

# Fundamentality without Foundations

Michael J. Raven / UNIVERSITY OF VICTORIA

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*Abstract.* A commonly held view is that a central aim of metaphysics is to give a fundamental account of reality which refers only to the fundamental entities. It is at least a working hypothesis for those pursuing the aim that, first, there must be fundamental entities. But, second, it also seems possible that the world has no foundation, with each entity depending on others. These two claims are inconsistent with the widely held third claim that the fundamental just is the foundational. The puzzle is typically resolved by rejecting the first or second claim, perhaps because it is obscure how the third claim might plausibly be challenged. But I develop a new analysis of fundamentality which challenges the third claim by allowing for an entity to be fundamental without being foundational. The analysis, roughly, is that an entity is fundamental (or *ineliminable*, as I call it) just in case not all facts about it are grounded in facts about other entities. The possibility of fundamentality without foundations not only provides for a novel resolution to the puzzle, but has applications to some live debates: for example, it undermines Jonathan Schaffer's modal argument for priority monism.

A commonly held view is that a central aim of metaphysics is to give a fundamental account of reality which refers only to the fundamental entities. While there are many kinds of fundamentality, one way especially relevant to this aim is that of an entity's being *ineliminable* to the desired account. My goal is to help clarify the common view by proposing a new analysis of fundamentality *qua* ineliminability.

Not only is the analysis of intrinsic interest, it also enables a novel resolution to a puzzle. First, it is at least a working hypothesis for those pursuing the aim that there must be fundamental entities; but, second, it is possible that the world has no foundation, with each entity depending on others. These two claims are inconsistent with

the widely held third claim that the fundamental just is the foundational. The puzzle is typically resolved by rejecting the first or second claim, perhaps because it is obscure how the third claim might plausibly be challenged. But the analysis reveals a new way to do so.

The analysis, roughly, is that an entity is fundamental just in case not all facts about it are explained by facts about other entities. This can be made rigorous by invoking the topical metaphysical explanatory notion of *ground*. The result is a conception of fundamentality that is both familiar and natural, but with teeth. In particular, the analysis surprisingly reveals that an entity might be fundamental without being foundational. The possibility of fundamentality without foundations not only provides for a novel resolution to the puzzle, but has applications to some live debates.

The paper proceeds as follows. First, the puzzle is stated (§1 ). The analysis's key idea is then sketched and developed precisely in terms of ground (§2 ). Next, the novel resolution is presented (§3 ). One application of the analysis is to undermine Jonathan [Schaffer \[2010: 3\]](#)'s modal argument for priority monism (§4 ). The paper concludes by discussing further prospects (§5 ).

## 1 THE PUZZLE

The puzzle arises from three individually plausible but jointly inconsistent claims. I will first state the puzzle informally before elaborating on the claims generating it (§§1.1-1.3).

It is commonly supposed that, however reality turns out to be, there must be a fundamental account of it. A (or even *the*) central aim of metaphysics is to give this account. Given this aim, we have reason to accept the *fundamentalist* working hypothesis that:

**FUNDAMENTALISM**      Necessarily, something is fundamental.

But we also seem able to imagine reality being a foundationless *abyss*: each entity depends on others, with no foundational entities independent of all else. Without conclusive reasons to rule out an abyss, we have reason to accept the *abyssalist* view that:

**ABYSSALISM**                      Possibly, nothing is foundational.

And yet it is widely (if implicitly) held that fundamentality just is foundationality, perhaps because it is difficult to conceive any alternative. So we have reason to accept the *foundationalist* view that:

**FOUNDATIONALISM**    Necessarily, something is fundamental if and only if it is foundational.

But these claims are inconsistent: **FOUNDATIONALISM** and **ABYSSALISM** imply that possibly nothing is fundamental, contrary to **FUNDAMENTALISM**. So consistency requires rejecting a claim, and yet we have reason to accept each. Hence the puzzle.

The puzzle needn't be viewed as paradoxical in the sense that we are obliged to accept each claim despite their inconsistency. Instead, we may view the puzzle as a device to show how consistency requires one to choose between the claims generating it, even if one's theory in retrospect makes the choice clear.

While those prompted to choose between these claims would likely reject abyssalism or fundamentalism, my aim is to show how to resolve the puzzle by rejecting foundationalism. But first I will motivate each claim. I will make no attempt to be exhaustive. My aim is rather to present typical *prima facie* reasons for accepting them.

## 1.1    **Fundamentalism**

Many are drawn to fundamentalism because it seems required, at least as a working hypothesis, for the project of giving a fundamental account of reality, or “writing the book of the world” ([Sider \[2011\]](#)).

This project, as I understand it, is best characterized in terms of a distinctive notion of fundamentality I call *ineliminability*. While the term is mine, the notion is embedded in our implicit grasp of the project and should seem familiar once drawn out (cf. [Jenkins \[2013\]](#)).

Here's one way to draw it out. An *account* of reality will, at the least, state the facts, or how things are. Whatever these facts are, it

might be supposed that some are more fundamental than others. To illustrate, consider the facts:

- (E) Electron  $e^-$  is negatively charged.
- (F) FEMA is a federal agency.

Since (E) and (F) are facts, their disjunction  $(E) \vee (F)$  is also a fact. But we can recognize a sense in which the disjunction *can but needn't* be included in our account if one or both disjuncts is already included.<sup>1</sup> The disjunction is *eliminable* because reality is described no worse without it but with only one or both disjuncts, whereas (suppose) (E) is *ineliminable* because reality cannot be completely described without it. The disjunction is non-fundamental *qua* eliminable, whereas (E) is fundamental *qua* ineliminable.

Since the facts state how *things* are, an account of reality will concern the entities *contained* in these facts. Whatever these *constituents* are (individuals or properties), perhaps some are more fundamental than others. Perhaps (E) is ineliminable but (F) is eliminable. We can recognize a sense in which (E)'s constituents ( $e^-$ , *negative charge*) are ineliminable, whereas (F)'s constituents (FEMA, *federal agency*) are not. FEMA is *eliminable* because reality is described no worse without it but with only its underlying micro-affairs, whereas this electron is *ineliminable* because reality cannot be completely described without it. FEMA is non-fundamental *qua* eliminable, whereas  $e^-$  is fundamental *qua* ineliminable.

Once the fundamental and non-fundamental are distinguished, it might be supposed that our desired account of reality will not be *comprehensive* unless it somehow explains how the non-fundamental derives from the fundamental. However comprehensiveness is specifically achieved, it will generally require corralling a *basis* of the purely fundamental facts or entities from which the non-fundamental facts or entities are to derive. The *fundamental* account of reality is this basis and its constituent entities are the *ineliminable* entities.

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<sup>1</sup> Cf. [Fine \[2013\]](#)'s distinction between *saying what can be said* and *describing what can be described*, as well as [Sider \[2013\]](#)'s discussion of the distinction.

Given the concept of ineliminability, we might wonder whether anything satisfies it. Suppose there were no ineliminables. Then, for any account of reality including an eliminable, there would be another omitting it. But then “Being would be infinitely deferred, never achieved”, in [Schaffer \[2010: 62\]](#)’s pithy words. Instead, as [Schaffer \[2010: 37\]](#) puts it, “all being must originate in basic being...There must be a ground of being”. Hence fundamentalism.

Considerations like these can be challenged. [Cameron \[2008\]](#) qualifies his sympathy for them by allowing it to be *contingent* whether something is fundamental, whereas [Miller \[2010\]](#) surveys general challenges to the necessity of metaphysical theses. And [Bliss \[2013\]](#) challenges common reasons for taking anything to be fundamental. Despite these challenges, fundamentalism remains widely accepted.

## 1.2 Abyssalism

We are often willing to regard a possibility claim as at least *prima facie* defeasibly justified if, upon reflection, there are no conclusive reasons against it. Abyssalism is a possibility claim. I suspect that whatever appeal it has is owed to the absence of conclusive reasons against it and, arguably, to some considerations in favor of it.

An *abyss* is a kind of foundationless world. We may embellish this kind in various ways (§§3.1-3.2). But for now my purposes are served by focusing on what is common to all abysses however they might be embellished. Abysses contain only material wholes the existence and identity of which depends on their material parts. So an abyss is *foundationless* in each of the following three ways: *mereologically foundationless* since each entity is gunky and has parts, none of which are partless atoms; *existentially foundationless* since each entity depends on others (its parts) for its existence; and *eidictically foundationless* since the essence of each entity depends on others (its parts).

An abyss’s combination of mereological, existential, and eidictic foundationlessness *appears* possible. Others defend these appearances: [Schaffer \[2003\]](#) defends the possibility of mereological limitless descent; [Cameron \[2008\]](#) defends the possibility of existential limitless descent; and while I know of no defense of the

possibility of eidictic limitless descent, we should be no less open to it than to the others. Each seems individually possible. And they seem possible combined. So it appears that an abyss is possible.

### 1.3 Foundationalism

In the abstract, an entity is a *foundation* just in case it is *independent* for *depending* on nothing else. A foundation is the terminal endpoint of a well-founded *chain* linking dependent entities to those they depend on. But all that is required of a foundation is that it depends on nothing else, regardless of whether anything else depends on it.

There is a kind of foundation for each kind of dependence. Thus, *existential dependence* concerns whether an entity's existence depends on the existence of another, and so an *existential foundation* will existentially depend on nothing else.<sup>2</sup> And *eidictic dependence* concerns whether an entity's essence (nature, identity) depends on that of another, and so an *eidictic foundation* will eidictically depend on nothing else.<sup>3</sup> There are other kinds of dependence, and foundation, as well. I will specify the kind when it matters, but will speak of dependence, or foundation, in the abstract when it doesn't.

In the abstract, it is tempting to identify the fundamental *qua* ineliminable with the foundational. For it can seem as if non-foundationality implies non-fundamentality. A dependent is *not* a foundation: it depends on more fundamental entities. But then it seems as if it needn't be included in a fundamental account of reality if what it depends on must already be included. For example, FEMA's dependence on underlying social events implies its eliminability.

Conversely, it can seem as if foundationality implies fundamentality. A foundation depends on nothing else. But then it might seem as if it must be included in a fundamental account of reality since it depends on nothing else and so cannot be eliminated

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<sup>2</sup> More precisely, x *existentially depends* on y just in case were y not to exist, x would not exist. Cf. [Fine \[1995\]](#)'s modal/existential account of ontological dependence.

<sup>3</sup> More precisely, x *eidictically depends* on y just in case the essence of x refers to y. Cf. [Fine \[1995\]](#)'s essentialist/existential account of ontological dependence, as well as [Lowe \[2006\]](#)'s identity-dependence.

in favor of on what it depends. For example, *negative charge*'s independence of all else implies its ineliminability.

Considerations like these seem to support a *foundationalist* approach to ineliminability (cf. [Cameron \[2008\]](#) and [Schaffer \[2010\]](#)). *Foundationalism* selects a cluster of dependence relations and the fundamental *qua* ineliminable is identified with the foundations of these chains. Different versions of foundationalism result from different selections of clusters. Foundationalism itself does not make the selection, but only requires that a selection be made.

## 2 FUNDAMENTALITY AS INELIMINABILITY

The puzzle is that there are reasons to accept fundamentalism, abyssalism, and foundationalism despite their inconsistency. I suspect most would resolve the puzzle by rejecting fundamentalism or abyssalism, perhaps because they are unable to conceive of any alternative to foundationalism. Those rejecting fundamentalism likely take the considerations in favor of abyssalism as teaching us that metaphysics' aim for a fundamental account of reality is a pipedream, whereas those rejecting abyssalism likely take the considerations in favor of fundamentalism as teaching us the impossibility of an abyss. But I will explore resolving the puzzle by rejecting foundationalism.<sup>4</sup> The new analysis of fundamentality *qua* ineliminability enables this.

### 2.1 Anti-foundationalism

My aim is to explore an anti-foundationalist resolution to the puzzle, not to defend it over its foundationalist competitors. Still, it is worth briefly considering the allure of the anti-foundationalist resolution.

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<sup>4</sup> [Barnes \[2013\]](#) also distinguishes “the fundamental” from “the independent”. While I lack the space to discuss her views here, I will make two brief remarks: first, she uses ‘fundamental’ and ‘independent’ somewhat differently than I do; and, second, nothing I say entails or precludes her analysis of emergence as fundamental but dependent.

Providing a fundamental account of reality presumably requires stating the fundamental facts. It is tempting to suppose that the fundamental facts are those containing only fundamental entities.

But this tempting supposition faces counterexamples. One of these relies on logically complex facts being less fundamental than their constituent facts. To illustrate, consider:

- (E) Electron  $e^-$  is negatively charged.
- (P) Proton  $p^+$  is positively charged.

Suppose that (E) and (P) are fundamental facts and that their constituent individuals ( $e^-$ ,  $p^+$ ) and properties (*negative charge*, *positive charge*) are fundamental entities. The tempting supposition predicts that the disjunction (E)  $\vee$  (P) will be a fundamental fact. But it is not.

Now, the merits of this quick counterexample are debatable. But my concern here is not with whether it ultimately succeeds but rather with how it suggests reversing the direction of analysis. Rather than analyzing fundamental facts in terms of fundamental entities, the suggestion is that we analyze fundamental entities in terms of our independent grip on fundamental facts.

This presumes we have an independent grip on fundamental facts, and I suggest it comes from the metaphysical explanatory notion of *ground*. The metaphysical project seeks to explain explainable facts by discovering the facts grounding them. Given the facts about some entity, it will either “disappear” or “persist” in them. It “disappears” if all facts about it are grounded in facts *not* about it. But there are *two* ways for an entity not to “disappear”: by “persisting” in an ungrounded fact about it or by “persisting” by recurring in the grounds of some fact about it.<sup>5</sup> The common thread is that the entity “persists” if some fact about it is *not* grounded in facts *not* about it. I propose that fundamentality *qua* ineliminability just is this notion of “persistence”. The next step is to make these informal ideas precise.

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<sup>5</sup> [Rosen \[2010: 111-12\]](#)’s characterization of a naturalistic metaphysics can be plausibly interpreted as appealing to something like “persistence” Cf. [Tahko \[2014\]](#)’s notion of “boring infinite descent”.



## 2.2 Ground

The proposed analysis uses the notion of (*metaphysical*) *ground*. Others have used ‘ground’ in various ways and I do not wish to challenge the propriety of their uses. My use of ‘ground’ denotes a distinctive kind of metaphysical explanation. Ground, so understood, is increasingly familiar in the literature, and so I will stick to a brief overview.<sup>6</sup>

Ground is a kind of explanation, and so may be expressed by an operator joining the sentences  $\Gamma$  stating what *gets* explained (the *grounded*) to the sentences  $\phi$  stating what *does* the explaining (the *grounds*). Thus, ‘ $\Gamma$  grounds  $\phi$ ’ states that the facts in  $\Gamma$  together fully ground the fact that  $\phi$ .

Just as we may distinguish a full explanation from its contributing parts, so too we may distinguish *full* and *partial* grounds. Thus, ‘ $\psi$  partially grounds  $\phi$ ’ says that the fact  $\psi$  *helps* ground the fact that  $\phi$ , regardless of whether  $\psi$  alone *fully* grounds  $\phi$ . (When I use ‘ground’ unqualifiedly, I use it to mean *full ground*.)

Although a benefit of expressing ground by an operator is to bracket controversies about its status as a relation and the status of its relata, it is still natural to suppose it is a relation. After all, ground is supposed to contribute to metaphysical explanations by ordering the facts from the less fundamental to their more fundamental grounds. This apparently requires taking ground to be a multigrade relation between the facts to be grounded and those doing the grounding, and taking its relata, *facts*, to be states of the world. But my present aims do not require fixing strictly on either the operator or relational approaches, and so I will slide between them when convenient.

Ground’s explanatory character imposes a distinctive logic, including: (i) *irreflexivity*: just as nothing explains itself, nothing grounds itself; (ii) *asymmetry*: just as cyclical explanations are prohibited, so too are cycles of ground; (iii) *transitivity (cut)*: just as

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<sup>6</sup> See [Raven \[forthcoming\]](#) for a survey of ground. [Fine \[2012\]](#) distinguishes a variety of kinds of ground. Mine is his *factive, full, mediate, strict, metaphysical ground*. [Rosen \[2010\]](#), [Audi \[2012\]](#), [Fine \[2012\]](#), and [Raven \[2012\]](#) defend ground’s coherence against challenges like those from [Hofweber \[2009\]](#) and [Daly \[2012\]](#).

explanations chain, so too ground chains;<sup>7</sup> and (iv) *non-monotonicity*: just as explanation needn't survive arbitrary additional premises, so too ground needn't survive arbitrary additional grounds. (i)-(iii) entail that ground forms a strict partial ordering on facts, like a hierarchy of chains of explanation.<sup>8</sup> Although some assume that such chains must be *well-founded*, this prejudices against abysses and fundamentality without foundations. So I will *not* assume well-foundedness.<sup>9</sup>

### 2.3 Ineliminability Analyzed

I propose analyzing fundamentality *qua* ineliminability in terms of the “topology” of ground.<sup>10</sup> Informally, ineliminables “persist” in some fact about them whereas eliminables “disappear” from all facts about them. For an entity to “disappear” is for there to be a *bound* in the grounds of some fact about it: a “last occurrence” of it after which the entity never recurs. So for an entity to “persist” is for it to be *unbounded*: there is no such “last occurrence”, either because one of these facts is ungrounded, or because the entity forever recurs in their chain of ground. An entity is eliminable if it is bounded in *all* facts about it, but is ineliminable if it is unbounded in *some* fact about it.

These informal remarks can be made precise. I assume we may speak of a fact's *constituents* without taking a stand on what kinds of entities these constituents might be. I will continue using ‘entity’ as I have implicitly throughout as a neutral term for these constituents, whether they might be individuals, properties, or something else. We may then define what it is for a constituent to be (*un*)*bounded* in a fact:

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<sup>7</sup> Full ground is not transitive because it is not a binary relation; but still it chains because it obeys a cut rule. Partial ground is a transitive binary relation and so chains.

<sup>8</sup> This is controversial: [Jenkins \[2011\]](#) questions irreflexivity and [Schaffer \[2012\]](#) questions transitivity. [Litland \[2013\]](#) defends transitivity and [Raven \[2013\]](#) argues that the present notion of ground is a strict partial order even if other notions aren't.

<sup>9</sup> This is controversial: [Cameron \[2008\]](#) defends well-foundedness and [Bennett \[2011\]](#) endorses it; [Rosen \[2010: 116\]](#) leaves it open like me, whereas [Bliss \[2013\]](#) challenges it.

<sup>10</sup> [Raven \[2009\]](#) gives an earlier version of this analysis, but there ineliminables are called ‘integrals’ and eliminables are called ‘augment’.

**BOUNDED**       $c$  is *bounded* in  $\phi$  iff  $\phi$  contains  $c$  and for some full ground  $\Gamma$  of  $\phi$ ,  $c$  is not a constituent of any fact, or any partial ground of any fact, in  $\Gamma$ .

**UNBOUNDED**     $c$  is *unbounded* in  $\phi$  iff  $\phi$  contains  $c$  but  $c$  is not bounded in  $\phi$ .

So an entity is bounded or unbounded only in facts containing it. An entity is bounded in a fact containing it just in case that fact has a full ground but the entity has a “last occurrence” in every chain of partial ground descending from this full ground. Conversely, an entity is unbounded in a fact just in case that fact is ungrounded or else has grounds but the entity recurs forever in these grounds.

The analysis of ineliminability can now be presented directly in terms of boundedness and without appeal to any kind of dependence:

**INELIMINABLE**     $c$  is *ineliminable* iff  $c$  is unbounded in some  $\phi$ .

**ELIMINABLE**       $c$  is *eliminable* iff  $c$  is bounded in every  $\phi$  containing  $c$ .

Fundamentality *qua* ineliminability just is boundedness in some fact.<sup>11</sup>

### 3 A NOVEL RESOLUTION

A striking feature of the analysis is that it permits fundamentality without foundations. I will show how by characterizing abysses in which some entities are fundamental but none are foundational. We have allowed entities to be individuals or properties, and different scenarios will be used for each. The first scenario is a *diffused abyss* in which a property is fundamental but not foundational (§3.1), whereas the second scenario is a *pervaded abyss* in which individuals are fundamental but not foundational (§3.2). Since these scenarios are

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<sup>11</sup> Consider the meta-question “What, if anything, grounds facts about what grounds what?” Answering it might prove awkward for the analysis: if ground facts are ungrounded, then ineliminability is vacuous since every entity ineliminable, but if ground facts are grounded, then grounded in what? While the meta-question has not been settled, the answers in the literature ([Bennett \[2011\]](#); [deRosset \[2013\]](#); [Dasgupta \[forthcoming\]](#)) would not appear to raise any distinctive difficulty for the analysis.

counterexamples to foundationalism, fundamentality without foundations provides a novel resolution to the puzzle (§3.3).

### 3.1 Properties: A Diffused Abyss

The first scenario illustrates an ineliminable property in an abyss. The scenario relies on a property recurring in its instantiations' grounds.<sup>12</sup>

Consider a *diffused abyss* in which the property *being material* is ineliminable for recurrently diffusing all individuals. One illustration of this takes a whole's materiality to be grounded in the materiality of its parts. Let 'L' and 'R' be iterable functions mapping an individual to its left and right parts, respectively, and to nothing otherwise (e.g. 'RLw' denotes the right part of the left part of w). Then, in a diffused abyss, that a whole w is material is grounded in its left part Lw being material and its right part Rw being material. To visualize:

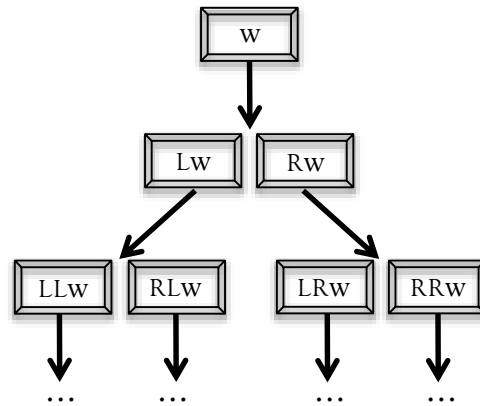


FIGURE 1

Arrows represent full ground and frames represent the property *being material*. Read each frame as the fact that its contents (w, Lw, etc.) are material. Thus, **FIGURE 1** illustrates a diffused abyss's limitlessly descending chains of ground collectively stating that each whole is material because its left and right parts are material. Crucially, *being material* (the frames) recurs in these chains and so is unbounded in them. So *being material* is unbounded and hence ineliminable.

One limitation of this strategy is that it does not extend to cases in which a whole's having a property is not grounded in its parts

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<sup>12</sup> [Fine \[2001: 27\]](#) discusses what can be interpreted as a structurally similar view.

having that property. Given what we *actually* know of electrons, it is presumably not the case that something's being an electron is grounded in its left and right parts being electrons (were the electron to have such parts). So the strategy won't show that *being an electron* is ineliminable, and so won't actually apply. But our concern has been merely to provide a *possible* scenario in which there is fundamentality without foundations, and so this limitation is irrelevant.

### 3.2 Individuals: A Pervaded Abyss

The strategy for ineliminable *properties* does not extend to *individuals*. This is because every whole is bounded in the generated ground chains. So every whole will disappear and hence be eliminable. Another strategy showing the ineliminability of *individuals* is needed.

An obstacle for recognizing such a strategy is the tempting thought that any fact about a whole is to be grounded in facts solely about its parts. In an abyss, this results in any whole being bounded in the facts about it, and so each whole will disappear and hence be eliminable. So the desired strategy can seem impossible.

But the obstacle is avoidable if a fact about a whole can have grounds in which the whole recurs. On this view, wholes “do not earn their admission into the ontology as constructs, even though any one of them might have been regarded as a construct” (adapting [Fine \[1994: 266\]](#)'s words for my own purposes).

Consider a *pervaded abyss* in which a whole recurrently pervades the chain of grounds for its having the parts it has. Thus, what grounds a whole's having this part is that *the whole* has as parts the parts of this part, and that *the whole* has as parts the parts of the parts of this part, and so on. To visualize:

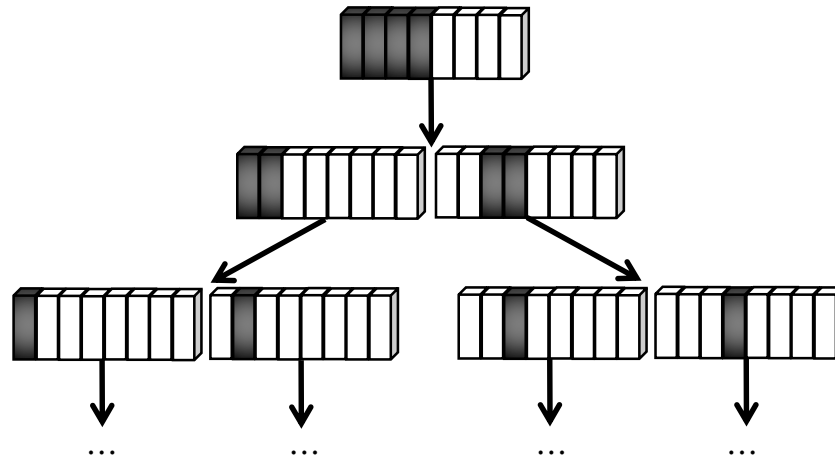


FIGURE 2

Arrows still represent full ground; but now each 8-celled block represents a whole, the cells representing its parts. Read the shading of the block as the fact that those shaded cells are parts of the whole. Thus, FIGURE 2 illustrates pervaded abyss's limitlessly descending chains of ground collectively stating that each whole has its left (right) part in virtue of having the left and right parts of *that* part, and so on. Crucially, the whole itself (the block) recurs at each node of these limitlessly descending chains of ground. That shows that the whole is unbounded and hence ineliminable. These considerations apply to *any* whole whatsoever. So, generally, every whole is ineliminable.<sup>13</sup>

One limitation of this scenario is that it is fictitious. Presumably, there are eliminable wholes (e.g. the Space Needle), and so the actual world is not a pervaded abyss. But our concern has been merely to provide a *possible* scenario in which there is fundamentality without foundations, and so this limitation is irrelevant.

Perhaps a more worrying limitation of this scenario is that it seems at odds with the project of giving a fundamental account of

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<sup>13</sup> This example will also show the ineliminability of the parthood relation, unless parthood is ultimately shown to disappear from the facts about it.

reality. A significant part of that project was supposed to be to distinguish the fundamental from the non-fundamental and explain how the latter derives from the former. Isn't the significance of this project undermined if everything is ineliminable? No, for two reasons.

The first reason is that it can be a significant result about a scenario that everything in it is ineliminable. It can be significant for being *contingent*. Presumably, the features of the present scenario which make it one in which everything is ineliminable are contingent: not all scenarios have them. So one has discovered a contingent fact about a scenario if one discovers that everything in it is ineliminable.

The second reason is that other significant questions of fundamentality can remain even if everything is ineliminable. We have resisted the urge to take fundamentality in one sense to imply fundamentality in any of the rest. So even if everything is ineliminable, it might still be the case that some things depend on others in various ways. Specifically, in the present scenario, wholes can still depend existentially and eidictically on their parts, even though these wholes and parts are equally ineliminable.

### 3.3 Resolving the Puzzle

Ultimately, my interest in these scenarios is as a means to the end of exploring fundamentality without foundations. I don't wish to claim that these are the only (or even the best) scenarios for that purpose. They are exotic and it is hard to imagine less exotic scenarios. Perhaps our imaginations are stunted by the unfamiliarity of fundamentality without foundations and will improve with greater familiarity.

But let us suppose that these scenarios are genuinely possible. Then they are counterexamples to foundationalism. This enables a novel resolution to the puzzle: reject foundationalism while retaining fundamentalism and abyssalism.

Now, it is not my aim to defend this novel resolution over competitors. If the scenarios are ultimately possible, then foundationalism is false and the puzzle is resolved. But even if they are impossible, the preceding considerations still at least show that we

are not entitled to assume foundationalism unreflectively. It must be argued that the novel resolution fails, if it does.

## 4 APPLICATION: PRIORITY MONISM

Fundamentality without foundations also has applications to live metaphysical debates. I will focus on one such example: the debate over the monistic view that the whole cosmos is the only fundamental entity. Despite monism's venerable history, interest in it had waned until recently rekindled by Jonathan Schaffer. My focus will be on [Schaffer \[2010\]](#)'s modal argument for (*priority*) *monism*. My aim is not to provide a thorough or conclusive evaluation of this argument or of monism itself, but rather to illustrate the potential application of fundamentality without foundations.

### 4.1 Priority Monism

(*Priority*) *monism* is the view that the *cosmos* (the entirety of the concrete world) is the sole fundamental entity, with its proper parts merely derivative upon it:

**MONISM**        There is one fundamental entity, the cosmos.

Monism opposes (*priority*) *pluralism*: the view that the cosmos is not fundamental but a plurality of other things are:

**PLURALISM**    There are at least two fundamental entities,  
                         none of which are the cosmos.

These informal statements leave unspecified which sense of fundamentality is at issue. Schaffer, as I read him, seems to have in mind existential independence. But I won't dwell on the matter here since, as we'll soon see, these informal statements will do.

### 4.2 The Modal Argument

While Schaffer has given various arguments for monism, my focus will just be on his *modal argument* for monism ([Schaffer \[2010\]](#)).



Here's the idea. The (material) world could be *gunky*: every object being a whole with proper parts. But pluralism brings this possibility into conflict with foundationalist fundamentalism. For pluralism encourages a kind of *atomism* pushing us to look "below" for a foundation of fundamental entities. But a gunky world provides no such foundation. Monism provides the solution by looking "up" for a foundation and finding it in the whole cosmos. More precisely:

**MODAL ARGUMENT**

- |  |   |
|--|---|
| (1) <b>MONISM</b> or <b>PLURALISM</b> is true.   | <i>Premise</i>                                |
| (2) If <b>PLURALISM</b> is true, then it is necessarily true.                                      | <i>Premise</i>                                |
| (3) Possibly, the world is gunky.  | <i>Premise</i>                                |
| (4) Necessarily, if <b>PLURALISM</b> is true and the world is gunky, then nothing is foundational. | <i>Premise</i>                                |
| (5) <b>PLURALISM</b> is true.  | <i>For reductio</i>                           |
| (6) So, possibly, nothing is foundational.   | <i>From (2)-(5)</i>                           |
| (7) So, possibly, nothing is fundamental.  | <i>From (6) and</i><br><b>FOUNDATIONALISM</b> |
| (8) So, <b>PLURALISM</b> is false.   | <i>From (7) and</i><br><b>FUNDAMENTALISM</b>  |
| (9) So, <b>MONISM</b> is true.   | <i>From (1),(8)</i>                           |

The four premises (1)-(4) on which the argument rely are each controversial and in need of justification. [Schaffer \[2010\]](#) has already defended each, and I am happy to grant these premises for the moment (although I'll challenge (1) in §4.3). I will focus on the distinctive challenge fundamentality without foundations poses.

Fundamentality without foundations challenges the validity of the modal argument. The inference from (6) to (7) relies on moving from the possibility of there being no *foundational* entities to the possibility of there being no *fundamental* entities. The validity of this move can be secured by **FOUNDATIONALISM**: given that something is foundational just in case it is fundamental, then (7) has to be true if (6) is true. But we have seen counterexamples to **FOUNDATIONALISM**. Without **FOUNDATIONALISM**, the inference from (6) to (7) is invalid, and the argument along with it.

One proposal for salvaging the spirit (if not the letter) of the modal argument would concede that there might be fundamentality without foundations but insist on their *de facto* convergence in the present case. It's not altogether clear what the appeal of this *de facto* convergence would be once the concession is made. But my present aim isn't to evaluate the proposal, but only to emphasize that one is not entitled to it. If there is such a *de facto* convergence, then it must be established by argument.

### 4.3 The Tiling Constraint

The scenarios of fundamentality without foundations violate [Schaffer \[2010: 38\]](#)'s *tiling constraint* for "no gaps, no overlaps" among the fundamental. Were this violation bad, it would undermine the scenarios. But I will argue that the violation is not bad and so does not undermine the scenarios.

The tiling constraint [Schaffer \[2010: 38\]](#) has in mind requires that "the basic actual concrete objects collectively cover [tile] the cosmos without overlapping it". Specifically, it requires that:

**NO PARTHOOD**      No fundamental object is a proper part of any other fundamental object.

[Schaffer \[2010: 40\]](#) gives two motivations for **NO PARTHOOD**: first, it avoids an offensive kind of redundancy in the fundamental; second, it allows the desirable free recombability of the fundamental.

The first motivation is *the argument from economy*. Without **NO PARTHOOD**, there could be *redundant* fundamental objects. For suppose some fundamental object was part of a fundamental whole. Then including that fundamental whole in an account of reality thereby includes its fundamental parts. Including these fundamental parts again would be *redundant*.

The second motivation is *the argument from recombability*. Without **NO PARTHOOD**, there could be illicit modal constraints on the combinations of objects. For suppose some fundamental object was part of a fundamental whole. Then, necessarily, if the fundamental whole is included in an account of reality, then so are its

fundamental parts. But this conflicts with the *free recombability* of the fundamental: that any fundamental object can exist or fail to exist with any other fundamental object.

The scenario of a pervaded abyss violates **NO PARTHOOD**. In a pervaded abyss, every whole and each of its parts is fundamental. So some fundamental entity will be part of another, contrary to **NO PARTHOOD**.

One reaction to this violation would be to show how it is tolerable by appealing to familiar doubts with the arguments from economy and recombability. Thus, some have argued that the redundancy from causal overdetermination is tolerable (cf. [Sider \[2003\]](#)). And others have challenged Hume's Dictum's ban of necessary connections among distinct existences (cf. [Wilson \[2010\]](#) and [Zimmerman \[ms\]](#)).

But I wish to pursue a different reaction. Perhaps the appeal of the arguments from economy and recombability rely on a foundationalist setting. Since the setting has changed, we ought to reconsider these arguments. It turns out that they lose much of their force in the present anti-foundationalist setting.

Reconsider the argument from economy. In a pervaded abyss, the chains of ground illustrated in **FIGURE 2** establish the ineliminability of an arbitrary whole *but not any of its parts*. Analogous but different chains of ground are needed to establish *their* ineliminability. Generally, merely including a fundamental (*qua* ineliminable) whole in an account of reality needn't include *its* fundamental (*qua* ineliminable) parts. So including the latter is *not* redundant. But here we have an *economical* violation of **NO PARTHOOD**: while some fundamental (*qua* ineliminable) objects are indeed parts of other fundamental (*qua* ineliminable) objects, this is not offensively redundant since the ineliminability of the one does not imply the ineliminability of the other.

Reconsider the argument from recombability. In a pervaded abyss, each whole is ineliminable and so are its parts. Grant that, necessarily, if a whole is ineliminable, then its parts are ineliminable. This combination violates recombability: for any fundamental (*qua*

ineliminable) whole *can only* exist with its fundamental (*qua* ineliminable) parts. But here we have a *motivated* violation of **NO PARTHOOD**: the present view characteristically takes every whole to be an ineliminable part, and so would seem to have every right to count as a counterexample to free recombability.

Switching away from a foundationalist setting thus provides distinctive reasons for tolerating violations of the tiling constraint. And these distinctive reasons apply independently of the success or failure of more familiar attempts to show how violations are tolerable.

These violations reveal another way in which the modal argument is unsound: (1) is false. [Schaffer \[2010: 44\]](#) claims that monism and pluralism are mutually exclusive and exhaustive. The tiling constraint helps explain why they are exhaustive: for any third option would require the fundamental to overlap. But if the tiling constraint can be violated, then (1) has counterexamples. For example, in a pervaded abyss the cosmos and all its parts are fundamental without anything being foundational. So monism fails because proper parts of the cosmos are fundamental. And pluralism fails because the cosmos itself is fundamental. So (1) is false.

## 5 PROSPECTS

My aim was to propose a new analysis of an important kind of fundamentality: ineliminability. One of the more tantalizing prospects of the analysis is its reversal of the usual direction of fit between fundamental entities and fundamental facts. This affects the characterization and methodology of metaphysics.

Foundationalism suggests (if not requires) an *entities-first approach*. Giving a fundamental account of reality presumably begins by distinguishing the dependent from the foundational *entities*. Then, whether a fact is fundamental turns on whether the entities it is about are foundational.

In contrast, my analysis requires a *facts-first approach* which proceeds by discovering which facts ground which. [Russell \[1918\]](#)'s words can be appropriated to express something like this approach:<sup>14</sup>

The analysis of apparently complex *things* such as we started with can be reduced by various means, to the analysis of facts which are apparently about those things. Therefore it is with the analysis of *facts* that one's consideration of the problem of complexity must begin, not with the analysis of apparently complex things.

This facts-first approach is compatible with invoking defeasible considerations about what is fundamental (e.g. *negative charge*) and what is not (e.g. FEMA). But, ultimately, the fundamental is discovered by examining the topology of which facts ground which and discerning which entities within the topology are ineliminable.

This facts-first approach disentangles ineliminability from other kinds of fundamentality. Whether an entity is ineliminable does not turn on whether it is mereologically, existentially, or eidictically foundational, but rather on what (if anything) grounds the facts about it, including any facts about its dependence relations.

Disentangling ineliminability from fundamentality complicates the *analysis*, *metaphysics*, and *methodology* of fundamentality. One consequence of disentanglement, as we saw, is that, in general, non-foundationality does not suffice for eliminability. This apparently blocks *analyzing* the one in terms of the other. Even if analysis is set aside, disentanglement is an obstacle to there being any easy *conceptual* connections between ineliminability and fundamentality. Instead, it will presumably be a *metaphysical* matter how they interact, when they do. A *methodological* consequence of this is to compartmentalize the project of discovering the fundamental: because it does not require fundamentality in general, those who would claim that it does in particular cases must earn the right to their claim.

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<sup>14</sup> This kind of facts-first approach is different from but compatible with the kind familiar from [Armstrong \[1997\]](#).

But far from being gratuitous or perverse, these complications and their methodological consequences are welcome results of our clarified metaphysics of fundamentality newly freed from ill-conceived entanglements. While ineliminability appears to be irreducible to other kinds of fundamentality, I do not take this to bestow upon it some privilege over them. Instead, we may think of the metaphysician's toolkit as containing ineliminability alongside other kinds of fundamentality: each will be the right tool for certain metaphysical jobs while being ill-suited for others.

What's more, disentanglement helps respond to those skeptical of ground's fruitfulness. [Koslicki \[forthcoming\]](#) and [Wilson \[2014\]](#) worry that ground crudely lumps together a heterogeneous mix of specific dependencies, and that interest in the former is thus ultimately trumped by interest in the latter. While attending to the heterogeneity of these specific dependences is fruitful, it needn't compete with the need for an abstract characterization of fundamentality neutral between them. Disentangling ineliminability from foundationality points toward such a need. This is a need that ground can fill, and it is not clear that there is anything else up to the task. Ineliminability matters to metaphysics, and so ground's fruitfulness is secured by helping to analyze it.<sup>15</sup>

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<sup>15</sup> The central ideas of this paper stem from [Raven \[2009\]](#). My experiments with how best to present them manifested in a variety of drafts and talks with different titles or emphases, and several false starts. As a result, I regret that I'm unable to recollect all those who benefitted this paper. But I'll try, with apologies to those omitted. Thanks to audiences at the Australian National University, *eidōs* Workshop in Metaphysics and Mathematics, New York University, Northwest Philosophy Conference, Reed College, University of Edinburgh, University of Melbourne, University of St. Andrews, University of Sydney, and University of Victoria. And thanks to anonymous referees, Mark Bedau, Margaret Cameron, Shamik Dasgupta, Kit Fine, Martin Glazier, Paul Hovda, Kathrin Koslicki, Jon Litland, Colin Marshall, and Ted Sider. Jonathan Schaffer was a gracious target and I thank him for his advice and encouragement.

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