

Grounding Explanations

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Abstract

A compelling idea holds that reality has a layered structure. We often disagree about what inhabits the bottom layer (or even if there is one), but we agree that higher up we find chemical, biological, geological, psychological, sociological, economic, *etc.*, entities: molecules, human beings, diamonds, mental states, cities, interest rates, and so on. How is this intuitive talk of a layered structure of entities to be understood? Traditionally, philosophers have proposed to understand layered structure in terms of either reduction or supervenience. But these traditional views face well-known problems. A plausible alternative is that layered structure is to be explicated by appeal to explanations of a certain sort, termed *grounding explanations*. Grounding explanations tell us what obtains in virtue of what. Unfortunately, the use of grounding explanations to articulate the layered conception faces a problem, which I call *the collapse*. The collapse turns on the question of how to ground the facts stated by the explanations themselves. In this paper I make a suggestion about how to ground explanations that avoids the collapse. Briefly, the suggestion is that the fact stated by a grounding explanation is grounded in its *explanans*.

Consider some facts: water contains hydrogen, my colleague's cat is alive, diamond is harder than granite, I prefer oatmeal to brussels sprouts, Beijing has over 14 million inhabitants, interest rates are low. These chemical, biological, geological, psychological, sociological, and economic facts all appear to rest on further facts. Facts involving cities, *e.g.*, the fact that Beijing has over 14 million inhabitants, are not rock-bottom: city facts are determined by, dependent upon, and derived from facts about where people live, how they act, and what their attitudes are. These facts might on occasion be hard to discover or state, given the number of people involved and the trouble we have saying exactly which actions and attitudes do the relevant work. But we shouldn't let the difficulty of the details distract us from the original, compelling idea: city facts rest on other facts, including facts about human beings; facts about human beings rest on other facts, including facts about organs, cells, and genes; these facts in

turn rest on chemical facts; and so it goes, at least for a while. Reality comes in layers. We often disagree about what there is at the bottom, or even if there is a bottom.¹ But we agree that higher up we find facts involving a diverse array of entities,² including chemical, biological, geological, psychological, sociological, and economic entities; molecules, human beings, diamonds, mental states, cities, and interest rates all occupy higher layers. The nature and existence of the entities in the higher layers are determined by, dependent upon, and derived from the more fundamental facts and entities we find lower down. So, it seems, there is a layered structure of facts and the entities those facts involve.

How is this intuitive talk of layered structure to be understood? One option is to cash out layering in terms of reduction: the upper layers – the chemical, biological, geological, *etc.* – are all reducible to lower layers. Another option is to rely instead on supervenience: upper layers asymmetrically supervene on lower layers. These options face a number of problems.³ Some thinkers have recently advanced a third option, linked to a certain kind of explanation. On this third option, upper layers are *grounded in* what goes on below. According to these thinkers, grounding is the relation that links entities of higher layers to entities of lower layers. For instance, on this view the idea that Beijing occupies a higher layer than certain people, their locations, activities, and attitudes is captured by the claim that Beijing is grounded in those people and their locations, activities, and attitudes.⁴ A specification of the entities that ground Beijing tells us something important about Beijing’s existence and nature; in particular it tells us that Beijing’s existence and nature are determined by, dependent upon, and derived from the existence and nature of the relevant people, locations, activ-

¹For variety of views about which facts are fundamental, see [Schaffer, 2010a, 2009], [Papineau, 2008], [Lewis, 1994a]. For an exploration of the view that there are no fundamental facts, see [Schaffer, 2003].

²Here and throughout, I am using “entity” as a catch-all term covering individuals, properties, facts, kinds, tropes, states, events, processes, *etc.* I assume that facts are specifiable by an expression of the form ‘the fact that ϕ ’. A fact *involves* all of the entities mentioned in a specification of this form. For instance, the fact that Obama is president involves both Obama and *being president*.

³See, *e.g.*, [Fodor, 1974] and [Putnam, 1967] for classic statements of problems with using reduction to articulate the idea of layered structure. See [Fine, 1994], [Horgan, 1993], [Trogdon, 2009], [Wilson, 2005], and [deRosset, 2011, §1] for critiques of the proposal to explain layered structure in terms of supervenience.

⁴I am here assuming that grounding is a relation among entities. This assumption has been disputed; see n.9 for discussion and references. Even among theorists who accept this assumption, there is an in-house dispute about whether grounding relates only facts (see [Rosen, 2010], [Fine, 2001]) or also relates entities of other categories (see esp. [Schaffer, 2010c]). In §1 below, I take steps toward a rapprochement, by suggesting a way of linking grounding of facts and grounding of other entities; see esp. n.14.

ities, and attitudes. More generally, a full specification of grounding relations among all entities would tell us how those entities “hang together” in something suitably like a layered structure.⁵

This suggestion threatens to wrap a mystery in an enigma. *Grounding* is supposed to be the notion needed to explain the compelling but elusive idea that reality has a layered structure. This suggestion is difficult to assess without some hint as to what the grounding relation is, or at least the conditions under which it obtains. Theorists of grounding have generally refused to offer a definition or analysis of the notion.⁶ But they have offered a partial specification of the conditions under which one entity is grounded in another, by linking grounding to explanations of a certain kind. Philosophers and scientists are fond of asking for explanations of this kind: “In virtue of what is murder wrong?” “In virtue of what am I justified in believing that I have hands?” “What makes gravity such a weak force?” Each question sets the stage for a more or less familiar ongoing research program. Each question calls for an explanation. It is plausible to think that the correct and complete answer, if there is one, to each question gives us a picture of the structure of a small slice of reality. For instance, if physicists manage to figure out what makes gravity so weak in comparison to the electromagnetic, weak, and strong nuclear interactions, then we will know which facts ground this striking fact. We will thereby gain insight into the nature of gravity, and of how gravity “hangs together” with the entities to which the physicists’ explanation appeals. More generally, if the investigation reveals a rich theory offering an explanation for the existence and important properties of gravity, then we will have discovered that the entities to which the theory appeals are what grounds gravity. This merits calling the explanations in question *grounding explanations*.⁷ On the view we are exploring, grounding explanations indicate grounding relations among entities, and thereby give us insight into the nature of those entities.

⁵Thanks to an anonymous referee for suggesting this way of putting the point, due originally to Sellars [2007, p.369].

⁶See [Fine, 2001, p. 21], [Schaffer, 2009, pp. 375–77].

⁷Plausibility requires that grounding explanations and causal explanations are not to be identified. First, what makes gravity weak or murder wrong is almost certainly not going to be something which causes gravity to be weak or murder to be wrong. Second, the fact that explosions are caused by detonators does not warrant the conclusion that detonators occupy a more fundamental level than explosions. I am agnostic on whether there are any causal explanations that do double duty as grounding explanations. The point for present purposes is that grounding explanations are not, or not just, causal explanations. In what follows I will use “because”, “explain”, and “explanation” narrowly to target grounding explanations.

Proponents of grounding claim that that notion — and the layered structure it reveals — is the key to understanding certain traditionally recognized metaphysical investigations. Grounding is useful for helping us characterize and pursue investigations concerning realism and anti-realism in various domains [Fine, 2001]. Grounding provides a way of making sense of interesting kinds of metaphysical dependence [Correia, 2008]. It provides a way of articulating a sensible form of nominalism about properties [Melia, 2005]. It is the notion needed to characterize physicalism [Schaffer, 2009, 2003]. It provides a way of reconciling a sparse inventory of fundamental entities with the rich ontological commitments of the special sciences [Armstrong, 1997], [Cameron, 2008], [Schaffer, 2007, 2009, 2010a]. In short a, or perhaps the, central concern of metaphysics is saying what grounds what, thereby limning the structure of reality.

Nice work, if we can get it. But grounding will serve these purposes only if it can vindicate the layered conception of reality. For instance, grounding can be used to characterize physicalism only if it is *prima facie* plausible to think that *pro tanto* non-physical entities, *e.g.*, my preference for oatmeal, do not occupy the fundamental layer. Unfortunately the use of grounding to articulate the layered conception faces a problem, recently pressed by Ted Sider [Sider, 2011, §7.2, 8.2.1]. I will call this problem *the collapse*.⁸ The problem, very roughly, is that if we take grounding explanations to state fundamental facts, then the facts about what explains, *e.g.*, my preference for oatmeal will be fundamental. So, my preference for oatmeal will be mentioned in any complete description of the fundamental layer. The same goes for any other entity. All of the layers collapse into one; every entity turns out to occupy the fundamental layer. The collapse turns on the question of how to ground the facts stated by the explanations themselves. I will suggest a way of grounding explanations that avoids the problem. Briefly, the suggestion is that the fact stated by a grounding explanation is grounded in its *explanans*.

Here's the plan. §1 lays out a simple-minded way of using grounding explanations to articulate the intuitive conception of layered structure. I also differentiate this approach to articulating the idea of layered structure from a more traditional one centering on reduction. §2 shows how the commitments

⁸The causal source of this label for the argument is Nathan Salmon's [2005] use of it to label a completely different phenomenon in another context.

articulated in §1 lead to the collapse, when paired with the claim that grounding explanations are fundamental. In §3, I defend a claim that plays a central role in both my articulation of the idea of layered structure and the collapse. §4 proposes an alternative way of avoiding the collapse by denying that grounding explanations are fundamental. §5 outlines and criticizes a different proposal for avoiding the collapse implicit in some of the the extant literature, and §6 discusses objections.

1 Grounding, Fundamentality, and Necessitation

How, exactly, does grounding reveal layered structure? We can get an answer to this question by exploring in fuller detail the link between grounding and grounding explanations. All proponents of grounding agree that grounding relates facts, and that the facts that ground a fact are the facts that explain it.⁹ The facts that ground, *e.g.*, Beijing’s cityhood are the facts in virtue of which Beijing is a city. Thus, grounding explanations reveal grounding relations among facts. But the idea of layered structure concerns relations among entities other than facts, including individuals, properties, states, events, *etc.* So, we don’t yet have an explication of the idea of a layered structure of entities of these disparate sorts.

Some proponents of grounding also hold that these other sorts of entities enter into grounding relations, and that one entity may ground another, even though they are from disparate ontological categories. Consider some examples of plausible grounding claims: the fact that snow is white grounds the fact that snow is either white or red; Obama, the man in full, grounds the fact that Obama exists; Obama grounds his singleton; the property *being white* grounds *being white or square*; England grounds (in part) the property of *being queen of England*; Brutus grounds (in part) Brutus’s stabbing of Ceasar.¹⁰ These are plausible grounding claims asserting fact-fact, object-fact, object-

⁹Fine [2001, p. 16] suggests that the most perspicuous way to represent grounding claims employs a (non-truth-functional) sentential operator “because”, on the model of the symbol for “would” counterfactuals ‘ $\Box\rightarrow$ ’, rather than a relational expression. Correia [2010] endorses this suggestion. Fine then argues that we needn’t think of grounding as a relation between facts at all: “The questions of ground ... need not be seen as engaging with the ontology of facts” [Fine, 2001, p. 16]. Fine and Correia liberally indulge in the relational idiom, presumably confident that what they say can be paraphrased using only the sentential operator.

¹⁰The idea that grounding links entities of disparate sorts is explicit in Schaffer; see esp. [Schaffer, 2010c, pp. 345-6] for more examples.

object, property-property, object-property, and object-event relations, respectively. The examples could be multiplied. Though plausible, each of these grounding claims may turn out to fail. If so, however, it won't be due to some prior constraint on grounding relations that rules them out.¹¹

So, grounding plausibly links a disparate assortment of entities in a wide variety of cases. What ties all of these cases together? One common thread is that the entities that ground e are supposed to be the entities in virtue of which e exists and has the nature it does.¹² As Schaffer puts the point,

[Grounding is] the metaphysical notion on which one entity depends on another for its nature and existence. [...] This is the notion that Plato famously invokes in the *Euthyphro* dilemma, asking ‘Is what is holy holy because the gods approve it, or do they approve it because it is holy?’... , and the notion that Aristotle codifies as *priority in nature*.¹³

Consider, for example, the case of Socrates and his singleton. Socrates's existence and features explain the existence and features of his singleton, and not vice versa. For instance, the singleton exists because Socrates does, and the singleton contains a snub-nosed man because Socrates is a snub-nosed man. More generally, there is a systematic link between grounding, which may relate entities of any sort, and explanation, which canonically relates facts:¹⁴

LINK e_1, \dots, e_n are the entities that ground entity e only if e 's existence and

¹¹If the suggestion (see n. 9) of [Fine, 2001, p. 16] and [Correia, 2010] – that the notion of grounding is best represented by a sentential operator rather than a relational expression – is correct and if there is no way of reducing relational grounding claims to claims that employ only the sentential operator, then talk of grounding relations among entities may ultimately have to be abandoned. Since this paper focuses on a different problem for the idea of a layered structure of entities, my assumption will be that it makes sense to talk of grounding relations among facts, properties, objects, events, *etc.* Thanks to an anonymous referee.

¹²It's a little unnatural to say that entities of some sorts, *e.g.*, events and facts, exist. “Exist” as I use it here may be taken to stand in for the appropriate correlative locution appropriate to a given entity e : “*occur*” for an event, “*obtain*” for a fact, and similarly for other sorts of entities.

¹³[Schaffer, 2010c, p. 345]. Schaffer's terminology differs from mine in this passage, where he speaks of “priority” instead of “grounding.”

¹⁴**LINK** states a necessary condition on grounding relations among entities. In fact, I am inclined to explain the notion of entity grounding by appeal to grounding explanations, by, in effect, strengthening **LINK** to a biconditional: roughly, e_1, \dots, e_n completely ground e iff e 's existence and features are all explicable solely by reference to the existence and features of e_1, \dots, e_n . This proposed strengthening is required neither for the explication of layered structure nor for the collapse. A detailed development and defense of the proposal is a task for another occasion.

features are all explicable solely by reference to the existence and features of e_1, \dots, e_n .

LINK helps us show how grounding can be used to explicate the idea of layered structure. The thought is that grounding explanations give us a way of making clear the idea that *facts* are organized into layers; and then **LINK** ties the layered structure of *other entities* to the layered structure of facts. The biological *entities*, for instance, are the entities characteristically involved in the biological *facts*. Those entities occupy a higher layer than the chemical entities only if the biological facts are explained by the chemical facts.

Grounding explanations provide us with both relative and absolute notions of fundamentality for facts. The relative notion first: one fact is *more fundamental* than another iff the one explains the other, but not vice versa.¹⁵ For instance, Barack Obama’s children carry some of his genes partly in virtue of the biochemical fact that certain DNA molecules bear certain causal and structural relations to one another. Thus, the fact involving Obama’s genes is less fundamental than the biochemical fact. Relative fundamentality is asymmetric and transitive, and thus induces a partial ordering on facts.¹⁶ Given a relative notion, we can also define an absolute notion of fundamentality: a fact is *fundamental* iff it is not explained by any other fact.¹⁷ A *derivative fact* is a fact that is not fundamental, *i.e.*, a fact that is explained by some other facts.

We can also specify notions of relative and absolute fundamentality for entities of other ontological categories using the notion of grounding. An entity is *less fundamental* than the entities that ground it. It is standardly claimed that grounding is asymmetric and transitive, so relative fundamentality induces a partial order on entities. An entity is *fundamental* iff it is not grounded by any other entities, and *derivative* otherwise.

On this picture, the grounding relations among entities are reflected in the layered structure of grounding explanations. According to **LINK**, for instance,

¹⁵Why do we need the “not vice versa?” For all we have said, there may be facts which are *self-explainers*: “because” is an anti-symmetric connective. This would reconcile the idea that there is a most fundamental level with a traditional commitment to a principle of sufficient reason [Della Rocca, 2010].

¹⁶This result assumes the standard view that grounding explanation is anti-symmetric and transitive.

¹⁷It is typically assumed that there are some fundamental facts, though this assumption has been questioned; see [Schaffer, 2003]. The collapse relies on a premise which implies that there are fundamental facts; see §2 below. The solution I explore in §4 does not rely on any such assumption.

if Obama’s genes are less fundamental than certain DNA molecules, then the facts involving Obama’s genes will all be explicable in terms of those recognizably chemical entities. If this pattern is repeated for the genes of all living things, then it is plausible to hold that genes in general are less fundamental than the molecules that ground them. This is the sense in which genes occupy a higher “layer” than molecules.

The systematic correspondence asserted by **LINK** between grounding and explanation implies a similar correspondence between fact- and entity-fundamentality:

CORR An entity e is fundamental if e ’s existence or its possession of some feature is fundamental.

Here is the argument that **LINK** implies **CORR**. Suppose that e ’s existence or its possession of some feature is fundamental. Assume for *reductio* that e is derivative, and so grounded in other entities. If e is grounded, then the application of **LINK** implies that e ’s existence and its possession of each of its features are derivative, contradicting our supposition. QED.

Arguments aside, **CORR** is an intuitively plausible result. Suppose, for instance, that Beijing occupies a certain spacetime point. If Beijing is derivative, we would expect that fact to be explicable by appeal to the features of the entities which ground Beijing. For instance, we would expect that fact to be explicable by appeal to the actions and attitudes of the people in the vicinity of that spacetime point. If Beijing’s occupation of that spacetime point has no explanation, then Beijing is a fundamental entity. In general, the fundamental facts are those facts in virtue of which all other facts obtain. **CORR** says that, if one were to detail all and only the fundamental facts, then one would mention only fundamental entities: derivative entities aren’t part of the fundamental story of the world.

The idea of layered structure has historically been associated with the ambition to provide reductions of theories of entities in higher layers to theories of entities in lower layers.¹⁸ But grounding does not require reduction, so the idea of layered structure is independent of these historically important reductive claims. I assume that reduction of the relevant sort requires modal equivalence: if a fact P is reducible to a fact Q , then it is necessary that P iff Q .¹⁹ Paradigm cases of grounding explanations indicate that grounding is

¹⁸[Oppenheim and Putnam, 1958]

¹⁹This assumption is widely shared, though it is rejected, at least in the unqualified form I

weaker than reduction, so long as this assumption is true. For instance, it is plausible to think that Al and Beth have an average height of 5'6" in virtue of the fact that Al's height is 5'4" and Beth's is 5'8". But Al and Beth's average height is not reducible to their having those specific heights, since they could have had different heights that nevertheless average to 5'6". Plausibly, there is a reduction of average height in the offing, but that should not distract us from the conceptual point: one fact can be explicable by another without being reducible to it. A similar result holds for properties. It is plausible to require that F -ness is reducible to G -ness only if necessarily every F is a G and vice versa. Presumably all of the actual rectilinear material objects are so in virtue of being composed of particles in a rectilinear arrangement. And this is so even if it turns out to be possible for there to be rectilinear material objects made of non-quantized matter. So, in the actual world, the distribution of the property *being rectilinear* is explained by appeal to arrangements of particles, even if it turns out that those arrangements of particles are not modally necessary for *being rectilinear* to be instantiated.

In general, the layered structure given by grounding explanations, unlike the layered structure given by reductions, is consistent with the phenomenon known as *multiple realizability*. A fact P can be explained by a fact Q , even if it is possible that something other than Q explain P , and Q not obtain at all. Similar results hold for properties and entities of other categories: the explanation of the existence and features of an entity e by the existence and features of some entities e_1, \dots, e_n does not entail the impossibility of e 's existing and having those features in the absence of e_1, \dots, e_n .

In short, an explanatory relation can hold, even if the *explanans* is not necessitated by the *explanandum*. An immediate upshot is that providing a grounding explanation for a fact does not require providing necessary and sufficient conditions for that fact to obtain. Likewise, explaining the instantiation of a property in a certain thing or the occurrence of an event at a certain time does not hang on our ability to frame necessary and sufficient conditions for the instantiation of the property or the occurrence of the event. Thus, grounding relations among entities may obtain even when the more fundamental entities are no part of any reduction or analysis of the grounded entities.

use here, in [Lewis, 1994b].

2 The Collapse

If grounding explanations are to vindicate the layered conception, then facts involving properties and objects that, on that conception, inhabit higher layers cannot turn out to be fundamental. For instance, on the layered conception, high-level entities like Beijing are supposed to be derivative. But suppose that some facts involving Beijing, *e.g.*,

- (1) Beijing is a city.

were fundamental. The application of **CORR** would yield the fundamentality of Beijing. Since Beijing’s cityhood would not then be grounded by any other facts or entities, there would be no reasonable sense in which the structure of grounding relations would show that Beijing, cityhood, or Beijing’s cityhood are determined by, dependent upon, or derived from more basic facts and entities. There would be no reasonable sense in which the explanations one might offer of facts involving Beijing (or, for that matter, cityhood) warrant the claim that they belong at a higher layer than, say, people, neurons, carbon atoms, electrons, quarks, *etc.*

Undoubtedly, our intuitive and relatively crude appreciation of layered structure is wrong in some cases. So perhaps we would be wrong to insist in advance that Beijing inhabits a non-fundamental layer.²⁰ It would be fatal for the proposal to understand layered structure in terms of grounding, however, if it turned out that *every* entity somehow figured into a complete specification of the fundamental facts. Then grounding explanations might reveal an interesting structure among *facts*: some facts get explained in terms of others. But they wouldn’t reveal any interesting structure among objects, states, properties, events, *etc.*: all such entities belong at the fundamental level. The erstwhile layered structure would collapse into a single, all-encompassing fundamental layer.

Sider [2011, §§7.2, 8.2.1] claims, in effect, that our proposal to use grounding to understand layered structure has this fatal flaw. Call the sort of fact reported by a grounding explanation a *grounding fact*. A key premise in Sider’s argument is that grounding facts are themselves fundamental. This premise is not required for our explication of layered structure. It is, however, plausible at first blush: it

²⁰Sider, for instance, sketches a view on which fundamentality is closed under mereological composition [Sider, 2011, §6.2]. If Beijing is mereologically composed of fundamental entities, then it turns out to be fundamental on this view.

is hard to see how even to begin answering the question of what it is in virtue of which certain facts explain Beijing’s cityhood. The fundamentality of grounding facts is also suggested by some of the claims made by proponents of grounding. Fine, for instance, argues that we can neither helpfully define the grounding relation between facts, nor frame a condition which helpfully guarantees such a grounding relation [Fine, 2001, p. 21]. Schaffer claims that grounding “passes every test for being a metaphysical primitive” [Schaffer, 2009, pp. 376].

Sider argues that, on the assumption that grounding facts are fundamental, all individuals and all properties inhabit the fundamental level; a complete specification of the fundamental facts would mention every object, state, event, property, *etc.*. Here’s the argument. Assume that a given entity, say, Beijing, is derivative. Then there is a fact ψ such that

(2) Beijing is a city because ψ ²¹

is true. The relevant instance of (2) states a grounding fact, and, as we have seen, it is plausible to maintain that grounding facts are fundamental. (2) also states a fact involving Beijing. Since Beijing is derivative only if no fact involving Beijing is fundamental, Beijing is not derivative. But our choice of Beijing was arbitrary: the argument would work equally well with any chemical, biological, geological, psychological, sociological, or economic object, property, state, event, *etc.* So, all such entities are fundamental; everything that supposedly inhabits upper layers has turned out to be fundamental. This argument is *the collapse*.

The argument shows that the following claims are jointly inconsistent:

D1 Beijing is a city;

D2 Beijing is derivative;

FUND Grounding facts are fundamental;

FACTS Beijing is derivative only if no fact involving Beijing is fundamental.

D1, **D2**, and **FACTS** together imply that some instance of (2) is true. Since that instance of (2) states a grounding fact, application of **FUND** yields the

²¹Here and below, I am sloppy about use and mention where there is no threat of confusion. Also, I indulge the harmless simplifying assumption that explanations always have a single *explanans* ψ . Perhaps there are cases in which there are ineliminably a plurality of facts ψ_1, \dots, ψ_n , that explain some fact ϕ . If so, the arguments of this paper could be modified, with some loss of simplicity, to accommodate pluralities of *explanans*.

fundamentality of that fact. But then **FACTS** implies that Beijing is not derivative. Contradiction.²²

What gives rise to the collapse is that if grounding facts are not themselves grounded, then they are among the fundamental facts. In order to make Beijing a city God must not only arrange people in the right way, She must also establish the connection between this arrangement of people and Beijing's cityhood reported by the relevant instance of (2).²³ But then Beijing turns out to be fundamental. It will get mentioned in any complete specification of the fundamental facts. It plays an ineliminable role in the fundamental story of the world.

If we are to use grounding to explicate the intuitive idea of layered structure, then one of the claims among **D1**, **D2**, **FUND**, and **FACTS** must go. Which one? For expository purposes, I will assume that **D1** and **D2** are data, not properly to be rejected. The specific claims **D1** and **D2** are, as I have already indicated, negotiable. The point for present purposes is that analogues of **D1** and **D2** are available with respect to every fact involving ostensibly higher-level entities. Rejecting the conjunction of such analogues in a given case means either denying the putative fact, or admitting the fundamentality of the entities it involves. If we do this in every case, then we end up with a view on which all the facts that remain involve only fundamental entities. That's tantamount to collapse. Thus, avoiding the collapse requires accepting the analogues of **D1** and **D2** in *some* cases. I'm assuming for expository purposes that Beijing's cityhood is one of those cases. That leaves a proponent of the layered conception a choice between rejecting **FUND** and rejecting **FACTS**.

3 LINK and its Consequences

One response to the collapse is to admit the soundness of the argument, and give up on the proposal to use grounding to explicate layered structure. Suppose, however, that we want to hold on to that proposal. One might think in that

²²The collapse threatens the idea that there is a layered structure of *entities*. A similar puzzle can be put for the claim that there is a layered structure of *facts*; see §3 below. See [deRosset, 2010] for discussion of a different argument that every *entity* is fundamental; that argument does not generalize to threaten the idea that there is a layered structure of facts.

²³This theological metaphor, on which what's fundamental is given by what God would have to do to create the world and its contents, runs through the literature on grounding. See, *e.g.*, [Schaffer, 2009, p. 351].

case that the obviously right response is to reject **FACTS**, which holds the derivativeness of Beijing hostage to the fundamentality of facts involving Beijing. The truth of a claim like (2) requires that Beijing have a certain feature, the feature that a thing x has if it satisfies the relevant instance of

(3) x is a city because ψ .

Since possession of that feature is not further explicable, it turns out that Beijing's having this feature cannot be explained solely by reference to other entities. Thus, **FACTS** is an upshot of the correspondence **CORR** between fundamentality for facts and fundamentality for the entities they involve. I have shown that **CORR** is a consequence of

LINK e_1, \dots, e_n are the entities that ground entity e only if e 's existence and features are all explicable solely by reference to the existence and features of e_1, \dots, e_n ,

which we can use to explicate the idea of layered structure.

We might hope to avoid the collapse by denying **LINK** and its consequence **FACTS**. If we are to deny **LINK** but maintain the contention that grounding can be used to explicate the idea of layered structure, then we will need a replacement for **LINK** well-suited to play an analogous role in the explication. A critic might suggest, for instance, that **LINK** goes wrong by requiring that a derivative entity e 's existence and *all* of its features be explicable in terms of the existence and features of the entities that ground it. An alternative proposal is to require only that e 's existence and *intrinsic* features be explicable by reference to those entities. If *being a city because ψ* is not an intrinsic feature of Beijing, then the weaker requirement does not lead to the collapse.²⁴

The question of whether the explanatory properties involved in grounding facts are intrinsic features is difficult. The literature on intrinsic features tends to focus on relatively familiar properties, like *being round*, *having mass*, or *being a pebble*. The fact involving Beijing that gives rise to the collapse involves the possession by Beijing of the relatively unfamiliar property indicated by (3). It's unclear how the notion of an intrinsic feature applies in this case.²⁵ Defending a view that replaces **LINK** with the weaker principle in question would require

²⁴Thanks to Jonathan Schaffer and Kelly Trogdon for independently suggesting the need to explore the prospects for weakening **LINK** to avoid the collapse.

²⁵Thanks to an anonymous referee for this insight.

plumbing these depths. So, one advantage (perhaps merely pragmatic) of exploring ways out of the collapse that maintain **LINK** is that we can explicate the plausible idea of layered structure without getting into these thorny issues in the metaphysics of intrinsicity.

In any case, the proposed replacement for **LINK** is too weak. Recall that one important use of the notion of grounding is to understand physicalism in the philosophy of mind as the idea that physical entities are more fundamental than non-physical entities and, in particular, mental properties, states, or events.²⁶ This is an example of an attempt to use grounding to explicate the idea of layered structure; on this way of understanding physicalism, it is the view that mental entities occupy a “higher layer” (in the sense of §1) than the physical entities that ground them. I will use this example to focus our discussion in this section. In recent years, the debate over physicalism has focused in large measure on questions concerning the causal features of mental states, properties, and events. These arguments concern the existence (or lack thereof) of downward causation of the physical by the mental, the metaphysics of the causal powers of mental states, and the like. For instance, physicalists argue that the fact that, *e.g.*, Joe’s pain causes the physical effects characteristic of grimacing behavior is explained by, say, the configuration of his central nervous system, its relations to his facial muscles, and the physical laws governing its operations.²⁷ Suppose that we are given a proposed replacement for **LINK** on which physicalism is consistent with the claim that the facts concerning the physical effects of Joe’s pain are fundamental. Then, the proposed replacement for **LINK** does not articulate the spirit of physicalism, and should be rejected. The thought here is that there is *something* right about the presumption, shared by physicalists and their opponents, that the facts concerning the physical effects of mental states present questions on which the truth of physicalism (in part) turns.

Here’s a heuristic, then, for assessing the acceptability of the proposed replacement for **LINK**: if, on the proposed replacement,

PHYS physical entities are more fundamental than non-physical entities and,

²⁶There are some participants in the debate about physicalism who propose to understand physicalism as the weaker view that all mental entities are grounded in non-mental entities (never mind whether they are physical). See, for instance, [Levine and Trogon, 2009, p. 356]. The arguments of this section work equally well when paired with this understanding of physicalism. Thanks to Kelly Trogon.

²⁷See [Wilson, 2005] for a discussion of the centrality of these issues to debates over physicalism.

in particular, than mental properties, states, or events

is consistent with the fundamentality of

- (4) Joe's pain caused the physical effects characteristic of grimacing behavior,

then the proposed replacement is unacceptable. Consider now the proposed replacement for **LINK** we have been considering: e_1, \dots, e_n are the entities that ground e only if e 's existence and *intrinsic* features are explicable by reference to those entities. The proposed replacement is deemed unacceptable by our heuristic. Take, for example, the fact stated by (4). Having the physical effects characteristic of grimacing behavior is a paradigmatic case of a non-intrinsic feature. Thus, on the proposed replacement, the question of how to ground this fact involving Joe's pain is simply irrelevant to the question of whether a certain mental entity – Joe's token mental state – is less fundamental than his neural state. Similarly, the causal effects of pain are paradigmatically non-intrinsic features of that mental state type. Thus, on the proposed replacement the fundamentality of (4) is also irrelevant to the question of whether another mental entity – the mental state type *pain* – is less fundamental than the physical states of the entities that instantiate it.

There is a lot of middle ground between **LINK** and its restriction to intrinsic features. Perhaps a subtler explication of the idea of layered structure can exploit that ground. I am pessimistic about the prospects for such an explication, but let's suppose this pessimism is unwarranted, and we manage to come up with a qualified version of **LINK** that may plausibly be used to explicate the idea of layered structure. Then **LINK** could be safely rejected. But, strictly speaking, the full strength of **LINK** is not required for the collapse. The collapse requires only the weaker claim

CORR An entity e is fundamental if e 's existence or its possession of some feature is fundamental.

of which **FACTS** is a contraposed instance.

LINK offers some support for **CORR**, but, I have argued, **CORR** is in any case independently plausible. It seems to me that **CORR** should be a commitment of any view which attempts to account for layered structure by appeal to grounding explanations. **CORR** is a natural upshot of the idea that

grounding relations are indicated by grounding explanations, which say what obtains in virtue of what. The idea is that the fundamental entities are the entities that must be mentioned in a complete specification of that in virtue of which all else obtains. If, for instance, (4) were fundamental, pain would be mentioned in any such specification. Likewise, insofar as the relevant instance of (2) is fundamental, Beijing will be mentioned in any such specification. If (4) is fundamental, then, according to participants in the debates over physicalism, we should accept that physicalism is false. Similarly, if (2) is fundamental, we should accept the analogous conclusion that Beijing is fundamental, just as **CORR** requires.

At the very least, a theorist who denies **CORR** but hangs on to the idea that grounding can be used to explicate the idea of layered structure faces the challenge of distinguishing two kinds of pain-involving facts: (i) pain-involving facts whose fundamentality would not imply that pain is fundamental, and (ii) pain-involving facts whose fundamentality would imply that pain is fundamental. To illustrate, consider again the use of grounding to articulate physicalism. Imagine that someone who claimed to be a physicalist gave us this speech:

All of the fundamental facts are physical, *except for the facts concerning the physical effects of pain*: the latter facts are not physical but they are fundamental.

We would think that he has what is in fact an anti-physicalist view. A core commitment of physicalism is that the facts concerning the physical effects of pain all obtain in virtue of further facts. Any such view which abjures that commitment manifestly fails to capture the spirit of the view. Someone who proposes to reject **CORR** to evade the collapse thus incurs the burden of showing why the following speech wouldn't have a similar upshot:

All of the fundamental facts are physical, *except for the facts concerning what explains the physical effects of pain*: the latter facts are not physical but they are fundamental.

It is not at all clear how to distinguish these two speeches, except by *ad hoc* appeal to the fact that only the latter allows us to evade the collapse.²⁸

²⁸This is a version of a point made in [Dasgupta, manuscript, §5]. See Dasgupta and [Schaffer, manuscript] for attempts to take up this challenge. Both Dasgupta and Schaffer defend versions of trialism, a view which I discuss in §5 below.

Suppose, however, that we were able to find some principle to distinguish the two kinds of pain-involving facts. The resulting view would still be, in that respect, less theoretically simple than a view which did not appeal to such a distinction or to its alleged underlying principle. Fewer fundamental principles make for a simpler, more elegant theory. Other things being equal, the methodological injunction to favor the simplest sufficient theory thus favors a response to the collapse that maintains **LINK** and defends **CORR**, while denying **FUND**. The next section outlines such a view.

There is one last consideration that militates in favor of solutions to our problem that deny **FUND**. There are related puzzles that presuppose **FUND** but do not employ the notion of a grounding relation among entities other than facts at all. Thus, the truth of **LINK** and its consequences, which govern grounding relations among objects, properties, events, *etc.*, do not bear on those puzzles. Here is a rough sketch of one such puzzle. Consider again our proposal to characterize physicalism by appeal to grounding. A core commitment of physicalism, it would seem, is the claim that all facts are either physical facts or are grounded in physical facts. This commitment will be vindicated, of course, if it turns out that all facts are physical facts. But, as we've seen, the interest of using grounding to explicate theses like physicalism is that doing so renders physicalism consistent with the anti-reductive claim that there are some facts which are not themselves physical but which are grounded in physical facts. So, let's assume that the fact that Beijing is a city states such a fact. Since that fact is non-physical, so too is any true instance of

(2) Beijing is a city because ψ .

Now the application of **FUND** requires the rejection of physicalism. Thus, the proposal to use grounding explanations to explicate physicalism, together with plausible ancillary premises, appears to rule out a core commitment of physicalism.²⁹ That's a problem.³⁰

²⁹To be clear, I am not assuming that physicalism is true; the assumption instead is that, if grounding is to be useful for explicating physicalism, our theory of grounding shouldn't rule physicalism out from the outset.

³⁰This puzzle is articulated by [Dasgupta, manuscript]. I do not think that physicalism (or the idea of layered structure more generally) can be exhaustively characterized by appeal to grounding relations among facts, without also appealing to the notion of grounding relations among other entities. The debates over physicalism extend beyond the status of mental facts to also incorporate the status of entities of disparate sorts, including mental states, properties, or events. So, **PHYS** more completely captures the spirit of physicalism than does the claim

It's not, however, a problem that can be solved by rejecting **LINK**. The solution to the collapse sketched in the next section rejects **FUND**. Since **FUND** is also required for this new puzzle, that solution also applies to the new puzzle.³¹ A solution which rejects **LINK** does not. This is a reason to favor a solution to the collapse that maintains **LINK** and rejects **FUND**: we get solutions to two puzzles for the price of one.

There are thus a battery of considerations supporting **LINK** and its consequences. What reasons are there for denying it? Perhaps some resist **LINK** on the grounds that its consequence **CORR** holds the fundamentality of an entity hostage to the fundamentality of what we might call the "Cambridge features" of an entity.³² Consider, once again, the physicalist view on which pain is derivative. Suppose the physicalist has shown, that the existence of, say, Joe's pain, together with those features of Joe's pain that have figured in the literature in the metaphysics of mind are all explained by the existence and features of Joe's neural state. There are other features of Joe's pain, which we might profitably think of as its "Cambridge features." For instance, Joe's pain co-exists with Beijing, and Joe's pain is such that no Supreme Court justices are Nobel laureates. The physicalist has given us no explanation for the possession of these features by Joe's pain. If **CORR** is true, then the fundamentality, *e.g.* of the fact that Joe's pain co-exists with Beijing would imply that physicalism is false.

It is tolerably clear, however, that the fact that the physicalist has given no explanation for these "Cambridge features" of Joe's pain simply doesn't bear on the question of whether Joe's pain is less fundamental than his neural state. Imagine, to illustrate, that someone offered the following objection to physicalism:

You have shown that Joe's pain exists in virtue of the existence and features of his neural state. You have shown that Joe's pain has such-and-such effects in virtue of the existence and features of his neural state and physical environment. But you haven't shown

that all facts are grounded in physical facts. This is a reason to think that the collapse strikes at least as close to the heart of the matter than does this new puzzle.

³¹Dasgupta's solution to the new puzzle denies both **FUND** and the claim that physicalism requires that all facts are either physical or grounded in physical facts [Dasgupta, manuscript]. The solution proposed in the next section is simpler and more natural than Dasgupta's insofar as it requires only the denial of **FUND**.

³²Thanks to Kelly Trogon for suggesting this source of resistance to **LINK**.

that Joe’s pain co-exists with Beijing in virtue of the existence and features of Joe’s neural state. This is a big problem for physicalism!

This is not a big problem for physicalism; it’s clear how the physicalist ought to respond. She should say that, having explained the existence of Joe’s pain in terms of the existence and features of his neural state, explaining the co-existence of Joe’s pain with Beijing is now a simple matter. The co-existence of Joe’s pain and Beijing is explained by the facts that explain the existence of Joe’s pain, together with the facts that explain Beijing’s existence. Similarly, Joe’s pain’s being such that no Supreme Court justices are Nobel laureates is explained by the facts that explain the existence of Joe’s pain, together with the facts in virtue of which no Supreme Court justices are Nobel laureates.³³ In no such case, supposing we can explain the existence of Joe’s pain, do we find ourselves forced by **CORR** to accept the fundamentality of Joe’s pain. Even though the physicalist has failed to offer explicit instructions for grounding the “Cambridge features” of Joe’s pain, it doesn’t take much imagination to see how to do so if her proposals to ground those more crucial features discussed in the literature are sound.

So, there are plenty of reasons to prefer exploring responses to the collapse that leave **FACTS** alone, and no reasons for keeping **FUND** and rejecting **FACTS**, **CORR**, or **LINK** have come to light.

4 Grounding Explanations

I have suggested that those who wish to use grounding explanations to explicate layered structure should avoid the collapse by denying **FUND**. It is high time to grasp the nettle, and say how grounding facts are themselves to be grounded. The history of attempts to explicate grounding in other terms is not encouraging. In particular, the attempt to recruit supervenience to play the role of grounding faces serious objections.³⁴ The lesson this history teaches is that we should make no attempt to provide either a conceptual or a metaphysical analysis that provides necessary and sufficient conditions for grounding. Proponents of

³³If Beijing’s existence turns out to be fundamental, then the co-existence of Joe’s pain and Beijing is explained by the facts that explain the existence of Joe’s pain, together with the fact that Beijing exists. Similar comments apply if it turns out to be a fundamental fact that no Supreme Court justices are Nobel laureates.

³⁴Lewis [Lewis, 1983, p. 358] makes this suggestion in passing; for criticism, see works cited in n. 3.

grounding have taken this lesson to heart.³⁵ But one moral of our efforts in §1 to distinguish grounding explanations from reductions is that grounding explanations do not require necessary and sufficient conditions. This opens the door to a view on which grounding facts can themselves be grounded, even in the absence of an analysis or reduction of the grounding relation.

Some informal reflections motivate just such a view. Suppose that a claim of the form

(5) ϕ because ψ

is true. It is plausible to think that a true explanation must be backed by an argument from *explanans* to *explanandum*.³⁶ Call such an argument an *explanatory story*. On this presumption (5)'s truth requires that there is an explanatory story that one could in principle tell, that starts with ψ and ends with ϕ . We can represent the form of this explanatory story by

(6)

| |
|------------|
| ψ |
| χ_1 |
| χ_2 |
| \dots |
| So, ϕ |

, where the χ 's stand in for ancillary material that may be necessary for making the *explanandum* intelligible (given the *explanans*) to one's audience.³⁷ For example, if the explanatory claim in question is

(7) It is either chilly or windy because it is chilly

then the ancillary information might include the observation that the *explanans* is a disjunction, a review of the truth table for disjunction, or a reference to a rule of disjunction introduction.

If the explanatory story represented by (6) is successful, it issues in the conclusion that (5) is true. Thus, (6) is an initial segment of a further argument,

³⁵[Fine, 2001, p. 21], [Schaffer, 2009, pp. 375–77].

³⁶Most prominently, this presumption is enshrined in the deductive-nomological account of explanation [Hempel and Oppenheim, 1948]. I am not, however, signing on to the deductive-nomological account in detail; in particular, I assume neither that the arguments in question are *deductive*, nor that they are *nomological* – laws need play no special role.

³⁷A limiting case of an explanatory story of the form represented by (6) is a case in which there is no such ancillary material, and so no χ 's at all.

which has the form

$$(8) \quad \begin{array}{c} \psi \\ \chi_1 \\ \chi_2 \\ \dots \\ \text{So, } \phi \\ \chi'_1 \\ \chi'_2 \\ \dots \\ \text{So, } \phi \text{ because } \psi \end{array}$$

Assuming that (6) is a successful explanatory story issuing in the conclusion (5), (8) is a good (presumably non-deductive) argument. My suggestion is that this argument *is also an explanatory story*. Consider again an explanation of the form

$$(2) \quad \text{Beijing is a city because } \psi$$

where ψ is a fact concerning the locations, activities, and attitudes of certain people. If that explanation is correct, then one could in principle start by laying out the facts involving people, trace how those facts make it the case that Beijing is a city, and conclude with (2). But then that very same story seems to answer the question of what makes it the case that the grounding fact reported by (2) obtains. One could, as before, start by laying out the facts involving people, trace how those facts make it the case the Beijing is a city, note (2)'s truth, and conclude with

$$(9) \quad (\text{Beijing is a city because } \psi) \text{ because } \psi.$$

In general, the suggestion is that every instance of the following schema is true:

BECAUSE If ϕ because ψ , then $(\phi$ because $\psi)$ because ψ .³⁸

The informal reflections that motivate **BECAUSE** can hardly be taken to be decisive. But adoption of **BECAUSE** has two important advantages.

³⁸Notice that the *prima facie* plausibility of **BECAUSE** depends on my artificially narrow use of “because” to indicate grounding explanation; see n. 7. For instance, if pressing the detonator *causally explains* the explosion, then it would not be plausible to claim that pressing the detonator causally explains *the fact that pressing the detonator caused the explosion*.

The first advantage, conspicuous in the present context, is that adopting **BECAUSE** allows us to evade the collapse. Recall that the collapse depended on the claim

FUND Grounding facts are fundamental.

If we adopt **BECAUSE**, then **FUND** turns out to be false. The trouble concerned the allegation that an explanation of the form

(2) Beijing is a city because ψ

is fundamental. But **BECAUSE** implies that (2) is not fundamental; it obtains in virtue of ψ . So long as ψ does not involve Beijing, we needn't mention Beijing to give a complete description of that in virtue of which all else obtains.

In fact, barring any reduction of grounding facts, **BECAUSE** is well-nigh inevitable if we wish to avoid the collapse while accepting the idea that layered structure is to be explicated by appeal to explanatory fundamentality, in the sense of §1. An explication of this sort, I have argued, is best defended by denying **FUND**, which says that grounding facts are fundamental. Suppose for illustration that Beijing's cityhood is explained by some fundamental fact ψ . Consider the question of how to ground

(2) Beijing is a city because ψ .

Explaining (2) requires explaining the relationship between Beijing's cityhood and ψ . There are, in principle, only four ways to go: (i) appeal to both of the relata; (ii) appeal only to Beijing's cityhood; (iii) appeal to some fact involving neither ψ nor Beijing's cityhood; or (iv) appeal only to ψ . Appealing to both relata or to Beijing's cityhood alone appears not to avoid the collapse.³⁹ Appealing to Beijing's cityhood alone is also a clear non-starter, as, it seems to me, is appealing to some fact involving neither ψ nor Beijing's cityhood. The best salient alternative, it seems, is to appeal to ψ alone. That, in effect, is what **BECAUSE** does.

The second advantage of adopting **BECAUSE** is a little subtler. Recall that grounding explanations are consistent with multiple realizability. Thus, an

³⁹Dasgupta [manuscript] argues that appearances are misleading on this score. He suggests that we need to make appeal to both relata, but that this appeal needn't undermine the claim that Beijing is derivative. Schaffer [manuscript] argues that it is a mistake even to ask how to ground a true instance of (2). Both espouse forms of trialism; see §5 below.

explanation of the form

(5) ϕ because ψ

does not entail what we might call *downward necessitation*:

(10) $\Box(\phi \Rightarrow \psi)$.

Several authors have suggested, however, that the converse necessitation relation is required if the explanation is complete: if a fact P is completely explained by Q , then it is impossible that Q obtain and P not obtain. This requirement is plausible. Suppose I suggest that a certain lump of coal has the mass it does in virtue of the fact that it is made of a certain number n of carbon atoms. The fact that those atoms could be replaced by different isotopes of carbon to give the lump a different mass indicates that this cannot be the whole story: the fact that the lump is made of n carbon atoms explains its mass only against the background of the facts detailing the relative proportions of relevant carbon isotopes. In general, an explanation has modal force: it's supposed to indicate what *makes* the *explanans* obtain. If it is possible for the *explanandum* to obtain while the *explanans* does not, then the *explanandum* does not make the *explanans* obtain, and so the explanation fails. Something similar holds for properties and entities of other categories: if an entity e 's existence and features are explained by appeal to entities e_1, \dots, e_n , then it is impossible that e_1, \dots, e_n exist and have the features they do and yet e fail to exist or have some of its actual features. In summary, it is plausible to impose a requirement of *upward necessitation* on claims of the form (5):⁴⁰ if such an explanation is complete, it entails

(11) $\Box(\psi \Rightarrow \phi)$.

⁴⁰The reflections in the main text are meant to be suggestive, but don't conclusively support a requirement of upward necessitation. In particular, there are ways of spelling out the notion of *making something the case* that are weaker than necessitation. Contemporary discussions of causation may be construed as sketching the outlines of such a notion; see [Woodward, 2008] for discussion. Such a requirement is assumed by many; see, *e.g.*, [Rosen, 2010, p. 118]. But it is disputed by some, including Stephan Leuenberger (personal communication) and [Schaffer, 2010b, pp. 320-1]. We can accommodate doubts about upward necessitation by casting the argument of the next paragraph as showing that *if* there is a requirement of upward necessitation, then the explanations required by **BECAUSE** meet it. In fact, I don't believe these doubts should be accommodated. See [deRosset, 2010] for a more serious argument in favor of a requirement of upward necessitation. Thanks to Stephan Leuenberger and Jonathan Schaffer for discussion.

The second advantage of adopting **BECAUSE** is that, given that an explanation of the form

(5) ϕ because ψ

meets the requirement of upward necessitation, the explanations for grounding facts required by **BECAUSE** appear to as well. Suppose that an explanation of the form (5) is true. Application of **BECAUSE** yields

(12) $(\phi \text{ because } \psi) \text{ because } \psi$.

Upward necessitation requires that, if (12) is complete, then its *explanans* ψ necessitates its *explanandum* (5). Assume that (12) is complete. (5) will also be complete.⁴¹ The application of upward necessitation to (5) guarantees that

(11) $\Box(\psi \Rightarrow \phi)$

is true. The only way for (12) to fail the requirement of upward necessitation is for

(13) $\Box(\psi \Rightarrow (\phi \text{ because } \psi))$

to be false. That, in turn, would require that it be possible for ψ to obtain but not ground ϕ . Given the necessitation of ϕ by ψ , it must be possible that ϕ and ψ both obtain, and yet ϕ not obtain in virtue of ψ . In focal cases of grounding explanations, there is no such possibility. For instance, given that Al and Beth's heights average 5'6" because Al is 5'4" and Beth is 5'8", it is not possible for Al and Beth to have those respective heights, and yet for their height to average 5'6" in virtue of some other circumstances. Likewise, given that a certain material object is rectilinear in virtue of being exhaustively composed of particles in a rectilinear arrangement, it is not possible for that object to be rectilinear and exhaustively composed of particles in that arrangement, and yet for there to be no explanatory relation between those facts.

It should be noted that a related necessitation claim may fail. Perhaps there are cases in which ψ is actually a complete explanation of ϕ , and yet it is

⁴¹Here I assume that if (12) is a complete explanation, then so is (5). Any incompleteness in (5) indicates that the explanation of ϕ by ψ is only partial: ψ is only a part of the totality of facts which explain ϕ , and so only explains ϕ against the background of certain further facts. Thus, any full specification of the facts in virtue of which ψ (partially) explains ϕ needs to include those further facts. In short, an incompleteness in (5) implies an incompleteness in (12).

possible that ψ obtain and not be a *complete* explanation of ϕ . It is plausible, for instance, to think that (i) a certain yellow, rectilinear material object is *either red or rectilinear* in virtue of being composed of particles in a rectilinear arrangement; furthermore, (ii) the compositional fact completely explains the thing's being either red or rectilinear; but (iii) it is possible that it be *either red or rectilinear* in virtue of being *both red and* composed of particles in a rectilinear arrangement; and so (iv) it is possible that its being either red or rectilinear is explained, but not *completely* explained, by the arrangement of its composing particles. The conjunction of all of the claims (i)-(iv) is consistent with **BECAUSE**.

The second advantage, then, of adopting **BECAUSE** is that it provides a way of explaining grounding facts that appears to meet the requirement of upward necessitation.

BECAUSE does not provide the means to ground every fact we might express using "because", even on my artificially narrow use of the term to indicate grounding explanation.⁴² Suppose, for instance, that ψ and χ explain Beijing's and Shanghai's cityhood, respectively. Then

$$(14) \neg(\psi \text{ because } \chi).$$

is plausible. **BECAUSE** does not tell us how to ground such a fact. More generally, **BECAUSE** gives no hint about how to ground negations of explanatory claims. Recall that fundamentality for a fact ϕ boils down to there being no explainer for ϕ . So, **BECAUSE** gives us no hint as to how to ground facts concerning what's fundamental.⁴³ Thus, embracing **BECAUSE** is consistent with thinking that *some* facts involving grounding are themselves fundamental. But the collapse does not involve any of those facts.

⁴²See n. 7.

⁴³**BECAUSE** does, however, point the way to explaining the *non*-fundamentality of Beijing's being a city. Given the framework sketched in §1, the non-fundamentality of Beijing's being a city comes to there being some explainer for that fact. According to **BECAUSE**, the fact ψ that explains Beijing's cityhood also explains a certain grounding fact: to wit, that ψ explains Beijing's cityhood. It is plausible to think that *some fact or other* explains Beijing's cityhood in virtue of ψ 's doing so. Thus, ultimately, the fact that explains Beijing's cityhood is also the fact in virtue of which Beijing's cityhood is derivative.

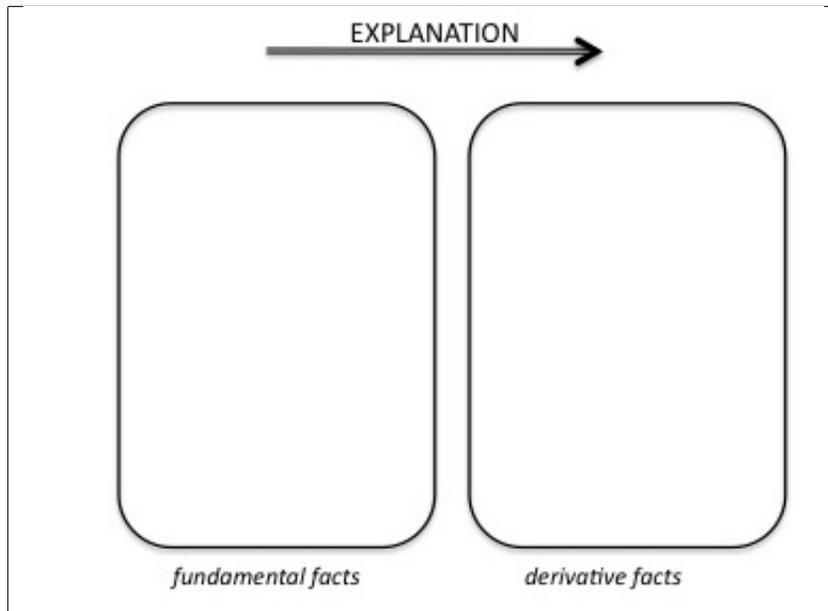


Figure 1: The simple picture

5 Trialism

The response to the collapse that I have urged denies **FUND** by suggesting how the grounding facts may themselves be grounded. There is, however, a different response implicit in some of the extant literature. I have been working with a characterization of fundamentality on which facts (and entities) divide exhaustively into the fundamental and the derivative. The idea is illustrated by the simple picture in fig. 1. Some theorists suggest that we should instead divide facts into three categories: the grounding facts, the basic facts, and the generated facts. Grounding facts are, as we have already seen, the facts about what grounds what; *basic facts* are not themselves grounding facts, but, together with the grounding facts, they generate the full, rich array of facts; and the rest are the *generated facts*. Suppose, for instance, that Beijing is a city in virtue of the locations, actions, and attitudes of certain human beings (and ignore for the moment that the relevant facts involving human beings are themselves further explicable). The relevant facts involving those human beings are a basis

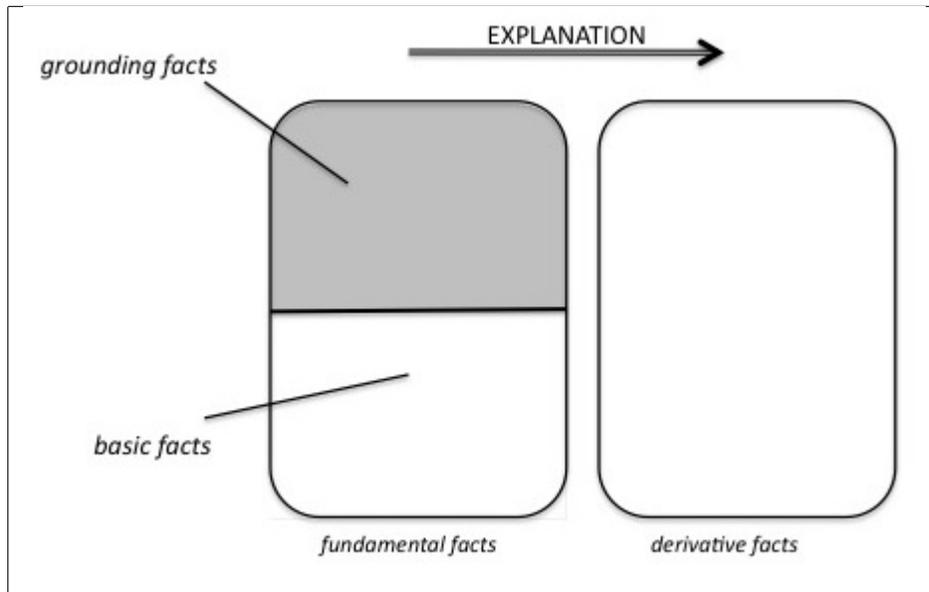


Figure 2: The trialist picture.

that, together with the grounding fact that Beijing is a city in virtue of those facts, yield the generated fact that Beijing is a city. On this view, which I'll call *trialism*, all basic facts are fundamental: they do not obtain in virtue of any further facts. But the converse is not guaranteed: some fundamental facts – in particular, those fundamental facts concerning what grounds what – may fail to be basic. Thus, according to trialism, we need to distinguish two different kinds of fundamental fact: the basic facts and the fundamental grounding facts. Our simple picture needs to be complicated a little, as illustrated in fig. 2. If we wish to generalize from facts to entities, the generated entities are given by the basic entities, together with generators. Consider, for instance, a certain bunch of marbles.⁴⁴ It is plausible to think that the bunch of marbles is grounded in its constituent marbles. Then those marbles and their standing in the *bunched* relation provide a basis that, together with the generator provided by the grounding relation, yields the bunch of marbles as a generated entity.⁴⁵

⁴⁴Thanks to Mark Moyer for suggesting this example.

⁴⁵A thoroughgoing exposition of trialism would include a more satisfactory characterization of the tripartite distinctions among facts and entities. Here I sketch only as much as is

Given trialism’s tripartite division of facts, the objector suggests that the notion of a *basic* fact should replace the notion of *fundamental* fact in our explication of layered structure. Likewise, the notion of a *generated* fact should replace the notion of a *derivative* fact. A fact f is *more basic* than g iff f explains g and not vice versa. Grounding facts will thus be excluded from the basicness ordering, except insofar as they themselves serve as *explanans* or *explananda*. Consider again a grounding fact of the form

(2) Beijing is a city because ψ .

That grounding fact is neither more nor less basic than Beijing’s cityhood, supposing it neither explains nor is explained by that fact. This basicness ordering can be used to explicate layered structure. If facts involving genes are quite generally less basic than facts about molecules, so that every gene fact obtains in virtue of some molecule fact, but not vice versa, then it is plausible to think that the genes inhabit a higher layer than the molecules. The basic entities, which inhabit the lowest layer, will then be just those entities involved in the basic facts.⁴⁶ If we adopt the trialist’s proposal, then the collapse will have to be recast using the trialist’s favored notions.⁴⁷ The result of recasting yields, as the two key claims:

FUND* Grounding facts are basic;

FACTS* Beijing is generated only if no fact involving Beijing is basic.

Trialism requires the rejection of **FUND***, and so escapes the collapse. Grounding facts are not basic; they are not generated either; instead, they belong to their own, third category. Thus, Beijing’s involvement in grounding facts does not count against its being generated.

necessary to outline and schematically assess the trialist defense against the collapse. For more complete treatments, see [Fine, 1991], [Johnston, 2006], and [Schaffer, 2009].

⁴⁶My uses of the words “basic”, “generated”, “fundamental”, and “derivative” are stipulative and artificial: I aim to mark different notions with different vocabulary. This terminological choice is not intended to track any pre-theoretic distinction one might discern, *e.g.*, between the near-synonyms “basic” and “fundamental”.

⁴⁷For the record, if we fail to recast the collapse, insisting that the trialist choose between **FUND** and **FACTS**, the trialist may reject **FACTS**, claiming that Beijing’s involvement in fundamental facts does not impugn its status as derivative, so long as those fundamental facts are grounding facts. Alternatively, the trialist may reject **D2**, the claim that Beijing is derivative, in the sense of §1. (Clearly these alternatives are not exclusive: the trialist may reject both claims.) Rejecting **D2** is tantamount to accepting the collapse in its original form; the trialist may take its lesson to be that fundamentality, in the sense of §1, is the wrong notion for explicating the idea of layered structure.

The trialist defense requires that we accord special treatment to grounding facts in our explication of the idea of layered structure. Suppose we accept the tripartite divisions of facts and entities. Then there is by implication a distinction between two sorts of fundamental facts: the grounding facts and the rest. The grounding facts don't get the label "basic", but they still must be mentioned if we are to completely specify that in virtue of which all of the rich panoply of facts obtain. One of the key intuitions backing the idea of layered structure is that Beijing, along with cityhood and a lot of other entities, need not be mentioned in order to give a complete specification of fundamental reality. The trialist defense has it that the mention of Beijing (along with all of the other entities) in grounding facts does not count against this idea. Somehow a specification of fundamental reality can be complete without mentioning grounding facts.

There are two problems with this idea.⁴⁸ First, the grounding facts are, after all, *facts*, and they are, on the trialist defense, facts that cannot be explained by appeal to further facts. So a specification of fundamental reality that leaves out the grounding facts leaves out some of the facts. This seems on its face a reason to think that such a specification is incomplete. The problem, to summarize, is that *any full specification of the basic facts that leaves the grounding facts out is intuitively incomplete*. Second, there seems to be no reason to grant grounding facts special treatment when we determine which entities are fundamental. Other facts, like

(15) Beijing is a less populous city than Shanghai

would, if they appeared in a complete specification of fundamental reality, count against the idea that Beijing is derivative. So *the trialist defense needs to justify the special treatment given to grounding facts*.

A trialist might motivate special treatment for grounding facts by appeal to a natural analogy between grounding and causation.⁴⁹ Grounding relations, like causal relations, are relations of determination and dependence. Like causal relations, grounding relations are accompanied by explanations that trace the direction of determination and dependence. The trialist picture yields a further point of similarity: both grounding and causal explanations have a tripartite structure. We have already noted the trialist's three-fold distinction among

⁴⁸Sider appears to concur; see [Sider, 2011, §8.2.1].

⁴⁹Thanks to Shamik Dasgupta and Jonathan Schaffer for offering this suggestion.

basic facts, generated facts, and grounding facts. In the case of causation, there are (i) the *causes*, (ii) the *effects*, and (iii) the *causal mediators*, which, depending on one's view of the metaphysics of causation, may be the laws, enabling conditions, counterfactual dependence relations, the causal relation itself, *etc.* It is a mistake, the trialist notes, to demand an answer to the question, "What caused the mediator?" in every case. Suppose, for instance, that the causal relation between the striking of the match and its ignition is mediated by a law which says, roughly, that matches ignite when struck. It would be a mistake to ask what caused the law itself to obtain. The law is not a cause; it is not an effect either; it is a third kind of thing. The trialist paints a picture on which grounding shares a tripartite structure with causation. The trialist may exploit this similarity of structure to argue for special treatment for grounding facts. The idea is that, just as it is a mistake to ask what causes the law that matches ignite when struck, so it is a mistake to ask what grounds the fact that ψ grounds Beijing's cityhood. Just as causal mediators need not themselves be part of the causal order, so the grounding facts need not themselves be part of the fundamentality order.

This analogy with causation does not support the claim that grounding facts are not part of the fundamentality order. Or, more accurately, it equally motivates the contrary claim, that grounding facts are part of the fundamentality order. This is because, while it does often seem mistaken to ask what *causes* a given causal mediator, it is not mistaken at all to ask what *grounds* it. Almost no one has written about what causes causal laws because that seems like a bad question; barrels of ink have been spilled in disputes about what grounds causal laws because that is a very good question. We may therefore exploit the similarity of structure between causation and grounding to argue that grounding facts should not receive special treatment: just as it is clearly in order to ask what grounds the law that matches ignite when struck, so it is clearly in order to ask what grounds the fact that ψ grounds Beijing's cityhood. Grounding facts are part of the fundamentality order, just like causal mediators. The trialist has noted that one way of generalizing from the case of causation suggests granting special treatment to grounding facts. But another, equally appropriate way of generalizing suggests instead that grounding facts should not be granted special treatment. Thus, the trialist's analogy between causation and grounding does not ultimately justify granting grounding facts the sort of special treatment

required by the trialist defense.

Perhaps, however, a justification could be mounted along the following lines: grounding is needed to explicate the idea of layered structure, and is theoretically very fruitful; if the price of these theoretical fruits is special treatment for grounding facts, then that price is well worth paying. The assumption here is that the trialist defense provides the only plausible way of avoiding the collapse. I have argued, however, that this assumption is false: we can avoid collapse at a cheaper price by endorsing **BECAUSE**. A trialist might urge, in response, that **BECAUSE** has its own problems: it faces objections independently of any antecedent commitment to trialism. Let's now consider some of these objections.

6 Objections

6.1 Regress

It might be thought that **BECAUSE** implies a problematic infinite regress. Suppose again that we have a true explanation of the form

- (2) Beijing is a city because ψ .

Then applications of **BECAUSE** yield a series of explanatory claims:

(Beijing is a city because ψ) because ψ
 ((Beijing is a city because ψ) because ψ) because ψ
 (((Beijing is a city because ψ) because ψ) because ψ) because ψ
 ...

This series is infinite, but there is no regress, or at least no problematic regress. According to **BECAUSE**, each fact in the series is grounded; all are grounded in the same fact, ψ . So explanations for every item in the series are anchored in a single fact. There is nothing more problematic in such a series of *explananda* than there is in the sensible idea that ψ also grounds every fact in the series

$(\psi \vee \phi_1)$
 $((\psi \vee \phi_1) \vee \phi_2)$
 $(((\psi \vee \phi_1) \vee \phi_2)) \vee \phi_3)$
 ...

where ϕ_1, ϕ_2, \dots are pairwise distinct, contingently false claims, *e.g.*, “I am 1 cm taller than LeBron James”, “I am 2 cm taller than LeBron James”, *etc.*

Another worry about **BECAUSE** is not so easily dismissed. The worry is that the explanations of grounding facts provided by instances of **BECAUSE** are all inadequate or incomplete. Suppose again that some fact ψ explains Beijing’s cityhood. Then ψ and the fact that Beijing is a city are related in a rare and special way: there is an explanatory tie between them. The fact ψ is not related in this way to just any old fact. Thus, the mere assertion of the fact ψ fails to account for the rare and special relation obtaining between ψ and Beijing’s cityhood and marked by our use of “because.” To account for that relation we need to say more than just that one of the relata obtains.

Why think that ψ fails to account for the explanatory relation between ψ and Beijing’s cityhood? Three reasons spring to mind. The rest of this section will be devoted to discussing each reason in turn.

6.2 Connection

The first reason one might have for thinking that instances of **BECAUSE** fail to account for the explanatory relation between *explanans* and *explanandum* concerns the form that explanations of grounding facts must take, given our assumptions. “Surely,” the objection goes, “one cannot explain why ψ explains Beijing’s cityhood without drawing a connection between ψ and Beijing’s cityhood. In order to explain why ψ explains Beijing’s cityhood, one would need to say something about *Beijing* and *cityhood*. Since there’s no way to explain the explanatory relation between ψ and Beijing’s cityhood without mentioning the erstwhile derivative entities, the relevant instance of **BECAUSE** is false.”⁵⁰

The objector’s core claim is:

CONNECTION To explain a certain feature of Beijing – its being a city because ψ – one must appeal to facts which themselves involve Beijing and cityhood.

The first thing to note about the objection is that the problem is not peculiar to the explanation of grounding facts. An entirely analogous objection can be put with respect to the putative explanation of ordinary facts involving Beijing. Consider Beijing’s cityhood. If **CONNECTION** is plausible, then so is the claim that one must mention Beijing and cityhood to explain Beijing’s cityhood.

⁵⁰Thanks to Rob Rupert and Shamik Dasgupta for independently pressing the need to respond to this objection.

Without such a mention, it will be mysterious how the putative explanation of Beijing’s cityhood is connected with *Beijing* and *cityhood*. Thus, insofar as **CONNECTION** is plausible, so is

ANALOGUE To explain a certain feature of Beijing – its cityhood – one must appeal to facts which themselves involve Beijing and cityhood.

Call this *the connection problem* for explaining Beijing’s features.⁵¹

A constraint on an adequate solution to the connection problem for explaining Beijing’s cityhood is that if we establish the requisite connection to Beijing by appeal to some fact involving Beijing or cityhood then that fact need not be among the *explanantia* for Beijing’s cityhood. The proponent of **BECAUSE** has the resources to meet this constraint. Recall that we can represent the form of an explanatory story by

$$(6) \quad \boxed{\begin{array}{c} \psi \\ \chi_1 \\ \chi_2 \\ \dots \\ \text{So, } \phi \end{array}}$$

, where the χ ’s stand in for ancillary material. Importantly, this ancillary material needn’t itself be reckoned to be part of the *explanans*. Suppose, for instance, that it is chilly but not windy. Then

$$(7) \quad \text{It is either chilly or windy because it is chilly}$$

is both true and complete. But, as we have seen, an explanatory story backing (7) may mention certain general facts involving the nature of disjunction, appealing, perhaps, to an inference rule or truth table for ‘or’. One shouldn’t think of these appeals to general claims about disjunction as part of the complete specification of those facts in virtue of which it is either chilly or windy, however.⁵²

⁵¹I borrow the label from Jonathan Schaffer (personal communication).

⁵²I think it’s tolerably clear that general claims about disjunction are not themselves part of any full specification of the facts in virtue of which it is either chilly or windy. But there is an argument for this conclusion, inspired by [Carroll, 1895]. Suppose we appeal to the validity of an inference rule for disjunction introduction in giving the explanatory story backing (7). Then a more complete grounding explanation for (7) is given by

$$(16) \quad \text{It is either chilly or windy because: it is chilly, and } \vee\text{-introduction is valid.}$$

Thus, we need to distinguish the entities that *must be mentioned in the explanatory story* from the entities *involved in the explanans*. A proponent of the plausible idea that Beijing is a city in virtue of facts concerning the locations, attitudes and activities of certain people may accept **ANALOGUE**, and insist that the relevant facts involving erstwhile derivative entities must be mentioned in the explanatory story, but are not themselves part of the *explanans*.

A similar response can be mounted to solve the connection problem for explaining the fact that ψ grounds Beijing’s cityhood. This shows, in effect, that **CONNECTION** is consistent with **BECAUSE**: we may appeal to facts involving derivative entities in the course of explaining the grounding fact even if the *explanans* ψ for the grounding fact involves none of those entities. Thus, the objector’s argument from **CONNECTION** to the falsity of an instance of **BECAUSE** is invalid as it stands.

One last note. The connection problem presents a challenge to the plausible suggestion that Beijing’s cityhood may be explained by appeal to facts that do not involve Beijing. For the same reasons, I have argued, it presents a challenge to the relevant instance of **BECAUSE**. But it is not a challenge that turns on whether grounding facts are derivative or how to ground them if they are. The connection problem is thus a more general (and potentially more serious) problem than the collapse. *A fortiori* it is a different problem from the collapse. Since this paper’s focus is the collapse, I set further discussion of the connection problem to the side.⁵³

6.3 Intelligibility

The connection problem appeals to a constraint on the *form* of an explanation of the fact that Beijing’s cityhood is explained by ψ : mention must be made of the erstwhile derivative entities. The second reason for thinking that ψ fails to

This explanatory proposal will itself be backed by an explanatory story, which makes appeal, implicitly or not, to the validity of, say, *modus ponens*. By parity of reasoning, a more complete explanation is given by

- (17) It is either chilly or windy because: it is chilly, \vee -*introduction* is valid, and *modus ponens* is valid.

But these explanatory proposals have gotten progressively less plausible. (If the conditionals corresponding to the applications of the inference rules must also be included, then we get a Carroll-style regress.) Clearly, the most plausible and least *ad hoc* way to respond to this pseudo-problem is to deny the first step: the validity of disjunction introduction is no part of a complete specification of that in virtue of which it is either chilly or windy.

⁵³See [deRosset, 2010] for an extensive discussion of the connection problem.

account for the explanatory tie between ψ and Beijing’s cityhood appeals instead to a constraint on an explanation’s *epistemological features*. “Any adequate explanation,” the objector claims, “must make its *explanandum* intelligible, given the *explanans*. Apply this constraint to the case of grounding facts. Here what needs to be made intelligible is the rare and special explanatory relation holding between ψ and Beijing’s cityhood. Merely citing ψ itself does not make that connection intelligible. Thus, the relevant instance of **BECAUSE** is false.” Call this the *intelligibility problem* for the explanation of Beijing’s cityhood.⁵⁴

A proponent of **BECAUSE** should respond to the intelligibility problem in the same way she responded to the connection problem. The facts one must cite to render the explanatory relation between ψ and Beijing’s cityhood is merely ancillary material. Indeed, the point of inserting ancillary material into the explanatory story is to deliver the relevant epistemic payoff – intelligibility – to one’s audience. In this respect, it is analogous to an appeal to inference rules in an explanatory story backing the proposal to explain a disjunctive fact by appeal to one of its disjuncts. Thus, in the course of offering the explanatory story that takes us from ψ to

- (2) Beijing is a city because ψ .

we might cite certain claims concerning how the entities involved in ψ are well-placed to be explainers for Beijing’s cityhood. We might, for instance, cite the fact that many of the people involved in ψ reside in Beijing’s location, and so their activities and actions are in the right place to explain Beijing’s cityhood. Perhaps these ancillary claims are needed to show how ψ renders the grounding fact intelligible to one’s audience. But we should not infer that they are part of those facts in virtue of which the grounding fact (2) obtains. The objector’s inference from the need to render (2) intelligible to the falsity of instances of **BECAUSE** is invalid as it stands.

6.4 Explanatoriness

The intelligibility problem alleges that the explanatory claims yielded by instances of **BECAUSE** are *epistemically* inadequate. The next objection focuses

⁵⁴Thanks to Kit Fine for pressing the need to address the intelligibility problem. We might discern a link between the intelligibility problem and the connection problem: the connection problem might be thought to arise because we will fail to make the Beijing’s possession of its features intelligible to our audience unless we mention Beijing or the relevant feature.

instead on a supposed *metaphysical* inadequacy of those claims. The worry is that grounding facts have a component that the explanations given by instances of **BECAUSE** fail to capture. This extra component is what we might call the *explanatoriness* of the relation between *explanans* and *explanandum*. It's the explanatory *oomph* imparted to Beijing's cityhood by whatever facts explain it.

The problem may be approached by way of an analogy. It is a fact that Elizabeth Windsor, the Queen of England, was born of certain parents. A rough outline of the sort of facts relevant to grounding this fact might include facts concerning the production by her parents of certain gametes, the combination of those gametes, and her emergence through a normal process of gestation and birth. These seem like the sort of facts in virtue of which Windsor was born of those parents. But now suppose that it is a fact that Windsor was born of those parents as a matter of necessity.⁵⁵ The facts which explain her (actually) being born of those parents clearly fail to explain her *necessarily* being born of those parents. That is, if Windsor is born of parents p_1 and p_2 in virtue of the fact that P , the explanatory proposal

(18) Windsor is necessarily born of p_1 and p_2 because P

clearly fails.

It's obvious that what's missing from (18) is precisely something that grounds the *necessity* of Windsor's parentage. Further, it just seems wrong to suggest that the further facts we must mention to account for this necessity are mere ancillary material that are no part of those facts in virtue of which the necessity obtains. Finally, (18) clearly fails even if it passes the requirement of upward necessitation. Suppose that the characteristic axiom schema of S4 is true, so that if it is necessary that Windsor be born of certain parents, then it is necessarily necessary that she be born of those parents. On this supposition, the explanatory proposal (18) passes the requirement of upward necessitation. Given that Windsor is necessarily born of certain parents, it is necessary that she necessarily be born of those parents. Since it's impossible that the *explanandum* be false, it's impossible that the proposed *explanans* be true and the *explanandum* false. This gives us upward necessitation. So what? The explanatory proposal (18) is clearly incomplete or inadequate anyway.

⁵⁵Perhaps what's necessary is only that Windsor be born of certain parents *if she exists*. I suppress any such qualification here and below for the sake of exposition.

The analogous complaint in the case of **BECAUSE** is that the proposed explanations of grounding facts are incomplete or inadequate insofar as they are missing something that grounds the *explanatoriness* of the relation between the facts in question. Thus, given a fact ψ in virtue of which Beijing is a city, **BECAUSE** yields

(19) (Beijing is a city because ψ) because ψ .

ψ may necessitate Beijing's being a city, and, as I have argued, it may even necessitate the explanatory relation between Beijing's being a city and ψ . This would give us upward necessitation. "But," the objection goes, "so what? Mere necessitation is insufficient for there to be an explanatory relation between ψ and Beijing's being a city. The explanatory proposal (19) is incomplete or inadequate: it fails to include any ground for the explanatory *oomph* imparted by ψ to Beijing's cityhood."

The complaint in the case of the alleged explanation of the necessity of Windsor's being born of her actual parents seems to me clearly correct. Here is an analogue, for necessary truths ϕ , of **BECAUSE**

NEC ϕ because $\psi \Rightarrow \Box\phi$ because ψ .

To see the analogy, note that we can understand **BECAUSE** as saying that when ψ explains a derivative fact ϕ , ψ also explains a certain feature of ϕ : to wit, its obtaining in virtue of ψ . **NEC** may be understood similarly, as the claim that when ψ explains a necessary truth ϕ , it also explains a certain feature of ϕ : its necessity. **NEC** is a clear non-starter. The objector is claiming that **BECAUSE** has an analogous problem.

How should a proponent of **BECAUSE** respond? The idea that animates the objection is

EXPLANATORINESS There is a component – *explanatoriness* – of the explanatory relation between Beijing's cityhood and a fact ψ in virtue of which it obtains that isn't captured by any explanation that appeals only to ψ as *explanans*.

This claim is pretty obscure. Though the obscurity of the claim gives me pause, I propose to press on nonetheless. Presumably there is a similar worry about the obscurity of the idea that there is a component – necessity – of the fact that

Windsor is necessarily born of certain parents, but the charge against **NEC** is nonetheless compelling. So, let's provisionally set aside the worry about the obscurity of **EXPLANATORINESS**. It seems to me that the best strategy for responding to the objection is to deny that metaphysical claim, and embrace instead a deflationary view of grounding explanation.

A deflationary view of grounding explanation would hold that there is nothing interesting or informative to say about the nature or constitution of *explanatoriness* in general. The explanatory *oomph* imparted by the facts that ground Beijing's cityhood is constituted by those very same facts. Likewise, the explanatory *oomph* imparted by the very different facts that ground the weakness of gravity is constituted by those different facts. There is no commonality in the nature of these instances of *explanatoriness* that can helpfully be brought to bear when considering the merits of a proposed grounding explanation of the relevant grounding facts. There is no extra component of the grounding fact

(2) Beijing is a city because ψ .

that fails to be accounted for even after we have noted that ψ obtains. Thus, there is no helpful general account of the nature of *explanatoriness*, as might be provided, *e.g.*, by the deductive-nomological account [Hempel and Oppenheim, 1948]. The nature of grounding explanation is exhausted by the instances of **BECAUSE**.

This deflationary point of view makes available the following response to the objection: the explanation of (2) by appeal to ψ does, after all, contain the ground for the *explanatoriness* of the relation between ψ and Beijing's being a city. The ground for that explanatoriness is ψ itself. The explanation does not take the form of applying a helpful general account of the nature and constitution of *explanatoriness* to the case at hand, and showing that ψ fits the contours of that account. For instance, it does not take the form of invoking the deductive-nomological account of explanation, and showing that ψ fits. But, according to the deflationary view, there is no such general account to be had, unless we think of the totality of instances of **BECAUSE** as providing the account.

Once again, an analogy may help to make the response clearer. A deflationist about truth endorses an analogue, for truths ϕ , of **BECAUSE**:

TRUTH ϕ because $\psi \Rightarrow$ (it is true that ϕ) because ψ .⁵⁶

Consider once again a grounding explanation of the form

(2) Beijing is a city because ψ .

Application of **TRUTH** yields

(20) (It is true that Beijing is a city) because ψ .

Imagine an objector who complains that (20) is incomplete or inadequate, since it provides no grounds for the *truthiness* of the proposition that Beijing is a city. A deflationist about truth should reply that there is nothing interesting or informative to be said about the nature or constitution of *truthiness* in general. That nature is exhausted by the totality of instances of the schema⁵⁷

E $\langle \phi \rangle$ is true iff ϕ [Horwich, 1990]

The *truthiness* of the proposition that Beijing is a city is imparted by Beijing's being a city; likewise, the *truthiness* of the proposition that telling lies is wrong is imparted by the wrongness of telling lies. There is no commonality in the nature of these instances of *truthiness* that can be brought to bear when considering the merits of a proposed grounding explanation of the relevant truth facts. The instances of (E) say all there is to say about the nature of *truthiness*.⁵⁸ Such a deflationist will hold that, insofar as there is any such thing as *truthiness*, (19) provides grounds for the *truthiness* of the proposition that Beijing is a city, and so is not incomplete or inadequate as the objector maintains. I am suggesting, in effect, that **BECAUSE** be defended along similar lines.

A deflationist about truth holds that, insofar as there is any such thing as *truthiness*, it is accounted for in every case by appeal to instances of **E**; as the proponents of the deflationary conception sometimes put it, the instances of **E** "exhaust the nature of truth." One might worry that this deflationary claim is so obscure that we have no reasonable grip on what it means. One might have

⁵⁶To see the analogy, recall that **BECAUSE** may be understood as saying that when ψ explains a derivative fact ϕ , ψ also explains a certain feature of ϕ : to wit, its obtaining in virtue of ψ . **TRUTH** may be understood similarly, as the claim that when ψ explains a truth ϕ , it also explains a certain feature of ϕ : its truth.

⁵⁷I am ignoring the fact that **E** in its full generality apparently leads to the liar paradox.

⁵⁸This deflationary view is in principle independent of various forms of *disquotationalism* about truth. A disquotationalist might hold that the sole function of truth predicates in natural language is disquotational, or that sentences of the form 'it is true that ϕ ' are synonymous with ϕ , *etc.* Thanks to Richard Heck.

a similar worry about the deflationary view of grounding explanation: we have no reasonable grip on the claim that, insofar as there is any such thing as *explanatoriness*, it is accounted for in every case by the instances of **BECAUSE**. I share these worries. But, in the case of the deflationary defense of grounding, it is important to realize that the obscurity of the idea is a problem with the objection: the objection we are considering relies on **EXPLANATORINESS**; the deflationary response I have suggested is just the denial of that claim. Recall that, in discussing how to respond to the objection, we set aside the obscurity of **EXPLANATORINESS**. The proposal to embrace deflationism thus only arises if the obscurity of the objector’s claim is no barrier to a discussion of its merits. So, either **EXPLANATORINESS** is objectionably obscure, or it isn’t. If it is, then we don’t have an objection to **BECAUSE** that is clear. If it isn’t, then neither is its denial. In neither case, I have argued, do we have an objection to **BECAUSE** that is both clear and well-motivated.⁵⁹

7 Conclusion

Grounding explanations are ubiquitous in philosophy and the sciences. They appear to provide a way of making sense of the intuitive conception of reality on which it has layered structure. The collapse threatens this way of making sense of layered structure. I have suggested that the collapse may be avoided by denying that grounding explanations are fundamental, and I have urged **BECAUSE** as a proposal for grounding them. **BECAUSE** does not require that grounding explanation be analyzable in or reducible to other terms; it does not require that the notion of a grounding explanation be either conceptually or metaphysically derivative. It meets the requirement of upward necessitation. It does not require the trialist’s otherwise unmotivated distinction between grounding facts and other explanatorily fundamental facts. It does not succumb to problems concerning regress, connection, intelligibility, or explanatoriness. These considerations make a powerful case in its favor.⁶⁰

⁵⁹Thanks to Ted Sider and Robert Schwartzkopff for discussion.

⁶⁰A version of this paper was presented at the “Because” II conference, jointly sponsored by the Eidos Centre for Metaphysics and the Phlox group, at the Humboldt Universität zu Berlin and at the 2011 Western APA in San Diego, CA. Thanks to David Chalmers, Shamik Dasgupta, Kit Fine, Carrie Jenkins, Mark Moyer, Derk Pereboom, Jonathon Schaffer, Benjamin Schnieder, Robert Schwartzkopff, Ted Sider, Alex Skiles, and Kelly Trogdon for comments and discussion.

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