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ABSTRACT

Ground is a distinctively metaphysical notion of explanation. Often expressed with the phrase ‘in virtue of’, ground has recently found some popularity among metaphysicians. In this dissertation I argue that the notion is well understood and useful, but not primitive. I argue that we should analyze ground partly in terms of relative fundamentality. This analyzed notion of ground can not only do the work that a primitive notion can, but it is better equipped to respond to a number of objections and challenges that the notion faces. The dissertation ends by demonstrating this is the case and responding to objections.

GROUND AND RELATIVE FUNDAMENTALITY

By

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DISSERTATION

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CHAPTER 1

INTRODUCTION

*Is what is holy holy because the gods approve it, or do they approve it because it is holy? –Plato, from *The Euthyphro**

Philosophy, and most of the academic world for that matter, is in the business of giving explanations. Being a good inquirer demands being clear about precisely what you are doing and so this inevitably involves sifting through the various notions of explanation and identifying which is appropriate for the context. This dissertation is about one distinctively metaphysical form of explanation called ‘ground’. Ground isn’t unfamiliar, it is precisely what Socrates was inquiring about in the above epigraph. Whatever the answer to Socrates’s puzzle, it is either that facts about holiness explain the gods approval or that facts about the gods approval explain the holiness. In either case this is a grounding explanation.

I spend all of chapter 2 trying to clarify and argue that ground is well enough understood and is philosophically profitable enough to serve as a distinctive notion of metaphysical structure.

In the following chapter I argue that ground isn’t suited to be our sole no-

tion of metaphysical structure. In addition to ground I argue that we need a notion of relative fundamentality. This diverges from the views of many of my grounding comrades who, if they say anything at all about relative fundamentality, are inclined to understand it in terms of ground. Chapter 3 continues with my arguing that we can use this notion of relative fundamentality to partly analyze ground. This solves a puzzle that I present in the beginning of the chapter. But my notion of relative fundamentality isn't alone sufficient to analyze ground, I also need a primitive connecting notion I call 'intimacy'. Analyzing ground in this way allows me the flexibility in responding to problems that other grounding theorists lack.

This flexibility is on display in chapter 4 where I show how my view of ground is able to mimic the central parts of Sider's view of metaphysical structure. There I show how my view is consistent with Sider's notions of purity and completeness which is something none of my partners in grounding can do. In this mimicking of Sider's view, my independent notion of relative fundamentality plays a very central role. But, whether relative fundamentality is truly independent has come under fire from at least one prominent philosopher working on ground.

In chapter 5, I address Karen Bennett's attempt at defining *more fundamental than* in terms of her notions of building—ground is just one of the building relations. This account though creative and insightful, fails. This provides further evidence in favor of accepting an independent notion of relative fundamentality as I do.

As is inevitable with any newly articulated notion, like ground, there are those who are skeptical. The most sustained attack on ground comes from Jessica Wilson. Her primary concern is that ground doesn't help us understand

dependence anymore than many of the familiar relations like parthood, identity theories, set membership, and so on. In chapter 6 I respond to Wilson and pay special attention to a few cases where my analyzed notion of ground is able to offer unique responses.

CHAPTER 2

WHY BELIEVE IN A NOTION OF GROUND?

After being revived by Kit Fine in his “The Question of Realism,”¹ ground has received a lot of attention, especially so in the last few years. A rapidly growing literature has sprung up arguing over the details of ground. Although there is some general agreement, there is considerable disagreement over the details.

There are, as I see it, two direct types of arguments for ground: by example and from explanation.² Most grounding theorists argue along these lines and I will follow suit. My aim here is threefold, first I will outline the main arguments for ground and then I will identify and argue for many of the general features of ground.³

¹Fine (2001).

²Later in §2.3 I will look at some applications of ground—connections that ground can illuminate, notions it can define, and jobs that it can do. These applications could be seen as an indirect argument for ground, an argument from utility—the notion of ground is useful, if a notion is useful, then it exists, so ground exists.

³I make no claims to the originality of these arguments as they can be found in numerous places in the literature. When appropriate I have cited directly, but I’ve benefited greatly from reading the general arguments for ground in all of the following: Audi (2012a,b), Bennett (2011b), Fine (2001, 2012), Rosen (2010), Schaffer (2009, 2012), Sider (2012), Skiles (2012), Trogon (2013). Finally, I will consider some of the applications of ground.

2.1 Arguments for the Notion of Ground

This chapter is an argument for ground. In so being, it faces skepticism at every turn in part because of unfamiliarity. Metaphysicians in particular are driven by precision and so introducing a new notion to metaphysics is an uphill battle. Gideon Rosen puts it best in his paper on the notion:

This essay is a plea for ideological toleration. Philosophers are right to be fussy about the words they use, especially in metaphysics where bad vocabulary has been a source of grief down through the ages. But they can sometimes be too fussy, dismissing as ‘unintelligible’ or ‘obscure’ certain forms of language that are perfectly meaningful by ordinary standards and which may be of some real use.

So it is, I suggest, with certain idioms of metaphysical determination and dependence. We say that one class of facts depends upon or is grounded in another. We say that a thing possesses one property in virtue of possessing another or that one proposition makes another true. These idioms are common, as we shall see, but they are not part of anyone’s official vocabulary. The general tendency is to admit them for heuristic purposes, where the aim is to point the reader’s nose in the direction of some philosophical thesis, but then to suppress them in favor of other, allegedly more hygienic formulations when the time comes to say exactly what we mean. The Thought is apparently widespread that while these ubiquitous idioms are sometimes convenient, they are ultimately too unclear or too confused, or perhaps simply too exotic to figure in our first-class philosophical vocabulary.⁴

I repeat Rosen’s plea and stress that the primary argument for the notion of ground will be based on the work that ground can do for us theoretically. Since each of the theoretical jobs will be differently judged by different metaphysicians, so the argument will be inductively stronger for some than for others. The aim here is to present a notion, to clarify it, and to point to a number of jobs that this notion can do well. If each of these is successful, then the argument for ground will be strong.

⁴Rosen (2010) p.109.

As above there are three general types of arguments for ground: by example, from explanation, and by role. I will consider these in turn.

2.1.1 By Example

Consider the following examples:⁵

Mind	The brain grounds the mind.
Numbers	Things to be numbered ground numbers.
Wholes	Parts ground wholes.
Meanings	Word meanings ground sentence meanings.
Types	Tokens ground types.
Sets	Elements ground sets.
Truth	Truthmakers for p ground the truth of p .
Events	The actions of the players ground the game.
Logic	Conditionals ground bi-conditionals.
Fiction	Concrete instances of <i>Bleak House</i> ground the fiction.
Properties	First order properties ground second order properties.

The point of the list is simply illustrative. These cases are just some of those where the notion of ground might be enlightening. I don't want to quibble over the individual cases above. They are all cases of *what grounds what* and have no particular bearing on whether the notion of ground is either intelligible or worthwhile. Just like the priority monist disagrees with the priority pluralist about the directionality of the part-whole relation philosophers can disagree about the direction of what grounds what, for any particular case.

It is also worth noting that the notion of ground doesn't aim to replace familiar notions like parthood, set membership, and instantiation. Rather, the notion is explanatory, akin to causal explanation. A few more detailed examples will be helpful.

- In Quantum Mechanics, the Measurement Problem has many proposed an-

⁵Each of the below should be read: Facts about... ground facts about...

swers. The Bohmian answers the problem of the superpositions by arguing that there are in fact particles with determinate positions. The existence of these particles explain why the superposition collapse happens where it does. In other words, the particle being located at l grounds the collapse happening at l .

- Neuropsychologists look very carefully at the neurobiology of the brain, not with the primary aim of understanding the biological components, but with the aim of understanding more about mental states like pleasure, pain, and so on. It is an underlying assumption of this field that the neurobiological facts will have a significant explanatory bearing on the mental facts; that the neurobiological facts ground the mental facts.
- Words, and sentences have meanings. For some word w , it is a fact that w means m . This is a semantic fact. So, what explains the fact that w means m ? Here, we could give a causal explanation, but maybe we're only interested in what makes it the case that w means m now. In this case, we might appeal to certain facts about use, perhaps some facts about eligibility of the candidate meaning, and so on. Each of *those* facts are non-semantic facts and those are the facts that ground the semantic fact that w means m .
- As a matter of fact, it is illegal to ride a motorcycle in California without a helmet. So what makes this fact the case? According to the legal positivists, it is entirely social facts that make the California helmet law the case.⁶ So, according to the legal positivists anyway, the legal facts are grounded in some set of social facts.
- Gratuitous acts of violence are wrong. But in virtue of what is a rape or a

⁶Rosen (2010) p. 110.

self-pleasing murder wrong? If we ask a utilitarian what makes this fact the case, she will say that it is facts about the overall well-being of the population in comparison to the gratuitous act of violence that *makes* it wrong. For instance the overall harm to the raped grossly outweighs any benefit to the rapist.

- The Humean about laws believes that, at the fundamental level of reality there are no such things as laws. Fundamentally, all there is, for the Humean, is a mosaic of objects and properties spread across spacetime—or maybe just properties and no objects. According to the Humean, the laws of nature are grounded by the regularities in this fundamental mosaic.⁷

Again, nothing about this argument hangs on any of the particular cases above. The cases are simply supposed to show that there are a number of familiar cases where we already implicitly appeal to the notion of ground.

There is a concern that in the examples above it is not a single relation that is picked out but rather many that bear some loose family resemblance and it is that resemblance that we identify by the term ‘ground’. This objection is addressed in some depth by Jessica Wilson in her “No Work for a Theory of Grounding”⁸ and will be discussed further in chapter 6. For now some challenges to anyone who is tempted by this objection: What relations, exactly, are at play in these cases? Are these relations at least, or better, understood than the notion of ground? What about some mixed cases? For instance, if you think that facts about parts ground facts about wholes and you think that facts about elements ground facts about sets, then what precisely is the relation between facts about the parts of an element and the facts about the set? Is it a new explanatory

⁷Loewer (2012).

⁸Wilson (2014).

relation, in addition to the two previous or some amalgamation of the two?

Causal Explanation

The notion of a causal explanation provides an excellent contrast to the notion of ground. So, a closer look will help us see specifically what notion we are considering.

The notion of a causal explanation is very familiar, we invoke causal explanations on a near daily basis and we would have a hard time getting about the world without employing them. Ground, or metaphysical explanations are very similar to causal ones and we might use them with near equal frequency despite rarely recognizing them as distinctly metaphysical.

Suppose a quizzical four-year old asks you: Why do I exist? Aside from having that awkward “I’m not ready for this conversation” feeling, you might think of ways to answer the question. In this context, appropriate answer might mention the birds and the bees, but wanting to avoid such metaphorical conundrums, you present the following answer. “You exist” you say, “because there are trillions and trillions of swarming particles that are just so precisely arranged into atoms, and molecules, and cells, and organs, and then those are arranged into a four year old person. Because of all those things, you exist.” All but the most philosophically minded child would be completely puzzled by this answer as he had some sense that his parents were somehow involved in the explanation.

Of course the child was looking for a causal explanation, but you deprived him of that and instead gave a metaphysical one, you identified the metaphysical grounds for the fact in question. Ground and cause are similar in a number of respects, but they differ about what the relata are. In the case of grounding explanations, the grounding facts are always more fundamental than the grounded

facts.⁹ The same is not the case for causal explanations. Typically the causing facts are temporally prior to the caused facts, but even this may not be the case.¹⁰

One way to think of the relation between ground and cause is that they order the facts along different axes. The x axis, lets say measures relative fundamentality and the various facts are plotted according to how fundamental they are relative to the other facts. Consider the fact s : Soy sauce is salty. This is a relatively non-fundamental fact and so will figure a fair distance from the bottom of the chart. There will be other facts plotted directly below $[s]$ and that are connected by a “grounding line.” Any two facts that are so connected will stand in the grounding relation to one another, the lower plotted fact—the more fundamental one—will ground the higher fact. There will be many such grounding chains all along the y axis. This is to say nothing of cause, as of yet. For causes there will be another set of lines, those that run along the y axis and some of them will connect portions of grounding chains to others. Let’s take a simple case. Suppose you’ve got a hydrogen atom, consider the fact h that the hydrogen atom exists. $[h]$ will be grounded in the facts that a specific electron exists and a specific proton exists, etc. Suppose that hydrogen atom becomes bonded to an oxygen atom—there will be a similar grounding chain for that oxygen atom, but I’ll spare the details. The new OH molecule is the effect of some stuff happening in the world and in order to explain what caused the existence of that molecule, we’ll have to appeal to facts like: h . The lines of causal explanation will be drawn between $[h]$, and its grounding chain, and the fact that OH exists. Obviously this isn’t the complete story, other facts will play roles, but hopefully the picture is clear.

⁹There are some that deny this, Paul Audi (2012a) for instance. Kit Fine has also denied this in personal correspondence.

¹⁰If causal loops, backwards causation, or even instantaneous causation are possible, then they will be exceptions to this generalization.

There is some reason to be concerned that talk of ground is just fancy talk about something we already understood, namely supervenience. The idea is simple: look at the lists of examples above, in every case where I've said that Φ grounds ψ , I could have just as easily said: ψ supervenes on Φ .

Just to be clear, at this point, I have the most generic notion of supervenience in mind:

A set of properties A supervenes upon another set B just in case no two things can differ with respect to A -properties without also differing with respect to their B -properties.¹¹

We can simply modify this to fit our purposes by changing the property talk to fact talk, so we get:

Some fact F supervenes upon a set of facts Γ just in case there can be no change in F without some corresponding change in Γ .

So, if the brain grounds the mind, then there will be no difference in the mental facts without some difference in the brain facts. If parts ground wholes, then there will be no difference in the whole without some corresponding difference in the parts, and so on for each of the above examples.

Problem one: supervenience is reflexive. Every fact trivially supervenes on itself, yet no fact grounds itself. Facts may be ungrounded but never self-grounded. If something was self-grounded and the ground is always more fundamental than that which it grounds, then those self-grounded facts would be more fundamental than they are. This is impossible and so nothing is self-grounded. This isn't an overly demanding problem since we can always just specify that the relation of the supervenience relation that *we* are interested in isn't reflexive.

¹¹Bennett and McLaughlin (2011)

Problem two: supervenience is a modal notion. Because of this, it is just not fine grained enough to make all the distinctions among facts that we need it to make. For instance, if grounding were just supervenience, then any necessary fact would be grounded by every contingent fact. For instance, consider the fact that God exists. If true, it is necessary. But then our version of supervenience says that there can be no change in the fact that God exists without some change in Γ —let's just say Γ is the set of all contingent facts. Since the fact that God exists is necessary, it will never change no matter what happens to the facts in Γ . So, the fact that God exists supervenes on the contingent facts.¹² This gets the order of things badly wrong. Whether you believe in God or not you can grant that *if* God exists, then she is more fundamental than the set of contingent facts. But, if grounding were just supervenience, then the fact that God exists would supervene on Γ . So, the facts in Γ would be more fundamental than the fact that God exists.

Problem three: some facts are conditionally necessary. For instance if Keith exists, then necessarily so does singleton-Keith, no exceptions. The grounding theorist wants to say that singleton-Keith exists because Keith exists and they do *not* want the converse to be true. If the 'because' here was just expressing supervenience, then there is no way to have: 'Keith exists because singleton-Keith exists' to turn out false. This is because supervenience, for necessary and conditionally necessary facts is symmetric. There can be no change in the fact that Keith exists without some corresponding change in the fact that singleton-Keith exists and vice versa. Given that, it follows that [singleton-Keith exists] grounds [Keith exists] and also that [Keith exists] grounds [singleton-Keith exists]. By the transitivity of grounding, it follows that the fact that [Keith exists] grounds

¹²If this fact is a problem, replace it with the fact that $1+1=2$ or some logical fact like the axiom of non-contradiction.

itself. This is impossible and so ground is not to be understood as supervenience.

Each of these problems points to a basic difference between ground and any modal notion: a problem that will plague any attempt to understand ground in purely modal terms. The modal framework is intensional while the grounding framework is hyperintensional. That means that in a true statement of ground, say Φ grounds ψ , the truth of the statement is not guaranteed to be preserved when substituting Φ for some intensionally equivalent set of facts Δ . The resultant statement: Δ grounds ψ may be false.

2.1.2 From Explanation

As is unsurprising there are many different explanatory notions, predominantly causal and epistemic. But also there are all of the subject specific notions, scientific, biological, chemical, historical, psychological, logical, and so on. It is an interesting question as to whether these forms of explanation cover all the forms of explanation. The grounding theorist thinks the answer is that they clearly do not. I discussed a couple examples of explanations above that don't fall under any basic explanatory notion, but it will be worthwhile to look at a few more here.

Consider the fact that San Diego is located within California, call it ' s '. What explains [s]? Whatever set Γ of facts does, it will include facts like: the geographical boundaries of California are x , the geographical boundaries of San Diego are y , and so on. So, Γ explains [s], but what kind of explanation is this? It seems implausible that this explanation is causal or mathematical. For instance, the relations of mathematical explanations are mathematical facts and it would be an extreme stretch to claim that the explanation was causal.

Suppose I want to know what *now* makes it the case that Kayla is 175cm

tall—the point of the ‘now’ is to emphasize that I don’t care about any other times and so I’m not looking for a causal explanation. What facts could I list that explain her 175cm height? Plausibly I’d list some facts about her parts, the atoms that make her up maybe. Certainly some facts about how those parts are arranged and so on. Once I’ve listed these facts, I’ll have an explanation of her height, but precisely what kind of explanation is this? It’s definitely not teleological or mathematical and I ruled out at the beginning that it wasn’t to be a causal explanation, and given that the set of facts explaining Kayla’s height is very large, the explanation is almost certainly not epistemic. If you go her way, she’ll point out that this is a distinctively metaphysical explanation, a grounding explanation.

The pattern for generating these kinds of explanations isn’t very sophisticated. All you need to do is consider the phrase ‘in virtue of’ and then consider some fact *f*. Then ask yourself: in virtue of what is [*f*] the case? If you can come up with an answer to this question it is likely the case that the answer is just a list of the facts that ground [*f*]. With very little effort one can come up with dozens of examples, and in most cases those examples won’t fit into any of the other explanatory categories.

Paul Audi argues similarly for an expressly metaphysical notion of explanation. He gives the following argument:

- (1) If one fact explains another, then the one plays some role in determining the other.
- (2) There are explanations in which the explaining fact plays no causal role with respect to the explained fact.
- (3) Therefore, there is a non-causal relation of determination.¹³

If the form of the explanations is similar to causal explanations, but the connection isn’t causal, then we have little to do but accept that there is another notion

¹³Audi (2012a) p.105.

of explanation. Then, we have to try and understand it as best we're able.

2.2 Features of Ground

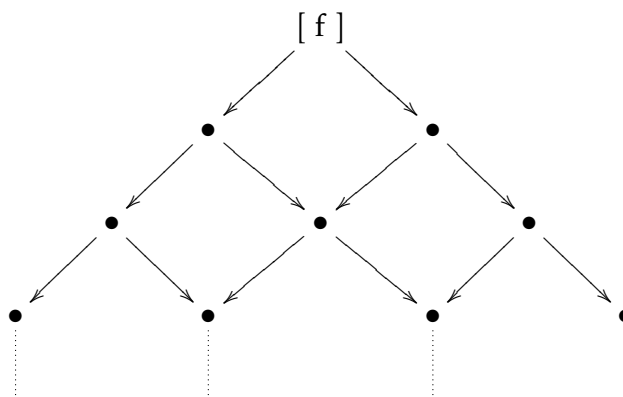
I've made the case that there is a place for the notion of ground in the philosophers tool bag, but as philosophers we'd like to have our tools be as precise as possible. In what follows I will outline a number of features and distinctions pertaining to ground.

2.2.1 Structural Features of Ground

Partial Order

The notion of ground introduces is a strict partial order on the world of facts and so the notion is irreflexive, asymmetric, and transitive. It is the partial order that makes for the "chaining" among grounding facts. For some fact $[f]$, if Γ grounds $[f]$, then likely for each fact among Γ , there will be some further facts that ground those, and so on.

This is nicely representable with the following Hasse diagram.



Each of the respective nodes is a further fact that grounds the fact that $[f]$

and in turn there are further facts that ground some of those. The descending ‘...’ aren’t to represent infinite descent, but rather that there may be many more grounds before we reach some ungrounded facts.¹⁴

There has been some dispute over whether the notion of ground in fact has these three features, so it is worthwhile saying something brief about each. To my knowledge, only Carrie Ichikawa Jenkins¹⁵ has argued that the notion of ground fails to be irreflexive, but some of the things that Jessica Wilson¹⁶ says suggest that she might think ground can sometimes be reflexive. Aside from these two, there seems to be nearly universal agreement among fans of grounding about its irreflexivity.¹⁷

The sorts of cases that Jenkins and Wilson have in mind are cases where, for instance, we come to discover that the mental states *just are* brain states—think: type or token identity theory. Before this discovery, the default position was something like mental facts are explained by brain facts. Each of Jenkins and Wilson think that the discovery that mental states just are brain states isn’t sufficient to make us give up this prior commitment to the explanatory claim. So we now have a situation where the following facts: [x is M] and [x is B] (where M is a mental state and B is a brain state) are such that, according to Jenkins and Wilson, [x is B grounds x is M]. But without some incredibly fine grained notion of a fact, [x is M] is identical to [x is B]. Wilson and Jenkins have slightly different ways of dealing with this purported irreflexivity, but aside from how they deal with it there are other options for the proponent of ground. Ground

¹⁴This diagram is also helpful to visualize some of the distinctions among ground that are explained below. Each horizontal row on the diagram represents an instance of full ground, each node a partial ground. Also, the first row below [f] are the immediate grounds of [f].

¹⁵Jenkins (2011).

¹⁶Wilson (2014). Although Jenkins and Wilson both might think there are cases of irreflexive ground, they have slightly different notions in mind.

¹⁷Also see: Correia (2013).

is an explanatory notion and most agree that if x grounds y , then x is prior to y . If x and y are identical, then by the substitutivity of identity it follows that x is prior to x . How could that be? The answer is that it can't.

This isn't to say that the grounding theorist can't accommodate identity theories about the mind, it can. Here's one option, there might be more. The grounding theorist can deny that there is a genuine explanation here. That is, deny that the brain facts ground the mental facts. To soften the blow, the grounding theorist can point out that identity theories about the mind are simply theories about what grounds what. In particular, they say that whatever it is that grounds the so-called mental facts also grounds the brain facts and that all talk of the mental facts is equally stated in terms of brain facts, but there is no metaphysical explanatory connection here—there might be some sort of epistemic explanation, but that's not the focus of this dissertation.

Asymmetry isn't a feature of ground if ground isn't irreflexive and is transitive, but ground is irreflexive and so it's at least non-symmetric. Rosen¹⁸ advocates a strong asymmetry for ground, namely:

Strong asymmetry If $[f]$ is grounded in $[g], \Gamma$, then not: $[g]$ is grounded in $[f], \Delta$.

and I agree with Rosen. In English, this says: If $[f]$ is grounded in the fact $[g]$ and some set of facts Γ , then it's not the case that $[g]$ is grounded in $[f]$ and some set of facts Δ . Or, if $[f]$ is even partially grounded in $[g]$, $[g]$ cannot be even partially grounded in $[f]$.

Transitivity has also caused some disagreement among grounding theorists. Jonathan Schaffer for instance has presented a number of examples for the claim

¹⁸Rosen (2010).

that grounding fails to be transitive.¹⁹ One of Schaffer's examples asks us to consider a dented sphere that has a determinate shape *S*. Since having the determinate shape that it does grounds it's being a member of some determinable *more-or-less spherical*, get the following three facts:

1. *a* is dented.
2. *a* has determinate shape *S*.
3. *a* is spherical-ish.²⁰

It seems pretty clear that 1 grounds 2 and also that 2 grounds 3. But as Schaffer claims, it's dubious that 1 grounds 3. If this is the case, then ground isn't transitive. Schaffer's solution to this problems with transitivity is to claim that ground is a four place contrastive relation. He can then preserve the transitivity of "ground" from the purported objections to transitivity.

I don't accept that ground is a contrastive notion and so can't accept Schaffer's account of these cases of transitivity. There are a couple other responses that I find appealing. First, Jon Litland²¹ introduces a distinction between explanation *how* and explanation *why*. The explanation of ground is explanation *how*. The grounds of some fact [*f*] *explain* in the sense that they cite the facts that make it the case that [*f*] obtains. Explanation *why*, on the other hand, aims to account for why some fact [*f*] is the case as opposed to some other fact [*g*].²² According to Litland, what is going on in Schaffer's purported counterexamples to the transitivity of ground is an implicit shift from explanation *how* to explanation *why*. It's implausible that 1 explains_{*why*} 3, but that does not entail that 1 doesn't explain_{*how*} 3. If this is right, then we should just reject the case above as

¹⁹Schaffer (2012).

²⁰Schaffer (2012) p.126. This specific example is repeated and discussed in both Trogon (2013) and Litland (2013).

²¹Litland (2013).

²²Explanation *why* is precisely what Schaffer's contrastive account captures.

an objection to the transitivity of ground.²³

My general attitude here is that Litland is right and that we should bite the bullet and accept that 1 does ground 3. But we should explain, as Litland does, that the “bullet” isn’t at all deadly. 1 explains how 3 is grounded and that’s it, I doubt it will be surprising to anyone that we easily slip between these two notions of explanation. What Schaffer’s examples show then is that explanation why, when presented as a two place relation, is not transitive.²⁴ On the other hand, explanation how is transitive and therefore so is ground.

Hyperintensionality

There is universal agreement about the hyperintensionality of ground. By this I mean that that for any three facts [f], [g], and [h] such that [f] grounds [g] and [h] is intensionally equivalent to [f]—i.e. [f] obtains at a world just in case [h] does—it does not follow that [h] grounds [g]. For instance, [3 is prime] partially grounds the conjunctive fact [3 is prime and avocados are delicious] and since they are both necessary truths, [2 is the successor of 1] is intensionally equivalent to the fact [3 is prime] but it’s simply not true that [2 is the successor of 1] even partially grounds [3 is prime and avocados are delicious].

The hyperintensionality of ground is important in part, because it is a feature that distinguishes ground from supervenience. But also because the notion of ground aims to connect facts by way of dependence and not just by covariation. There are no accidental grounds, just like there are no accidental causes.²⁵

²³Schaffer’s other purported counterexamples also face similar objections. See also: Raven (2013) for further discussion.

²⁴This ‘two place relation’ clause is important since as Schaffer (2012) shows, if ground is a four place contrastive relation we can avoid the particular counterexamples that he gives.

²⁵It might be helpful to think of the connection in terms of a GRE question: Ground is to cause as supervenience is to _____. The answer, of course, is correlation.

Monotonicity

Ground is not monotonic. That is, if Γ grounds [f], then it doesn't follow that Γ , [g] also grounds [f]. In case this isn't obvious, let's consider an example. Suppose some facts about Oxygen and Hydrogen atoms ground the fact that water is a simple molecule, call this 'w'. If ground was monotonic, then it would also be true that some facts about Oxygen and Hydrogen atoms *plus* some facts about Radon ground [w]. But no facts about radon ground the fact that water is a simple molecule and so ground is not monotonic. Just to be clear, the claim isn't that you can't ever add a fact to the ground and preserve the truth of the claim, but rather that adding a fact to the ground doesn't guarantee the preservation of truth for the grounding claim.

Another way to see that ground *should* not be monotonic is to think of precisely what ground is supposed to be doing for us. Ground is a form of explanation and so the explanans should contain only the facts necessary for explaining the explanandum, and none more. If I want to explain the fact that my cat is sleeping, I will have to cite some facts about her neurological state, about her current biological functioning, etc. But I don't then go and add facts about the earth's orbit around the sun since those are irrelevant to the fact that my cat is sleeping.

Adicity

The standard view, accepted by almost everyone is that ground is a two place relation.²⁶ What is slightly less agreed upon is whether the argument places are plural or singular. Shamik Dasgupta for instance thinks that both places are

²⁶Or, operator, as we will consider shortly.

plural.²⁷ So, for instance he thinks that there are grounding facts of the form: F grounds G, where both F and G are plural variables. Dasgupta thinks that the facts of biology, for example are collectively grounded in the facts of chemistry. This is not to say that there aren't also singular facts that are grounded, but just that the primary notion is plural.

I am personally undecided as to whether ground is irreducibly plural or whether it is a plural–singular notion. In either case, none of what is said in this chapter or others will depend on one view or the other. I will proceed with the view that the notion is plural–singular.

Another view that has been defended by both Carrie Jenkins and Jonathan Schaffer says that ground is a four-place relation.²⁸ Although the details of their views differ, both are non-standard view and I won't say more here.

Relation vs. Operator

The literature is divided over the proper formulation of ground. There are two views on the matter, call them the predicational view and the operator view.²⁹ The predicational view, as the name suggests, treats ground as a predicate. Some facts ground another just in case the former stand in the appropriate relation to the latter. The proper expression of ground on this view is: '... grounds ...'

The operator view, on the other hand, takes ground to be an operator. The official formulation is in terms of the sentential connective *because*. In this case, if we want to express that some facts ground some other facts, we say: Mammals are able to survive in cold climates *because* mammals are warm blooded.

²⁷Dasgupta (2014).

²⁸Jenkins (2011) and Schaffer (2012).

²⁹These are the terms used by Correia and Schnieder (2012) but they may not be original to them. See Rosen (2010), Schaffer (2009), and Trogdon (2013) on the relational view and Correia (2010), Fine (2012), Schnieder (2011), and Sider (2012) on the operator view.

There are some minor expressive differences between the views and there is the ontological cost of the relation for the case of the relational view.³⁰ The expressive differences will make no difference anywhere in this dissertation and so I will ignore them. My official view is that ground is an operator that can take facts as arguments. However, I will sometimes speak as though ground is a relation; this is simply for ease of reading.

Facts

Ground connects facts, as has already been repeatedly mentioned.³¹ This is unlikely surprising given that ground is an explanatory notion. Explanatory notions are often—and in the case of ground always—answers to non-causal *why* questions. If I ask: why is the pineapple rotten? Precisely what the answer is to this question doesn't really matter, but whatever it is it will be a list of facts. These facts are the grounds of the fact in question.

Jonathan Schaffer argues that grounding is a relation between things.³² This is not to deny that some facts ground some other facts, but rather to expand the notion to include pineapples, tables, distant stars, and superstrings—if there are any. Whether there is any such relation as the one that Schaffer outlines is up for grabs, but what isn't is that Schaffer's notion just isn't explanatory. To see this, suppose I ask: Why is the iPad not powering on? Suppose the Apple Genius answers: Battery, iPad, Screen, Plug, Facebook, . . . and so on, has he answered my question? I can't imagine anyone being satisfied with this as an answer and so as an explanation of the fact that the iPad won't power on. What we need here are structured entities: structured propositions, Wittgenstinian facts, or states of

³⁰See Correia and Schnieder (2012) p.11 for some detail.

³¹The fact view is endorsed by a vast majority in the literature; Audi (2012a,b), Correia (2005), Fine (2012), Rosen (2010), Trogon (2013), and many others.

³²Schaffer (2009).

affairs—assuming they are very finely grained—will all suit our purposes here.

2.2.2 Notions of Ground

Full and Partial Ground

The full ground of a fact $[f]$ is whatever facts Γ are both minimal and sufficient to make it the case that $[f]$ obtains. The *sufficiency* clause requires that the grounds actually do make it the case that $[f]$ obtains. It will not do that the full ground is sufficient if it happens to be preempted. The *minimality* condition on full ground is important since ground fails to be monotonic, as per above. For example, the full ground of $[f \vee g]$ is $[f]$, but also $[g]$ —so note, the full ground of a fact $[f]$ need not be unique.

A partial ground for $[f]$, by contrast is a fact that, together with some other facts, constitute s full ground for $[f]$. For instance, the fact that Terry the triangle has three sides partially grounds the fact that Terry is a triangle. If we added the facts that Terry is a closed planar figure, that Terry has straight sides, and that Terry's internal angles equal 180° , then we would have the full ground for the fact that Terry is a triangle.

Fine suggests that we should take the notion of full ground to be prior to partial ground since, as I did above, we can define partial ground in terms of full ground.³³ For instance, the partial grounds are the same for these two facts: $[f \vee g]$ and $[f \wedge g]$, where both f and g are the case. But, the full grounds are different, in the left case, each of $[f]$ and $[g]$ are a full ground of the disjunctive fact.

³³Fine (2012) p.50.

Ultimate Ground

The notion of an ultimate ground is relatively familiar. If God were confronted with a two year old who endlessly asked ‘Why?’, despite God’s unending patience, at some point God would stop answering. God stops answering at precisely the point at which the explanations end. In non-metaphorical terms, the ultimate grounds are those facts for which there is no further ground; the ungrounded facts.

Fundamental Ground

For many grounding theorists, the notions of an ultimate ground and a fundamental ground pick out the exact same set of facts. For many, the ungrounded grounds *just are* the fundamental grounds—there just isn’t anything else to being fundamental but than to be ultimate—or ungrounded.³⁴ Accepting this, however, is not imperative.

Immediate and Mediate Ground

As Fine says, an immediate ground is one that is not mediated by any other grounds.³⁵ For instance, $[f]$ is an immediate ground of $[f \vee (f \vee f)]$. An immediate ground $[g]$ for any fact $[f]$ is one for which there is no distinct fact $[h]$ that both grounds $[f]$ and is grounded by $[g]$. A mediate ground $[f]$ is any ground of $[h]$ for which there is a fact $[g]$ that both grounds $[h]$ and is grounded by $[f]$. One other thing that is hopefully obvious, is that both of immediate and mediate ground will have full and partial variations.

³⁴This idea will be formally covered in a section below.

³⁵Fine (2012) p.51.

Total Ground

To understand the notion of a total ground, it is easiest think about the grounding chains. For some fact [f] consider all of the chains to their terminus in the ultimate grounds. Now consider each fact on each of those chains, those facts form a set Δ . This set is the union of full and partial grounds of [f], it is the total ground of [f].³⁶

Weak and Strict Ground

The distinction between weak and strict ground is Fine's.³⁷ Strict ground, being the more familiar notion, is one in which a strict priority is introduced between the facts in question. An instance of ground is an instance of strict ground when, for any facts [f] and [g], if [f] grounds [g], it's false that [g] grounds [f]. Strict ground is the partial ordering notion that we've considered in all of the examples so far. By contrast, weak ground doesn't prioritize one fact over the other. For example, consider the facts, [Quinn married Kelly] and [Kelly married Quinn]. According to Fine, [Quinn married Kelly] weakly grounds [Kelly married Quinn] as well as the converse.

It might be tempting to think that weak ground is a symmetric notion, but that overreaches. More appropriately we should say that weak ground is not asymmetric. Since we can easily define the notion of a strict ground in terms of a weak ground:

$$x \text{ strictly grounds } y =_{df} x \text{ weakly grounds } y \text{ and } \neg(y \text{ weakly grounds } x)$$

Every instance of strict ground will also be an instance of weak ground—albeit

³⁶The total grounds of a fact might very well contain redundant grounds, but this is ok.

³⁷Fine (2012) p.51-52.

one that isn't reversible.³⁸

2.2.3 Metaphysical Features

In addition to the structural features of ground itself, there are a number of metaphysical features that often arise and it will be worthwhile to say something about a few of these.

Well-Founded

Jonathan Schaffer claims that the notion of ground is well founded.³⁹ That is, every grounding chain terminates. The idea seems plausible, after all, it seems that there must be some way that the world fundamentally is, right? However that is, that must be where the grounding chains end.

Not everyone thinks that ground is a well-founded notion however. Suppose that facts about wholes ground facts about parts. Further suppose that gunk is possible—something is gunky iff every proper part of it has proper parts. In a gunky world, suppose a piece of gunky matter *x* is *F*. Given that facts about wholes are grounded in facts about parts, it is possible that the resulting grounding chain will have no end. Each explaining fact—i.e. each ground—will have a further fact to explain it since each part has proper parts.

This might not be an entirely compelling argument against the well-foundedness of ground, but it is reason enough to hesitate and to remain neutral for now on the issue. The well-foundedness of ground is, after all, a substantive metaphysical thesis.⁴⁰

³⁸See deRosset (2013b) for a critical appraisal of weak ground.

³⁹Schaffer (2009).

⁴⁰For further discussion see: Bliss (2013), Cameron (2008), Morganti (2009, 2014).

Grounding Ground

Suppose that Γ grounds $[f]$. In that case, we have a new fact: $[\Gamma \text{ grounds } f]$, is this fact grounded? If it is, then we have another new fact, namely $[\Delta \text{ grounds } [\Gamma \text{ grounds } f]]$ and so on. If not, then we have some ungrounded facts that are plausibly not fundamental, but given what I say below, this is problematic.⁴¹ Another way of seeing the puzzle is to ask: If I explain why some fact obtains, must there be an explanation of why what I said is an explanation for the fact in question? If yes, then, the grounding facts must be grounded. If no, then we will have some ungrounded facts that are (plausibly) not fundamental.

There are many options for escape and I will discuss one attractive option in chapter 3, but for now, I want to note that nothing about ground itself compels us to answer this puzzle one way or the other.

2.3 Applications of Ground

As with the examples in §2.1.1, the notion of ground does not stand or fall with any of the definitions below. The point of this section is to show how wide reaching the applications of ground can be. If, for instance, it turns out there aren't any integrated wholes, that won't make any difference to the notion of ground itself. Nor would it show that ground wasn't helpful in elucidating the notion of an integrated whole. Ground is a piece of our ideology that aims to express how facts are related, regardless of both what facts there are and what the furniture of the world is like.

⁴¹Both Bennett (2011a) and deRosset (2013a) present this puzzle and provide somewhat similar answers. Raven (2009) was the first to present such a solution.

2.3.1 Defined Notions

Mere Aggregates and Integrated Wholes

For Jonathan Schaffer—who is a priority monist—the distinction between mere aggregates and integrated wholes is an important one, and the notion of ground can shed some light on the distinction.⁴² Informally, we can say that an integrated whole is one for which the whole is prior to the parts and for a mere aggregate the converse is true. But if we accept ground, then we can be more specific.

An integrated whole is something for which the facts about the whole ground the facts about the parts. Likewise, we can say that a mere aggregate is one for which the facts about the parts ground the facts about the whole.

Fundamentality

It has been suggested by a number of philosophers⁴³ that we need a notion of either absolute or relative fundamentality, this notion will provide us with something like a “layering” structure for the world.

Although I don’t think that grounding alone can provide this structure—I’ll talk much more about this in chapter 3—some have used grounding to outright define a notion of fundamentality.⁴⁴ We can say that a fact *f* is *fundamental* when no facts ground *f* and we can say that a fact *f* is *more fundamental than* another fact *g* when *f* is at least a partial ground of *g*.⁴⁵

⁴²Schaffer (2010).

⁴³See: Bennett (2011b), deRosset (2011, 2013a), Fine (2001, 2012), Rosen (2010), Schaffer (2009), Sider (2012).

⁴⁴Schaffer (2009) p.373.

⁴⁵I say considerably more about this in the following chapters, especially 3 and 5.

2.3.2 Connections and Theses Illuminated

Like both the metaphysical theses and defined notions above, we can deny any of the following without also denying that there is a well-behaved and intelligible notion of ground. The below cases are intended to show how the notion of ground can help us understand and unify a number of common notions.

Determinable–Determinate

Redness is a determinable of the determinate scarlet. So, what is this connection? It is a relationship between properties and the determinate is certainly more specific than the determinable, but what precisely is the relation? It really is hard to spell out the connection between determinables and determinates more than I've already done.

If, however, we take the notion of ground seriously, we can gain a little more insight into the connection between the two. Gideon Rosen gives us what he calls the determinable–determinate link. It says:

If G is a determinate of determinable F and a is G, then [Fa] is grounded in [Ga].⁴⁶

That is to say, facts about determinates ground facts about determinables. This seems to accord nicely with how we think of these notions. After all, if we take the example above, we would plausibly say that a shawl is red because it is scarlet, and not the other way around.

Genus–Species

We're all familiar with the terms 'genus' and 'species' from wildlife examples, but Rosen⁴⁷ offers us another example. Consider a square and a rectangle. What

⁴⁶Rosen (2010) p.126.

⁴⁷Rosen (2010) p.126.

is the relationship between these two shapes? We might be tempted to say that being square is a determinate of being rectangle, but that would be a mistake. Briefly, this would be a mistake because, if you consider a paradigm case of determinate and determinable, say: being scarlet and being red, there is just no way that you can define being scarlet in terms of being red and another property. For the square and rectangle on the other hand, you can define being a square in terms of being a rectangle and another property, the differentia. Given this difference, we should think of the square as the species and the rectangle as the genus. Since the genus is primary and the species is generated by adding a difference maker to the genus, being rectangle is primary. In the case of the square, the differentia is being equilateral. So, for some x if x is both rectangular and equilateral (differentia), then x is square.⁴⁸

We can nicely connect this notion with ground:

If G is the genus of S , D is the differentia of S , and a is S , $[Ga]$, $[Da]$ grounds $[Sa]$.

That is, the fact that some thing is a member of a species is grounded in the facts that it is a member of some genus and has some difference maker property.

–isms

One of the great coups for the notion of ground is a clear concise way of defining a number of –isms that have otherwise posed problems for philosophers. Physicalism, for instance has created a great deal of strife among philosophers.⁴⁹ With the notion of ground at our disposal, we can easily and straightforwardly define physicalism.

⁴⁸The example is on p.126-7 of Rosen (2010).

⁴⁹See Stoljar (2009) for a thorough discussion of the issues.

Physicalism All facts are either physical facts or are grounded in physical facts.

Is this what the physicalist must believe? No, but it is a relatively attractive view of what physicalism says.

Eliminativism is popular among some ontologists, but also philosophers of mind, ethicists, legal theorists, and so on who wish to deny that some things, states, or properties exist. For instance, the nihilist about composition insists that there are no things with parts, no tables, no chairs, no people. The eliminativist about mental states thinks that there just are no such thing as mental states. All that exists are neurological processes and that's the end of the story. Some moral and legal theorists think that there simply are no such thing as rights.

One way of (simply) understanding these views is in terms of ground. Let's take the nihilist about composition as an example. The nihilist denies that there are any composite things whatsoever, but we could understand her view as the following:

There are no fundamental facts about composite things.

This leaves open the possibility that there are grounded facts about composite things.⁵⁰ Note, I'm not claiming that the nihilist believes the above. The aim here is just to show how the notion of ground can be used to define, elucidate, and illuminate theses that we previously didn't have the resources to deal with.

⁵⁰This view is relatively close to the view of Ted Sider (2007, 2012).

Reduction

One connection that is the subject of some disagreement is the link between ground and reduction.^{51,52} According to Rosen:

If p reduces to q and p is true, then $[q]$ grounds $[p]$.⁵³

We need to be somewhat careful here since the term ‘reduction’ is used in many different ways. Sometimes reductions are purely linguistic and other times they are conceptual. In this case, the notion is purely metaphysical. So suppose that [Michael is in pain] is grounded in [Michael is in brain state b_1]. Assuming that [Michael is in pain] is true, it follows that [Michael is in pain] *reduces to* [Michael is in brain state b_1]. (Note, identity claims aren’t metaphysically explanatory, so the connection expressed in the claim of reduction was not token or type identity theory.)

Realism and Anti-Realism

Kit Fine famously uses the notion of ground to formulate the theses of realism and anti-realism.⁵⁴ If you want to be an anti-realist about some class of facts, then according to Fine you should believe of those facts that they aren’t grounded in anything that holds in reality. If you want to be a realist about a class of facts, then you should believe that those facts are grounded in something that holds in reality. Fine also needed his notion of ‘in reality’ to give these theses, but ground plays a crucial role here.

⁵¹For instance Rosen (2010) is a fan and Audi (2012a) is not.

⁵²Some of the above cases, the “-isms” could be seen as cases of reduction.

⁵³Rosen (2010) p.122.

⁵⁴Fine (2001).

2.4 Conclusion

The main aim of this chapter was to demystify the notion of ground and to point toward some work that the notion can do for us. Not only is ground an independently plausible notion, but it is able to help us define a number of philosophically useful notions and help us elucidate some otherwise difficult philosophical theses. I have by no means given an irrefutable argument for the notion, that was never the aim. Instead I think that collectively the arguments in this chapter make a plausible case for the inclusion of ground in our philosophical tool-bag.

CHAPTER 3

ANALYZING GROUND

In this chapter I'm particularly interested in the idea that the notion of ground can be analyzed. By far the most common position among philosophers working on ground is that ground is a primitive notion.¹ There are some however that think that the notion ought to be analyzed.² Among the analyzers of ground, there is virtually no consensus on either the reason for the analysis or in what the analysis consists. My reasons for analyzing the notion of ground primarily have to do with its connections to a notion of relative fundamentality, particularly a problem that arises when we consider the two carefully. (There are also auxiliary benefits to analyzing grounding as I do that will be discussed at the close of the chapter.)

The solution to this problem that I favor leads me to analyze grounding in terms of two distinct primitives, one familiar and one perhaps not. The familiar notion is simply relative fundamentality and the other, which is unfamiliar, I call 'intimacy'. This notion can be loosely, and somewhat metaphorically, thought of as, *grounding light*. Think: the notion of ground minus the requirement that

¹Audi (2012b,a), Rosen (2010), Schaffer (2009), Fine (2001, 2012), among others.

²Skiles (2012).

the grounds be more fundamental than the groundee. Intimacy is similar to both Kit Fine's notion of *weak ground* and Elizabeth Barnes' notion of *symmetric dependence*.^{3,4} For any fact F that grounds some other fact G, both facts bear a very tight connection to each other in a way that some other non-ground-related fact H isn't. F makes it the case that G obtains while H doesn't. Intimacy is that "makes it the case that" connection and I will argue that there are some cases where it holds between some facts that are equally fundamental. I will speak about this in more depth in §3.5.1, but hopefully this brief suggestion will satisfy for now.

After discussing both relative fundamentality and intimacy, a little work needs to be done to ensure that the analyzed notion of ground preserves the features of the primitive notion⁵ and some of the advantages of the analyzed version of ground need to be considered. For one, this analyzed version of ground allows a novel answer to the problems raised by Karen Bennett, Louis deRosset, and Shamik Dasgupta⁶ about what grounds the grounding facts.⁷ §3.1 presents part 1 of a puzzle for ground and §3.2 contains an interlude on primitivity. §3.3 gives some reasons to take a notion of relative fundamentality as primitive. Then §3.4 completes the discussion of the puzzle and considers a number of potential solutions. In §3.5 I present and defend my analysis of ground, which is also a solution to the puzzle discussed in earlier sections. Lastly, §3.6 briefly discusses some of the flexibility that this analyzed notion of ground has over its competitors.

³Fine (2012), Barnes (2013).

⁴Any facts that are weakly grounded—in Fine's sense—are intimate. Also, many of the examples Barnes gives of symmetric dependence I either accept or accept fact-fact versions of them.

⁵After all, if the analyzed notion is different from the purportedly primitive notion, it's a little unclear in what sense they are the same notion.

⁶Bennett (2011a), deRosset (2013a), and Dasgupta (ms).

⁷This is one place where my analysis pays some dividends.

3.1 A Puzzle for Ground, Part 1

Almost everyone agrees that there is a strong connection between the notion of ground and relative fundamentality. Consider the following statement by Gideon Rosen,

The thought is that when we cite grounds for [p], we cite facts that are strictly prior to [p] in a certain explanatory order. If [q] plays a role in making it the case that p, then [q] must be ‘more fundamental’ than [p]...⁸

That the grounds are more fundamental than the facts they ground shouldn’t be surprising at all. Just as with causal explanations, whatever does the explaining comes *before*—in some sense—what is explained; it is no different for ground.

This is not to say that we couldn’t deny this connection. You might think that if there is a notion of relative fundamentality, it doesn’t relate facts, but rather objects or properties. In this case, there just might not be any robust connection of relative fundamentality that connects facts to facts. Whether this is a tenable alternative or not depends at least in part on whether it is as fertile a notion as the one connected to ground.⁹

Let’s put this possibility aside and consider the following pair of sentences.

- (1) \square If Γ ground [f], then Γ are more fundamental than [f].
- (2) \square If Γ are more fundamental than [f], then Γ ground [f].

Each expresses a necessary connection between relative fundamentality and grounding, but which, if either is true? (1) expresses the connection that Rosen identified above and nearly everyone working on grounding agrees to. On the other

⁸Rosen (2010) p.116.

⁹In chapter 5 I will spend even more time arguing that we can’t define relative fundamentality in terms of ground.

hand nearly everyone rejects (2).¹⁰ This shows us that relative fundamentality and ground are distinct notions. Since (2) is almost certainly false, let's focus our attention on (1).

If (1) is true, then there is a necessary connection between the two notions—relative fundamentality and ground—that should make even the non-Humean uncomfortable. If there is such a connection and both relative fundamentality and ground are primitive notions, then the connection pleads for an explanation. As I see it, there are three options:

- (i) Accept the necessary connection as brute.
- (ii) Analyze relative fundamentality in terms of grounding.
- (iii) Analyze grounding in terms of relative fundamentality.

I concede I don't have any knockdown argument against (i) aside from what I said above. Even if your anti-Humean intuitions run quite strongly, accepting this connection between two purportedly primitive notions is uncomfortable. If a physicist told us that of necessity anytime we have a weak nuclear force we also have an instance of a gravitational force, but not the converse, we'd immediately ask why. If, when asked why, she answered that it's just a brute physical connection and she didn't give us any further evidence for why it was an unexplainable connection, I doubt anyone being very satisfied. If all of the other avenues for explaining this connection were explored, then I would be more amenable to accepting (i); although perhaps reluctantly with some suspicion that something was missed.

Similarly with the connection between ground and relative fundamentality. If we are to accept that the connection is brute, it should only be after consider-

¹⁰No one has particularly discussed (2) which probably because it is wildly implausible. (2) entails that some facts about electrons on the other side of the galaxy ground the fact that Bill Clinton is over 60. But obviously these facts have *nothing* to do with one another. Obviously no facts about those electrons ground any facts about Bill Clinton's age.

able investigation into both (ii) and (iii). We will return to discuss (ii) and (iii) in §3.4 and §3.5 respectively, but first I want to fill in a few gaps about the notions of being a primitive and being relatively fundamental.

3.2 Being Primitive

There are at least two things people can mean when they say that a term, notion, predicate, operator, piece of ideology might be a primitive.¹¹ First there is the restricted sense in which, for example, the notion of a set is a primitive for set theory or the notion of a belief for epistemology. In these cases, these notions are basic and are starting points for the rest of the subject area. When our focus is properly restricted there just is no asking: ‘what is a belief?’ and ‘what is a set?’, they are basic and there is nothing further to say within that discipline. If we step outside of set theory, we can start asking questions about the metaphysics of sets or beliefs. For each of these cases there might or might not be some more basic notions with which to explain them.

Second, there is the unrestricted sense of being a primitive. In order for a notion ϕ to be an unrestricted primitive, there needs to be no other, more basic, notions in any discipline whatsoever that can (metaphysically) explain ϕ 's role. If ϕ is a predicate, then there needs to be no more basic predicates that explain when ϕ truly predicates what it does of some things. If ϕ is a logical connective, then there needs to be no more basic logical connectives that explain when that connective truly applies to some sentences, and so on.¹²

One reason to think that the *metaphysical* ideology is primitive in the unrestricted sense is that it is very natural to “rank” the various subject areas in terms

¹¹There are probably many things that people can mean by ‘x is a primitive’, but the two I will canvas here are the two relevant to the current debate.

¹²Consider the connection between \vee , \neg , and \rightarrow .

of what explains what (and so, given (1) in §3.1 above, in terms of what is more fundamental than what). For instance, no one disputes that chemistry is a more fundamental science than biology or psychology. And similarly there is no disagreement that zoology is more fundamental a science than the study of English literature. Not all of the academic subject areas can be put in such nice order, since some particular facts might be involved in more than one subject area; e.g. facts about economies might well ground some facts about psychology or sociology, and the converse is definitely true. But we don't need a perfect ordering of the subjects of academic research to agree that some disciplines are more fundamental than others. Metaphysics, for instance, investigates what there is and what it's like at the most basic level.¹³ If metaphysics is a fundamental discipline—i.e. there are no more fundamental disciplines that explain the basic truths of metaphysics—then the metaphysical primitives will be unrestrictedly primitives.

As mentioned above, most philosophers want take the notion of ground to be unrestrictedly primitive. For instance, Gideon Rosen says:

We should grant immediately that there is *no* prospect of a reductive definition of the grounding idiom: We do *not* know how to say in more basic terms what it is for one fact to obtain in virtue of another. (Rosen, 2010, p.113, emphasis added.)

And Schaffer:

Grounding should rather be taken as a primitive, as per the neo-Aristotelian.¹⁴ Grounding is an unanalyzable but needed notion—it is the primitive structuring conception of metaphysics.¹⁵

¹³Obviously, metaphysics doesn't *exclusively* do this, but it is one of its foremost jobs.

¹⁴c.f. Fine (2001) p.1.

¹⁵Schaffer (2009) p.364.

3.3 Relative Fundamentality

Being able to compare facts in terms of how fundamental they are will turn out to be a valuable tool for metaphysics. The idea that some facts are more fundamental than others isn't new, even though it is just now getting a lot of attention. For example, David Lewis has argued that there is a lot of work in metaphysics to be done by a notion of *being natural*, or *nearly natural*.¹⁶ I won't dive into all of the cases Lewis examines, but he makes a case that if we adopt his notion of being natural (or nearly so), then we can answer, in a unified fashion, a number of puzzles faced by philosophers. I'm not claiming that the notion of relative fundamentality that I have in mind here *is* Lewis's, but I do think that if we accept my notion of being relatively fundamental, we can define Lewis's notion of being natural—even though my notion applies to facts and Lewis's to properties or predicates.¹⁷

More or less every philosopher working on ground, and the near by territory, thinks that a notion of fundamentality is important for doing metaphysics.¹⁸ Where they disagree is on whether that notion can be analyzed or defined in terms of ground or whether it's a distinctive notion altogether. Fine thinks that grounding alone can't cut it and instead they prefer, as I do, a stand alone notion of fundamentality—although they both prefer an absolute notion.¹⁹ Others like Sider and Robbie Williams don't believe in grounding at all, but still think it crucially important to metaphysics to have a distinct notion of fundamentality.²⁰ We may disagree on the details but we are united in our agreement that

¹⁶Lewis (1983).

¹⁷Chapter 4 I show how to derive the relative fundamentality of properties and objects from my notion with applies to facts.

¹⁸Most of those cited so far have something to say about the notion as well as alternative approaches like those from McDaniel (2013) and Sider (2012).

¹⁹Fine (2001, 2012).

²⁰Sider (2012) and Williams (2010) respectively.

some notion of fundamentality is crucial.

Another issue, when proposing, as I do, a primitive notion of relative fundamentality is specifying precisely what notion we have in mind. For most, the first that comes to mind is most easily expressed by the expression *is more fundamental than*. If we work with this notion, then we can define an absolute notion—as I do below—and we can define a notion of being equally fundamental (for facts that aren't absolutely fundamental). For instance:

x is **equally fundamental** to y =_{df} x is not more fundamental than y and y is not more fundamental than x.

But, this leads to a problem, if there are some facts that aren't comparable in terms of their fundamentality. It's fairly straightforward to see how facts are comparable if we only consider atomic facts like [Jennifer exists] and [Sherlock Holmes exists], but things get much more complicated when we consider some conjunctive facts. Consider $f = [\text{Jennifer is sitting} \wedge \text{the sky is blue} \wedge \text{the coffee is hot}]$ and $g = [\text{San Diego is in California} \wedge \text{the Chicago Blackhawks won the Stanley Cup} \wedge \text{Argon is a noble gas}]$. Is [f] more fundamental than [g]? What about the converse? It doesn't seem, in the case of [f] and [g] that either is more fundamental than the other, but if that's true, then given the definition above, they are equally fundamental. But it seems the answer we should give is that they are non-comparable and there isn't any good way to get this from more fundamental than.

The option I prefer is to take the notion of *at least as fundamental*, as primitive and then define *more fundamental than*, *equally fundamental to*, *not comparable to*, and *absolutely fundamental* in terms of it as follows:

x is more fundamental than $y=_{df}$	(x is at least as fundamental as y) \wedge \neg (y is at least as fundamental as x).
x is equally fundamental to $y=_{df}$	(x is at least as fundamental as y) \wedge (y is at least as fundamental as x).
x is not comparable to $y=_{df}$	\neg (x is at least as fundamental as y) \wedge \neg (y is at least as fundamental as x).
x is absolutely fundamental $=_{df}$	nothing is more fundamental than x.

3.3.1 Absolute Fundamentality

As above, we can simply define a notion of absolute fundamentality in terms of the fundamental, but I would be remiss if I didn't say a little more about the notion. In particular, the notion of fundamentality that both Sider and Fine are working with is absolute—Fine thinks of it in terms of being real, but for our current purposes, this difference doesn't matter. There is an asymmetry in the connection between these two notions of fundamentality. For instance, you can easily define the absolute notion in terms of the relative notion, but not the relative in terms of the absolute. There are ways to try to carry out this latter task, but they are dead ends.²¹

As we proceed, further reasons for why I prefer a relative notion will emerge, but without another related notion, the absolute notion of fundamentality doesn't have the expressive resources to say anything but “not fundamental” or “fundamental” for any fact whatsoever. This isn't a problem for many of the jobs that we require our notion of fundamentality to perform, but it will be for some.²²

²¹Sider mentions several in Sider (2012) section 7.11.1 p.129-133.

²²See the excellent paper by Billy Dunaway (2013) for a number of cases where relative fundamentality outperforms the absolute notion. Also McDaniel (2013) for arguments in favor of a related relative notion.

3.4 A Puzzle for Ground, Part 2

Lingering above are the two other options for explaining the connection between relative fundamentality and ground. Many working on *fundamentality* think that the notion of ground doesn't cut it for analyzing the notion of fundamentality. If this is true, then it is worthwhile working through the arguments for why this is the case.

If we are going to try, as (ii) says, to analyze the notion of relative fundamentality in terms of ground, then we should start with the most obvious account, for instance,

x is **more fundamental than** y =_{df} x grounds y.

If we then follow the definition of absolute fundamentality above, we get that,

x is **fundamental** =_{df} no y grounds x.

Although few philosophers have come out in defense of the definition of relative fundamentality,²³ some have for this definition of *is fundamental*.²⁴

Note however that the definition of relative fundamentality above is actually a definition of 'more fundamental than' and not of my preferred notion of relative fundamentality, 'at least as fundamental as'. This latter notion will prove even more problematic for the grounding theorist. More on this in a moment, but for now it's worth seeing why we can't even define 'more fundamental than' from grounding.

First of all consider the definition of absolute fundamentality immediately above. Given how it's defined it doesn't allow for facts that are non-fundamental to be ungrounded; this amounts to a significant metaphysical claim. One of the

²³Jonathan Schaffer, in an unpublished manuscript, claimed that we can define the notion of *having a greater degree of reality* straightforwardly in terms of grounding.

²⁴See Bennett (2011a), Dasgupta (ms), and deRosset (2013a) for instance.

key roles for the notion of ground to play, as laid out in Fine’s “The Question of Realism” and again in Dasgupta’s “On the Plurality of Grounds,”²⁵ is to distinguish between realism and anti-realism. The realist about numbers, he says, is one who believes that there are facts about numbers and that these facts are grounded in the fundamental. While an anti-realist about numbers thinks that there are facts about numbers, but that they aren’t grounded in anything that is fundamental. This defined absolute notion of fundamentality simply rules out this anti-realist position since according to it, all and only the ungrounded things are fundamental.

The other major problem for this account is that a compelling case can be made that there are some facts that are more fundamental than other facts despite not being connected by ground. Let’s consider a few examples.

More Fundamental	Less Fundamental
Electron e is – charged. Cancer cell c exists. p is a plant cell. Sea water is salty.	Fingernail clipper f is sharp. The trout-turkey exists. Winnipeg is a city. Churches are closing.

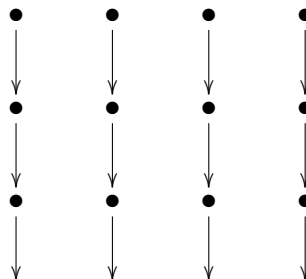
It is extremely implausible to deny that any of the facts on the left are more fundamental than those on the right, but of course, none on the left ground those on the right. If this is correct, then the simple definition of ‘more fundamental than’ in terms of ground above is false.

Before launching into some other potential definitions, a little further diagnostic will be helpful. The particular problem with the above definition is that the resulting notion of relative fundamentality will *only* trace the grounding chains downwards and there will be no connections to other grounding chains.

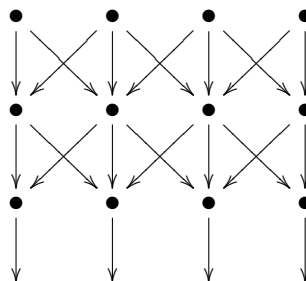
The best a definition of relative fundamentality in terms of grounding can

²⁵Fine (2001) and Dasgupta (2014) respectively.

do look like this:



And not like this:



where the lines represent some possible connections of relative fundamentality: more fundamental than, equally fundamental to, and so on. Of course, my preferred notion isn't total—in the logical sense of the term—so it might turn out that some of those dotted connections aren't present. The point of the illustrations however is to direct attention to the particular feature that any acceptable account of relative fundamentality in terms of grounding will have to have, it must be able to compare at least some facts from different grounding chains.

Consider a brief example: some facts about Kris's cell parts ground facts about Kris's hair and so Kris's cell part facts are more fundamental than the facts about his hair. Similarly some facts about Mark's cell parts ground facts about Mark's hair and so Mark's cell part facts are more fundamental than the facts about his hair. The relation we are seeking to account for in what follows

is the relative fundamentality of the facts about Kris's cell parts and the facts about Mark's hair. Grounding alone cannot do this and so whatever the attempt, it will have to appeal to something in addition to grounding. There are two main sorts of additions to ground that frequently come up and so it is worth looking at both.

3.4.1 Numbering Strategies

The first sort involves somehow numbering the layers—there are various strategies for doing this. In the simplified diagrams above, it is easy to see how a very basic numbering would go. Find the bottom layer and number it 1, and then 2, and so on. Then if we want to know how fundamental some fact f is, we would just need to see how far it is from the bottom. Suppose it's 103 steps up, it will follow that for any fact that is less than 103 steps up, it is more fundamental than f . Any fact that is exactly 103 steps up is equally fundamental to f and any fact that is more than 103 steps up is less fundamental than f . The notion of ground here does the ordering and the numbering allows us to cross compare grounding chains.

As nice as it would be for this numbering scheme to work, it is a dismal failure. I'll give seven reasons why this basic numbering strategy fails, but it is worth noting that variations on and combinations of these seven reasons are sufficient to show that any other numbering scheme I've come across also fails.²⁶

First, it is not mandatory that we believe the metaphysical thesis of *well-foundedness* for grounding. This thesis says that every grounding chain terminates with a fact that is ungrounded. It is at least plausible that there are worlds—maybe this world—where the grounding chains don't terminate: there

²⁶More on this in chapter 5.

are always further grounds. This would be a gunky-grounding world. In this case there is simply no starting point for our counting and so although we might be able to arbitrarily assign relative fundamentality-values to facts, it would be just that: arbitrary. If you think this kind of world is possible, then skip the next six reasons. If not, read on.

Second, it is not implausible that there might be some facts that are densely-grounded. In this case there would be a bottom floor and so a place to start counting, but then between any two facts on the grounding chain there will be infinitely many further facts. If it turned out that every grounding chain was dense, then there wouldn't be a problem, we could use the Rationals to number the facts on the chains. Using the Rationals won't work if only some chains, or some sub-sections of some chains are dense. Consider two people, Peter and Julie. Suppose that facts about Peter are densely grounded and facts about Julie aren't. For example [Peter exists] is densely grounded and [Julie exists] isn't. Presumably the two facts, [Peter exists] and [Julie exists] are equally fundamental, but our numbering scheme won't work here for [Peter exists] will have some infinite number assigned to it while [Julie exists] will have a finite number assignment. In this case, it will turn out that [Julie exists] is massively more fundamental than [Peter exists].

Third, if there are some facts that aren't comparable, fundamentality wise, then this account simply doesn't get it. If we number from the ungrounded facts up, then every fact whatsoever gets some number or other. Since any two of the naturals—or rationals, in the densely grounded case—can be compared in terms of size, any two facts will be comparable in terms of fundamentality. In other words, the defined notion of relative fundamentality is connected.

Fourth, there is a problem raised above that is also a problem here. Since

the numbering scheme always starts at the bottom of the grounding chain, the bottom fact will get the number 1. But above I noted that one of the jobs that the notion of ground can do for us is to help distinguish various theses, including distinguish between various sorts of realism and anti-realism. The anti-realist about numbers might very well think that there *are* facts about numbers but deny that those facts are grounded in anything that is fundamental. So, a fact about numbers might be at the terminus of a grounding chain, and so get the number 1 on this account. In that case, it would be true for the anti-realist that the terminating number fact will be just as fundamental as say a fact about a simple particle. This is simply not what the anti-realist believes and so this account of relative fundamentality rules out using the notion of ground for this purpose.

Fifth, there are straightforward counterexamples to this definition. Consider a fundamental particle e . Now, consider e 's singleton $\{e\}$ and consider a sucrose molecule s of which e is a part. Given some fairly basic metaphysical assumptions about what grounds facts like $[\{e\} \text{ exists}]$ and $[s \text{ exists}]$, it turns out that the fact about the singleton is more fundamental than the fact about the sucrose molecule. But, it is extremely doubtful that facts about the existence of sets are more fundamental than facts about the existence of sucrose molecules and so the counting strategy gets this case wrong.

Sixth, most philosophers think that disjunctive facts are grounded in their disjuncts. Consider two disjunctive facts: $[a \vee b]$ and $[a \vee c]$ where both a and b are true, but c is false. Further, a is a fundamental fact while b is massively non-fundamental—maybe b is a fact about fictional characters or the like. c on the other hand is false, but were it true it would be equally fundamental to b . The naïve view of counting certainly tells us that $[a \vee c]$ is very nearly funda-

mental, but what about $[a \vee b]$? There are two grounding “paths” for $[a \vee b]$ and which one should we employ here? This counting view doesn’t say and so is simply insufficient. (Note, we do not want to say that it’s as fundamental as both of its paths since that would lead to the conclusion that it’s more fundamental than it is.) There might be ways to modify this counting view to avoid this problem accounting for the relative fundamentality of facts that are multiply fully grounded. Maybe we could define distinct notions of relative fundamentality on the basis of longest grounding path, shortest grounding path, average grounding path length, or maybe something else altogether.²⁷ But even if one of these will work, for this particular objection, it’s doubtful that they will work for all of the above objections.

Seventh, suppose we can somehow get a counting strategy to work, then we’d have an account of what facts are more fundamental than what, great! But, in this case we lose any ability to account for the non-comparability of two facts. Assuming that every fact is grounded in the fundamental facts, every fact will be some number of grounding steps from the fundamental. So, every fact will be either the same number of steps, fewer steps, or more steps from the fundamental than any other fact. Since these numbers of steps are comparable, it turns out that every pair of facts is relative fundamentality related. In other words, the relation *more fundamental than* is a total relation.

Of course, if the notion of ground can’t be used to define ‘more fundamental than’, then it cannot define ‘at least as fundamental as’. Since the above arguments showed that it is unlikely that ground can be used to define ‘more fundamental than’, we can conclude that it is unlikely that ground can be used to define ‘at least as fundamental as’, my preferred notion of relative fundamental-

²⁷Thanks to Alex Skiles for these suggestions.

ity.

3.4.2 Kind Strategies

The second sort of strategy tries to employ kinds—or something similar—into the mix. Consider an example from above: similar facts about Mark and Kris are similarly fundamental and facts about Kris’s cell parts are more fundamental than facts about Kris given that they ground—at least some of—the facts about Kris.²⁸ It seems nearly undeniable that facts about Kris’s cell parts are more fundamental than facts about Mark, but as we earlier saw, the straight account of relative fundamentality in terms of ground can’t account for this.

One very common response to this kind of case is to point out that there are some facts that ground facts about me that are *of a kind* with facts about Kris’s cell parts. This proposal intuitively makes sense, but there are a few details that need some working out. Here’s a basic attempt, but most every other attempt we can come up with will suffer the same counterexamples.

x is **more fundamental than** y =_{df} (x grounds y) or (x is of a kind K such that there is a fact z that grounds y and z is of kind K).

What will be important for any fan of this sort of definition to be clear about is how fine grained the notion of a kind is. If the notion is too fine grained, then we will have obvious counterexamples. For instance, consider the above example, but replace Kris, with a tree. In that case, it will not be true that facts about the tree cell parts—remember, we are working with a very fine grained notion of kind here and these are plant cells—are of a kind with facts about my cells—which are animal cells.

²⁸I include this qualification simply to be neutral on as many questions about exactly what grounds what and in what order, as I can.

If, on the other hand, the notion of a kind is too coarse, then there are other counterexamples. For instance, suppose I'm wondering whether a fact about a star's mass is more fundamental than a fact about Sherlock Holmes. Of course, neither grounds the other, but in that case, all that is needed for the fact about Sherlock Holmes to be more fundamental than the fact about the star's mass is for it to be of a kind with some ground of the fact about the star's mass. Is there such a kind? Well, if the notion is coarse enough, then sure: *being a fact*, comprises a kind, on a coarse enough notion. Stating precisely the fineness of grain for the notion of a kind is not only difficult, but even if we could, there are counterexamples that the kind view faces.

Consider two cubes C and D and let's suppose they are equally fundamental. Also each of C and D are composed of smaller cubes which in turn are composed of smaller cubes. What our account should give us is that the parts of C , namely c^1, c^2, \dots, c^n , are all more fundamental than D . But, since none of c^1, c^2, \dots, c^n ground D , or vice versa, we need to look to the second disjunct in the definition for our answer. When we plug in c^1, c^2, \dots, c^n for x and D for y , we can find a z , namely d^1, d^2, \dots, d^n that are of a kind with c^1, c^2, \dots, c^n and that ground D , so c^1, c^2, \dots, c^n are more fundamental than D , so all is good.²⁹ All is good until we consider that we could just as well have plugged in D for x and c^1, c^2, \dots, c^n for y and notice that there is something that grounds c^1, c^2, \dots, c^n that is of a kind, *being a cube*, with D . So, it turns out also that D is more fundamental than c^1, c^2, \dots, c^n . But then given the transitivity of *more fundamental than*, D is more fundamental than D .

Another counterexample to this account involves a slightly more exotic example. Suppose that there are two distinct types of matter in the world: matter

²⁹I've intentionally shifted to talking about things instead of facts for clarity's sake. All of what was just written however, could be re-written in terms of facts.

and schmatter. Both matter and schmatter can constitute a person. Consider some simple bit of matter and the person comprised of schmatter. Plausibly, the simple bit of matter is more fundamental than the schmatter person, but why? The bit of matter doesn't ground the schmatter person nor is it of a kind with any bit that is a part of the schmatter person, so according to the kind account it simply isn't true that the bit of matter is more fundamental than the schmatter person.

One last problem, and this is evidenced by the last two paragraphs, is that the notion of ground and so the notion of relative fundamentality that we are trying to define here, is a notion that relates facts. But what is owed us by those who want to incorporate the notion of a kind into the definition is how precisely the notion of a kind applies to facts. The place to point would be to whatever property is a constituent of the fact, but then how do we extend this to facts that are disjunctive or that involve multiple properties or that involve properties like grue. I'm doubtful a satisfactory account can be had. But, even if there is one, it doesn't address the above concerns.

Each of the last two sections were attempts to show that we can't use the notion of ground, even with additional notions like *being a kind*, to define a notion of relative fundamentality. More specifically, I showed that we can't use ground to define the notion *more fundamental than* even though my preferred notion is *at least as fundamental as* since if we can't define the former, we can't define the latter.³⁰ Have I shown that it's impossible? No. Have I shown that it's unlikely? Yes.³¹

If defining relative fundamentality in terms of ground is out, then we are left with one final way of accounting for the connection between relative funda-

³⁰This argument is in more detail above.

³¹Chapter 5 takes a much closer look at one ambitious attempt to meet this challenge.

mentality and ground, namely:

- (iii) Analyze grounding in terms of relative fundamentality.

Let's get to that.

3.5 Analysis

My analysis of ground is in terms of two more basic notions: relative fundamentality and intimacy.

Γ grounds $[f]=_{df}$ Each fact g among Γ is more fundamental than $[f]$ and Γ are intimate with $[f]$.

3.5.1 Intimacy

I've said a great deal so far about relative fundamentality but nothing about the other notion in the analysis, intimacy. The notion of intimacy is unfamiliar, so let me start by echoing what I said above. Take any facts that stand in a relation of ground. These facts bear a very tight connection to one another, after all, the grounding facts *make it the case that* the grounded fact obtains! Early on we ran into a problem with the connection between ground and relative fundamentality and came to the conclusion that what we needed to do was analyze ground at least partially in terms of relative fundamentality. What, if we just stripped the notion of relative fundamentality from the notion of ground? We're left with a very tight connection, call this connection intimacy.

There are examples to give, but first a brief interlude about the logical features of intimacy.

Features

Intimacy is not transitive or asymmetric or irreflexive, unlike grounding. However, like grounding, it is hyperintensional, is a many-one relation, is an operator, relates facts, and fails to be monotonic. This implies that, unlike grounding intimacy is not a partial order.

Intimacy is also, like ground, explanatory. Given that intimacy is reflexive, I need to be a little cautious here, but precisely what I have in mind here is that every fact f makes it the case that f .³² On this view, being explanatory doesn't take much, just like *making it the case that* doesn't often take much. The point is primarily that the sets of facts that we typically think of as explanatory are sets that consist entirely of facts that are more fundamental than the fact it explains.

Examples of Intimacy

In the introduction to this chapter I mentioned that the notion of intimacy is similar in some ways to Kit Fine's notion of *weak ground* and also to Elizabeth Barnes' example of *symmetric dependence*. Although I think that neither of these is in fact intimacy, I think that examples of each are examples of intimacy. Let's consider some examples.

In Fine (2012), we are introduced to the notion of a weak ground. Fine is a fan of this notion since he thinks that the logic of ground is on a more stable footing if we take the notion of a weak ground as primitive. I won't be concerned with that here, but the example Fine gives is a nice case of intimacy that is symmetric.³³ Consider the pair of facts [Kelly marries Quinn] and [Quinn marries Kelly]. Each of these facts makes it the case that the other one obtains

³²This position mirrors the very minimalist view of what counts as an answer to the question 'who is x ?' where x is a name of an individual, presented in David Braun (2006)

³³Fine (2012) p.52.

and whenever you have the grounds of one you have the grounds of the other. In other words, there is nothing *extra* that you need to do in order to bring the other about once you have one of the pair.

In a recent talk, Elizabeth Barnes has floated the idea that there is a relation of symmetrical dependence. As she presented it, the relation relates things, but her notion is simply convertible into a notion that relates facts. Her case for symmetrical dependence mirrors, very closely, the arguments for ground presented in chapter 1. In particular, she presents a number of cases and suggests that barring good argument that they aren't cases of dependence combined with the fact that so-classifying them would be unifying, we should believe that the cases in question are cases of symmetrical dependence.

Before presenting the cases, I want to quickly note that if Barnes is right and there are cases of so-called symmetrical dependence, we need to ask ourselves why it is that some cases of dependence are *not* symmetric. I answer this question by tacking on a notion of relative fundamentality with which we are familiar. I think that some of Barnes' cases of symmetric dependence are in fact cases of intimacy.

Barnes presented four examples, two of which I will present here as cases of intimacy. Consider the connection between David Armstrong's states of affairs as presented in Armstrong (1997) and their constituents. For Armstrong, it really is implausible that the constituents of the states of affairs are more fundamental than the states of affairs themselves. Further, it's even less plausible that the states of affairs are more fundamental than the constituents. Given these two facts, one option is to hold that some facts about the two things are intimate, for instance the fact that the state of affairs exists and also the fact that constituents a_1, a_2, \dots exists.

Second, if you are a non-eliminative structuralist in mathematics, you think that there are facts about numbers, but that facts about structures make it the case that those facts about numbers obtain. But what about the converse? According to Barnes, this is a case where our metaphysics need not decide on the order because it's just not true that the facts about structure are more fundamental than facts about numbers, and vice versa.

Another case involve what Peter van Inwagen calls “a closed family of concepts.”³⁴ What he has in mind are what he calls the mereological circle and the modal circle, but we can also add the moral circle.³⁵ The idea here is that there are “circles” of terms such that the facts involving those terms are intimately connected. With the mereological circle, we have notions like improper part, proper part, overlap, and so on. Consider the fact that *c* is an improper part of *d* and the fact that *c* is either a proper part of *d* or *c* is *d*. Here are two facts, one disjunctive and one not and neither is more fundamental than the other. However, they are connected in a grounding-like way. There are similar pairs for each of the terms in these circles and permitting the notion of intimacy into our tool bag gives us a way of accounting for this connection.³⁶

We don't have to stop here however. We can, of course, cite any cases of grounding since anytime [f] grounds [g] is true, it is also true that [f] and [g] are intimate.

³⁴van Inwagen (1990) p.52.

³⁵This is discussed in “The Methods of Ethics” by Henry Sidgwick (1981).

³⁶In the modal case, we can pair facts about possibility with facts that say something is not necessarily not the case. Similarly facts about obligation can be paired with facts about what I should do, and so on.

3.6 Account Benefits

The primary benefit of this account, as I laid out is that we can explain that necessary connection between ground and relative fundamentality. But there are others. One in particular that I have alluded to pertains to a puzzle about what grounds the grounding facts.

Consider some facts [c], [d], [e], and [f], if [c], [d], and [e] ground [f], then it is a fact that [c, d, and e ground f]. Either [c, d, and e ground f] is grounded or it's not. Suppose it is, then there will be a new fact [Γ grounds [c, d, and e ground f]]. Either this fact has a ground or not, if it does, then...—hopefully the regress is clear. This might not be a vicious regress, but the burden for taking this horn of the dilemma is to give some reason to think that there could be some fact or set of facts that grounds each of these grounding facts. It's not impossible that there could be some such facts, but until I see something of a gesture in the right direction, I'll remain skeptical.

The other horn of the dilemma is that [c, d, and e ground f] isn't grounded. But in that case, according to almost everyone else, that entails that [c, d, and e ground f] is fundamental! To make the problem worse, if [c, d, and e ground f] is a fundamental fact, then it violates something like Sider's purity principle which says that fundamental facts only involve fundamental notions; but if [f] is grounded, then it is a derivative fact and so shouldn't be involved in a fundamental fact.

When we separate the notions of being fundamental from the notion of being ungrounded, we have a third option, namely that [c, d, and e ground f] is an ungrounded fact and it is not fundamental. Informally this is actually quite plausible. Think of that special three year old who *endearingly* continually asks why.

Q: Why are my eyes blue?

A: Your eyes are blue because your irises...

Q: Why are my eyes blue because my irises...

This creative three year old has asked why is it the case that some explanations holds—i.e. why the grounding fact obtains. *Maybe* there is something that we can say about this case, but it's not even remotely clear that there is something to say in each of these types of cases. On my view, stopping here is consistent with the involved notions, this is not the case for those who understand relative fundamentality in terms of ground.

3.7 Conclusion

If the case for believing in a notion of ground is convincing, and I think it is, and we see the tension between ground and relative fundamentality, I do, then we should try to understand one in terms of the other. My way of understanding ground in terms of relative fundamentality raises a problem about the primitive connection that obtains between the grounds and the groundees.

CHAPTER 4

GROUND AND STRUCTURE

Ted Sider argues that his own view is better, for giving a metaphysical theory, than the grounding theorists. One way to show that this is not the case is to show how a grounding theory can mimic Sider's view. If the mimicry is close enough, then any move that Sider makes, the grounding theorist can also make. In this case, the grounding view will be at least as good as Sider's view. If it turns out there are other things that the grounding theorist can do, in addition to what Sider can, then the grounding theorist has an advantage over Sider.

4.1 Absolute and Sub-Propositional

Sider's view of fundamentality is absolute and sub-propositional. It is absolute since his central notion: being *structural*, does not admit of degrees. Sider represents this notion with the operator \mathcal{S} which makes grammatical sentences out of expressions of any grammatical category. So, $\mathcal{S}(\text{is tall})$, $\mathcal{S}(\wedge)$, $\mathcal{S}(\mathcal{S})$, $\mathcal{S}(\text{or})$, and $\mathcal{S}(\exists)$ are all grammatical sentences. What these sentences express is that, whatever falls within the parentheses *is structural*—or, for our purposes, *is fun-*

damental. His view is sub-propositional since it is not whole propositions that are fundamental or not, but the expressions that constitute those propositions.¹

My view, on the other hand is relative and propositional. It is relative since my central notion: *at least as fundamental as*, compares the degree to which two facts are fundamental. It is propositional since it only relates facts and it is the whole fact that's the locus of fundamentality.

So how different are these views really? It is straightforward to move from a relative notion of fundamentality like mine to an absolute one, like Sider's. we start by defining 'more fundamental than' and then define the absolute notion. For instance:

x is **MFT** $y=_{df}$ (x is at least as fundamental as y) \wedge \neg (y is at least as fundamental as x)
 x is **AF** $=_{df}$ Nothing is more fundamental than x.

It is worth noting that from my primitive notion of relative fundamentality, I can also define: 'is equally fundamental with' and 'is non-comparable to'. Unless Sider's attempt to define 'more fundamental than' from his absolute notion is successful, defining these further notions is very tricky.² I won't push this point, here however since my aim is to show that my view can mimic Sider's and not the converse.

Now what about moving from a propositional account like mine to a sub-propositional account like Sider's? I think that given my notion of relative fundamentality we can define a notion of relative fundamentality that relates the constituents of facts instead of facts themselves. We start by identifying the

¹I take no stand here on what propositions or expressions are. I will also often slide between talking about sentences and expressions and propositions and constituents. This is done for the sake of readability, it would not be difficult to exclusively talk in terms of propositions or sentences, it would just be more awkward.

²And, even if Sider can define 'more fundamental than', defining 'non-comparable to' is not plausible. See my discussion in §5.5 for a more involved discussion of this point.

most fundamental fact F that some x is a constituent of and then we can define what it takes for some constituent to be at least as fundamental as another.

Informally the most fundamental fact of which x is a constituent is the fact F such that there is no fact G that is more fundamental than F and x is a constituent of G . This definition may not uniquely pick out a single fact, but that's not a problem. If it doesn't uniquely pick out a single fact, then the facts it identifies are equally fundamental.

Now we can define what it is for one constituent to be at least as fundamental as another. Abbreviating at least as fundamental as, as 'ALF', we can define a version of ALF for constituents of facts called 'ALF_C' as follows:

x is **ALF_C** $y=_{df}$ (The most fundamental fact that x is a constituent of) is ALF (the most fundamental fact that y is a constituent of).

Using ALF_C we can define what it is for a constituent to be more fundamental than another constituent:

x is **MFT_C** $y=_{df}$ $(x \text{ ALF}_C y) \wedge \neg(y \text{ ALF}_C x)$.

Using MFT_C we can then define what it is for a constituent to be absolutely fundamental, abbreviated 'AF_C'.

x is **AF_C** $=_{df}$ $\neg\exists y (y \text{ MFT}_C x)$

None of these should be particularly surprising, but this final defined notion AF_C picks out just what Sider's \mathcal{S} does, provided some reasonable assumptions about what's more fundamental than what. There needs to be some qualification here since anyone who adopts a primitive notion of fundamentality, whether absolute or relative, has some choices about what is fundamental and what is not. Consider the following pair of sentences ' $\neg\phi$ ' and ' $\neg\neg\neg\phi$ '.³ One

³Sider (2012) considers this example on p.148.

might think that ' $\neg\phi$ ' is fundamental and ' $\neg\neg\neg\phi$ ' is not since $\neg\phi$ might be part of the metaphysical truth conditions for $\neg\neg\neg\phi$. But you need not have this particular view of the connection between logical equivalences. I, in fact don't have this view. I think that $\neg\phi$ and $\neg\neg\neg\phi$ are both fundamental sentences and that they are connected by intimacy. But my particular view doesn't matter here, which is the point. What matters here is that what I've said so far is open about precisely what is fundamental, I've just been presenting the tools for talking about fundamentality. Whatever reasons Sider gives for thinking that some notion x is structural are reasons I can give for thinking that x is AF_C . So, those are the assumptions the assumptions about what's more fundamental than what that I had in mind above.

In comparing his own sub-propositional view to Fine's propositional account, Sider discusses a number of ways in which the propositional account of fundamentality is more flexible than his own sub-propositional account.⁴ Sider also argues that there are two ways in which his sub-propositional account is more flexible. Exactly how strong these arguments are is something that even Sider seems dubious about.

Some quantifier variantists think that object-hood is a non-fundamental notion and so, on this view, no fundamental facts have, as constituents objects. "One might think," says Sider that "to build up a sentence for a [fundamental fact], one needs to begin with predicates, whether applied to names or quantified variables; but predication, naming, and quantification are all object-involving concepts."⁵ If this is indeed the case, then there can be no fundamental facts. This sort of quantifier variantist that accepts Sider's sub-propositional view is at least able to say something about the fundamental structure. For instance they

⁴Sider (2012) p.147-151.

⁵Sider (2012) p.151.

could say $\mathcal{S}(\vee)$ or $\mathcal{S}(\wedge)$. Sider himself doesn't think that this is much of an objection against the propositional account of fundamentality,⁶ but even if we grant that it is an objection worth worrying about, I don't think it succeeds. This objection relies on the connection between language and the fundamental facts. It is entirely plausible that whatever language is most appropriate for expressing the fundamental facts is not that much like English. For instance, if we adopted a feature-placing language⁷ or a functor language,⁸ then our language makes no reference to object-hood at all.

The second case in which Sider thinks his sub-propositional account does better than the propositional account of fundamentality is that his view implies a combinatorial principle that allows him to rule out some "views on which the fundamental level is distinguished, not by a distinctive vocabulary, but rather by a distinctive set of claims in a more inclusive vocabulary."⁹ This principle says:

If S is a fundamental truth, and S' is any true sentence containing no expressions other than those occurring in S , then S' is a fundamental truth as well.

My view does not imply this principle, but it can easily take it on as an extra-metaphysical thesis. In the above I described how to get my notion of relative fundamentality to apply to objects and properties. The fundamental truths then, are those truths that express fundamental facts. And from there the principle follows. There is no problem with expressions being in both fundamental and non-fundamental truths, any more than there is a problem with fundamental objects being in both fundamental and non-fundamental facts. Given my dis-

⁶He says "Not that this is especially damning" about this objection.

⁷Like the one discussed in Hawthorne and Cortens (1995).

⁸Like the one discussed in Quine (1960, 1982).

⁹Sider (2012) p.150.

tinct notion of relative fundamentality I was able to say precisely how fundamental a object was and so similarly we are able to identify a class of expressions eligible for use in fundamental truths.

Now that I've shown how to use my analyzed notion of ground to mimic Sider's absolute and sub-propositional account of fundamentality, it is worthwhile examining whether I can meet his necessary conditions: purity and completeness.

4.2 Purity and Completeness

Sider thinks that *purity* and *completeness* are necessary conditions on any successful account of fundamentality. Informally, purity says that the fundamental facts are entirely fundamental—i.e. they say nothing about non-fundamenta. Completeness, on the other hand says roughly all of the facts about the non-fundamenta are explainable in terms of the fundamental facts. Both purity and completeness are initially plausible necessary conditions, but it is worth briefly examining the motivations for them.

When God was creating the world, she was not required to think in terms of non-fundamental notions like city, smile, or candy.

All she needed to do, so the story goes, is bring into being the fundamenta. Once God finished this task, she was done creating the world. She did not need to say anything about when things are arranged so as to form a cities, smiles, or candies. Truths about these things just are the case once the fundamenta are in place. So, Sider thinks:

It is natural to assume that the fundamental must be “complete”, that the fundamental must in some sense be responsible for everything.¹⁰

¹⁰Sider (2012) p. 105.

The basic idea is that whatever the fundamental consists in, it is solely responsible for how the world is. All the powers in the world are contained in the fundamental and so when giving a theory of the world, there isn't any more story to tell once you've told the fundamental story, that's it. Completeness expresses that all there is to say is explainable in terms of the fundamental and purity highlights that the fundamental story need not mention anything about cities, smiles, or candies.. The fundamental story is just about the fundamental.

Sider's own theory is tailor made to meet purity. Purity says:

Purity Fundamental truths involve only fundamental notions.¹¹

Since Sider's view is absolute, sub-propositional, and fundamental truths are built out of the fundamental notions, it is entirely trivial to meet purity. Since the fundamental truths are built out of only fundamental notions, there is simply no opportunity for there to be any non-fundamental notions in the fundamental truths. There is some controversy over whether purity and completeness are true.¹² But my aim here is to show how my view, a grounding view, can meet both of these conditions.

On the other hand, purity makes trouble for many grounding theorists since it entails that there are no fundamental truths about what grounds what. You might think that if ground is our primitive notion of fundamentality, then it would show up in the fundamental metaphysical account of what the world is like, but given purity it doesn't. This is because ground is a connecting notion that relates more fundamental facts to less fundamental ones and so every fact in which ground is involved will also involve some non-fundamental fact.

¹¹Sider (2012) p.115.

¹²Trenton Merricks (2013) argues against the plausibility of both purity and completeness.

Above I defined a number of notions, including AF_C which says that to be a fundamental constituent you need to be a constituent of a fundamental fact. Assume that $[F \text{ grounds } G]$ is a fundamental fact. If $[F \text{ grounds } G]$ is a fundamental fact, then G would be an absolutely fundamental constituent, given the definition of AF_C above. If G is an AF_C , then any constituent of G is also an AF_C since G is a fact by itself. But, G s being grounded entails that G isn't fundamental, and so it is plausible that some constituent of G , say x , that is not a fundamental constituent. If x is not an AF_C , then x can't be a constituent of a fundamental fact since all constituents of fundamental facts are AF_C . If x isn't an AF_C , then neither is G or $[F \text{ grounds } G]$ which is inconsistent with our assumption. So, $[F \text{ grounds } G]$ is not a fundamental fact. Consider this less abstract instance of the argument above: suppose that superstrings are the fundamental constituents of reality. Further, suppose that superstring s oscillating in way J and that $[Js]$ grounds the existence of a quark q . Now we have a new fact, $[Vs \text{ grounds } q \text{ exists}]$. Either this fact is fundamental or not. If it is, then we have a violation of purity since $[q \text{ exists}]$ isn't a fundamental fact, but it's a constituent of the grounding fact. So, we should conclude that it's not a fundamental and in fact no grounding fact is fundamental because every grounding fact follows this same pattern. I have more to say on the non-fundamentality of grounding facts shortly, but first we should introduce completeness.

Sider introduces a couple notions of completeness, both of which I think are worth presenting, in order to contrast the notion of completeness with ground.

Completeness_{IVO} Every non-fundamental truth holds in virtue of some fundamental truth(s).¹³

Completeness Every sentence that contains expressions that do not carve at the joints has a metaphysical semantics.¹⁴

It is the second of these that Sider ultimately prefers but note the use of ‘in virtue of’ in completeness_{IVO}. This is just to say that all non-fundamental truths are grounded in fundamental ones. Capturing the second version with my notions of fundamentality is a little less straightforward, but doable. Here’s an informal way of mimicking completeness with my notions: every fact that has constituents that aren’t also constituents of a fundamental fact has a metaphysical semantics. As is unsurprising, a metaphysical semantics is Sider’s analogue to ground, but they aren’t quite the same.

Sider’s metaphysical semantics, like ground, takes us from non-fundamental truths to the fundamental ones. In this way both notions are connecting. His metaphysical semantics like ground, is also a non-fundamental notion (assuming that fundamental truths don’t have a metaphysical semantics).¹⁵ To see this, consider the argument above for the conclusion that the grounding facts are non-fundamental. Let’s assume that [F is the metaphysical semantics for G] is a fundamental fact. If [F is the metaphysical semantics for G] is a fundamental fact, then G, which is a constituent, would also be a fundamental fact. But since fundamental truths don’t have metaphysical semantics G doesn’t have a metaphysical semantics. But, that is precisely what [F is the metaphysical semantics

¹³Sider (2012) p.115.

¹⁴Sider (2012) p.116.

¹⁵If this assumption turns out to be false, no further problem arises. This is because, when I address my own account directly, my basic connecting notions are also fundamental notions. So it’s not as though counting his connecting notion among the fundamental notions is a win for Sider over my own view. If, on the other hand, the assumption is true, then my own view can count it a win that my connecting notions are fundamental.

for G] says, so our assumption that [F is the metaphysical semantics for G] is fundamental, is false. So, the metaphysical semantics facts are non-fundamental. This argument about Sider's notion of a metaphysical semantics, if successful, shows that the notion of a metaphysical semantics is not a fundamental notion. This is significant since my own view, as mentioned, holds that both of my metaphysical primitives are fundamental notions. In other words, I don't need to appeal to any non-fundamental notions to give a complete metaphysical theory, all of the resources are contained within the fundamental.

Like Sider's metaphysical semantics, ground is not a fundamental notion. That said, on my view ground is an analyzed notion.¹⁶ My two primitive notions, *at least as fundamental as* and *is intimate with* are both fundamental notions. Let's start with intimacy. Like ground, intimacy is a very tight connection between facts—at one point in chapter 3 I describe intimacy as “grounding light.” The idea is that if you consider the notion of ground and then abstract away the relative fundamentality, what you are left with is intimacy. This informal characterization is helpful, but not perfectly accurate since intimacy also relates facts that don't also stand in the grounding relation to one another. For instance, earlier I talked about the connection between $\neg\phi$ and $\neg\neg\neg\phi$ and suggested that I don't think that the latter is less fundamental than the former. That said, I do think that they are different facts and that they are closely connected to one another. I say they are intimate. If this is right, then the fact that [$\neg\phi$ is intimate with $\neg\neg\neg\phi$] is a fundamental fact and so intimacy is a constituent of a fundamental fact. If intimacy is the constituent of a fundamental fact, then it follows that intimacy itself is fundamental.¹⁷ There are, of course many oc-

¹⁶To be clear, I do not think that being analyzable is sufficient for being non-fundamental. For instance, we can analyze notions like the material conditional in terms of negation and conjunction, but I do not think that this entails that facts involving material conditionals are non-fundamental facts.

¹⁷There are other plausible examples discussed in §3.5.1.

casions on which intimacy does relate non-fundamental facts to fundamental facts but that isn't sufficient to show that intimacy is non-fundamental, recall the definition of AF_C above. Sider agrees that fundamental notions can relate or be true of non-fundamental constituents. Consider the plausibly fundamental predicate *is charged*. There are, obviously, all sorts of instances of *is charged* being true of non-fundamental things. All this implies is that those facts, say: [ion *i* is positively charged] are non-fundamental facts. It implies nothing about the fundamentality of the predicate itself.

Similarly, my notion *at least as fundamental as* is also a constituent of fundamental facts. It is trivially true that for any of Sider's fundamental notions *x* and *y* that *x* is at least as fundamental as *y*, and also the converse. That we can define non-fundamental notions from it implies nothing about its own fundamentality. To see this, assume that green and blue are fundamental notions. From green, blue, and a few other fundamental notions it is simple to define a gerrymandered, non-fundamental notion *grue*.

x is **grue** =_{df} *x* is green and located at *l* or blue and located elsewhere.

[*x* is grue] fails to be primitive on my view, not because it is a defined notion¹⁸ account as a brute fact. It just turns out that there are some facts that are more fundamental than it. On Sider's account, despite grue being defined in purely fundamental terms, [*x* is grue] also fails to be a fundamental fact. On Sider's view it is primitive expressions that are the arguments of his \mathcal{S} operator. Since grue isn't a primitive expression, despite being defined entirely in terms of primitive expressions, $\mathcal{S}(\text{grue})$ isn't true.¹⁹ Since grue isn't a fundamental notion, facts involving grue are not fundamental facts. The point of this example was to show

¹⁸See note 16 above.

¹⁹This example is from personal correspondence with Sider.

that my notion at least as fundamental as, be used to define non-fundamental notions despite being a fundamental notion itself.

4.3 Conclusion

The aim of this chapter was simply to show that my own notions *at least as fundamental as* and *is intimate with* can be used to define the notions that are centrally relevant to Sider's account. And, in addition, meet his conditions of purity and completeness. Depending on whether fundamental facts can have a metaphysical semantics, my own view may actually do better than Sider's—by his own lights—since my connecting notion intimacy gets is a fundamental notion while his metaphysical semantics isn't.

CHAPTER 5

RELATIVE FUNDAMENTALITY AND GROUND

It's no secret that philosophers are still figuring out what notions they *need* in order to do metaphysics. Mostly everyone thinks that some sort of notion of fundamentality is essential to doing metaphysics, but whether it's a primitive part of our ideology or a defined notion is still an open question. In either case we need some way or other to say what is and is not fundamentally the case, what is or is not prior to what in the metaphysical order. Another related issue is whether the best notion of fundamentality is absolute or relative. It's clear that we can define an absolute notion from a relative one and clear that we can't do the converse,¹ but whether we need a relative notion is disputed. I won't examine those arguments here and I won't spend much time looking at the absolute notion. I will instead just assume that there is sufficient reason for accepting some notion of relative fundamentality and proceed accordingly.

¹This is almost certainly too fast, but ultimately right. Lewis (1983) attempts to account for the relative notion by appealing to the length of definition for some x in perfectly natural terms. Sider (2012) recognizes some of the problems that faced Lewis's account and sketches the start of a far more intricate account in §7.11. I'm not a fan of either of these approaches, but won't discuss them further here.

(In case the notion of fundamentality is at all unfamiliar, I don't have anything more exotic in mind than as used in the expression "fundamental physics." It's difficult to elucidate this further without resorting to metaphors, but in the case of physics 'fundamental' just means something like: the bottom level, the most basic truths. In metaphysics, I think the notion is being used in exactly the same way. One difference between physics and metaphysics is that the subject matter of metaphysics is bigger and so the fundamental ideology and ontology of metaphysics will be at least as big, if not bigger, than that of physics.)

In addition to some notion of fundamentality we need a notion that connects the fundamental to the non-fundamental. There are many options here. On the one hand you might think as Theodore Sider does, that what does the connecting is what he calls a 'metaphysical semantics'. Sider's metaphysical semantics connects some non-fundamental sentences to fundamental ones. To take this route is to deny the existence of the non-fundamenta. I have no doubt that there are non-fundamenta and so won't consider Sider's view further here.² Granting that there are non-fundamenta, there are a number of options. The notion of ground has received most of the attention on this front despite significant disagreement about the details concerning what ground is like. In her forthcoming book *Making Things Up*, Karen Bennett argues that it's not only ground that connects the fundamental to the non-fundamental but also familiar relations like: composition, constitution, realization, micro-based determination, among others. Bennett calls these relations collectively 'building relations'.

²It's difficult to concisely communicate Sider (2012)'s view, but in a sense what I've said above isn't accurate. Sider's view of fundamentality is put in terms of sentences and sentence parts. Technically there are sentences of the form 'There are trees' that are true, however in that sentence, the 'there are' doesn't express the fundamental quantifier and so 'there are trees' isn't a fundamental truth. The upshot of Sider's view is that 'there are trees' isn't true because *there are trees*, but rather because there are some fundamental truths that are the metaphysical semantics for the sentence 'there are trees'. My point here is that Sider doesn't take the reality of derivative entities as seriously as I think we should.

Although not a fan of ground, Jessica Wilson³ agrees with Bennett that, in many cases, the relations connecting the fundamental to the non-fundamental are the “building” ones. Despite disagreement on the details, everyone who believes in non-fundamenta,⁴ agrees that we need some way of connecting them to the fundamental.

What I’m particularly interested in here is the relationship between what I’ll generically refer to as connecting notions and relative fundamentality, with an acute focus on the notion of ground. Some have suggested that you can account for, define, or explain, a notion of relative fundamentality in terms of one or more of these connecting notions. I think this is wrong and will argue for that conclusion. Karen Bennett has made this claim most explicitly and so I will focus primarily on her account, but many of the arguments will extend with ease to others who claim to be able to do away with an independent notion of relative fundamentality in terms of ground, or other building notions.

It is also important to note that until much later in the chapter, I will be using the phrase ‘relative fundamentality’ very generally, similarly for ‘ground’. My particular view is that it’s facts, and facts only, that stand in both the *more fundamental than* relation to one another and that can ground or be grounded. I will sometimes give examples here that belie that view. However in each case, the examples could be easily reformulated into ones consistent with my view. I do this for two reasons: first, it’s more expedient to not always talk about this fact grounding that fact. Second, many of my opponents think that ground and relative fundamentality do hold between things other than facts. I don’t want to address this particular issue here and so will mostly leave things general.

³Wilson (2014).

⁴Or maybe more perspicuously, everyone who believes non-fundamenta are real to some degree or other—following McDaniel (2013).

Late in the chapter, my own view will become more relevant since I will use it to respond to and address some of the objections and concerns that Bennett raises against her opponent, the primitivist about relative fundamentality. I will then be more strict about what things ground and stand in relations of relative fundamentality.

In §5.1 I argue that none of the straight-forward accounts of relative fundamentality in terms of building relations are successful. In §5.2 I endorse a primitivism about relative fundamentality and defend it against some of Bennett's objections. In §5.3 I present and explain Bennett's account of relative fundamentality—specifically more fundamental than—in terms of building. Then, in §5.4 I show why Bennett's account of more fundamental than_{Ground} fails. Finally, in §5.5 I show why Bennett's chosen notion of more fundamental than_{Ground} is not able to accommodate another notion that she explicitly appeals to, namely the non-comparability, fundamentality-wise, of some facts.

5.1 Limits of a Straightforward Definition

At least a few philosophers have praised the notion of ground for its ability to illuminate other notions. For instance, Gideon Rosen says:

The thought is that when we cite grounds for [p], we cite facts that are strictly prior to [p] in a certain explanatory order. If [q] plays a role in making it the case that p, then [q] must be 'more fundamental' than [p], in which case [p] cannot play a role in making it the case that q.⁵

Rosen is rightfully cautious about saying too much here. The most we can reasonably pull from this is that being a ground for some fact entails being more fundamental than that fact. In virtue of what, that entailment holds, is still open

⁵Rosen (2010) p. 116.

for debate, but this sort of connection is one that most grounding theorists would ascent to.

Others are more bold for instance, Jonathan Schaffer straightforwardly claims that:

... the key notions of a fundamental entity... and derivative entity... can both be defined in terms of grounding (ontological dependence, priority in nature), as follows:

Fundamental: x is fundamental $_{df}$ nothing grounds x .⁶

Given this definition, the fundamental are the ungrounded things and are non-fundamental otherwise. This leaves no room for fundamental things to ground other fundamental things, nor does it allow for there to be any ungrounded things that fail to be fundamental. This definition is a little too crude since it doesn't leave open a few live possibilities. Let's consider examples: you might think it plausible that some logical facts ground other logical facts. For instance, it's plausible to think that the fact that $[p \leftrightarrow q]$ is grounded by the facts that $[p \rightarrow q]$ and $[q \rightarrow p]$ but simply not think that the biconditional fact is any less fundamental than the conditional facts. It's a little difficult to know how seriously to take these intuitions, but the mere interdefinability of logical notions surely isn't enough to ensure their relative fundamentality. If the logic example is unconvincing, consider a mereological fusion of two simples. Many accept that the whole depends on its parts, but without accepting the principle that parts ground wholes, it strikes me as at least a bit hasty to then conclude that the fusion must therefore be less fundamental than the simples. It seems a viable philosophical position that there might be composite fundamental things,

⁶Schaffer (2009) p. 373.

but that is ruled out on this definition.⁷

The second sort of case that this definition rules out are cases where not all the fundamental are ungrounded. Kit Fine presents a powerful use for the notion of ground.⁸ He argues that the possibility of non-fundamental ungrounded facts gives us the resources to distinguish realism from anti-realism, factuality from non-factuality, and to understand what it is for something to be reduced.⁹ The idea in the realism/anti-realism case is that for some fact [p], we are realists about [p] just in case either [p] is fundamental or is grounded in something fundamental. And, we are anti-realists about a fact just in case [p] fails to either be fundamental or grounded in something fundamental.

Although Schaffer doesn't do so above, there is a strong sentiment in favor of defining a notion of relative fundamentality directly from the notion of ground.¹⁰ For instance:

x is **more fundamental** than y =_{df} x grounds y.

This definition is certainly more versatile than the one above, since from this definition we can define Schaffer's absolute notion above. Further support comes from Gideon Rosen's suggestion, that x being a ground of some y entails that x is strictly prior to—read: more fundamental than—y,¹¹ but is that all there is to some things being *more fundamental than* other things? Is it really only grounds and their groundees that can stand in relations of relative fundamentality? In chapter 3 I gave some arguments against this definition of relative fundamentality, let me briefly parrot them here.¹² The upshot of the following examples

⁷It's also worth prematurely noting that this position, that there are fundamental composites, is ruled out by Bennett's own account of relative fundamentality.

⁸Fine (2001, 2012).

⁹Sider also mentions the factuality/non-factuality possibility in Sider (2012), p. 125.

¹⁰Bennett (2011a, ms), Correia and Schnieder (2012), Fine (2001), and Rettler (2013).

¹¹Rosen (2010) p. 116.

¹²Bennett (ms) gives similar arguments for the same conclusion.

is that there are some facts that are more fundamental than some other facts, despite not standing in a relation of ground.

Supposing that parts are more fundamental than their wholes, it follows that Christie Brown's left foot is more fundamental than him. Similarly, my left foot is more fundamental than me as well, but given the definition of relative fundamentality above, there is no comparison of fundamentality between Christie Brown's famous foot and me or between my left foot and him. This is simply a product of the definition since neither grounds the other one can't be more fundamental than the other. A further example: atoms are more fundamental than molecules, but in no cases are caffeine molecules grounded by helium atoms. If our intuitions are right that atoms are more fundamental than molecules, this definition of relative fundamentality underperforms. It doesn't account for some extremely plausible notions of relative fundamentality.¹³

If we want to preserve something more than these flat-footed approaches to fundamentality we have two options, either be a primitivist or argue for a defined notion. In chapter 3 I opted for a primitivist account of relative fundamentality, specifically the notion *at least as fundamental as*, and argued against a number of attempts at a defined notion of relative fundamentality. I'm still a primitivist, but there I conceded that there may be better definitions that aren't susceptible to the objections I raised. In her book *Making Things Up*, Bennett recognizes these objections and tries at more sophistication. She rightly says:

The fact that one thing can be more fundamental than another despite not standing in a building relation to it means—obviously—that there is more to the more fundamental than relation than the obtaining of a building relation. That is, it is not the case that a's being

¹³In Dunaway (2013), Billy Dunaway argues for a primitive notion of relative fundamentality. He identifies a number of roles for the notion to play including reference, realism, and confirmation. None of the roles filled by relative fundamentality could be played were relative fundamentality constrained to what grounds what, as in the definition above.

more fundamental than b just amounts to a's building b. This point may be of particular interest in the case of grounding. Proponents of grounding often talk as though it automatically grants them all the tools they need to talk about fundamentality, to sketch the "priority structure" of the world. Matters are not so simple. One thing can be more fundamental than another despite not grounding it, nor building it in any way at all. Now, this does not mean that relative fundamentality relations cannot be identified with more **complex patterns of building relations**. Indeed, I take precisely that to be both true and important...¹⁴

I think Bennett's account of relative fundamentality is worthy of serious consideration and I will get to that, but first I want to defend my own version of primitivism in response to the objections that Bennett raises.

5.2 Primitivism about Relative Fundamentality

In chapter 3 I argued that it's best to analyze the notion of ground in terms of two more basic notions: *intimacy* and *at least as fundamental as*. Bennett sees only two ways of understanding the notion of relative fundamentality and I agree: be a primitivist or explain relative fundamentality in terms of other notions. Bennett who chooses the latter of these options levels some criticisms at the primitivist that are worthy of response.

Before addressing Bennett's objections directly I want to be clear just what I mean when saying I'm a primitivist about relative fundamentality. I take primitivism to be the position that for any facts f and g, if [f] is more fundamental than [g], there are no further facts Γ that explain the relative fundamentality of [f] and [g]. There might very well be evidence for the fact that f is more fundamental than the fact that g. That is, there might be reasons why we should

¹⁴Emphasis mine; Bennett (ms) Ch.2.

believe that [f] is more fundamental than [g], but there are no facts that *make it the case that* [f] is more fundamental than [g].

Metaphysical explanation is something that I take very seriously and the role that I take relative fundamentality to play in metaphysical explanation is of narrowing the class of facts that are even eligible to explain a fact like g. When we add in the notion of intimacy, we narrow the class further to just those facts that ground [g]. This class of facts comprise the *Total Ground* that I defined in §2.2.2. Metaphysical explanations aren't anything unfamiliar, they are really just answers to a special class of *why* questions. If I ask one of these metaphysical why questions like: Why is it the case that [g]? The answer will be of the form: [g] is the case because _____. In order fill in the blank, I must look to the more fundamental facts first. Those, and only those, are the candidate facts for explaining [g].

The primitivist that Bennett has in mind is somewhat different than me since her primitivist thinks that objects, properties, sets, and so on are the things that are relatively fundamental. I only think that these things stand in this sort of connection derivatively. For me, it's facts and only facts that are more or less fundamental than one another. We can, of course, define a notion of relative fundamentality that holds between non-facts. Consider the defined version of *more fundamental than*:

non-factual MFT $y=_{df}$ the most fundamental fact that x is a constituent of is more fundamental than the most fundamental fact of which y is a constituent.^{15,16}

This, and other definable notions of non-fact relative fundamentality will give us an account of the relative fundamentality of the sorts of things that Bennett

¹⁵The term 'factual' follows use in Jason Turner (2014).

¹⁶I don't have much to say about the notion of *being a constituent* above other than it's an abstraction from the facts. Jason Turner op cit also has something to say about how to abstract objects from facts.

is primarily concerned with. So, for the remainder of the chapter, unless particularly pertinent, I will ignore these details of my own view.

Bennett considers a version of primitivism she calls “extreme primitivism” which says:

... relative fundamentality has nothing to do with building. There is nothing in virtue of which the relative fundamentality facts obtain, and the relative fundamentality facts are entirely unconstrained by the building facts. They just have nothing whatsoever to do with each other.¹⁷

So, extreme primitivism has two components:

- Extreme Primitivism:**
- (a) There is nothing in virtue of which the relative fundamentality facts obtain.
 - (b) The relative fundamentality facts are entirely unconstrained by the building facts.

Any version of primitivism about relative fundamentality needs to endorse (a), but it is (b) that makes this primitivism “extreme.” Bennett raises two types of objections to extreme primitivism. The first is that extreme primitivism is inconsistent with a couple claims she’s earlier made. For instance, earlier in chapter 2, she argues that for each of the building facts, in each case that *x* builds *y*, *x* is more fundamental than *y*. That is, the relative fundamentality facts perfectly track the building facts. I suppose it’s conceivable that this correlation is a matter of sheer coincidence, but that’s a rather unpalatable position. If the initial assumption of the correlation between building relations and relative fundamentality is right, then this makes for a conflict with (b). The second conflict with her earlier claims is her account of absolute fundamentality. Bennett understands absolute fundamentality in terms of *independence*. To be independent is to be unbuilt and so again we have a conflict with (b).

¹⁷Bennett (ms) Ch.5.

I'm not particularly moved by either of these objections because I don't think Bennett's claim that whenever x builds y , it's true that x is more fundamental than y . This may be true for some building relations, but certainly not all of them. That said, if it's true that some building relations do entail that the relata are relatively fundamental, doesn't that show that relative fundamentality is at least somewhat constrained? I think that in these cases, we need to look very closely at the building relations in question. This puzzle is similar to the one I addressed in chapter 3 in connection to relative fundamentality and ground. There I concluded that we should understand ground partly in terms of relative fundamentality and here I would do the same for those building relations that indeed do entail that their relata are relatively fundamental.¹⁸ As far as absolute fundamentality, I think that Bennett's account in terms of independence rules out the possibility of independent but non-fundamental things. This possibility is, as I alluded to earlier, important in Kit Fine's accounting for the distinction between realism and anti-realism.¹⁹

The second type of objection that Bennett levels against extreme primitivism is epistemic. The argument has two premises:

- (i) Building facts constitute evidence for relative fundamentality facts.
 - (ii) Building facts constitute evidence for relative fundamentality facts only if there is a causal or constitutive link between them.
-
- (iii) There is a causal or constitutive link between building and relative fundamentality.²⁰

¹⁸This won't be a straightforward matter since my official position is that it's the facts that are connected by relative fundamentality. Perhaps the best approach would be to try to use non-factual relative fundamentality to analyze the notions in question, but this isn't a project I am prepared to tackle here. Another option is to follow Jason Turner (2014) and account for the non-facty things in the world by appeal to the interconnectedness of the facts.

¹⁹Fine (2001).

²⁰Bennett (ms) Ch.5.

I won't dispute premise (i), in fact I accept it. (ii), Bennett says, is an instance of a general rule about evidence and connection. I also agree and so the argument is sound and extreme primitivism is false since (iii) is not compatible with (b) above. There is a connection between building and relative fundamentality. What this connection is like however is not illuminated by this conclusion.

Rejecting (b) from extreme primitivism leaves us with what I'll call moderate primitivism:

Moderate Primitivism: There is nothing in virtue of which the relative fundamentality facts obtain.

Bennett describes the idea behind the position nicely:

The sophisticated primitivist's picture is this: the world has relative fundamentality structure "before" any building relations obtain, and that structure enables building relations to obtain. Building relations can only hold between things that are antecedently different in terms of relative fundamentality.²¹

I think this description perfectly captures what is behind my notion of relative fundamentality. Although, I hasten to add, that I don't think that all of Bennett's building relations entail relative fundamentality relations.

Bennett doesn't find this picture plausible and her argument against it isn't straightforward. Rather, her argument against the moderate primitivist consists in her presenting an alternative account of relative fundamentality, one in terms of building. Her account aims both to vindicate a number of the intuitions we have about relative fundamentality as well as explain the link between building and relative fundamentality. If Bennett's account is a success, the success lies in her avoiding adopting another primitive notion, which is indeed a benefit. Whether she succeeds is the subject of the next two sections.

²¹Bennett (ms) p.8.

5.3 *Building Relative Fundamentality*

Bennett thinks the link between building and relative fundamentality is accounted for by defining relative fundamentality in terms of building. As I considered earlier, no simple account will do and Bennett agrees.²² But since Bennett thinks that relations of relative fundamentality *just are* “complex patterns of building relations,” her account will need to be comparatively complex.

Without rehearsing all the steps that brought Bennett to her account, here it is:

(MFT) x is more fundamental_R than $y =_{df}$ either:

1. x is fewer building steps away from the fundamental entity(ies) that terminate its chain than y is from the fundamental entity(ies) that terminate its chain, or
2. x at least partially builds y , or
3. x stands in the ancestral of a building relation to y , or
4. x is absolutely fundamental and y is not, or
5. x belongs to some kind K and y belongs to some kind K^* such that:
 - (a) neither K nor K^* includes both built and unbuilt members, and
 - (b) y does not belong to K and x does not belong to K^* , and
 - (c) members of K typically or normally build members of K^* .²³

There is a lot to say about this account, but first the following quote nicely captures her general attitude about what she’s up to:

I do think this definition is, at a minimum, on the right track. But I am frankly not particularly concerned about small counterexamples and consequent tweaks, as long as those tweaks result in clauses that

²²See chapter 3 for the bulk of my arguments against the straightforward accounts.

²³It is worth noting that Bennett is somewhat reluctant to say that this is the final complete account of relative fundamentality, as the forthcoming quote shows. She concedes in chapter 5 of Bennett (ms) that there might be a need for further conditions. In addition she acknowledges that if building chains aren’t well-founded—i.e. that they terminate—her account doesn’t deal well with those cases. The objections I press here against her account won’t rely on this possibility.

remain formulated in terms of building. That's because I care much more about my overall claim than about the precise implementation. My overall claim, again, is a reductionism or deflationism about relative fundamentality—there is nothing more to relations of greater and lesser fundamentality than the obtaining of certain patterns of building. In a world with no building relations, nothing is more fundamental than anything else.²⁴

There may be some objections in what follows that can be seen as “small counterexamples” requiring “consequent tweaks.” I'm not intending most of the objections to show that Bennett's account is terminally flawed, rather my aim is to highlight the limits of the various disjuncts by presenting would-be objections. The objections I count as serious and non-trivial, come at the very end of §5.4 and into §5.5. I take these objections to be serious, potentially insurmountable problems for her account since it is dubious whether tweaks are available that preserve the reductionist aim of her account. These objections cast serious doubt on the role that her notion of relative fundamentality is suited to play. Before then, one added point of clarification.

In the definiendum, following ‘fundamental’ there is a sub-scripted ‘*R*’. Despite talking as though she is going to account for *relative fundamentality*, Bennett's account is relativized to specific building relations. The ‘*R*’ is that relativization, so for whatever specific building relations there are—composition, constitution, realization, microphysical determination, and ground, among others possibly—there will be a corresponding notion of relative fundamentality.²⁵

This feature is one significant point of dissimilarity between her own account and primitivism about relative fundamentality. Bennett is able to give a generalized account, but admits that any generalized account will fail to be

²⁴Bennett (ms) Ch.5 p.23.

²⁵Bennett considers singleton formation, non-mereological composition, truthmaking, among others, as possible additions to this list. Bennett (ms) Ch.2.1.

asymmetric. There are cases where, on one relativization of relative fundamentality, some x is more fundamental than y and on some other, y is more fundamental than x . The details don't particularly matter here, but it brings into question whether this generalized notion can really do much of the work that made the notion palatable in the first place.²⁶

Early on I, and others,²⁷ argued that there are a number of important roles for ground to play in a metaphysical theory. In chapter 3 I argued that we need to analyze ground at least in part in terms of relative fundamentality, and so whatever roles ground had to play, relative fundamentality had a part in playing them. Similarly Kris McDaniel²⁸ argues for a notion similar to my relative fundamentality on the basis that it has a number of important roles to play. Dorr and Hawthorne²⁹ also argue—following Lewis—that there are a number of important roles for the notion of naturalness to play and they suggest that we could use a notion of fundamentality to play many of these roles. All this is to say that if Bennett's notion is disjointed in the way that she admits, then we have some reason to doubt whether her notion can fulfill the roles set out for it to play.

I'm sure it seems, at this point, that I'm gesturing towards arguments without actually giving arguments, and that would be right. The reason I'm not giving many arguments yet is that what I think is at the heart of the issue is whether Bennett's relative fundamentality_{Ground} can do the work and then we can just ignore all of the other relative fundamentality_R notions. I don't think there's much point in taking any notion of relative fundamentality seriously if the notion can't do important philosophical work.

²⁶Ignoring the details here does no disservice to Bennett since she thinks this is a feature of the generalized account herself in chapter 5 of Bennett (ms).

²⁷Schaffer (2009), Rosen (2010), Fine (2001, 2012), among others.

²⁸McDaniel (2013).

²⁹Dorr and Hawthorne (2014) p.72.

However Bennett herself, doesn't think that her notion of relative fundamentality aims to play the role of Lewisian naturalness, in fact she makes claims to the contrary.³⁰ Given this, I do think it's legitimate to question what role this notion of relative fundamentality is playing aside from simply assuaging some of our intuitions about the relative positions of things in the structure of reality.

I think there is still a chance for Bennett's account though. I've commented that Bennett's account of relative fundamentality is fractured, in that she in fact has a number of different notions of relative fundamentality, one for each building relation. What I want to investigate in the next section is whether Bennett's disjunctive analysis can work, at least for ground, which is one of her building relations. Specifically, I want to look closely at whether her relative fundamentality_{Ground} can do just as good a job as my primitive notion of relative fundamentality. For one, going this route will avoid any of the objections like those raised by Jonathan Schaffer³¹ with his example of integrated and non-integrated wholes which cause problems that Bennett herself recognizes for her account.³² Also, Bennett can mimic the moves that I explicitly make to give parasitic accounts of what it is for non-facts to be fundamental and relatively fundamental respectively. Will this will be enough for Bennett's relative fundamentality_{Ground} to succeed is the subject of the next section.

³⁰Bennett (ms) Ch.4.

³¹Schaffer (2009).

³²An Integrated whole is a whole that grounds its parts. A non-integrated whole is one whose parts ground the whole. This is a problem for Bennett's account of relative fundamentality since she holds that every building relation entails that the built thing is less fundamental than the builder. For integrated wholes, the whole is more fundamental_{Ground} than the parts and also less fundamental_{composition} than the parts. This isn't a contradiction, but it is a case that entails the failure of asymmetry of her generalized notion of relative fundamentality and makes it more difficult to see how her account of relative fundamentality could play a number of the important roles that Lewis (1983) and others have laid out.

5.4 Relative Fundamentality_{Ground}

There is nothing in Bennett's view that requires us to accept that each of her building relations entails the relative fundamentality of the relata. And, undoubtedly, some philosophers will want to reject that whatever our ultimate notion of relative fundamentality is, we should reject that *it* is entailed by all of Bennett's building relations. This is some reason to focus on one of her defined notions and see whether it is suitable to play the role required of relative fundamentality. So, the question is: Can Relative Fundamentality_{Ground}, given Bennett's definition, do the work of my primitive notion? In order to answer this, it will be useful to look through the definition and see why she needs each of the disjuncts and then to closely examine whether there are any conflicts between them.

An assumption: I will assume that ground relates only facts. Bennett herself doesn't say this, but it's an assumption that is in her favor. If Bennett's account is able secure a viable notion of relative fundamentality from the notion of ground, then she's both addressed the concerns I raised in chapter 3 and can do with one less primitive notion than I need—Bennett can do with ground alone while I need relative fundamentality and intimacy.

The reason for a disjunctive account is that there are a number of plausible sufficient conditions for two facts to be necessarily fundamental. None of the conditions is alone sufficient to account for all of the cases of relative fundamentality. Further, it's not the case that any of the disjuncts in question are even necessary for relative fundamentality, but Bennett's claim is that collectively the disjuncts are both necessary and sufficient.³³ In the next few paragraphs I'll

³³Further, it's doubtful that they are jointly sufficient for relative fundamentality since we'll see that there are cases where Bennett's account gives conflicting answers regarding the relative fundamentality of some pairs of facts.

briefly outline each of the disjuncts and say something about why none alone can be our complete account of relative fundamentality.

1. The first disjunct of Bennett's account says "x is fewer building steps away from the fundamental [facts] that terminate its chain than y is from the fundamental [facts] that terminate its chain."³⁴ Two reasons that this clause alone is not sufficient as an account of relative fundamentality.³⁵ First, worlds where there are no fundamental facts are worlds where there are no facts about how far some fact F is from the "fundamental facts." Ergo, there are no facts about whether F is nearer or further than G from the fundamental facts. In these worlds the relative fundamentality facts will need to be secured by other means. Second, a world that is partially dense is a world where between any two points on a grounding chain, there are infinitely many intermediate grounding "steps." So, suppose F is on a non-dense grounding chain and G is on a dense one. It follows that as long as F is finitely many grounding steps from the bottom, it is more fundamental than G. These cases make it the case that disjunct 1 is not alone sufficient as an account of relative fundamentality.

2. Disjunct 2 says "x at least partially builds y." This disjunct is of course sufficient for xs being more fundamental than y but not as a general account of relative fundamentality. There are facts, say ones about helium molecules on the other side of the galaxy that, in no way ground any facts about Bill Clinton's tenor saxophone and yet are more fundamental. These sorts of cases are precisely the kind that Bennett is trying to accommodate with her disjunctive

Another possibility for Bennett is that her disjunctive definition is supposed to be exclusive. If this is what she intends, then the defined notion of relative fundamentality will not only be relativized to building relation, but to building relation + disjunct. If Bennett has n distinct building relations she will have $5n$ notions of relative fundamentality.

³⁴I will adjust the disjuncts to accommodate fact-speak.

³⁵This disjunct is just an instance of a counting strategy like I considered in chapter 3, it's worth parroting those reasons here.

account of relative fundamentality.³⁶

3. Disjunct 3 says that “x stands in the ancestral of a building relation to y.” This disjunct is primarily to accommodate those building relations that aren’t transitive, set-formation for instance. Since I’m primarily focused on relative fundamentality_{Ground}, it is worth noting that whether this disjunct will be needed at all depends on whether ground is transitive. There is some dispute about this, but we need not resolve that issue in order to identify why this disjunct fails. It fails as an account of relative fundamentality for exactly the same reason as the second disjunct fails: it doesn’t have any way for accounting for the non-grounding chain connected facts that are relatively fundamental.

4. Disjunct 4 says “x is absolutely fundamental and y is not.” Unlike disjuncts 2 and 3 this disjunct does capture some of the cases where two facts aren’t on the same grounding chain. The problem is that it does this only when one or the other of the facts is absolutely fundamental. Bennett understands fundamentality in terms of independence and independence in terms of building. An independent fact, for Bennett is an unbuilt fact. So, disjunct 4 won’t help us account for the relative fundamentality of facts that are both built but that aren’t on the same grounding chain. Consider again the example from disjunct 2, the connection between facts about Bill Clinton’s tenor sax and a helium atom on the other side of the galaxy. Neither of these facts is fundamental and yet they the latter is clearly more fundamental than the former.

5. The fifth disjunct is the most complicated, it says: “x belongs to some kind K and y belongs to some kind K* such that:

- (a) neither K nor K* includes both built and unbuilt members, and
- (b) y does not belong to K and x does not belong to K*, and

³⁶Bennett mentions cases like this on multiple occasions as the motivation for not just settling with the second disjunct as the analysis of relative fundamentality.

(c) members of K typically or normally build members of K^* .”

This fifth disjunct is an instance of a kind strategy like those I introduced in chapter 3. Bennett needs (a) and (b) to avoid a couple problems she discusses, while (c) expresses what is typically the motivation behind kind accounts in general. For example, we want to account for the fact that simple bonded oxygen pairs in a far off galaxy are more fundamental than a brass trumpet played by Louis Armstrong. The intuitive explanation is something like: a bonded oxygen pair is a molecule—of the kind *molecule*—and the trumpet is a musical instrument—of the kind *musical instrument*—and musical instruments are typically built from molecules, even if not of oxygen molecules.

Bennett needs conditions (a) and (b), because without them the account of more fundamental than is susceptible to cases of symmetry. Consider the kind *object*. It's true that objects typically build other objects and it's true that both the trumpet and the oxygen molecule are both objects and so without (b), it would follow from the definition that the trumpet would be more fundamental than the molecule and vice versa. (a) is required to avoid conflicts with other disjuncts. Bennett asks us to consider a world where there is an individual who has a mind that is fundamental, even though every other mind in that world is built from neurons, among other things. In this world, since neurons typically are among what builds minds, it follows that non-fundamental neurons are more fundamental than the fundamental mind. The kind *mind* in this case includes both built and unbuilt members and so is excluded by (a).

Given this answer, an interesting puzzle pops up. In this world with a single fundamental mind, what does Bennett now say about the relation between the non-fundamental mind and the far off helium atom? Normally such relations would be handled by the kind strategy, but (c) rules that out without appealing

to some gerrymandered kinds.³⁷ None of disjuncts 2, 3, and 4 are able to help here, but that leaves us with the counting strategy which we've seen is problematic. More generally though, if Bennett is willing to countenance examples like the fundamental mind case, we can easily construct analogous cases where the counting strategy and the kind accounts run in different directions.³⁸

There are a couple additional problems for *kind* accounts that I discussed in chapter 3 that apply to Bennett's version. The objections in what follows are variations or advancements on those. One particular problem here has to do with kinds applying to facts. This is germane since it's facts that are the relata of ground and what we're really analyzing is whether we get a coherent notion of more fundamental than from the notion of ground. It's of course clear that facts can be the members of some kinds, for instance we have existential facts, negative facts, singular facts, disjunctive facts, physical facts, biological facts, sociological facts, and so on. But how fine-grained are fact-kinds? Let's consider some examples. Plausibly, we think that physical facts, say the fact that some quark has spin-up is more fundamental than a Malthusian fact about population growth. It seems just obvious that any physical fact is more fundamental than any Malthusian fact since ultimately all Malthusian facts are grounded in physical facts. But what if we consider two physical facts—in which case, the kind *physical* will be too coarse grained? How about $N = [x \text{ is negatively charged}]$ and $L = [y \text{ was at } l_1, l_2, l_3, \dots, l_n \text{ in the past 24 hours}]$, where both x and y are atoms.³⁹ Both N and L are physical facts and plausibly N is more fundamen-

³⁷Even so, appealing to the gerrymandered kinds might not be enough since we'd need to find a gerrymandered kind of which the neuron is a member that *typically or normally* builds some gerrymandered kind of which the non-fundamental mind is a member. Noting that this latter gerrymandered kind can not also include the one fundamental mind.

³⁸More on this shortly. Thanks to Mark Heller for pointing out this problem.

³⁹The stipulation that x and y are atoms, rules out that either is a fundamental fact. What atoms they are exactly isn't particularly important, any atoms should do.

tal than L, but unless N grounds L—which we can stipulate it doesn’t—what kinds can account for this relative fundamentality? One option that immediately comes to mind is that N is a synchronic fact while L is a diachronic fact. With the assumption that diachronic facts are always grounded in synchronic facts, it follows that N is more fundamental than L. But, *being synchronic* is ruled out by (a) in the definition since there are clearly built and unbuilt synchronic facts. So, we need a more fine-grained notion of kinds here. Are there options? I’m extremely doubtful that there is some such kind-facts that can do the work for this example.

At this point, it might seem prudent for Bennett to retreat to the counting strategy—her definition of more fundamental than is a disjunction after all—and claim that N is more fundamental than L since it is fewer grounding steps from the fundamental facts. But then all the problems of the counting strategies just re-emerge, for instance we still don’t really know how the counting works except for in extremely obvious cases. And in some of the cases I considered above, it doesn’t work well at all. Maybe there is another way of assigning a kind to a fact, perhaps we could say that fact F is of some fine-enough-grained kind K if and only if fact F is about K. Then we’ll have a finer grained notion of a kind for a fact than we had before and plausibly this will work for all sorts of simpler cases, but what happens when we start getting into messy disjunctive facts or facts about large gerrymandered regions of spacetime or even complex facts about people’s individual mental lives? It strikes me as implausible that there is some fine-enough-grained kind that the latter facts are about and further, it seems that whatever kind some disjunctive fact is *about*, that kind must also be disjunctive. Consider the fact D= [Jen is fast or San Diego is cloudy or the 48th numeral of π is 9 or hockey is played on ice or books are going extinct or alcohol

is a drug]. I'm extremely doubtful that there is any non-disjunctive kind that D is *about*.⁴⁰ If it's implausible that there are kinds for facts like this, then it's implausible that there is anything we can say about the relative fundamentality of facts like this and non-fundamental facts that aren't on the same grounding chain. (After all, both kind and counting strategies are aiming to capture the relative fundamentality facts that don't stand in the relation of ground to one another.)

All I think I've done in the preceding is problematize the various strategies that Bennett has employed in trying to define more fundamental than_{Ground}, but there is a more serious problem with her account. The real problem, which I alluded to in the last paragraph, is that depending which disjunct we look to, for an account of relative fundamentality, we will get differing answers as to whether one fact is more or less fundamental than another.

Consider the following simple case. Suppose that there are two, fundamentally different kinds of matter in the world: matter and schmatter.⁴¹ The primary difference between matter and schmatter is the size of the fundamental particles. An atom is just the size that it is in the actual world, while a schmatom is 10^{-100th} the size of an atom. But, fortunately schmatoms combine in such a way—an extremely complex building way, mind you—as to compose something that plays precisely the role of an atom. Atoms, of course can be arranged in such a way as to compose neurons which in turn can be arranged in such a way as to compose a brain. Brains, as we know are the physical underpinnings of minds and in grounding speak, this is to say that facts about the brains ground facts about minds. Going back to schmatoms, since we can build atoms from schmatoms,

⁴⁰The notion of a kind here has slipped a long way from the notion of a kind that is particularly philosophically useful for things, natural kind, biological kind, etc.

⁴¹I presented a matter/schmatter case in chapter 3.

we can build neurons from the atoms, and so do the same for brains and then minds. Now consider two conscious individuals, Courtney and Mitch. The fundamental facts that ground facts about Courtney are facts about atoms and the fundamental facts that ground facts about Mitch are facts about schmatoms. So, what do we say to queries like: Are facts about Courtney’s mind more fundamental than facts about Mitch’s neurons? If we look to the counting strategy, the answer is obviously no, since Courtney’s atoms are at the bottom of the grounding chain and so almost any fact about Courtney’s mind will be fewer steps to the fundamental than any fact about Mitch’s neurons. But, if we look to the kind account, we get a directly conflicting answer since: (a) neither facts about neurons nor facts about minds include both grounded and ungrounded facts, (b) facts about Courtney’s mind are not neuron facts and facts about Mitch’s neurons are not mind facts, and (c) facts about neurons “typically or normally” ground facts about minds. So, facts about Mitch’s neurons are more fundamental than facts about Courtney’s mind, despite the difference in grounding chain steps.

This inner conflict with Bennett’s definition of more fundamental than_{Ground} has just presented us with symmetrical cases of more fundamental than. Since there are no such cases, we have no choice but to conclude that Bennett’s account fails.

5.5 One Further Problem

Assuming that my arguments in the previous section are sound, Bennett’s account of relative fundamentality in terms of ground fails. But even if it did succeed, there is one further ripple. The notion of relative fundamentality that Bennett attempts to capture with her disjunction is *more fundamental than*. With

this notion we can define a few other notions of relative fundamentality, but we cannot define all that we might like.

Plausibly, we'd like the notions:

MFT	More fundamental than
LFT	Less fundamental than
AF	Absolutely fundamental
EF	Equally fundamental to
NC	Not comparable to

MFT is the starting notion of fundamentality for Bennett, so she needs to use it to define the others. LFT and AF are nearly trivial:

$$\begin{aligned} x \text{ is } \mathbf{LFT} \ y &=_{df} \quad y \text{ MFT } x. \\ x \text{ is } \mathbf{AF} &=_{df} \quad \neg \exists y (y \text{ MFT } x). \end{aligned}$$

It's a little less straightforward to define EF, and there are even a couple options for precisely how to do it.

$$x \text{ is } \mathbf{EF}_1 \ y =_{df} \quad \neg(x \text{ MFT } y) \wedge \neg(y \text{ MFT } x)$$

This says that x and y are equally fundamental₁ just in case they neither is more fundamental than the other. This definition is fine, if we have reason to think that the world of facts is connected—that is, every fact is related fundamentality-wise to every other fact—but Bennett is explicit that the world is not this way. She thinks that there's just no sense in asking whether a fact about a peanut butter sandwich is more or less fundamental than a fact about a whiskey sour.⁴² Interestingly, \mathbf{EF}_1 is the proposed account of equifundamentality that Bennett gives in her book.⁴³

Given that \mathbf{EF}_1 doesn't allow for a definition of non-comparability, it is prudent to take another approach.⁴⁴

⁴²Bennett (ms) Ch.5.

⁴³Bennett (ms) Ch.5.

⁴⁴Thanks to Michaela McSweeney, Alex Skiles, and Steve Steward for conversation about these definitions.

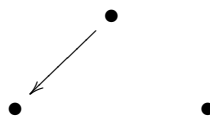
$$x \text{ is } \mathbf{EF}_2 y =_{df} (y \text{ MFT } z \rightarrow x \text{ MFT } z) \wedge (x \text{ MFT } w \rightarrow y \text{ MFT } w)$$

\mathbf{EF}_2 says that x and y are equifundamental just in case everything that y is more fundamental than, x is more fundamental than and everything that x is more fundamental than y is more fundamental than; or, x and y are more fundamental than all and only the same things. This is a promising definition since it is (i) not troubled by worlds without a fundamental level, i.e. worlds of infinite descent and (ii) it doesn't require the world to be connected as \mathbf{EF}_1 does.

If \mathbf{EF}_2 is our settled notion of equifundamentality, we can try now to define non-comparability as follows:

$$x \text{ is } \mathbf{NC} y =_{df} \neg \exists z (x \text{ MFT } z \wedge y \text{ MFT } z) \wedge \neg \exists w (w \text{ MFT } x \wedge w \text{ MFT } y)^{45}$$

This says that x and y are non-comparable just in case there is nothing that x is more fundamental than that y is also more fundamental than and nothing that is more fundamental than x that is also more fundamental than y . Visualize, a world with three facts like this:



The arrow represents the direction of more fundamental and since there is no arrow connecting the top bullet to the bottom right bullet, according to the definition above, that entails that the two bottom bullets aren't comparable. There are clear counterexamples to this case. Suppose we think that conjunctions are less fundamental than their conjuncts, then consider two facts F and G that are non-comparable. Now conjoin F and G and we have a new fact, H that is less fundamental than both F and G . But, if \mathbf{NC} is how we define non-comparability,

⁴⁵Some minimal logical transformations gets us to the, perhaps more easily understandable conjunction: $(y \text{ MFT } z \wedge \neg x \text{ MFT } z) \wedge (x \text{ MFT } w \wedge \neg y \text{ MFT } w)$

then it turns out that F and G are no-longer non-comparable since they are both related to H.

There are other ways to try to fix the definition of non-comparability, for instance we might replace MFT in the definition with LFT. This “fix” actually fares worse than NC since, assuming there is some fundamental fact F, every non-fundamental fact will be less fundamental than F and so fail to be non-comparable according to this definition in terms of LFT.

Bennett thinks it’s clear that some facts are not comparable to other facts, but the notion she defines from ground simply isn’t able to define a notion of non-comparability. The problem is actually worse than this. In §3.4.1 I argued that non-comparability is entirely ruled out if some sort of counting strategy works, as suggested by the first disjunct. If one of these counting strategies works, *more fundamental than* turns out to be a total relation, that is: every pair of facts is relative fundamentality related. I suppose Bennett could adopt some primitive notion of non-comparability, but this is not only counter to her aim of accounting for fundamentality in terms of ground, but it’s also a significant ideological cost.

5.6 Conclusion

In chapter 3, I presented a puzzle for the necessary connection between relative fundamentality and ground. There were three options for the resolution, were to simply accept the necessary connection as brute, I rejected this option. Second, was to analyze relative fundamentality (at least partly) in terms of ground and the third was to analyze ground (at least partly) in terms of relative fundamentality. I chose the third option there, and Bennett has chosen the second

option. Although I have no way of showing that there is *no* way to analyze relative fundamentality in terms of ground, I have shown that a very ambitious and carefully thought out attempt fails. This is surely some reason to favor the primitivist account that I favor.

CHAPTER 6

OBJECTIONS TO GROUND

As the notion of ground has become more and more popular, objections to the plausibility and serviceability of the notion have been developed. In particular Jessica Wilson has developed a series of arguments that she deploys in her paper “No work for a theory of grounding” with the aim, as the title suggests, to show that the notion has no philosophical purchase.¹

There are two groups of objections that I will not consider. Those are: objections from close theories and internal objections.² Objections from close theories are like those given by Theodore Sider in his *Writing the Book of the World*.³ Although Sider’s own view is similar in many respects to my own, he ultimately thinks ground isn’t as good a notion as his structure and metaphysical semantics.⁴ Internal objections are like some of those I considered in chapter 2. For instance, Jonathan Schaffer’s objection to the transitivity of ground, Carrie Jenk-

¹Thomas Hofweber (2009) also presents an influential set of objections to the notion of ground. Christopher Daly (2012) also presents an extended attack on ground. Daly’s objections have been nicely handled by both Audi (2012a) and Raven (2012).

²I will also not address Kit Fine’s very pressing objection to the connection between some very strongly held logical principles and the features of ground that he discusses in Fine (2010), as I have nothing to add.

³Sider (2012).

⁴In chapter 4 I aimed to show that my notion of ground can mimic Sider’s notion of structure and so do just as well as Sider’s notions.

ins's objection to the irreflexivity of ground, or disputes about whether ground is necessitating.⁵ Instead, the objections in this chapter call into question the general legitimacy of adopting ground into our philosophical tool bag.

Wilson aims her objections at a wide variety of accounts—particularly those of Fine, Rosen, and Schaffer.⁶ This broad target makes it plausible that no theory of ground is immune from some part of Wilson's attack. In fact, it's very likely that there is some account of ground that each of her objections is successful against. What I'm particularly interested in is not whether her attack is successful against some account or other, but whether her account is successful against my own account.⁷ My response to Wilson will involve some elaboration of my own account. In particular, I will expand on some of the connections that my view bears to notions like dependence—Wilson pays a lot of attention to this particular connection in her attack on ground.

In general, objections to ground fall roughly into three categories:

1. Objections to the primitivity of ground.
2. Objections to the usefulness of ground.
3. Objections to the intelligibility of ground.⁸

Since most philosophers accept the intelligibility of the notion, much more attention is dedicated to the first two. This is where Wilson focuses her attack and where I'll focus my reply. In §6.1 I present and respond to Wilson's attack on the primitivity of Ground. In §6.2 I respond to Wilson's allegations that Ground is not well suited to illuminate metaphysical dependence, including defining important theoretical positions like naturalism. Finally, in this same section I address Wilson's attack on the explanatoriness of Ground and draw an analogy

⁵Schaffer (2012) and Jenkins (2011) respectively.

⁶Fine (2001, 2012), Rosen (2010) and Schaffer (2009).

⁷This is not intended to imply that I think that other views of ground can't be defended against Wilson's attack.

⁸These categories follow Daly (2012), p.82.

to another familiar explanatory notion: namely, causal explanation.

One clarificatory point before I continue. In her paper, Wilson makes a distinction between two sorts of grounding: big-g and little-g, Ground and ground respectively. When talking about Ground, she is concerned with the notion, as discussed by Fine, Rosen, and Schaffer. When she talks about ground, on the other hand, she is thinking about specific relations: “type identity, token-but-not-type identity, functional realization, the classical mereological part-whole relation, the causal composition relation, the set membership relation, the proper subset relation, and the determinable–determinate relation, among others.”⁹ For the remainder of this chapter I’ll follow this convention.

6.1 Against the Primitivity of Ground

Philosophers aren’t always clear about how they use the term ‘primitive’, so here I want to be clear. Often fans of Ground claim that the notion is primitive, what they mean is that there are no more basic metaphysical notions that we can use to analyze Ground.

Gideon Rosen, in particular puts the sentiment quite strongly when he says:

We should grant immediately that there is no prospect of a reductive definition of the grounding idiom: We do not know how to say in more basic terms what it is for one fact to obtain in virtue of another.¹⁰

Rosen’s attitude is very common among Grounding theorists¹¹ and the last sentence bears repeating: “We do not know how to say in more basic terms what it

⁹Wilson (2014) p.4.

¹⁰Rosen (2010) p.113.

¹¹Audi (2012a,b), Bennett (ms), Correia (2005), Dasgupta (2014), deRosset (2013a), Fine (2001, 2012), Rosen (2010), Schaffer (2009, 2012), Trogdon (2013).

is for one *fact* to obtain in virtue of another.”¹² Grounding is explicitly a relation among facts. The aim of positing Ground is not to replace the relations that Wilson calls ‘grounding relations’. Instead, the problem Rosen is highlighting is that the plausibility of accounting for this fact-fact relation in terms of type identity, token identity, functional realization, mereological part-whole relations, and so on is so dubious that we should just concede that it can’t be done.

I agree with Rosen that we can’t say in more basic grounding terms—that is, Wilson’s grounding relations—what it is for one fact to obtain in virtue of another. However, I do think that Ground can be analyzed. This was precisely the aim of the arguments I gave in chapter 3, and so I can’t take Ground as primitive notion.¹³ *Intimacy* and *more fundamental than* conjunctively analyze Ground on my view so I’m not directly the target of Wilson’s objections to the primitivity of Ground. However, intimacy like Ground is a connecting notion and I take intimacy to be a primitive notion. So, Wilson’s complaints about the primitivity of Ground will plausibly apply to my notion of intimacy.

Wilson gives two sorts of arguments against the primitivity of Ground. The first¹⁴ notes that taking any notion as a primitive is a theoretical cost. The main line of argument in the paper aims to show that there aren’t any benefits of this notion so that the theoretical cost of the primitive outweighs the benefits. She does this by primarily focusing on her grounding relations and trying to show that Ground can’t do what grounding can. If Ground doesn’t replace the grounding relations it is an additional theoretical cost and if Ground doesn’t do anything over and above the grounding relations, that cost is for naught.

The second objection to the primitivity of Ground starts with the observa-

¹²Emphasis mine.

¹³I won’t rehash my objections to the primitivity of Ground here.

¹⁴Wilson (2014) p.3.

tion that typically, Grounding theorists argue that Ground can help us better understand the notion of dependence. However,

...even basic assessment of claims of metaphysical dependence, or associated views, cannot proceed by reference to Grounding alone. As such, investigations into metaphysical dependence cannot avoid appealing to the specific ‘small-g’ grounding relations... which are capable of answering these crucially basic questions about the existential, ontological, metaphysical, and causal status of metaphysically dependent goings-on.¹⁵

If all inquiry into what Grounds what—big-g—ultimately requires that we look to what grounds what—small-g ground—then whatever characterization we give of dependence in terms of Ground will ultimately derive from some characterization in terms of small-g grounding relations. So, Ground isn’t primitive, or so the argument goes anyway.

There are many things to say about this passage, but one point of clarification: Grounding theorists do not claim that we can simply ignore facts about the small-g grounding relations. There are plausibly cases where we need to appeal to facts like [x is a part of y] or [w is a member of z], Ground is not a replacement notion.

There are a few principled ways to see that this isn’t a good objection to the primitivity of Ground. First, if the connection between Ground and the grounding relations is the same as the relation of genus to species,¹⁶ then it is just false that our characterization of dependence will ultimately appeal to just the grounding relations and not Ground. For example, on the genus-species view of this connection, what each of parthood, set membership, constitution, and so on have in common is that they are all species of Ground. To be a species of some genus is to be analyzable in terms of that genus and some difference maker.

¹⁵Wilson (2014) p.4-5.

¹⁶See Rettler (2013).

What makes the difference, in that case, between parthood and set-membership is just whatever the difference-makers turn out to be.

A second way recognizes that it is true that philosophers sometimes make Grounding claims and have other relations in mind.¹⁷ Also it is true that there are hard questions about the connection between Ground and these grounding relations, but that does entail that Grounding claims are just shorthand for the other more “specific grounding relations.” It is even true that sometimes when philosophers make Grounding claims, they think the Grounding claims are true *because* of the specific grounding relations, but this also doesn’t entail that Grounding claims are just shorthand for grounding claims.¹⁸ I suspect that in many cases, what’s happening is that instances of the specific grounding relations are being taken as evidence for the instance of Grounding. For instance, if I believe the existence of a set depends on the existence of its members, then I might take the fact that *x* is a member of its singleton *y* as evidence for the Grounding claim that the fact that *y* exists is Grounded in some facts about *x*. But, there might be other facts required to ground the existence of a set. Maybe the fact that *y* exists is also Grounded in a general law about set-formation. In this case, the dependence expressed in terms of Grounding contains more information than simply the fact that *x* is a member of *y*. The only way that I really know how to show that Grounding facts reduce to grounding facts is to actually give the reduction. That some grounding facts might be relevant to the Grounding facts is hardly surprising, but from this we just can’t conclude that Ground plays no explanatory role.

Third, to be primitive is to be unanalyzable in more basic terms. If Wil-

¹⁷In at least some cases, this can be attributed to not really thinking about Ground, despite making a Grounding claim.

¹⁸Here too, this might be a case of not having a clear sense of Ground.

son's complaint is that Ground is analyzable in terms of the grounding claims since we ultimately need to look to the small-g grounding relations in order to understand the connections of dependence, Ground can't be a primitive notion. But why does this follow from her claim that we need to appeal to the grounding relations when making Grounding claims that Ground is analyzable? Is it even likely that we could analyze Ground in this way? There are undoubtedly connections between Ground and the grounding relations, but I'm quite dubious that we can analyze Ground in terms of the grounding relations. However the analysis would look, it would be very gerrymandered given the vast discrepancy of formal features of the specific grounding relations. Not only that, but it almost certainly true that some of the specific grounding relations don't entail that one of their relata is more fundamental than the other. For example, Wilson wants to include some identity relations, and so it's incredibly dubious that this is the case: there's just no way for one fact to be more fundamental than itself. In addition to this, it's plausible that some of the grounding relations, mereological parthood for instance, will have instances where facts about the wholes Ground—and so are more fundamental than—the existence of the parts, instances where facts about the parts Ground—and so are more fundamental than—the fact that the whole exists, and so on.¹⁹ Many of the problems faced by Bennett's attempt to define more fundamental than in terms of her building relations, would resurface for any attempt to replace Ground with the specific building relations that then tries to understand relative fundamentality in terms of them.²⁰ Needless to say I'm exceedingly doubtful of the success of any attempt to analyze or replace Ground.

¹⁹See Schaffer (2009) p.374 for a discussion of integrated wholes.

²⁰Bennett (ms). This is the account I discussed in chapter 5.

6.2 Against the Usefulness of Ground

The most persuasive arguments for ground point out the usefulness of the notion. After all if there's no use for a candidate metaphysical notion, then we really have no reason to consider accepting it. As I examined in chapter 2, there are a number of candidate roles that Ground can play in addition to being able to help us clarify related metaphysical notions and theses.²¹

There are two main attacks from Wilson against the usefulness of Ground. I will spend the remainder of this chapter examining these. Wilson spends the majority of her time arguing against the Grounding theorist's claim that Ground can help us understand the idioms of dependence. Wilson argues that the notion of Ground brings nothing to our understanding that we didn't already have with the (small-g) grounding relations.

6.2.1 Dependence

One long-standing proposal for how to explain the dependence of things like the mind and the brain is to rely on modal notions, supervenience in particular. The idea has been that since there can't be variation in the features of the mind without some variation in the features of the brain, the mind supervenes on the brain.²² These attempts at explaining dependence in modal terms fail because supervenience isn't finely grained enough for the task at hand. They fail more horribly when we consider cases like Kit Fine's case of Socrates and his singleton.²³ Everyone will agree that singleton-Socrates exists if and only if Socrates does, but absolutely no one thinks that they are mutually dependent—

²¹Another mode of attack is to challenge the intelligibility of Ground, but since Wilson thinks that ground is an intelligible notion, she aims most of her objections at the usefulness of ground.

²²Bennett and McLaughlin (2011).

²³Fine (1994).

Socrates just doesn't depend on singleton-Socrates for his existence. However, the existence of Socrates and singleton-Socrates necessarily co-vary and so any attempt to characterize the asymmetric dependence in modal terms will fail. Along comes Grounding, which is hyperintensional, and so more fine-grained than supervenience. Since Grounding is hyperintensional, it can distinguish the dependence of facts that necessarily co-vary. So Ground is suited to do what supervenience can't.²⁴

Wilson agrees completely with the previous paragraph, however, she does *not* think that Grounding is fine-grained enough to help elucidate the various notions of metaphysical dependence. This coarseness is enough, she argues to “do the work of appropriately characterizing metaphysical dependence on its own, failing to distinguish importantly different (eliminativist, reductionist, non-reductionist, emergentist) accounts of such dependence, not to mention small-g variations on these themes.”²⁵

Wilson considers and attempts to counterexample a proposal from Rosen as to some of the uses for the notion of Ground. Ground, Rosen argues, can be used to define some interesting and heretofore difficult to define philosophical theses, *naturalism* for example. If we consider how Ground structures the world, we get a picture that has at one end the fundamental facts—if there are any—and moves upward in a branching fashion to encompass the derivative facts. If we choose some arbitrary derivative fact, there will be a unique chain of facts, each connected by a relation of partial Ground, call these chains ‘Grounding trees’. One puzzle for the naturalist is to make sense of the so-called normative facts. Given Ground, Rosen claims we have the tools necessary to characterize

²⁴For further excellent arguments on the importance of hyperintensional notions to metaphysics, see Nolan (2013).

²⁵Wilson (2014) p.4.

naturalism and resolve this puzzle:

A path in such a tree is naturalistic when there is a point beyond which every fact in the path is non-normative and non-intentional. A tree is naturalistic when every path in it is naturalistic. Metaphysical naturalism is then the thesis that every fact tops a naturalistic tree.²⁶

Wilson thinks that although this is a plausible account of naturalism, not only is the notion of Ground not doing much work here, there are some plausible metaphysical theses that aren't compatible with this account of naturalism.²⁷

Wilson asks us to consider the case of “robustly emergent mental states.”

She says:

Since these are over and above physical states, they are not Grounded in physical states. But according to the robust emergentist, emergent mental states are nonetheless dependent on physical states.”²⁸

Wilson thinks supervenience does better than ground since being supervenient entails nothing whatsoever about fundamentality. Grounding on the other hand does, according to most grounding theorists including myself. The problem then is that if Ground is to replace our notions of dependence and Ground entails being more fundamental than, then it follows that the robustly emergentist states are non-fundamental, contrary to what their endorsers think. In reply, three points in ascending order of strength.

First, it's relevant here to note that most of my fellow Grounding theorists think that Ground is a relation between facts and most have said nothing about how we are to understand the relative fundamentality of things or properties. This particular argument from Wilson relies on some connection between the fundamentality of facts and their constituents. It is, presumably open to the

²⁶Rosen (2010) p.111-12.

²⁷Wilson (2014) p.7.

²⁸Wilson (2014) p.7.

grounding theorist to deny such a connection, of course doing so makes some of the other work that Ground aims to do a little more tricky.²⁹

Second, and this point will reappear later, none of the Grounding theorists Wilson takes as opponents nor myself, claimed we can replace *every* notion of dependence with Ground. It might turn out that there is another notion of dependence that we need, in addition to Ground, maybe one that captures precisely this connection between the emergent states and that on which they depend. On the other hand, it might turn out that robust emergentism is false. Is it a problem for Ground if it entails that this sort of robust emergentism is false? I don't have any strong methodological suggestions about when it's not a cost for one metaphysical theory to rule out another, but Wilson thinks that is. I won't say more here about this, I'll grant Wilson that it is a cost and show how my version of Ground can accommodate robust emergentism.³⁰

Third, my own view as I argued in chapter 3 requires an independent notion of relative fundamentality. Because of this, I'm able to give a novel answer to Wilson's objection from robust emergentism. In chapter 4 I argued that we can define what it is for an object or property to be fundamental, to some degree or other, on the basis of my notion of the relative fundamentality of facts. The idea is simple: some property is as fundamental as the most fundamental fact of which it is a constituent. Supposing that a property like *spin-up-ness* is a fundamental property, then on my view, that is because *spin-up-ness* is a constituent of a fundamental fact. So, let's say that some robustly emergent property *e* is dependent on some physical state *P*. Wilson doesn't want to say that *e* is Grounded in *P* since that would entail that *e* is less fundamental than *P*. But wait, my

²⁹I have in mind, some of the roles that Lewis (1983) considers for the notion of a *natural property*.

³⁰One well-respected philosopher once said to me: "My theory is allowed to say that false theories are false, that's not a cost." Whether this is one such case, I take no stand.

view doesn't entail that! What my view says is that there is some fact about the instantiation of e that is grounded in some fact or facts about P . On my view, this entails that the fact about e 's instantiation is less fundamental than the facts that ground it, but it does not entail anything about the relative fundamentality of e . What a robust emergentist who adopts my view can say is that although some facts about e are non-fundamental, the fact that e exists is a fundamental fact. That the fundamentality of a property doesn't track the fundamentality of whatever facts it is a constituent of shouldn't be a surprise. After all, for any fundamental object or property, there is some fact, of which it is constituent, that isn't a fundamental fact. For instance, consider the fact that the property *spin-up-ness* is dramatically more spread across the universe than I am. This fact is absolutely not a fundamental fact, despite that it has a fundamental property as a constituent and so we shouldn't be too concerned by facts with robustly emergent properties as constituents being grounded in non-fundamental facts.

Wilson's second complaint against the Grounding theorist, as it pertains to dependence is:

Grounding alone leaves open questions that are crucially relevant to characterizing metaphysical dependence and the structure of reality. . . But the deeper concern. . . is not just that Grounding (failure of Grounding) claims leave some interesting questions open; rather, it is that such claims leave open questions that must be answered to gain even basic illumination about or allow even basic assessment of claims of metaphysical dependence, or associated theses such as naturalism.

The objection here is that adopting the notion of Ground into one's ideology doesn't answer any of the questions that "must be answered" about *how* some facts depend on others. Further, it doesn't tell us anything about whether some facts are reducible to others, or which facts are real and which aren't, and so on. Ultimately, Wilson thinks that Grounding theorists over-promised and under-

delivered with their notion of Ground.

Before getting into specific examples, I want to point to a remark I made above. The aim of Ground is *not* to replace the various notions of dependence. It is *not* to say all there is to say about dependence. It is *not* to be our only connecting notion. Ground will help us illuminate some of the notions of dependence, but ‘dependence’ hardly refers to a unified set of notions. In general dependence is very gerrymandered and I don’t think any Grounding theorist really thought Ground could do anything like define or analyze them all. As we will see, there are some examples of dependence below that Grounding theorists will not be able to accommodate and that’s ok. The question about the serviceability of Ground is whether it does enough work to take seriously, I think it clearly does.

Rosen, for one, clearly claims that the notion of Ground gives us insight into the various notions of metaphysical dependence. For instance, he says:

In each case some philosophically interesting class of facts is said to be grounded in, or to obtain in virtue of, some allegedly more fundamental class of facts, and some discipline is charged with identifying the detailed patterns of dependence.³¹

This is an entirely plausible view that most of us intuitively hold. For instance, nearly all of us think that biological facts obtain in virtue of chemical facts. If there is a cell *c* with a positive charge, then it will obviously be a fact *F* that the cell has a positive charge. Given our conviction about the connection between the biological and the chemical, it follows that this fact about this cell obtains in virtue of—is explained by, is grounded in—facts about chemical processes within the cell. The connection here is without doubt and if we adopt the notion of Ground, then we have a way of expressing this connection.

In light of what Wilson said above, she will likely complain that if this is

³¹Rosen (2010) p.111.

all Ground does, then there's not much reason to accept the notion. There are of course, all sorts of interesting connections of dependence between the biological and chemical levels and we can do well enough with the grounding relations to sort them out. We have no need for Ground in addition.

I'm sure Rosen would agree about there being many other connections of dependence, after all simply saying that the biological facts are Grounded in the chemical facts, while true, is clearly not all there is to be said about the connections between the two. This is why, I think, Rosen adds that the next step is to assign some discipline—in this case bio-chemistry—to identify “the detailed patterns of dependence” between the fact that cell *c* has a positive charge and the chemical facts that ground it.³² In other words, one goal of a field like bio-chemistry is to determine in virtue of what, certain biological facts obtain.

Let's look more closely at some particularly philosophical examples that Wilson gives to see whether Ground can do a good enough job to pay its way. Remembering Rosen's account of naturalism above:

...every normative fact and every intentional fact is Grounded in some constellation of non-normative, non-intentional facts. ... metaphysical naturalism is then the thesis that every fact tops a naturalistic tree.³³

Building off the literature on physicalism, Wilson provides numerous examples of types of dependence that she thinks the Grounding theorist is simply unable to express in terms of Ground.³⁴

³²This idea, that it's the detailed patterns of (Grounding) dependence that differentiate some of the ways that things depend is important and will resurface later in response to some of Wilson's philosophical examples.

³³Rosen (2010) p.111-12.

³⁴Wilson (2014) p.10.

Type-identity	Normative state types are identical to some naturalistic state types (or combination thereof)
Token-identity	“normative state tokens are identical with naturalistic state tokens”
Functionalism	“normative state types are characterized by functional or causal roles played by naturalistic state types”
Determinable/ Determinate	The normative state types and/or tokens stand in something like the determinable/ determinate relation.
Linguistic	The normative states might not exist at all, and might just be pragmatically expedient ways of talking.

Of these examples, Wilson says:

Each of these views conforms to Rosen’s ‘in virtue of’ formulation of naturalism, but each, in appealing to different specific metaphysical relations, advances a different conception of how the normative and intentional goings-on metaphysically depend on the naturalistic goings-on. And each of these metaphysically informed views is genuinely illuminating: unlike Rosen’s formulation, each is in position to provide answers to basic questions about the ontological, metaphysical, and causal status of the metaphysically dependent goings-on at issue.

Wilson takes this to show that Ground is underdetermined since it doesn’t, on its own, specify each of the connections between the normative states and the physical states. The only way to fix this underdetermination, in her view, is to appeal to the relations above and in doing so we eliminate the primary need for Ground. Much more will be said about this purported underdetermination, but a few observations about the small-g grounding relations listed above as compared to Ground.

Before considering the responses to this objection there are a few smaller points that are relevant here. The relations above are supposedly the relations that are doing the real work in the case of Grounding claims. But the relations above aren’t very like the notion of Ground except they do some sort of “connect-

ing”. This is hardly sufficient for a replacement to Ground and so unless more can be said in their favor, they won’t be replacements. First of all, the relations above aren’t explanatory, they don’t relate facts. Some of them are symmetric, others are less well understood than Ground itself.³⁵ But more importantly, the notion of Ground can distinguish and accommodate the relations above. Let’s look at them in turn.

Keep in mind that Wilson presented the above examples under the umbrella of the physicalist who wants to “explain” the connections between the normative and the natural. If you are a type identity theorist, you think that the normative states are identical to some natural state or some combination thereof. For instance consider the state of *being wrong*. On this view *being wrong* is just some combination of natural states Φ . To make this closer to the notion of Ground we can *factize*, so we get facts like:³⁶

<i>Normative</i>	[Wrongness exists]
<i>Natural</i>	[Φ exists]

The gloss the Grounding theorist needs to give here is slightly different than simply: the natural Grounds the normative since according to type identity theorist the states involved in these facts are identical. If the facts are identical, then they can’t ground one another since ground is irreflexive. However, the Grounding theorist can say something like:

According to the type-identity theorist, the normative fact and the natural fact share all of their grounds.^{37,38}

³⁵It’s worth noting that Rosen (2010) (p.126) uses his notion of Ground to elucidate the relationship between determinable and determinate.

³⁶As specified in chapter 1, the square brackets around a sentence are to be read as “The fact that. . .”

³⁷I’m reluctant to so simply generalize to all facts that include normative contents, but for the facts above, this account is apt.

³⁸In chapter 3, I introduce the notion of intimacy. The fan of Ground who is also a fan of intimacy could also say here that the normative and natural facts above are intimately connected. The point here isn’t to argue for a particular response to Wilson’s worries, but rather to illustrate that it is not a requirement on

There is a perfectly analogous account that the Grounding theorist can give for the token identity theorist. The account of functionalism isn't quite the same, but it's comparatively simple. The speech for the functionalist is:

Facts about the normative state types are Grounded in facts about functional roles played by natural state types.

The notion of Ground, given the arguments in chapter 1, is at least as well understood as the relation of *being characterized by* that is used for the connection between functional roles and normative state types. Given this, there is no further determination going on here other than to specify what kinds of facts ground what other kinds of facts.

The determinable/determinate connection is one that Rosen specifically considers in connection to ground and he presents the following account:

Determinable/ If G is a determinate of the determinable F and a
Determinate is G, then [Fa] is grounded in [Ga].

In other words, if normative states are determinables of (some) natural states, then some natural state fact will Ground the normative state fact. Wilson's complaint about underdetermination is appropriate here only if we think that principles like the one above need to be thrown out once we adopt Grounding. But they definitely don't. The relation of a determinable to determinate is a relation between properties and in connecting it to Grounding, we are codifying that relationship between facts. One last point about determinables and determinates: Wilson herself has argued that some determinables are equi-fundamental with their determinates.³⁹ I happen to agree with her on this point and so can't accept the principle above. That said, my view allows me to deny that determinables are grounded in determinates while still holding that they are con-

the Grounding theorist that she be able to distinguish all of the specific grounding relations with Ground.

³⁹Wilson (2012).

nected in a grounding like way. On my view, the facts [Fa] and [Ga] are at least intimately connected. If F and G happen to be an instance of the sort Wilson considered—where they are equi-fundamental—then they are nothing more than intimately connected. On the other hand, if G is the color scarlet and F is the color red, then [Ga] is also more fundamental than [Fa] and so [Ga] Grounds [Fa].

This determinable/determinate case is an instance of a more general issue for Wilson's approach. I suspect that with many of her grounding relations, the priority of the relata isn't consistent. Take parthood for instance. If Jonathan Schaffer is right about the possibility of integrated wholes,⁴⁰ then there are some things that are more fundamental than their parts and other things for which their parts are more fundamental than their wholes. Adopting Ground enables us to express the direction in a more nuanced manner than simply pointing to the grounding relation of parthood. In other words, if we followed Wilson's advice and rejected Ground in favor of the specific grounding relations, then we wouldn't have the resources for expressing the direction of dependence in the case of the integrated wholes.

Finally, what about the linguistic case? For someone who thinks that normative facts don't exist at all, then we need to say something about why we can at least say things that sound like expressions of normative facts and yield agreement and disagreement among hearers. What the Grounding theorist should say in this case is that the fact to be Grounded here—the one that initially looked normative—is in fact one about language. It will be Grounded in precisely the way that any other fact about language is Grounded. If a normative claim like 'Murder is wrong' is just pragmatic shorthand for some fact about the world,

⁴⁰Schaffer (2009).

then we'll have to find out what grounds that particular bit of language. Presumably some linguistic conventions will do and also some facts about murdering and so on. I'm not going to give an account of what Grounds linguistic facts, but I hope I've gestured enough in the right direction to communicate that Wilson's proposal—namely, that the theory that normative facts are simply shorthand for natural facts—can be accommodated by the Grounding theorist.

We have a lot of resources to identify the various patterns of dependence among the facts. Not only can we try to mimic some of the specific grounding relations, but we can take advantage of the various notions directly definable in terms of Ground from chapter 2: full and partial ground, ultimate, fundamental, mediate, and immediate ground, as total, weak, and strict ground. It is these notions that will help us be very clear about the “detailed patterns of dependence” that facts bear to other facts.

Even if these attempts to show that Ground can express what these grounding relations seem to be, it is always an open option to respond: Ground just isn't suited to express some of these specific grounding relations. Would this be a cost to Grounding theory? I don't think so, after all, it was never the aim, when introducing Ground, to replace all of the grounding relations. The challenge is now whether Wilson can do as good a job at characterizing these like physicalism or naturalism with the small-g grounding relations.

6.2.2 Explanation

We take ground to be an explanatory relation: if the truth that P is grounded in other truths, then they account for its truth; P's being the case holds in virtue of the other truths' being the case.⁴¹

Like Fine, most Grounding theorists consider Ground to be a form of ex-

⁴¹Fine (2001) p.15.

planation. Wilson argues that the claim to Ground's explanatoriness is further evidence that we need the specific grounding relations. She says:

From the bare fact that some goings-on are Grounded in some others it hardly follows that the latter metaphysically explain the former in any interesting sense; nor does a bare Grounding claim itself constitute an explanation in either a metaphysical or epistemic sense. Gaining even basic explanatory illumination about metaphysical dependence requires appeal to the specific relations (type and token identity, functional realization, the classical mereological parthood relation, the causal composition relation, the set membership relation, the proper subset relation, the determinable-determinate relation, and so on) that are the typical focus of investigations into such dependence.^{42,43}

That Ground is an explanatory relation bears a tight resemblance to another explanatory notion, namely cause. Let's consider how Wilson's argument appears if it were applied to the notion of a causal explanation. Whatever the relata of causal explanation are, the statements of causal explanation take a similar form to statements of Ground. Both can be expressed with the connective 'because', both entail a sort of priority, and they both tell us something about how the caused/Grounded came to be. More importantly though, it's quite implausible that the specific grounding relations are more explanatory than Ground. For instance, suppose we want to know why (metaphysically, not causally) some object *o* exists. Are we just going to point to its parts? Even in the case of an arbitrary sum, that doesn't seem any better than pointing to the facts that ground its existence, in fact it seems worse. At least in the case of Ground, one of the grounds can be the law of unrestricted composition. parthood alone won't get us anything like that.

⁴²Wilson (2014) p.15.

⁴³It's unfortunate that Wilson didn't give us any further insight into just what she means by 'explanation'. Without such a characterization, it makes a direct evaluation of whether Ground meets the criteria a difficult one.

Suppose that I say: The causes causally explain the effect. If we rehearse the objection to ground here, we're faced with answering the charge that when I give a causal explanatory story, I've actually got some more specific relation in mind that the cause bears to the effect. So this talk of a causal explanation is underdetermined because it doesn't illuminate the particular causal connection. It might be that the particular relation between the cause and the effect is a bump or a slap or a poke and of course when I say that so-and-so caused my arm to hurt I've not pointed out the precise way that this happened. Does this feature of causal explanations make them underdetermined and so not particularly helpful? My guess is that far fewer people will find this story compelling than will find Wilson's story about the underdetermination of ground compelling. But causal explanation and metaphysical explanation are analogous as are these objections so they stand or fall together.

Wilson in fact denies that there is this analogy between ground as a form of explanation and causal explanation. In essence, her objection is an objection to what we can come to know from a claim of Ground. About causal explanation, she says:

Even if I don't know which specific sort of causal relation...I am nonetheless in position to know quite a lot about what the claim metaphysically entails or presupposes about the related goings-on.⁴⁴

Can't we say something similar about Ground? If someone tells me that the redness of my shirt is grounded in facts about the remnant dye and the surface reflectance properties of the shirt, I will have learned an awful lot about the state of affairs. I'll know this just from the statement alone and not because of anything I learn about precisely the nature of the Grounding connection.

⁴⁴Wilson (2014) p.16.

6.3 Conclusion

Wilson's attempt to show that Ground is an unuseful notion depended on her showing that Ground isn't well suited to play any of the roles that advocates for ground argue for. This argument proceeds, in large part by arguing that Ground is a coarse and underdetermined notion. She does this by pointing out that there are underlying metaphysical relations, ones we already believed in, that are in fact doing the work and that make it the case that the grounding facts obtain.

I argued that she is wrong about this. The various grounding relations that she presented aren't challengers to play the role of ground. In fact, they don't even account for why two facts ground one another.

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