

# THE GROUNDS OF NONGROUND

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## ABSTRACT

This paper concerns the grounds of nonground: what makes facts of the form [ $F_1$  does not ground  $F_2$ ] hold. I argue that nonground is grounded in distinctness from ground. If  $F_1$  does not ground  $F_2$ , the reason it does not is that it is distinct from that which does ground  $F_2$ . While this proposal strikes me as natural, it faces puzzles involving contingency, fundamentality and cardinality. The bulk of this paper explores how the view might be precisified, and how these puzzles might be resolved.

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## 1. Introduction

The facts of the world do not lie in disarray; they exhibit patterns of explanation and dependence. The Forbidden City's walls are some shade of red because they are vermilion—and the number of United Nations member states is prime because the number is 193. Not all facts hold in virtue of all others. It is not the case that Socrates is wise because {Socrates} contains someone wise—nor is it the case that the Eiffel Tower is actually tall because it lies four kilometers from Montmartre. Recently, philosophers have dubbed this phenomenon 'grounding'.<sup>2</sup> If one fact holds in virtue of another, we say that the latter grounds the former. If one fact does not hold in virtue of another, we say that the latter does not ground the former.

Given that facts are organized in this way, the grounding relation is of paramount philosophical importance. Puzzles in numerous subfields can be understood as debates over ground. The question of physicalism might be interpreted as a debate over whether the mental is grounded in the physical—and the question of normative naturalism might be interpreted as a debate over

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<sup>2</sup> The literature on ground is too extensive to canvass here. Early converts include Schaffer (2009); Fine (2012). For critiques of theories of ground, see Wilson (2014); Fritz (2022)—for replies, see Berker (2017); Goodman (2023); deRosset (2023). I will not defend the intelligibility of grounding here. This paper is directed towards those who already theorize in terms of ground; it is not intended to convince those who do not.

whether the normative is grounded in the non-normative. Unsurprisingly, metaphysicians have dedicated substantial effort into studying the nature of ground.

There is a puzzle of iterated ground. What (if anything) grounds facts about grounding? If one fact grounds another, why does the grounding relation obtain? And what grounds facts about nongrounding? If one fact does not ground another, why does the grounding relation not obtain?

These questions impact traditional philosophical debates. Philosophers armed with a theory of iterated ground have the resources to explain—in a deep sense—what makes their theories true. A physicalist who understood the grounds of grounding could explain both the physical foundations of the mental and why the mental is grounded as it is. A dualist who understood the grounds of nongrounding could both reject physicalism and explain why the mental does not depend upon the physical as the physicalist claims.

The puzzle of iterated ground has generated a large (and rapidly growing) literature. Theories of what grounds facts of the form  $[F_1 \text{ grounds } F_2]$  include the following:<sup>3</sup>

|                                |                                                                                                              |
|--------------------------------|--------------------------------------------------------------------------------------------------------------|
| <i>Superinternal Grounding</i> | Not only does $F_1$ ground $F_2$ , but $F_1$ also grounds the fact that $F_1$ grounds $F_2$ .                |
| <i>Grounding Essentialism</i>  | The essences of the constituents of $F_2$ , together with $F_1$ , ground the fact that $F_1$ grounds $F_2$ . |
| <i>Bridge Principles</i>       | Metaphysical bridge-principles—akin to metaphysical laws—ground the fact that $F_1$ grounds $F_2$ .          |
| <i>Grounding Disunity</i>      | There is no unified theory to provide; different grounding facts are grounded in different ways.             |

Superinternalists hold that  $F_1$  performs double duty.<sup>4</sup> Not only does it explain why  $F_2$  obtains, but it also explains why the explanation itself holds. Essentialists view this explanation as incomplete—noting that specific examples of superinternal grounding sound implausible. When confronted with a question like ‘Why does the fact that John’s C-fibers are firing explain the fact that John is in pain?’ the response, ‘Because John’s C-fibers are firing’ seems inadequate. They believe that the essence of pain—together with the fact that John’s C-fibers are firing—provides a complete explanation. Bridge Principlists, for their part, maintain that grounding is (in some respects) analogous to causation. Just as causal explanations are backed by nomological laws, so too grounding explanations are backed by metaphysical laws. And Disunionists hold that

<sup>3</sup> For defenses of *Superinternal Grounding*, see Bennett (2011) and deRosset (2013, 2023). For a defense of *Grounding Essentialism*, see Dasgupta (2014). For a defense of *Bridge Principles*, see Schaffer (2017). For a defense of *Grounding Disunity*, see Sider (2020).

<sup>4</sup> The term ‘superinternal’ was coined by Bennett (2011). There is a classic distinction between internal and external relations. A relation  $R$  is said to be ‘internal’ just in case, for any  $a$  and  $b$ , the characteristics—or intrinsic nature—of  $a$  and  $b$  determine whether  $a$  stands in relation  $R$  to  $b$ . A relation is said to be ‘external’ just in case it is not internal. For example, relative mass might be considered to be an internal relation (since the masses of  $a$  and  $b$  determine whether  $a$  is more massive than  $b$ ), while relative weight might be considered to be an external relation (since locations of other massive objects impact how much  $a$  and  $b$  weigh). Following Bennett, a relation  $R$  is said to be ‘superinternal’ just in case the characteristics—or intrinsic nature—of *only one of the relata* determine that the relation obtains.

the most plausible grounds for grounding facts vary case by case; perhaps we were wrong in supposing that there is a unified story to be told.

The complementary question—what grounds facts of the form  $[F_1 \text{ does not ground } F_2]$ ?—has received far less attention.<sup>5</sup> This relative omission is, to my mind, very surprising—as the exact same arguments that motivate the puzzle of iterated ground apply to the grounds of nonground.

Many philosophers appeal to *Purity*—the principle that fundamental facts only have fundamental constituents.<sup>6</sup> If the fact [electron  $e$  is spin-up] is fundamental, *Purity* entails that both electron  $e$  and the property *being spin-up* are fundamental as well. The problem is that, if facts of the form  $[F_1 \text{ grounds } F_2]$  were fundamental, fundamentalia would proliferate.<sup>7</sup> Suppose that philosophers are having a conference—and that the fact that they are having a conference is grounded in the fact that they are engaging in activities  $C$ . If the grounding fact [The fact that philosophers engage in  $C$  grounds the fact that they are having a conference] were fundamental, then philosophers, *engaging in C*, and *having a conference* would all be fundamental. To avoid this proliferation of fundamentalia, perhaps we ought to hold that grounding facts are grounded in some way or other.

An analogous argument applies to nongrounding facts. As before, suppose that philosophers are having a conference—but also suppose that the fact that they are having a conference is *not* grounded in the fact that they are engaging in activities  $C^*$ . If the nongrounding fact [The fact that philosophers engage in activities  $C^*$  does not ground the fact that they are having a conference] were fundamental, then philosophers, *engaging in  $C^*$* , and *having a conference* would all be fundamental. This example generalizes. Arguably, everything figures in *some* nongrounding fact; for an arbitrary fact  $F_1$ , there is some other fact  $F_2$  that  $F_1$  does not ground (after all, no fact grounds absolutely everything). If nongrounding facts were fundamental, *Purity* would entail that the constituents of  $F_1$  (and  $F_2$ ) are all fundamental. Because the choice of  $F_1$  was arbitrary, *Purity* would thus entail that absolutely everything is fundamental.

Schaffer (2010b) and Bennett (2011) provide another argument that relies on a principle of free modal recombination. Derivative facts cannot be freely recombined; possible worlds that contain the same fundamental facts also contain the same facts that depend upon them. For example, possible worlds cannot contain different conjunctive facts without also containing different atomic facts; conjunctions supervene upon their conjuncts. The reason that recombination fails, Schaffer and Bennett argue, is that conjunctive facts are grounded in their conjuncts. This does not hold for fundamental facts themselves. So, perhaps for any collection of fundamental facts  $F_1, F_2, \dots$  there are worlds that disagree with respect to  $F_1, F_2, \dots$  but agree with respect to all other fundamental facts.

<sup>5</sup> To the best of my knowledge, the only discussion of the grounds of nonground occurs in Rumm (Unpublished Manuscript).

<sup>6</sup> In what follows, ‘fundamental fact’ should be interpreted as ‘ungrounded fact.’ Arguably, the most canonical discussion of *Purity* occurs in Sider (2011). However, see Fine (2010); deRosset (2013); Raven (2016) and Litland (2017) for other defenses of *Purity*. I myself am skeptical of *Purity*, for reasons provided by Elgin (2026a). However, I suspect that sufficiently many philosophers endorse *Purity* that this argument has real force. See Barker (2023) for another argument against *Purity*.

<sup>7</sup> A sophisticated version of this point is developed in deRosset (2023)—who argues that if grounding facts were fundamental, everything would be fundamental.

Suppose that nothing grounds facts about what grounds what; facts of the form [ $F_1$  grounds  $F_2$ ] are fundamental. According to *Recombination*, there would then be pairs of possible worlds that disagree about the grounding facts, yet agree with respect to all other fundamental facts. In particular, there is a world that is identical to this one, except that none of the actual grounding relations obtain. If, in the actual world, disjunctions are grounded in their true disjuncts, in this alternate world disjunctions are *not* grounded in their true disjuncts. And if, in the actual world, the fact that a substance is made of water is grounded in the fact that it is made of  $H_2O$ , in this alternate world the fact that a substance is made of water is *not* grounded in the fact that it is made of  $H_2O$ . This leads to an odd sort of skepticism. What makes us think that we occupy a world in which facts are grounded, rather than one in which they are not? After all, a nongrounding world would be phenomenally indistinguishable from ours—and the arguments that lead philosophers to endorse grounding would apply there as well. Finding this possibility implausible, Schaffer and Bennett conclude that grounding facts are grounded in one way or another.

Once again, a parallel argument applies to nongrounding facts. Suppose that nothing grounds facts about what does *not* ground what; facts of the form [ $F_1$  does *not* ground  $F_2$ ] are fundamental. According to *Recombination*, there would be pairs of worlds that disagree about the nongrounding facts, yet agree with respect to all other fundamental facts. There would then be a world identical to this one, except that the nongrounding facts do not hold. If it is actually the case that  $F_1$  does not ground  $F_2$ , in this alternate world  $F_1$  *does* ground  $F_2$ . This is a world that radically violates the logic of ground—one where seemingly unrelated facts ground one another with abandon. If grounding is actually irreflexive, no fact actually grounds itself. In this alternate world, *every* fact grounds itself. And if the fact that the sky is blue does not actually ground the fact that chocolate contains cocoa, in this world the fact that the sky is blue *does* ground the fact that chocolate contains cocoa. Because all other fundamental facts obtain, this world would be phenomenally indistinguishable from ours—and the same arguments concerning grounding would apply. What makes us think that we occupy the world where grounding is well-behaved—one in which it complies with intuitive logical principles and where facts are relevant to that which they ground—rather than the world where it is not? To avoid this problem, perhaps we ought to hold that nongrounding facts are grounded in one way or another.

The arguments that motivate theories of iterated ground thus motivate theories of the grounds of nonground as well; the reasons to hold that nongrounding facts are derivative are just as strong as the reasons to hold that grounding facts are derivative.<sup>8</sup> Simultaneously, these arguments do not strike me as conclusive. An available response is to reject both *Purity* and *Recombination*—after which they lose much of their force.<sup>9</sup> But the arguments are strong enough

<sup>8</sup> Another argument that grounding facts are derivative occurs in Correia (2023), who cites a principle of Settledness, according to which For every thick grounding fact [ $F$  is grounded in  $FF$ ] and some fact  $X$  among  $F$  and  $FF$ , [ $F$  is grounded in  $FF$ ] is less fundamental than  $X$ . I do not discuss this argument in depth, but believe a parallel argument can also be constructed for nongrounding facts.

<sup>9</sup> I do not mean to suggest that those who reject *Purity* and *Recombination* face no pressure to provide such a theory. As Dasgupta (2014) argues, the motivation to provide theories of iterated ground (or nonground) may arise from a general desire to specify connections between metaphysical levels, rather than these precise principles.

to justify an exploratory venture; they warrant the development of a theory of the grounds of nonground, if for no other reason than to determine what progress or pitfalls might arise.

A brief remark on my ontological assumptions. Some will balk at the claim that there is a nongrounding *fact*. There is a long and deep-seated resistance to negative facts.<sup>10</sup> (Indeed, Russell once remarked that his defense of negative facts “nearly produced a riot” (Russell, 1919).) The thought is that once we specify how the world *is*, there is little need to specify how the world *is not*—so there may be no theoretical work for negative facts to perform. Facts of the form  $[F_1 \text{ does not ground } F_2]$  are negative; they hold that the grounding relation does not obtain. If there are no negative facts, then there are no nongrounding facts—so the question of what grounds them does not arise.

I have several responses to this concern. The conception of facts that I primarily operate with is somewhat deflationary. Facts are nothing more than true propositions. In order for a fact to exist, the world requires nothing more than that the proposition it corresponds to is true. Many negations are true; it is true that I am not standing—and this truth suffices for the fact that I am not standing to exist. Additionally—and perhaps more conciliatorily—this paper is primarily directed towards philosophers who already believe that negative facts exist, either in my deflationary sense of ‘fact’ or in a more robust manner. But I suspect that some explanatory demand remains however the ontological question is settled. Whether or not there is an *entity* corresponding to the claim that  $[p]$  does not ground  $[q]$ , there remains the question of why  $[p]$  fails to ground  $[q]$ . Those who feel the pressure of this question may be interested in theories of nonground.

## 2. The Grounds of Nonground

It is worthwhile to precisify our notation. One distinction that impacts formal theories of grounding is that between full and partial ground. A collection of facts is said to fully ground another if they suffice (in the relevant sense) to make that fact true. A fact is said to partially ground another if it is a member of a collection of facts that fully ground.<sup>11</sup> Thus, the fact that roses are red fully grounds the fact that roses are red or violets are blue—but merely partially grounds the fact that roses are red and violets are blue. Following standard notation, I use the variably polyadic operator ‘ $\llcorner$ ’ to denote full ground and the binary sentential operator ‘ $\lhd$ ’ to denote partial ground.

A significant choice-point concerns the relata of the grounding relation. While I have operated with the (somewhat orthodox) conception on which ground relates facts thus far, some hold that it is a relation between propositions instead.<sup>12</sup> I primarily operate with the first interpretation,

<sup>10</sup> For the classic case against negative facts, see Armstrong (2004); see Molnar (2000) for a survey of the options, and Barker and Jago (2012) for a defense. I do not take a stand on this debate here.

<sup>11</sup> While this formulation of the distinction between full and partial ground is standard, see Trogdon and Witmer (2021) for an argument that fully ground should be defined in terms of partial ground, rather than the reverse. See, also, Trogdon (2025).

<sup>12</sup> Fine (2012) employs both a factive and a non-factive conception of ground—while Schaffer (2009) opts for an entity conception. See Wilhelm (2020) for an argument for the entity-conception and Lo (2022) for a reply. See, also, Elgin (2026b) for a use of the grounding operator for all terms across the type-theoretic hierarchy.

but will flag the second when it is significant. As is already evident, I denote facts with  $[ ]$  notation—and will refer to propositions without the use of brackets. Thus, ' $[p] < [q]$ ' asserts that the fact that  $p$  fully grounds the fact that  $q$ , while ' $p < q$ ' asserts that the proposition  $p$  fully grounds the proposition  $q$ . I primarily operate with a factive notion of ground, but explore the advantages of a non-factive notion later in this paper.

Let a nongrounding fact be any that takes the form:

$$[\neg([p] < [q])]$$

This is intended to be interpreted as: the fact that it is not the case that the fact that  $p$  grounds the fact that  $q$ . While I begin by discussing non-*full*-ground, I address non-*partial*-ground as well. Ground is variably polyadic, and the account extends to plural nonground in the obvious way: I also seek conditions for  $[p_1], [p_2], \dots$  to fail to ground  $[q]$ . For ease of exposition I primarily work with examples in which a single fact serves as the nonground, and return to the plural case when significant below.

To develop a theory of the grounds of nonground, it helps to start with a concrete example. Let  $[p]$  and  $[q]$  be fundamental facts, and consider the disjunction  $[p \vee q]$ . Most metaphysicians hold that disjunctions are grounded in their true disjuncts. In this case, both  $p$  and  $q$  are true, so  $[p \vee q]$  is fully grounded in  $[p]$  and fully grounded in  $[q]$ . In principle, of course, the disjunction could have further grounds. Many maintain that ground is transitive—so if either  $[p]$  or  $[q]$  were derivative, the disjunction would also be grounded in whatever it is that grounds them.<sup>13</sup> Even granting that  $[p]$  and  $[q]$  are fundamental, the disjunction could be grounded in additional ways—at least in principle.<sup>14</sup> However, for the sake of simplicity, let us assume that these are the only grounds.  $[p \vee q]$  is fully grounded in  $[p]$ , fully grounded in  $[q]$ , and nothing else.

What grounds the fact that  $[\neg([r] < [p \vee q])]$ ? That is, if  $[p \vee q]$  does not hold in virtue of  $[r]$ , what explains the fact that it does not hold in virtue of  $[r]$ ? A natural suggestion is that the reason  $[r]$  does not ground the disjunction is because it isn't that which *does* ground the disjunction.  $[r]$  *isn't*  $[p]$ —and  $[r]$  *isn't*  $[q]$ .  $[p]$  and  $[q]$  are the only things that ground  $[p \vee q]$ ; because  $[r]$  isn't either of those facts, it does not ground  $[p \vee q]$ . The facts that  $[[r] \neq [p]]$  and  $[[r] \neq [q]]$  collectively ground the fact that  $[r]$  does not ground  $[p \vee q]$ .

This particular example can be generalized. Take an arbitrary fact  $[q]$  fully grounded in each of the facts  $[p_1], [p_2], \dots$  (that is, a fact  $[q]$  such that  $[p_1] < [q], [p_2] < [q], \dots$ ). What grounds the fact that  $[r]$  does not ground  $[q]$ ? On my view, the fact that  $[r]$  is distinct from all of  $[q]$ 's grounds: the fact that  $[r] \neq [p_1]$ , the fact that  $[r] \neq [p_2]$ , etc. In a slogan, nonground is grounded in distinctness from ground.

There are two ways that the distinctness account might be interpreted. On the first conception, the grounds take the form of a universal. The ground of the fact  $[\neg([p] < [q])]$  is the

<sup>13</sup> For potential counterexamples to the transitivity of ground, see Schaffer (2012)—and for a reply, see Litland (2013).

<sup>14</sup> Here is an example of how this might occur. Suppose that [electron  $e$  is spin-up] is fundamental, and that it is a law that a measurement along the  $z$ -axis yields a definite value. The law, together with the fact that  $e$  was measured along the  $z$ -axis, plausibly grounds [ $e$  is spin-up or  $e$  is spin-down] without grounding either disjunct, since which outcome occurs is objectively chancy. I do not wish to place inordinate weight on this particular example; the point is only that we ought not assume that something of this structure could not exist.

fact  $[\forall x((x < [q]) \rightarrow (x \neq [p]))]$ . On the second conception, the grounds of nongrounding facts consist of a plurality of distinctness facts— $[p]$ 's distinctness from those facts which happen to ground  $[q]$ . Here, I will concentrate on the second conception. Plausible assumptions about the logic of ground entail that the first violates the irreflexivity of partial ground—and I do not wish to dispute these assumptions.<sup>15</sup>

While I personally find this proposal intuitive, it might strike others as implausible.<sup>16</sup> After all, if  $[p]$  does not ground  $[q]$ , shouldn't this depend only on facts about  $[p]$  and  $[q]$ ? Why is  $[p]$ 's distinctness from *some other fact* relevant to the grounds of nonground?

In some sense, this is a difficult challenge to rebut. It is difficult to cultivate an intuition—and if a philosopher denies that my theory has intuitive appeal, there is little I can say that will bring it about. But it might help to emphasize the oddity of denying my account in explanatory contexts. Suppose that the fact [grass is green] is grounded in the fact that  $[p]$  (perhaps some fact about grass's microphysical structure). Consider a context where two philosophers are discussing why grass's color is not grounded in other ways. Suppose one were to ask, 'Why isn't grass's greenness grounded in the fact that  $[q]$ ?' and were met with the reply 'As it turns out, grass's greenness is only grounded in the fact that  $[p]$ . The fact that  $[p]$  isn't the fact that  $[q]$ , so grass's greenness isn't grounded in the fact that  $[q]$ .' It is very difficult to see how this explanation could be deficient—or to imagine what a more satisfying one would look like. Once someone is convinced that the fact that  $[q]$  differs from the grounds of [grass is green], there is little else to be confused about.

Nevertheless, this theory faces a number of puzzles and challenges. In what remains of this paper, I will explore various ways the theory might be developed, and how problems might be avoided. I do not take the resulting account to be the only viable candidate—and I will not argue that it is preferable to all others. My aim is to show that this is a *good* theory, not necessarily the best.

### 3. A Puzzle for Full Nonground

The distinctness view gives rise to a pair of related puzzles for full and partial ground. These dilemmas become most apparent with the help of two auxiliary principles:

*Necessity of Distinctness*      If  $[p]$  is distinct from  $[q]$ , then  $[p]$  is necessarily distinct from  $[q]$ .

*Ground and Strict Implication*      If  $[p]$  grounds  $[q]$ , then, necessarily, if  $p$  is true then  $q$  is true.

Each of these principles is controversial, yet eminently defensible. The necessity of distinctness is a theorem in modal logics containing the B axiom  $p \rightarrow \Box\Diamond p$ .<sup>17</sup> If we model modality with

<sup>15</sup> The assumptions in question are that universal facts are grounded in their instances, and that material conditional facts are grounded in the falsity of their antecedent (in the case where their antecedent is false). I take the suggestion that universal facts are grounded in their instances to be standard. For an appeal to this ground of conditional facts, see Donaldson (2017).

<sup>16</sup> My thanks to Ezra Rubenstein for pressing me on this point.

<sup>17</sup> This was established in (Prior, 1962, pp. 205–6). I have included a brief informal discussion of the reasoning behind the proof; I direct those interested in the technical details to the original text. An additional argument for

possible-worlds semantics, B corresponds to the assumption that accessibility is symmetric; if world  $w$  can access  $w'$ , then world  $w'$  can also access world  $w$ .

Suppose, for reductio, that distinctness were contingent;  $[p]$  and  $[q]$  are actually distinct, but could have been identical. Therefore, there exists a possible world  $w$  where  $[p]$  is identical to  $[q]$ . The necessity of identity is a theorem in even the weakest of the standard modal logics—so, within  $w$ , it is provable that  $[p]$  is necessarily identical to  $[q]$ .<sup>18</sup> Every world that  $w$  can access is one in which  $[p]$  is identical to  $[q]$ . Given the B axiom, this includes the actual world—so  $[p]$  is (actually) identical to  $[q]$ . This contradicts the assumption that  $[p]$  and  $[q]$  are (actually) distinct. Therefore, facts that are actually distinct are necessarily distinct.

Ground and Strict Implication is the orthodox connection between grounding and necessity.<sup>19</sup> It asserts that if  $[q]$  holds in virtue of  $[p]$ , there is no possible situation where  $p$  is true and  $q$  is false. It reflects the thought that full ground provides a complete explanation; if the truth of  $p$  does not settle the truth of  $q$ , then a complete explanation for why it is the case that  $[q]$  requires more than merely citing  $[p]$ . After all,  $[p]$  fails to rule out the possibility that  $q$  is false. So, if  $[p]$  fully grounds  $[q]$  it is necessary that if  $p$  then  $q$ .

While these principles both strike me as plausible, they remain controversial—so it is worthwhile to clarify the dialectical role that they play. Here, they serve to generate challenges to my account. In a sense, those who reject them need not disagree with anything that I say; rather than objecting to my view, such philosophers have another path to accepting the claim that distinctness grounds nonground.

Consider a variant of the initial example: suppose that  $p$  is contingently true and  $q$  is contingently false; suppose that both are fundamental—and consider  $[p \vee q]$ . There is then a fact  $[p]$  but there is no fact  $[q]$ . In this case, the grounds of the disjunction are not overdetermined. It is grounded by  $[p]$ , and nothing else.

Because  $[p \vee q]$  is only grounded in  $[p]$ , the distinctness view holds that the reason  $[q]$  does not ground  $[p \vee q]$  is that  $[q]$  is distinct from  $[p]$ . That is:

$$[[q] \neq [p]] < [\neg([q] < [p \vee q])]$$

Given Ground and Strict Implication, this entails the following:

$$\Box([q] \neq [p]) \rightarrow [\neg([q] < [p \vee q])]$$

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the necessity of distinctness (that employs an actuality operator, rather than the B axiom) occurs in Williamson (1996). However, for an argument that distinctness is contingent (on the grounds that principles of free modal recombination entail contingent distinctness) see Roberts (2023). Much of this debate centers on the distinctness of objects—rather than facts (so, if we were to formulate these debates in type-theory, it would be represented by terms of type  $e$ , rather than  $t$ ). I take it that the arguments translate; it would be odd for a philosopher to hold that the distinctness of objects was necessary, but the distinctness of facts contingent (or vice-versa).

<sup>18</sup> The necessity of identity was first proven in Barcan (1947)—and the assumptions were weakened and the proof simplified in Kripke (1980).

<sup>19</sup> However, some philosophers who deny Ground and Strict Implication include Bricker (2006), Schnieder (2006), Schaffer (2010a), Leuenberger (2014) and Skiles (2015).

Necessarily, if  $[q]$  is distinct from  $[p]$ , then  $[q]$  does not ground  $[p \vee q]$ . The weakest standard modal logic—K—includes a distribution axiom; necessity distributes over the material conditional:  $\Box(p \rightarrow q) \rightarrow (\Box p \rightarrow \Box q)$ . This axiom thus entails:

$$\Box[[q] \neq [p]] \rightarrow \Box[\neg([q] < [p \vee q])]$$

If it is necessary that  $[q]$  is distinct from  $[p]$ , then it is necessary that  $[q]$  does not ground  $[p \vee q]$ . Because  $q$  and  $p$  differ in their truth-values (since  $p$  is true and  $q$  is false),  $[q]$  is actually distinct from  $[p]$ . Given the Necessity of Distinctness, we have:

$$\Box[[q] \neq [p]]$$

This, then, entails:

$$\Box[\neg([q] < [p \vee q])]$$

Necessarily,  $[q]$  does not ground  $[p \vee q]$ . But that's false.  $[q]$  could have grounded the disjunction—indeed, it *would* have—if  $q$  were true.<sup>20</sup>

While this example strikes me as compelling, there is a way in which it is unsatisfactory. It refers to fact  $[q]$ , despite the nonexistence of this fact. Classically, one could infer from the nongrounding fact  $[[q] \neq [p]] < [\neg([q] < [p \vee q])]$  that:

$$\exists x([x \neq [p]] < [\neg(x < [p \vee q])])$$

But if  $[q]$  does not exist, this existential claim is surely false. There *is no fact*  $[q]$  to be distinct from  $[p]$ , so  $[q]$  cannot figure in relations—even distinctness relations. This example might appear illicit due to its reference to nonexistent facts.

There are some conceptions of facts on which this objection misses the mark. If (as I previously suggested) facts are nothing more than true propositions—propositions which exist even in possible situations in which they are false. On this way of thinking, a factive conception of ground merely requires that the propositions that flank the grounding operator are true; it allows for false propositions to occur as constituents of these true propositions. However, we need not appeal to this conception of facts—as it is possible to generate an analogous puzzle for partial ground: one that indisputably only cites facts that exist.

#### 4. A Puzzle for Partial Nonground

On the distinctness view, if  $[p]$  does not partially ground  $[q]$ , the reason it does not do so is that it is distinct from that which does partially ground  $[q]$ . If  $[r]$  does not partially ground  $[p \wedge q]$ , then

<sup>20</sup> I note that there is a sense in which the Necessity of Distinctness is gratuitous within this argument. While it is strictly needed to derive  $\Box[\neg([q] < [p \vee q])]$ , it is possible to end the proof earlier, and conclude that  $\Box([q] \neq [p]) \rightarrow [\neg([q] < [p \vee q])]$ . This strict conditional is extremely implausible—so even those who reject the Necessity of Distinctness will face some pressure to abandon my account. My thanks to Verónica Gómez Sánchez for pressing me on this point.

the fact that  $[r]$  does not partially ground the conjunction is grounded in  $[[r] \neq [p]], [[r] \neq [q]]$  (given the standard assumption that conjunctions are grounded in their conjuncts).<sup>21</sup> That is:

$$[[r] \neq [p]], [[r] \neq [q]] < [\neg([r] < [p \wedge q])]$$

Suppose that  $p$  and  $q$  are contingently true and  $r$  is contingently false (and that there are no interesting modal connections between  $p$ ,  $q$  and  $r$ ). Consider the fact  $[p \vee (q \wedge r)]$ . Because  $r$  is false, the only partial ground of the disjunction is  $[p]$ . What grounds the fact that  $[q]$  does not partially ground the disjunction? On my view, the reason  $[q]$  does not partially ground  $[p \vee (q \wedge r)]$  is that  $[q]$  is distinct from that which does partially ground the disjunction—in this case,  $[p]$ . So, we have that:

$$[[q] \neq [p]] < [\neg([q] < [p \vee (q \wedge r)])]$$

Ground and Strict Implication entails:

$$\Box([q] \neq [p]) \rightarrow [\neg([q] < [p \vee (q \wedge r)])]$$

Necessarily, if  $[q]$  is distinct from  $[p]$ , then  $[q]$  does not ground  $[p \vee (q \wedge r)]$ . The K axiom then entails:

$$\Box[[q] \neq [p]] \rightarrow \Box[\neg([q] < [p \vee (q \wedge r)])]$$

If it is necessary that  $[q]$  is distinct from  $[p]$ , then it is necessary that  $[q]$  does not partially ground  $[p \vee (q \wedge r)]$ . By stipulation  $[q]$  is actually distinct from  $[p]$ ; the Necessity of Distinctness entails that  $[q]$  is necessarily distinct from  $[p]$ . So, we have:

$$\Box[\neg([q] < [p \vee (q \wedge r)])]$$

Necessarily,  $[q]$  does not partially ground  $[p \vee (q \wedge r)]$ . Once again, this is false.  $[q]$  *could* have—indeed, *would* have—partially grounded  $[p \vee (q \wedge r)]$  if  $r$  were true. In this example, both  $p$  and  $q$  are true, and so facts  $[p]$  and  $[q]$  both exist—and can thus stand in relations to one another. This problem cannot be avoided by denying that nonexistent facts are distinct.

## 5. Potential Solutions

Contingency generates a problem for the grounds of nonground. Of course, one option is to simply deny the assumptions that lead to conflict: to abandon either the Necessity of Distinctness or Ground and Strict Implication—or else to reject the distinctness account entirely. Perhaps unsurprisingly, more modest approaches strike me as preferable.

One option is to add a totality fact to the distinctness account. Return to the problematic example for full ground:  $p$  is contingently true and  $q$  is contingently false. On this modification,

<sup>21</sup> Note that, while the nongrounding fact in question concerns partial ground (in that it holds that  $[r]$  does not partially ground  $[p \wedge q]$ ), I provide the full grounds of this fact. Collectively, the fact that  $[r]$  is distinct from  $[p]$  and the fact that  $[r]$  is distinct from  $[q]$  fully ground the fact that  $[r]$  does not partially ground  $[p \wedge q]$ .

what makes it the case that  $[q]$  does not ground  $[p \vee q]$  is not merely the fact that  $[q]$  is distinct from  $[p]$ —but also the fact that  $[p]$  is the only thing that grounds  $[p \vee q]$ . We could represent this option as:

$$[[q] \neq [p]], [\forall x((x < [p \vee q]) \rightarrow ([x] = [p]))] < [\neg([q] < [p \vee q])]$$

This suggestion does not seem entirely implausible. If someone were to ask ‘Why it is the case that the disjunction does not hold in virtue of  $[q]$ ?’, the reply, ‘Because  $[p]$  is the only thing that the disjunction holds in virtue of, and  $[q]$  is not  $[p]$ ’ sounds relevant, explanatory and non-redundant. Including a totality fact might be seen to ‘fill out’ the nongrounding explanation.

Which totality fact is included depends on how the disjunction is grounded. In situations where the disjunction is only grounded in  $[p]$ , the totality fact only references  $[p]$ ; in situations where the disjunction is only grounded in  $[q]$ , the totality fact only references  $[q]$ ; and in situations where the grounds of the disjunction are overdetermined, the totality fact references both  $[p]$  and  $[q]$ . Totality facts thus hold contingently—they vary world by world.

The totality inclusion avoids the contingency problem. Given Ground and Strict Implication, facts necessitate that which they ground. In this case, it is necessary that if  $[q]$  is distinct from  $[p]$ —and if  $[p]$  is the only ground of  $[p \vee q]$ —then  $[q]$  does not ground  $[p \vee q]$ . Because the totality fact holds contingently, it does not follow that  $[q]$  necessarily does not ground  $[p \vee q]$ . Moreover, this necessity seems entirely unproblematic; there ought to be no possible worlds where  $[p]$  and  $[q]$  are distinct,  $[p]$  is the only ground of  $[p \vee q]$  and yet  $[q]$  grounds  $[p \vee q]$  as well.<sup>22</sup>

This proposal is provisional. The totality fact is a universally quantified conditional. Given the assumptions that told against the universal formulation of the distinctness account above—that universal facts are grounded in their instances, and that material conditional facts with false antecedents are grounded in the falsity of their antecedents—it is partially grounded in  $[\neg([q] < [p \vee q])]$ . The totality fact is thus partially grounded in that which it partially grounds. I return to this problem below. For now, the point is only that the totality inclusion resolves the contingency puzzle.

Another potential resolution is to opt for a non-factive—rather than a factive—conception of ground. It is important to distinguish two choice-points that might be conflated. The first concerns the *relata* of ground: whether the grounding operator relates facts or propositions. The second concerns *factivity*: whether the terms flanking the grounding operator are true. These are independent from one another. We could take propositions as relata while enforcing a truth-constraint (so that only true propositions are capable of grounding or being grounded). Alternatively, we could take the relata to be facts—but expand the domain to include facts that do not obtain.<sup>23</sup> What resolves the present puzzle is not the choice of relata but rather the rejection of the truth-constraint. On this conception of ground, the truth or falsity of the relata is largely

<sup>22</sup> In an analogous way, this inclusion avoids the problem for partial ground. Consider  $[p \vee (q \wedge r)]$  for contingently true  $p$  and  $q$  and contingently false  $r$ . On this version of the account,  $[\neg([q] < [p \vee (q \wedge r)])]$  is grounded both in the fact that  $[p]$  is not  $[q]$  and the fact that  $[p]$  is the only partial ground of  $[p \vee (q \wedge r)]$ . Ground and Strict Implication entails that it is necessary that if  $[p]$  is distinct from  $[q]$  and if  $[p]$  is the only partial ground of  $[p \vee (q \wedge r)]$ , then  $[q]$  does not partially ground  $[p \vee (q \wedge r)]$ . As before, this necessity seems entirely unproblematic—and cannot be used to infer that  $[q]$  necessarily does not partially ground the disjunction.

<sup>23</sup> My thanks to both referees for pressing me to distinguish these choice-points.

irrelevant to the grounding relations they stand in; falsehoods ground other propositions. For example, it may be that the proposition *Kamala Harris is president* grounds *Either Kamala Harris or Hillary Clinton is president*—despite the fact that Kamala Harris is not president. In what follows, ‘the non-factive conception of ground’ should be understood in this way. Return to the example. Regardless of whether  $p$  or  $q$  is true, both propositions ground the disjunction  $p \vee q$ . That is:

$$p < (p \vee q)$$

$$q < (p \vee q)$$

Not only is it *possible* for  $q$  to ground  $p \vee q$  on the non-factive conception, but  $q$  *actually does* ground  $p \vee q$ —even in situations where  $q$  is false.

Of course, just as false propositions are capable of grounding, so too false propositions are capable of being grounded. There is thus a (false) nongrounding proposition  $\neg(q < (p \vee q))$ . What prevents us from carrying out analogous reasoning on the non-factive conception as on the factive conception, and reaching a similarly troubling result?

On the distinctness view, the proposition that  $q$  does not ground  $p \vee q$  is grounded in the propositions that  $q$  is distinct from the grounds of  $p \vee q$ . In this case, we have:

$$(q \neq p), (q \neq q) < \neg(q < (p \vee q))$$

The proposition asserting that  $q$  is not  $p$  and the proposition asserting that  $q$  is not  $q$  ground the proposition that  $q$  does not ground  $(p \vee q)$ . Ground and Strict Implication entails that:

$$\Box((q \neq p \wedge q \neq q) \rightarrow \neg(q < (p \vee q)))$$

Necessarily, if  $q$  is distinct from  $p$  and distinct from itself, then  $q$  does not ground  $p \vee q$ . The K axiom then entails:

$$\Box(q \neq p \wedge q \neq q) \rightarrow \Box\neg(q < (p \vee q))$$

But here there is a crucial difference from the derivation on the factive conception. The antecedent of this conditional asserts that, necessarily,  $q$  is distinct from  $p$  and distinct from itself. But this is false.  $q$  is necessarily *identical to*—not *distinct from*—itself. So, we cannot use this derivation to establish that, necessarily,  $q$  does not ground  $p \vee q$ .<sup>24</sup>

We thus face a choice-point: ought we include a totality fact, or opt for the non-factive conception of ground? I personally prefer the non-factive conception. However, it only will become clear why this is preferable after considering yet another puzzle.

<sup>24</sup> A similar resolution applies to the puzzle for partial ground. On the non-factive conception  $p \vee (q \wedge r)$  is partially grounded in  $p, q, r$  and  $q \wedge r$ —regardless of these propositions truth values. And, as with the puzzle for full ground, the derivation of necessity fails; the proposition  $\neg(q < (p \vee (q \wedge r)))$  is grounded in  $q \neq p, q \neq q, q \neq r, q \neq (q \wedge r)$ . Ground and Strict Implication entails that, necessarily, if all of these distinctness propositions are true then  $q$  does not ground the disjunction. But it is not necessary that  $q$  is distinct from itself (indeed, it is necessary that it isn’t), so this strict conditional does not preclude the possibility that  $q$  grounds the disjunction.

## 6. Nongrounding the Fundamental

Consider a fundamental fact. For the sake of concreteness, suppose that [electron  $e$  is spin-up] is fundamental—and so not grounded in anything whatsoever.<sup>25</sup> What grounds the fact that [grass is green] does not ground [electron  $e$  is spin up]? On my view, this nongrounding fact is grounded in the fact that [grass is green] is distinct from the positive grounds of [electron  $e$  is spin-up]. But because [electron  $e$  is spin-up] is fundamental, there are no positive grounds for [grass is green] to be distinct from. This is an instance of a general puzzle. If a fact  $[q]$  is fundamental, what grounds the fact that  $[p]$  does not ground  $[q]$ ? I have argued that nonground is grounded in distinctness from positive grounds. But what if there are no positive grounds?

The answer that strikes me as most natural is that these facts are zero-grounded. If  $[q]$  is fundamental, the empty plurality of facts grounds  $[[p] \text{ does not ground } [q]]$ . The fact  $[[p] \text{ does not ground } [q]]$  is grounded in a plurality of distinctness facts—each holding that  $[p]$  is distinct from a ground of  $[q]$ . The number of facts within this plurality depends upon the number of positive grounds of  $[q]$ . If  $[q]$  has a single ground— $[r_1]$ —then the plurality consists of a single fact:  $[[p] \neq [r_1]]$ . If  $[q]$  has two grounds— $[r_1]$  and  $[r_2]$ —then the plurality consists of two facts:  $[[p] \neq [r_1]], [[p] \neq [r_2]]$ . In the case where  $[q]$  is fundamental, there are no positive grounds—so the plurality ought to contain zero facts. But the plurality consisting of zero facts *just is* zero-grounding, so the fact  $[[p] \text{ does not ground } [q]]$  is zero-grounded. To be clear, this is not the suggestion that there is a *special way* in which fundamental facts are nongrounded. Rather, the claim that they are zero grounded is an obvious—perhaps *the* obvious—extension of the distinctness view.

Perhaps some suspect that one version of my account avoids appealing to zero-ground: the formulation that includes a totality fact. Recall that, on this view,  $[[p] \text{ does not ground } [q]]$  is not only grounded in the fact that  $[p]$  is distinct from  $[q]$ 's grounds—but also that those are all of the grounds of  $[q]$  that there are. In the case where  $[q]$  is fundamental, what grounds the fact that  $[p]$  does not ground  $[q]$  is the fact that nothing grounds  $[q]$ ; the totality fact asserting that  $[q]$  has no grounds grounds the fact that  $[p]$  does not ground  $[q]$ .

At first blush, this might seem plausible. Confronted with the question 'Why is it the case that  $[p]$  does not ground  $[q]$ ?', the answer 'Because nothing grounds  $[q]$ ' sounds appropriate. I believe this to ultimately be mistaken. The natural way to formalize this view is:

$$[\forall x(\neg([x] < [q]))] < [\neg([p] < [q])]$$

Notice that the grounding fact takes the form of a universal: the fact that, for all  $x$ ,  $x$  does not ground  $[q]$ . The standard logic of ground holds that universal facts are grounded in their instances: what makes it the case that everything is  $F$  is the fact that  $a$  is  $F$ , that  $b$  is  $F$ , etc. In the present case, the fact that nothing grounds  $[q]$  is grounded in the fact that  $[r]$  does not ground  $[q]$ ,  $[s]$  does not ground  $[q]$ , etc. One instance concerns the fact that  $[p]$ ; the fact that  $[p]$  does not ground  $[q]$  partially grounds the fact that nothing grounds  $[q]$ . That is to say:

<sup>25</sup> As should be clear from the previous section, there is now a debate over whether to operate with a factive or non-factive conception of ground. My use of 'the fact that  $[p]$ ' is due to ease of prose and for consistency with the previous discussion.

$$[\neg([p] < [q])] < [\forall x(\neg([x] < [q]))]$$

Given the transitivity of ground, the fact that  $[p]$  does not ground  $[q]$  would thus partially ground itself. The totality account thus violates the standard logic of ground; for this reason, I prefer the non-factive formulation.

Zero-grounding impacts the modal status of fundamental facts.<sup>26</sup> On the non-factive conception of ground, select a fundamental  $q$  (i.e., a proposition  $q$  such that no proposition  $p$  grounds  $q$ ). On the distinctness account, for any  $p$ , the proposition  $p$  does not ground  $q$  is zero-grounded; given Ground and Strict Implication, it is necessary that  $p$  does not ground  $q$ . Because the selection of  $p$  was arbitrary, every proposition necessarily does not ground  $q$ . This comes close to the claim that every fundamental proposition is necessarily fundamental—a claim that philosophers like Wildman (2018) call into question, exploring the possibility that something actually fundamental might have been derivative.

Interestingly, our background modal logic impacts whether  $q$  really is necessarily fundamental. The inference from *every proposition necessarily does not ground  $q$*  to *necessarily, every proposition does not ground  $q$*  depends upon a propositional version of the Barcan Formula. Those who reject the Barcan could allow  $q$  to be possibly grounded—so long as it is grounded by a proposition that does not actually exist.

Here's an example of how that might work. Suppose that  $a$  is a mereological simple with mass  $m$ , that  $a$  has mass  $m$  is fundamental, and that there is a world in which  $a$  is composed of parts  $b$  and  $c$  that do not actually exist—a world in which  $a$  is composed of  $b$  and  $c$ , whose masses sum to  $m$  grounds  $a$  has mass  $m$ . If the proposition  $a$  is composed of  $b$  and  $c$ , whose masses sum to  $m$  does not actually exist, then even though every actual proposition necessarily fails to ground  $a$  has mass  $m$ , something could have grounded it.<sup>27</sup>

This reply is unavailable to those (like me) who endorse the B axiom—which entails the Barcan when coupled with classical quantificational logic.<sup>28</sup> Nevertheless, I think there remains room for contingent fundamentality—at least on one conception of 'fundamental.' Given the non-factive conception of ground in play, ' $q$  is fundamental' might mean one of two things: either that absolutely nothing grounds  $q$  or, alternatively, that everything that does ground  $q$  is false. (Of course, on a factive conception these coincide, since only truths ground; on the non-factive conception they come apart). Arguably, it is the second reading that captures what is ordinarily meant when a truth is said to be fundamental: nothing that is the case makes it the case. And on the second reading, fundamentality may be contingent in exactly Wildman's sense. Returning to the previous example: the proposition  $a$  is composed of  $b$  and  $c$ , whose masses sum to  $m$

<sup>26</sup> My thanks to an anonymous referee for pressing me on the issues discussed in the remainder of this section.

<sup>27</sup> The inference from the nonexistence of  $b$  and  $c$  to the nonexistence of the proposition requires higher-order contingentism: the view that contingency in what individuals there are carries with it contingency in what propositions there are. See Adams (1981) and Stalnaker (2012); for model-theoretic treatments, Fritz and Goodman (2016); Fritz (2016); and for dissent, Fairchild (2024). Wildman (2018) discusses, and resists, the objection that  $a$  is essentially simple.

<sup>28</sup> Prior (1956) showed that the Barcan Formula is derivable in quantified S5. See Hughes and Cresswell (1996) for a proof that appeals to B. Contingentists typically avoid it by adopting a free quantification theory. See Williamson (2013).

may ground *a has mass m*. So long as all of the grounds of *a has mass m* are false, the proposition is fundamental—though it would have been derivative if one of its full grounds were true. On this second interpretation of ‘fundamental’ propositions can be contingently fundamental.

By contrast, on the first interpretation of ‘fundamental’ there is indeed necessary fundamentality (given the propositional Barcan). If a proposition *q* has *no grounds whatsoever* (including grounds that are false), then it is necessary that it has no grounds whatsoever. This takes a stand in a live debate, but one that is plausible and, on the non-factive conception, unsurprising. On that conception, which propositions ground one another does not vary with their truth-values; what varies from world to world is which of their grounds are true. The claim that a proposition has no grounds entails that it is impossible for anything to ground it.

There is a related puzzle for zero-grounding in particular. There is a proposition asserting that *q* is not zero-grounded:  $\neg(\emptyset < q)$  (where ‘ $\emptyset$ ’ denotes the empty plurality). Propositions of this form fall within the scope of this paper, yet it is not immediately clear what the empty plurality’s distinctness from a ground of *q* amounts to. Suppose, first, that *q* is grounded in  $p_1, p_2, \dots$ . Ground is variably polyadic, and the distinctness account extends to plural nonground in the obvious way (which is discussed in more depth below). A plurality fails to ground *q* because it is distinct from each plurality that grounds *q*. This requires the introduction of distinctness facts for pluralities. The empty plurality is a plurality like any other. Just as it can flank the grounding operator, so too it can flank the distinctness operator. There are thus propositions of the form:

$$(\emptyset \neq p_1, p_2, \dots) < \neg(\emptyset < q)$$

The fact that the empty plurality is distinct from *q*’s grounds grounds the fact that the empty plurality does not ground *q*. Distinctness between pluralities is admittedly unorthodox, and it is the source of the cardinality problems discussed below.

The case in which *q* is fundamental (in the sense that it lacks all grounds—not merely true grounds) is handled in the manner discussed above. Because *q* is fundamental, the fact that the empty plurality does not ground *q* is itself grounded in the empty plurality. If nothing grounds *q*, then there are no pluralities for the empty plurality to be distinct from; the list of distinctness propositions is itself empty.

## 7. The Grounds of Distinctness

The distinctness account faces a serious concern.<sup>29</sup> The motivation for developing a theory of nonground appealed to *Purity*—the principle that fundamental facts only have fundamental constituents. While *Purity* indicates that nongrounding facts are derivative, it also indicates that distinctness facts are derivative. If  $[p]$  is a derivative fact, and  $[p]$  is distinct from  $[q]$ , then the fact  $[[p] \neq [q]]$  has a nonfundamental constituent—and so must be grounded in some way or other. Those who hold that nonground is grounded in distinctness from ground cannot stop there; they must provide grounds of distinctness as well. Perhaps the distinctness account merely relocates the problem from *Purity*, rather than resolving it.

<sup>29</sup> My thanks to an anonymous referee for pressing this concern.

I have two responses to this concern. The first is that the explanatory demand is not new. Anyone who endorses *Purity* ought to accept both of the following:

- i. Nongrounding facts (with derivative constituents) are derivative.
- ii. Distinctness facts (with derivative constituents) are derivative.

Adherents of *Purity* thus owe an account of the grounds of distinctness *regardless* of how nongrounding facts are grounded; the demand arises from *Purity* itself, not from the claim that nongrounding facts are grounded in distinctness facts. Holding that facts of the first sort are grounded in facts of the second generates no additional explanatory burden. If anything, it lightens the load: two explanatory demands are reduced to one.

Nevertheless, this would be little comfort if the grounds of distinctness were as obscure as the grounds of nonground. A reduction of one puzzle to another is progress only if the second puzzle is more tractable than the first. I believe that it is. There are several accounts of the grounds of distinctness on offer. Each is compatible with *Purity*. I do not commit to any one of them here; my aim is only to show that there are plausible, *Purity*-compatible grounds of distinctness.

One possibility is that distinctness facts are zero-grounded. Ground is variably polyadic; in principle, any number of facts can ground  $[p]$ —including zero.<sup>30</sup> Fine (2016) and Litland (2023) have both argued that identity facts are zero-grounded; facts of the form  $[a = b]$  are grounded in the empty plurality.<sup>31</sup> Litland extends the claim to distinctness facts explicitly, and it is natural to do so on Fine's view as well.<sup>32</sup> If distinctness facts are zero-grounded, then they are grounded—and so do not violate *Purity*. This option does not collapse the distinctness account into the view that nongrounding facts are zero-grounded. On the present proposal,  $[\neg([p] < [q])]$  is grounded in  $[[p] \neq [r_1]], [[p] \neq [r_2]], \dots$ , each of which is grounded in the empty plurality. By transitivity, the nongrounding fact is thereby zero-grounded as well—but it is not *merely* zero-grounded. Its *immediate* grounds are the distinctness facts, and it is *mediately* zero-grounded. The claim that nongrounding facts are immediately zero-grounded is a distinct proposal.

A second possibility is that distinctness facts are *autonomous*. Dasgupta (2014) argues that certain facts are not apt for being grounded—drawing an analogy with mathematics. An axiom is the sort of thing that could be derived from further principles, but happens to be taken as a

<sup>30</sup> The notion of zero-grounding was introduced by Fine (2012). Not everyone accepts that the notion is intelligible. Lo, Rodriguez-Pereyra and Skiles (2025) argue that there is no coherent distinction between a fact's having no grounds and its having zero grounds, and Leech (2026) surveys the challenges the notion faces. Those who reject zero-grounding ought not to accept this option.

<sup>31</sup> The two proposals differ in an important respect. Fine allows identity facts to have grounds in addition to the empty plurality: the identity of a set with itself, for instance, may also be grounded in its having the same members as itself, in accordance with the criterion of identity for sets. Litland, by contrast, holds that identity and distinctness facts are *uniquely* zero-grounded; the empty plurality is their only ground. For present purposes, the difference does not matter. On either view, such facts are grounded—and so are not fundamental.

<sup>32</sup> Both Fine and Litland are primarily concerned with the identity and distinctness of objects, whereas the distinctness facts at issue here relate facts (or, on the non-factive conception, propositions). Nothing in either proposal turns on the category of the relata; Litland's account, in particular, is fully general.

starting point in proof. By contrast, a definition is not a candidate for proof in the first place. Along these lines, there are two ways for a fact to not be grounded: it may be apt for grounding but happen to lack grounds, or it may not be the kind of thing that could be grounded at all.<sup>33</sup> While Dasgupta takes essentialist facts to be autonomous, it seems natural to place facts about identity and distinctness in the same category; it lies in the nature of a thing to be what it is—and what it is not. If *Purity* applies only to substantive facts, and if distinctness facts are autonomous, then distinctness facts do not violate *Purity* even if nothing grounds them.

A third possibility is that distinctness is grounded in difference:  $[a \neq b]$  is grounded in  $[Fa]$  and  $[\neg Fb]$ , for some property  $F$  that  $a$  has and  $b$  lacks. This proposal faces a threat of circularity. If any property whatsoever can take the place of  $F$ , then *being identical to  $a$*  (which we might represent with  $\lambda x.(x = a)$ ) can take the place of  $F$ . If this were so, then the fact that  $a$  is distinct from  $b$  would be grounded in the fact that  $a$  is identical to  $a$  and the fact that  $b$  is not identical to  $a$ —and the latter is the very fact to be explained.<sup>34</sup> This circularity can be avoided in one of two ways: either by restricting the properties that can take the place of  $F$  (as in Shumener (2020)) or else by formulating the proposal in a formal setting in which the circularity cannot arise (as in Elgin (2026b)). However the details are worked out, *Purity* poses no threat. So long as the facts  $[Fa]$  and  $[\neg Fb]$  are derivative *Purity* does not apply to them—as it only concerns constituents of fundamental facts.

A fourth possibility involves entity-grounding. Wilhelm (2020) has argued that identity facts are grounded in the entity that is self-identical; Venus grounds  $[\text{Hesperus is Phosphorus}]$ .<sup>35</sup> If this is so, it is natural to suggest that distinctness facts are grounded in the entities that are distinct: collectively, Mars and Venus ground  $[\text{Mars is distinct from Venus}]$ . In the case where the distinct entities are themselves facts, the plurality  $[p], [q]$  grounds  $[[p] \neq [q]]$ . As before, *Purity* poses no threat. The distinctness fact is grounded, and so is not fundamental. Its grounds,  $[p]$  and  $[q]$ , are subject to *Purity* exactly as they already were: if they are fundamental, their constituents must be fundamental; if they are derivative, they have grounds of their own.

These alternatives are not exhaustive. Distinctness facts might be grounded in other ways still—perhaps by metaphysical laws in the sense of Schaffer (2017), or perhaps in ways that vary with the kind of entity that is distinct.<sup>36</sup> I do not choose among these options here. What matters is that the distinctness account is compatible with each of them, and that each is compatible with *Purity*. The upshot is this. There was a concern that *Purity*—the principle that motivated the puzzle of nonground—indicates that distinctness facts are grounded as well. This would be a problem if there were no viable account of the grounds of distinctness. However, there are plausible positions regarding the grounds of distinctness, so distinctness facts need not

<sup>33</sup> The notion is developed further in Dasgupta (2016). For discussion of whether identity and distinctness facts in particular are apt for explanation, see Shumener (2021).

<sup>34</sup> A bit more precisely, it would be grounded in the plurality  $[\lambda x.(x = a)(a)], [\neg \lambda x.(x = a)(b)]$ . On some theories of facts, the fact  $[\neg \lambda x.(x = a)(b)]$  is identical to  $[a \neq b]$ , in which case irreflexivity is violated directly. On others, it is grounded in  $[a \neq b]$ . Both alternatives result in circular grounding.

<sup>35</sup> See Lo (2022) for a reply.

<sup>36</sup> It is plausible, for instance, that  $\{1\}$  is distinct from  $\{2\}$  because 1 is distinct from 2. This set-theoretic ground of distinctness does not obviously extend to entities of other kinds. But perhaps each kind has grounds of its own, in the spirit of Sider (2020).

be fundamental. A philosopher who endorses *Purity* can hold that nongrounding facts are immediately grounded in distinctness facts—so long as they also hold that these distinctness facts are themselves grounded in some-way-or-other.

A natural question concerns whether the distinctness account can be generalized.<sup>37</sup> Nothing about the account appears to turn on a special feature of the grounding relation in particular; perhaps *all* facts of the form  $[\neg R(a, b)]$  are grounded in the fact that  $a$  is distinct from everything that stands in relation  $R$  to  $b$ . The distinctness account may be but one instance of a general pattern.<sup>38</sup>

I do not believe that the account can be generalized (at least in this way). Many instances of the generalization are deeply implausible. It may be that Sally does not love John—but it is absurd to suggest that this is because Sally is distinct from Sarah (who, we can suppose, does love John). More worryingly, distinctness facts are negative relational facts themselves. On this generalization, the ground of  $[a \neq b]$  would be that  $a$  is distinct from that which is identical to  $b$ : namely,  $b$ . The distinctness fact would thus ground itself—in violation of the irreflexivity of ground.

I deny that this counts against the distinctness account. There are numerous examples of the grounds of negative facts that are not (obviously) generalizable. It is quite plausible that  $[\neg p] < [\neg(p \wedge q)]$  and that  $[\neg p], [\neg q] < [\neg(p \vee q)]$ —but it is far from clear how these principles could be extended to facts of the form  $[\neg Fa]$ .<sup>39</sup> Similarly, some argue that distinctness facts are zero-grounded, but no one suggests that every negative fact is.<sup>40</sup> If principles along these lines are correct, then the grounds of a negative fact may depend upon its internal structure: negative conjunctive facts are grounded in one way, negative disjunctive facts in another, and distinctness facts in still another. Along these lines, we might expect the grounds of nongrounding facts to depend upon the grounding relation in particular. The *form* of the distinctness account is, admittedly, generic. But the facts it cites are not: what grounds  $[\neg([p] < [q])]$  is determined by what grounds  $[q]$ .

On one way of thinking, this is unsurprising. Consider the positive facts.  $[Fa]$  and  $[Gb]$  share a logical form, yet no one expects them to be grounded in the same way; what grounds an arithmetic fact differs from what grounds a mental fact, and the difference lies in  $F$  and  $G$  rather than in logical form. There is no uniform theory of the grounds of positive facts that ignores this. If negative facts are the mirror image of positive facts, we ought not expect one for them either.  $[\neg R(a, b)]$  and  $[\neg S(a, b)]$  share a logical form, but their grounds may differ with  $R$  and  $S$ —and that nongrounding facts are grounded differently from facts like [Sally does not love John] is no more surprising than that arithmetic facts are grounded differently from mental facts. However, I note that there is a path for those who believe that there is a uniform theory of the grounds of

<sup>37</sup> My thanks to an anonymous referee for raising this question.

<sup>38</sup> Accounts of this form—which De Rizzo (2019) calls difference accounts—have been proposed as accounts of negative predications more generally. The two standard objections to them are that distinctness is insensitive to the contingent features of the relata, and that the universal formulation violates the irreflexivity of ground. These correspond to the concerns about contingency and irreflexivity addressed above.

<sup>39</sup> See De Rizzo (2019).

<sup>40</sup> See Litland (2023). De Rizzo (2020) extends zero-ground to necessary truths more generally, but allows for contingent negative facts to not be zero-grounded.

negative facts to embrace the distinctness account. They might hold that the grounds of these facts are overdetermined—grounded both in distinctness from ground and in whatever grounds negative facts generally.<sup>41</sup>

To be clear, this is not to claim that distinctness facts are privileged stopping points for explanation; they may be grounded in any of the ways canvassed above. But the account differs from the proposal that nongrounding facts are zero-grounded (or, more generally, that they are immediately grounded in whatever grounds distinctness facts, on any of the options canvassed above). Asked ‘What explains the fact that  $[p]$  does not ground  $[q]$ ?’, the zero-groundist answers ‘Nothing’—perhaps before distinguishing the claim that there is no explanation from the claim that the empty collection of facts explains. The reply ‘Because  $[p]$  is distinct from everything that does ground  $[q]$ ’ strikes me as far more satisfying. If distinctness facts are themselves zero-grounded, then the nongrounding fact is zero-grounded as well, by transitivity—but its *immediate* grounds are distinctness facts.

## 8. Cantorian Hell

I close by addressing a final puzzle for the distinctness account—one that strikes me as far more troubling than any considered thus far. Indeed, there was a time when I feared that any reasonably general version of my theory was inconsistent, and that it therefore ought to be abandoned.

So far, I have primarily considered monadic nongrounding; I have addressed cases of the form  $[[p] \text{ does not ground } [q]]$ .<sup>42</sup> But, as noted above, ground is variably polyadic; any number of facts can serve as grounds—and any number of facts can serve as nongrounds. Just as we can explain why  $[p]$  does not ground  $[q]$ , so too we can explain why the plurality  $[p_1], [p_2], \dots$  does not ground  $[q]$ .

On the distinctness account, there seems to be a natural explanation for why a given plurality of facts does not ground  $[p]$ : because it is distinct from the plurality of facts that *does* ground  $[p]$ . For example, we might explain why the plurality  $[r], [s]$  does not ground the conjunction  $[p \wedge q]$  with:

$$[[r], [s] \neq [p], [q]] < [\neg([r], [s] < [p \wedge q])]$$

The reason that the plurality  $[r], [s]$  does not ground  $[p \wedge q]$  is that it differs from the plurality  $[p], [q]$ : the plurality that grounds  $[p \wedge q]$ . For this explanation to be viable, distinctness must relate not only individual facts, but also pluralities of facts. Not only must we introduce facts of the form  $[[p] \neq [q]]$ , but also facts of the form  $[[p_1], [p_2], \dots \neq [q_1], [q_2], \dots]$ .

But there’s a problem. We can’t. It is impossible to introduce a different distinctness fact for every plurality of facts that are distinct. That is to say, there cannot be a different fact  $[[p_1], [p_2], \dots \neq [q_1], [q_2], \dots]$  for each pair of pluralities such that some fact is a member of  $[p_1], [p_2], \dots$  but not a member of  $[q_1], [q_2], \dots$

<sup>41</sup> Not that Fine (2016) allows that the grounds of identifications are overdetermined in an analogous way.

<sup>42</sup> For ease of prose, I have continued to speak in terms of facts; the reader should be aware from the previous discussion that I ultimately interpret these cases non-factively. Nothing in this section hangs on that difference.

The problem stems from the cardinality of the set of distinctness facts. How many such facts are there? Let's start with a relatively simple case: how many distinctness facts involve  $[p]$ ? Well, there is the fact that  $[q] \neq [p]$ , the fact that  $[r] \neq [p]$ , the fact that  $[q], [r] \neq [p]$  etc. As it turns out, nearly *every* plurality of facts (except for the plurality consisting just of  $[p]$ ) is distinct from  $[p]$ . So, the cardinality of the set of distinctness facts involving  $[p]$  is the cardinality of the set of pluralities of facts.

The cardinality of the set of pluralities of facts is thus the cardinality of the powerset of the set of facts; there are as many pluralities as there are combinations of facts. If there were different distinctness facts corresponding to each pair of these pluralities, there would then be an injection from the powerset of facts to the set of facts; for every collection of facts  $[q_1], [q_2], \dots$ , there would exist a fact that  $[p] \neq [q_1], [q_2], \dots$  (except for the case where the plurality consists of  $[p]$ ). We could then map each element of the powerset of facts to the distinctness fact which held that that plurality is not  $[p]$ .<sup>43</sup> Since the distinctness facts are, well, *facts*, we could therefore map every element of the powerset of facts to a unique fact.

There cannot be such a mapping. Cantor's Theorem entails that there is no injection from the powerset of facts to the set of facts. For this reason, there cannot be a unique distinctness fact for each plurality of facts that are distinct. Because the distinctness view depends upon generalizing distinctness so that it is a relation between pluralities—and because we *can't* generalize distinctness in this way—the nongrounding view appears to be untenable.

There is a way to loosen Cantor's grip.<sup>44</sup> Perhaps plural nonground does not require plural distinctness facts at all; perhaps binary distinctness facts suffice. On this suggestion, the reason that  $[r], [s]$  do not ground  $[p \wedge q]$  is that  $[r] \neq [p]$ ,  $[r] \neq [q]$ ,  $[s] \neq [p]$  and  $[s] \neq [q]$ . Because the binary distinctness facts are no more numerous than the pairs of facts, they generate no injection from the powerset of facts to the set of facts. Some care is required in formulating this proposal; the full sequence of pairwise differences will not do. Suppose, as before, that  $[p \wedge q]$  is grounded in  $[p], [q]$ —and consider why the plurality  $[p], [r]$  does not ground it. There is no fact  $[[p] \neq [p]]$  to serve among the grounds, and yet the pluralities are plainly distinct. Additionally, the plurality consisting of  $[p]$  alone fails to ground  $[p \wedge q]$ , even though its sole member is identical to one of the conjunction's grounds. What plural distinctness requires is a *witness*: some fact among one plurality that is distinct from every fact among the other. On the amended proposal, the grounds of a plural nongrounding fact are the binary distinctness facts that witness the plurality's distinctness from each plurality that does ground the target—in the first case,  $[[r] \neq [p]], [[r] \neq [q]]$ ; in the second,  $[[q] \neq [p]]$ .<sup>45</sup> I am sympathetic to this amendment. Yet even if it succeeds, a cardinality problem for the nongrounding facts themselves remains.

Just as we cannot generate a different distinctness fact for each plurality, so too we cannot generate a nongrounding fact for each plurality. Select an arbitrary fundamental fact  $[p]$ ; how many nongrounding facts involve  $[p]$ ? There is the fact that  $[p]$  does not ground  $[p]$ , the fact that  $[q]$  does not ground  $[p]$ , the fact that  $[p], [q]$  does not ground  $[p]$  etc. In fact, for every plurality

<sup>43</sup> More precisely, we could use distinctness for most of this injection, and identity for the fact that  $[p] = [p]$ .

<sup>44</sup> My thanks to an anonymous referee for this suggestion.

<sup>45</sup> Note that this amendment relies upon the standing assumption that universal facts are grounded in their instances; the witnessing fact must be distinct from *every* member of the grounding plurality.

of facts  $[p_1], [p_2], \dots$ , there ought to be a nongrounding fact asserting that  $[p_1], [p_2], \dots$  does not ground  $[p]$  (except for the limited number of combinations that do ground  $[p]$ ).<sup>46</sup> If this were so, then the *nongrounding* facts would generate an injection between the powerset of facts and the set of facts—for the exact same reason that distinctness facts did. For each collection of facts, we could generate a nongrounding fact that maintains that that collection does not ground  $[p]$ . Since this injection cannot exist, we cannot countenance as many nongrounding facts as there naturally seems to be.

Notably, this restriction has *nothing whatsoever* to do with the distinctness account. Regardless of what—if anything—grounds nongrounding facts, *every* theory of nonground faces this limitation. Cantor's Theorem restricts the number of nongrounding facts that there can be.

The upper bound of the cardinality of the distinctness facts is thus the cardinality of facts. For the same reason, the upper bound of the cardinality of the nongrounding facts is also the cardinality of facts. So, there is no reason (or, at least, no *cardinality* based reason) to deny that we can provide a distinctness fact—or, on the amended proposal, a plurality of binary distinctness facts—for each nongrounding fact that needs to be grounded. In this sense, the distinctness account remains a live candidate; given a nongrounding fact, there may be distinctness facts that serve to ground it.

The position we find ourselves in is far from comfortable. There can neither be as many distinctness nor nongrounding facts as there naturally seems to be. The amended proposal relieves the pressure on distinctness, but the pressure on the nongrounding facts persists. For those who resist the amendment, there are other options. It could be that distinctness facts that ought to differ from one another are in fact the same; perhaps  $[p], [q] \neq [r], [s]$ , but  $[[p], [q] \neq [t], [u]] = [[r], [s] \neq [t], [u]]$ —or perhaps there are collections of facts such that no distinctness fact involving them exists.<sup>47</sup> Analogously, it could be that nongrounding facts that ought to differ from one another are in fact the same; perhaps  $[p], [q] \neq [r], [s]$ , but  $[\neg([p], [q] < [t])] = [\neg([r], [s] < [t])]$ —or perhaps there are collections of facts such that no nongrounding fact involving them exists. These options are far from intuitive, but they are options forced upon anyone who countenances nongrounding facts. What matters, for our purposes, is that there is no *special problem* for the distinctness view—no problem that would prevent us pairing a distinctness fact with each nongrounding fact that needs to be grounded—that other accounts might hope to avoid. Cantor's Theorem reveals odd aspects of this theory, but ultimately provides no reason to reject the distinctness account.

One might draw a more radical lesson: perhaps the puzzle shows that there are no nongrounding facts at all.<sup>48</sup> If there are no nongrounding facts, there need be no puzzle about how they are individuated. I do not think this is the right response. Cantor's Theorem does not discriminate between nongrounding facts and nongrounding *truths*. The argument shows

<sup>46</sup> Note that, on the assumption that  $[p]$  does not partially ground itself, we are guaranteed that the cardinality of nongrounding facts exceeds the cardinality of facts; the cardinality of pluralities of facts that include  $[p]$  exceeds the cardinality of facts.

<sup>47</sup> The reason that the first modification resolves the problem is that the trouble with Cantor's Theorem stemmed from generating a *different* fact for each distinct pluralities of facts. If some of these pluralities correspond to the *same* distinctness fact, then distinctness need not generate an injection between the powerset of facts and the set of facts.

<sup>48</sup> My thanks to an anonymous referee for raising this possibility.

equally that there cannot be a distinct true proposition asserting, of each plurality of facts, that it fails to ground  $[p]$ . Rejecting nongrounding facts does not resolve the problem so long as nongrounding truths remain—and it is difficult to deny that the proposition *Socrates is wise does not hold because {Socrates} contains someone wise* is true.

## 9. Conclusion

The case is more-or-less complete. An underdeveloped puzzle concerns the grounds of nonground—and a very natural solution appeals to distinctness from positive grounds. As we have seen, a number of puzzles emerge when this view is carefully considered—but a version survives scrutiny. I believe that the best version of this view is non-factive, rather than factive, holds that the nongrounding facts involving fundamentalia are zero grounded, and avoids Cantorian problems.

If this is correct, there are several immediate implications—ones that surpass the puzzle at hand. First, this pushes us toward a non-factive, rather than factive, conception of ground more generally. It would be odd if the grounds of nongrounding were to be understood non-factively, but the rest of ground to be understood factively. Second, there is theoretical work for distinctness to accomplish. Far from being a theoretically idle relation, distinctness performs substantive work.

Lastly, while I take it that my view is plausible, it is far from the only potential candidate. It could be that, if  $[p]$  grounds  $[q]$ , then  $[p]$  also grounds the fact that  $[r]$  does not ground  $[q]$ ; that  $[q]$  grounds the fact that  $[r]$  does not ground  $[q]$ ; that  $[p]$  and  $[q]$  collectively ground the fact that  $[r]$  does not ground  $[q]$ ;<sup>49</sup> or that all facts of the form  $[[r] \text{ does not ground } [q]]$  are zero-grounded. It is my hope that other candidate theories receive the attention that they deserve.

<sup>49</sup> Conversationally, REMOVED FOR BLIND REVIEW have suggested this to me—which might indicate that it is an option worth taking seriously.

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