded in Γ, then [*p*] is necessitated by Γ, i.e. grounding necessitarianism is true.

Call this **the open question** argument. The argument is clearly valid; is it sound? Although it is an interesting question whether (P1) and (P3) are true, I will grant them for sake of argument.

The problem with the open question argument is that even if we grant that (P1) and (P3) are true, instances of grounding without necessitation easily satisfy the epistemic constraint without also satisfying the essence constraint. For instance, suppose that the *w*-instance proposal for grounding accidental generalizations is true (as I argued in §4). And suppose that Bob is a possible rational individual who, in addition to being fully informed of the natures of the facts [*Ga*], [*Gb*], …, [∀x(Fx → Gx)] and their constituents, also knows that *a*, *b*, … are the only things that are *F*. (The claim here is not that *every* possible individual such as Bob possesses this last bit of knowledge—I only require the wholly plausible claim that *some* does.) Then clearly, it follows that the question "Why should every thing that is *F* also be *G*, given that *a*, *b*, … are all *G*?" lacks cognitive significance for Bob. It is not epistemically possible for Bob that some *F* fail to be *G*, if Bob knows that *a* is *G*, knows that *b* is *G*, … and knows that these are the only things that are *F*. Since this suffices for the question to lack cognitive significance, it follows that [*Ga*],

[*Gb*], ..., [∀*x*(*Fx* → *Gx*)] satisfy the epistemic constraint. Yet this collection of facts fails to satisfy the essence constraint: it is no part of the essence of any one or more of these facts or their constituents that each one of *a*, *b*, ... is *F*. Thus, even if Trogdon is correct that there is a broadly epistemic constraint upon grounding, that is consistent with the falsity of (P2) and—for all the open question argument shows—consistent with contingentism.

The proponent of the open question argument might respond by ratcheting up the threshold for satisfying the epistemic constraint. But it is difficult to see how one could do so without ruling out illustrative cases of grounding along with cases of grounding without necessitation. For instance, one might ratchet up the threshold by claiming that the question "Why should [*p*] obtain, given that the facts in Γ obtain?" lacks cognitive significance only if it is *necessary*—and not merely *possible*, as Trogdon would have it—that being fully informed of the nature of the relevant entities suffices for the question to lack substantive content for a rational individual. First problem: *any* such question would fail to lack cognitive significance, and thus no fact would be grounded, since is it possible for such a question to have substantive content for rational individuals fully informed about the nature of relevant entities, due to any number of kinds of epistemic misfortune. (Perhaps this individual has undefeated evidence that the relevant entities do *not* have these natures; perhaps she has mistaken beliefs about the modal status of truths about natures; perhaps she forgets some information about the natures of the relevant entities, or does not draw out all the implications of this information, as she considers the question; etc.)

Second problem: even if the first problem is waived, even the case that Trogdon uses to motivate the epistemic constraint would fail to satisfy it. It is not enough for a rational individual to be fully informed about the facts about the nature of the Fabergé egg, its molecules, and their properties in order for the question "Why is the Fabergé egg fragile, given the crystalline bonding between its molecules?" to lack cognitive significance. She must also have a basic understanding of the underlying chemistry and how molecules bonded in this manner interact with other kinds of molecules given the relevant chemical laws (as Trogdon seems to grant: cf. *ibid*., p. 5). Since it is possible for a rational individual to lack this information, it is possible for this question to have substantive content for such an individual, and thus even this illustrative case of grounding would fail to satisfy the epistemic constraint.

I thus conclude that the open question argument does not succeed. Even if instances of grounding all exemplify the broadly epistemic features that Trogdon ascribes to them, that is fully compatible with the grounds of a fact failing to necessitate it.

6 Conclusions

Over the course of this paper, I have argued that not only is there no good reason to believe that a fact must be metaphysically necessitated by the facts that ground it (as the grounding necessitarian claims), there is good reason to believe that there can be

grounding without necessitation (as the grounding contingentist claims). What follows if this is correct?

Contingentism bears broad implications first of all for a number of *first-order* disputes about grounding. First-order disputes about grounding concern whether every fact about mentality, morality, modality, or some other aspect of reality is grounded at all, and which kinds of facts do the grounding if so. Yet the falsity of contingentism is often a crucial suppressed premise in arguments that bear on specific first-order grounding hypotheses, both for and against. Arguments *against* such hypotheses typically proceed by attempting to establish that facts of one kind are *not* necessitated by facts of another kind, then inferring that the former facts are not grounded in the latter facts. This inference is good, of course, only if a fact is always necessitated by facts that ground it.[43] Arguments *for* specific first-order hypotheses instead typically proceed by attempting to establish that each fact of one kind *is* necessitated by the facts of another kind, then inferring that the best explanation for this truth is that the former facts are also grounded in the latter facts. Although this style of argument need not essentially rely upon the falsity of contingentism as a premise, presumably the putative explanation would not be as good if contingentism were true.[44]

Contingentism bears important consequences for *second-order* disputes about grounding—which concern the essential features of grounding itself, and whether it can be characterized in more basic terms—as well. For instance, the falsity of contingentism has been deployed in arguments for surprising and controversial views about the logical form of grounding statements,[45] about the relationship between full and partial grounding,[46] about what grounds facts about grounding,[47] and about how grounding relates to ontological commitment.[48] One way to undermine such arguments, of course, would be to reject the premise that contingentism is false. The truth of contingentism would also be relevant to those who take there to be a constitutive relationship between grounding and truthmaking, or who take there to be necessary connections between them, who now must either devise strategies for resisting arguments against truthmaker necessitarianism analogous to those I raised against grounding necessitarianism, or accept that a truth need not be necessitated by the existence of its truthmakers.[49] And finally, reductive theories of grounding—

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[43] Cf. Leuenberger (2013) and Trogdon (forthcoming) for discussion.

[44] Cf. Kim (1998, ch. 1) and Wilson (2011) for relevant discussion regarding the grounding of 'higher-level' special science facts, and McPherson (2012) for relevant discussion regarding the grounding of moral facts.

[45] Dasgupta (2014) appeals to the falsity of contingentism in order to argue that a collection of facts can be grounded without any one of the facts in that collection being grounded.

[46] Perkins (manuscript) appeals to the falsity of contingentism in order to argue that full grounding should be characterized in terms of partial grounding rather than *vice versa*.

[47] Bennett (2012) and deRosset (2013a) appeal to principles that entail the falsity of contingentism in order to argue that if [*p*] is grounded in Γ, then the fact that [*p*] is grounded in Γ is itself grounded in Γ.

[48] As we saw in §5.4, deRosset (2010) appeals to the falsity of contingentism to argue that a theory's ontological commitments are not determined by what that theory says are the fundamental (i.e., ungrounded) facts.

[49] Such proponents of truthmaker necessitarianism are Armstrong (1997), Rodriguez-Pereyra (2005), and Cameron (forthcoming) *inter alia*.

which have been underexplored in recent literature on the metaphysics of fundamentality—may secure support from contingentism if they help to illuminate how grounding without necessitation is possible, or predict the extent to which grounding without necessitation occurs.[50]

One final, lingering worry with contingentism is that stable theorizing both about, and with, grounding would become completely unconstrained, and thus little progress could be made while investigating the notion, unless one could 'test' claims about grounding by checking to see whether the putative grounds of a fact necessitate it. Much to the contrary. Breaking the link between *causation* and necessitation was not the end of philosophical inquiry into causation, but rather just the beginning. Precisely the same is true for *grounding* as well. There are interesting questions about when grounds necessitate, and when they do not. There are interesting questions about why citing the grounds of a fact along with pieces of supplemental information can in certain contexts suffice to explain it as well. There are interesting questions about what makes for better explanations of this kind. These are just a few of the interesting questions that the metaphysics of fundamentality must eventually face up to if there is grounding without necessitation, and that are capable of anchoring theorizing about grounding. Appreciating the truth of grounding contingentism helps one see these questions directly, and emboldens one to begin to approach them vigorously.[51]

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[50] Cf. Skiles (2012) and Leuenberger (2013).

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