Fundamentality and Friends

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Abstract

Certain philosophers have claimed that metaphysics is principally concerned with a special group of totally fundamental entities which ostensibly give rise to everything else in the world. A common refrain is that the world has a distinctive ranking of things from more to less fundamental. Alongside these notions of absolute and relative fundamentality is a notion of ground, or generativity, by which the fundamental things — or facts about them — supposedly explain the non-fundamental things.

This thesis provides a partial taxonomy of theories of fundamentality and attendant notions, explores the relations between generative relations and fundamentality, and argues that a plausible account of fundamentality must be built upon some primitive relation(s) of generativity. Chapter 1 argues that an account of relative fundamentality cannot be built on just a notion of primitive absolute fundamentality. Chapter 2 argues that an account of relative fundamentality cannot be primitive, and further argues that a single primitive *in virtue of* relation is a poor basis for a reduction of relative and absolute fundamentality. Chapter 3 argues against an entirely deflationary account of relative and absolute fundamentality.

Dedication

For those persons who especially helped me to become the person I am today. In particular my professors and mentors Jane, Kristin, Paul, Jim, and Troy; my friends Karen, William, Will, Monika, Margalit, Aaron, Felicia, and Erik; my mother Angela; my brother Eli.

Introduction

Amongst the many curious ideas that I was brought up to believe is that the world is layered in a certain way. I had a notion that the things that physicists study — atoms, quarks, electrons, etc. — were somehow 'prior to' or 'more fundamental than' the cars, dogs, and baseball games which I was more familiar with. This was, as far as I could tell, because cars, dogs, and baseball games somehow 'depend' on atoms, quarks, and electrons in various ways. Such a picture has intuitive appeal to me even today, but I've come to see that it is in desperate need of philosophical attention.

I am not alone in being drawn towards a layered world view. Indeed, the idea of metaphysical dependence has a long history in philosophical inquiry. Questions about what depends on what have come up in philosophy at least as early as in Plato when Socrates wonders,

> Is what is holy holy because the gods approve it, or do they approve it because it is holy? (1961, 178)

Recently philosophers have spilled a lot of ink calling for an explicit treatment of metaphysical priority. Perhaps the most visible research program in the vicinity is that of metaphysical ground, which has experienced massive attention as a postmodal tool (or perhaps collection of rival postmodal tools with the same

name) which might be used to characterize the sort of dependence needed to describe the world's layers.[1] But ground is situated in a larger discussion, one that includes (at least) the notions of "being fundamental", "being in virtue of", and "being more fundamental than".

Further, proponents and detractors of grounding alike disagree on many key details. For instance, it is an open question whether Ground on its own suffices to characterize relative and absolute fundamentality. Certain well known practitioners have argued yes (Schaffer, 2016a), while others have argued that it needs to be supplemented with other notions (Fine, 2001). Further, it is an open question whether ground is able, even with a primitive notion of fundamentality, to characterize metaphysical priority (Wilson, 2014). Further still, it has been proposed that perhaps a totally deflationary account of relative and absolute fundamentality can be provided (Bennett, 2017).

The promise of such work is to provide a framework within we can characterize the assymetric, synchronic dependence of things in the world. It is on the one hand to be able to answer 'why' questions such as, "why is there a conference going on?" in terms of the goings-on which underpin such an event. On the other hand, it is desired that an account of metaphysical priority also puts us in a position to say *how* the lower-level goings-on explain that e.g. there is a conference going on. Given the conviction that some things in the world are metaphysically prior to others, and thus that a complete description of the world will need to say something about this, such a research program is urgent.

However, as is often the case in philosophy, the options on the table face many

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[1]I borrow the phrase 'postmodal' from Ted Sider, and by it I mean to characterize the concepts introduced to supplement modality in order to describe features of the world which metaphysicians struggled to characterize modally. I count naturalness, essence, ground, fundamentality, and generativity amongst postmodal tools.

shortcomings. In this thesis I give a partial characterization of the landscape of promising theories of priority and fundamentality and develop various criticisms of them. I categorize existing theories of metaphysical structure into two categories: Those which propose the necessity of a distinctive, primitive, hyperintensional notion and those which do not. The former category deals with three sorts of views. The first, exemplified by Jessica Wilson, is that metaphysical structure is appropriately characterized by a primitive notion of being fundamental, along with the ordinary relations of metaphysical inquiry like composition, set-formation, realization, and so on. The second, exemplified by (the recent) Jonathan Schaffer, is that a primitive 'in virtue of' relation amongst things — ground — is preferable. The third, exemplified by Kit Fine, is that both primitive fundamentality and ground are needed to characterize metaphysical structure.

I break up the consideration of the three positions into two chapters. Chapter 1 deals with the two views which begin with a primitive notion of fundamentality. I argue that the existing motivations for taking fundamentality as primitive do not stand up to scrutiny, and I offer two novel arguments in favor of primitive fundamentality which I think do better. It seems to me that the best argument for primitive fundamentality is that it is an essential part of the most virtuous account of priority structure, though of course what features are desirable in any metametaphysical theory are controversial. I then turn to two accounts of meta-physical structure which make use of primitive fundamentality. I conclude that Fine's account of ground suffers from a failure to connect priority to other relations of metaphysics, and that the idea that things are both primitively fundamental and separately primitively more fundamental that other things is unparsimonious. I conclude that Wilson's account of priority which eschews ground altogether fails

to actually explain why some things are more fundamental than other things. In other words, I claim that Wilson's account isn't really an account of priority.

Chapter 2 considers Schaffer's recent work which characterizes fundamentality in terms of relational features given a primitive grounding relation. Further, the view considered provides a formalism for ground which connects ground to other metaphysical relations through structural equation models. I argue that the formalism strongly suggests that fundamentality is primitive, and I push existing arguments that the formalism fails to make sense of all but the simplest cases of metaphysical dependence.

Chapter 3 engages with the radically reductive approach of Karen Bennett. My central claim is that, contra Bennett, a deflationary account of metaphysical priority coupled with a deflationary account of fundamentality is not able to describe the priority structure. I argue that some primitive 'in virtue of' relation(s) is (are) needed for the account to be viable. But once the necessary tools are brought onto the scene the view starts to either look like a grounding view or else look egregiously unparsimonious. I further press the objection that the connection between the relations she outlines and relative fundamentality is threatened by counter-examples.

Chapter 4 briefly documents the moral of the preceding chapters: that an account of metaphysical structure requires one or more primitive hyperintensional posits, one of which is ground, which both explain how some things are prior to others and explain how such priority relates to more ordinary metaphysical relations such as composition and determination. In addition to the primary task of showing the need for a primitive 'in-virtue-of' relation or relations, I hope to underscore the seriousness of the challenge of connecting ground to garden-variety

metaphysical relations.

Chapter 1

Emanating Light

The fundamental things are those things which God had to make to make the world. Fundamentality is fundamental, or so the story goes. In this chapter I consider the view that fundamentality is primitive. Some of the central figures in the debate subscribe to this view — most notably Kit Fine (2001, 21) and Jessica Wilson (2014) (2016). Some of Jonathan Schaffer's work also supports primitivism about the fundamental, though Schaffer has more commonly endorsed a version of Independence.[2]

The goal of this chapter is to detail existing arguments in favor of primitivism about the fundamental — which in all cases are arguments against defining fundamentality in relational terms — and to at least sketch two accounts of how the priority structure of the world could be accounted for in terms of the absolutely fundamental entities. It is divided into two parts. First I assess arguments in favor of primitivism about the fundamental — I try to show why one might believe in the light. Second I consider two ways of building out a notion of relative

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[2]Independence will be explained in more detail in later sections, but it can be thought of as the property of being unexplained, unbuilt, or ungrounded. I take Schaffer's remarks in (2016a) to be in tension with anti-primitivism about the fundamental. This is addressed in Chapter 2.

fundamentality given such a primitivism — I show how the light might emanate.

I choose the term 'emanating light' to describe the flavor of view advocated by primitivists somewhat in jest, but also because it captures the idea that they have in mind that the fundamental things are somehow primitively special — glowing with some special property — and that in virtue of this they are able to form the backbone of the world's metaphysical structure. It is juxtaposed with the concept developed in the next chapter that fundamentality is a feature which may or may not be had by one or more things in a certain structure of one or more relations of metaphysical dependence.

1.1   Light

1.1.1   Wilson

Jessica Wilson is to my knowledge the philosopher who has given the most explicit argument in favor of primitivism about the fundamental. She is also, to my knowledge anyway, the only person who both maintains primitivism about the fundamental and denies the existence or theoretical need for a primitive 'in virtue of' relation to relate the fundamental to the non-fundamental. This section is divided into three parts. In Part 1 I consider Wilson's arguments in favor of primitivism about the fundamental as well as replies from Karen Bennett and Jonathan Schaffer. In Part 2 I consider Wilson's account of the priority structure in terms of absolute fundamentality, as well as a detailed attack from Schaffer. I close the section with my own criticism of Wilson's project, wherein I argue that primitive fundamentality on its own gives no guide to which relations characterize the priority structure. I conclude that primitive fundamentality is not sufficient

on its own to characterize metaphysical structure.

We can isolate two arguments in favor of primitivism about the fundamental in Wilson's work. The first is that to understand the fundamental in terms of something else, e.g. in terms of Ground or Building, "inappropriately characterizes basic entities in non-basic (indeed, relational negative) terms" (2016, 192). In more detail,

> the fundamental should not be metaphysically characterized in nega-
> tive terms—or indeed, in *any* other terms. The fundamental is, well,
> *fundamental:* entities in a fundamental base play a role analogous
> to axioms in a theory–they are basic, they are 'all God had to do,
> or create'. As such–again, like axioms in a theory–the fundamental
> should not be defined in *any* other terms, whether these be positive
> or negative. (2014, 560)

There are two elements of this argument that I want to highlight. The first is that Wilson is making a normative claim. She's not saying that we *can't* describe the fundamental things in other (read: relational) terms. In fact her account of metaphysical structure probably works out such that given a directed graph of the various relations she thinks transmit the priority structure one could provide an algorithm which would determine which things are fundamental.[3] She thinks, rather, that starting with the relations is metaphysically backwards. If one takes seriously the idea that creating the fundamental things is "all God had to do to create the world," then this normative claim has at least some plausibility. We shouldn't go about defining the fundamental in terms of anything else because it debases them — the world starts with the fundamental and there is nothing more to say.

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[3] The fundamental things may be grounded, but they will only be grounded in other fundamental things, so one would look for a set of entities closed under the grounded relation.

Such a normative claim is certainly not decisive however. For one thing, that we *shouldn't* characterize fundamentality in relational terms is no indication that we *can't* characterize fundamentality in relational terms — the cost of heresy may very well be paid for by the spoils of theoretical utility. Further, it's not even totally clear that the phrase "all God had to do to create the world," is best vindicated by primitivism. It seems to me that the phrase at least implies something like minimal-completeness: the fundamental entities are those entities which jointly (and minimally) give rise to all else, and thus the advocate of a relational theory which characterized the fundamental as that which is part of a minimally complete set of entities under some relation(s) of metaphysical priority might reasonably claim the phrase as theirs.

The second piece of Wilson's first argument that I'd like to consider is whether the argument that fundamental entities are like axioms in a theory actually supports any claim in the vicinity of the view that fundamentality is primitive. Bennett at least thinks that it does not:

> this seems to me to confuse defining *the fundamental entities* with defining *fundamentality.* I of course agree that no fundamental entities can be "metaphysically defined"—such entities are not accounted for by anything... But that does not stop us from defining fundamentality. It is true that on my picture any particular fundamental entity is fundamental in virtue of being unbuilt–i.e., that its status as fundamental is not fundamental. But that is consistent with its being fundamental. (2017, 135)

The distinction Bennett draws between defining fundamentality and the things which are fundamental is an important one. Further, Bennett is correct that those who define fundamentality in relational terms, in terms of ground for instance, do not thereby define the fundamental entities (whatever that means exactly). I've

come to believe, however, that part of Wilson's argument (or perhaps a modification of Wilson's argument) can soldier on through this reply.

To show you what I see we need to dig into the idea that the fundamental things are like axioms in a theory. I myself have some discomfort with such an analogy, but there is enough intuitive pull to it that its worth pursuing. There is a small payoff at the end of this road. I promise. The first thing to note is that the notion of axiom *is* defined. When we were eighteen years old we all learned something to the effect of,

> An axiom is a certain kind of formula, a formula that one is allowed to enter into a proof without any further justification.

And alongside such a description we learned about *axiom schemas*. You'll recall that axiom schemas are recipes for constructing an infinite number of axioms. For instance, if we consider the axiom schema of a standard development of propositional logic:

$$\varphi \to (\psi \to \varphi)$$

This schema is not a theorem, let alone an axiom, of propositional logic. Rather, it instructs us in the generation of axioms like the following:

$$P \to (Q \to P)$$

which *is* an axiom of propositional logic. So what does this all have to do with Wilson's analogy? If we think of the fundamental things as being "like axioms in a theory" then we should think of being fundamental as something like conforming to the axiom schemas. This is because it is in virtue of having the form of the schema that a formula is an axiom. Likewise, if fundamentality is defined, then it

is in virtue of having *that* that a thing is fundamental.

Note that the schemas are not a part of the formal system they describe. Rather, they are in a meta-language which is used to characterize the formal system. And, just to press this analogy, we are part of the system that the axioms are part of. So then, there is an epistemic reason to think that we can't define fundamentality in non-primitive terms: we don't have access to the goings-on outside of the system. The theorem can make no sense of why an axiom is an axiom, for the theorem knows nothing of the schemas outside of the system in which it lives. Likewise, if the fundamental is like an axiom *of our world*, then we have no access to whatever makes it an axiom. This is not to actually say there is no definition out there — its to say there is no definition in here where we sit.

This, then, is my take on Wilson's argument. The text supports it insofar as Wilson is fond of envoking the analogy between fundamental goings-on and axioms, and she never runs through the implied analogy in full. So I hedge in my attribution of such an argument to Wilson. Maybe the above is something she would assent to, maybe it is not. But if she is serious in her insistence of viewing the fundamental as axiomatic then she should follow through with the rest of the analogy.

Is the provided picture attractive? I think it's not. For one thing, it is a broadly skeptical argument: there is no claim that fundamentality cannot be characterized, just that we cannot characterize it. I don't say that epistemic worries do not bear on metaphysics. They of course do, and I doubt there is a metaphysician alive who hasn't been kept up by epistemic worries. But the sort of skepticism on the menu is self-defeating. If we cannot characterize fundamentality due to epistemic issues, then we should expect to fare no better in our treatment

of any other aspect of metaphysical structure.

Further, there is good reason to think that that the fundamental goings-on are importantly *not* like axioms in a theory. For instance, Wilson thinks that they may depend on each other. Further, she is dubious that they algorithmically characterize the whole world. That taking the analogy of primitive stuffs to axioms seriously leads to a condemnation of the project of characterizing fundamentality is more an argument against the analogy than the project.

Wilson's second argument for the primitivism of fundamentality is that characterizations of fundamentality in terms of relations like ground "rules out of court various live metaphysical views on which the fundamental goings-on are self-grounding (as per, e.g., a self-sustaining god) or mutually grounding (as per e.g., Leibnizian monads)." (2016)

This is a call for some kind of theory neutrality.[4] She says, "Rather, we should metaphysically characterize the fundamental in primitive, metaphysically neutral terms—after all, if anything is fundamental, it's the fundamental!" There are two questions that need to be addressed here. I'll start with the question of whether metaphysical neutrality is a virtue for our metametaphysics. Despite the methodological importance of coming to some consensus on this matter I have not run across many explicit discussions one way or the other on this issue. I consider metaphysical neutrality in a several places in this thesis, and I think my treatment — indeed any treatment — is going to be somewhat controversial. However, I have two observations which I hope will be taken kindly by all.

The first observation I have to make is that obviously unrestricted theory

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[4]I slur between speaking of theory neutrality and metaphysical neutrality. The reason I do so is because by theory neutrality I just mean neutrality regarding which first-order theory correctly describes the metaphysical goings-on.

neutrality is neither possible nor desirable. No one can be faulted for ruling out a view of the fundamental on which the fundamental things are only me, Tobias, or you the reader, or whatever. But Wilson is not doing this. Rather, Wilson thinks our account of fundamentality need only leave open 'live' views.

The second observation I have to make is that *some* amount of theory neutrality is necessary for an account of fundamentality to be taken seriously. For instance, consider an account of fundamentality on which what it is to be fundamental is just to be the mereological fusion of all things. The currency of Schaffer's "Monism: Priority of The Whole," would certainly rise if this metametaphysics were to break into the mainstream, but it would rise too much! A theory of fundamentality is not identical with an account of the fundamental. Further, a theory of fundamentality ought not imply one particular account of the fundamental. I *think* everyone in the literature agrees with me, but people sometimes talk as if they reject the legitimacy of theory-neutrality as a virtue for metamataphysical theorizing.

We've discerned the amount of theory-neutrality needed for an adequate account of fundamentality to about the degree that Goldilocks discerned the adequate temperature of delicious porridge. Call this the Goldilocks account of theory-neutrality. It is minimally limitative, and I hope that it strikes everyone as common sense.

In order for Wilson's argument here to have a shot the sort of theory-neutrality she is advocating must be a virtue. Is it? I'll confess up front that I think it is. The first reason I have to say this is that it seems to me the strongest argument for treating an 'depends on' relaton as antisymmetric is that people would like to be able to read off the 'more fundamental than' structure as its inverse: whenever

a depends on b, b is more fundamental than a. But this is not virtuous for two reasons. Firstly, it is the sort of motivated reasoning which we ought not undertake in philosophy. Let us consider the formal properties of relations in terms of our best guesses as to *the behavior of those relations*. In the case of 'depends on', it seems as though the world is filled with cases of mutual dependence.

For instance take Scott, who's depression is dependent on, in the sense of being characterized by, his laziness, poor hygiene, etc. But also it is clearly the case that his laziness, poor hygiene, etc. are also dependent on his depression. I don't just mean this in a causal sense — though I don't deny that there is a causal relation at play in the case. I mean rather that he is lazy at least particully in virtue of being depressed, and he is depressed in at least partially virtue of being lazy. This is synchronic and non-causal. It is exactly the kind of 'depends on' or 'in virtue of' talk which is in play when we talk about composition, determination, etc.

Secondly, we don't need a relation of dependence to be antisymmetric or antireflexive in order to construct a partial ordering out of it. Indeed, consider the following offering from Rabin (2018):

Relaxed Grounding If x grounds y, and y does not ground x, then x is more fundamental/at a lower level than y.

This suggestion divorces the metaphysical priority structure from the metaphysical dependence structure, but so what? I take it that this suffices to show that we do not *need* antisymmetry or antireflexivity out of relations of dependence in order for the priority structure to be characterized in terms of them. However, while this argues in favor of the tenebility of Wilson's theory-neutrality demand, it actually hints at a powerful argument against her overall argument: it

is straightforward to characterize fundamentality in terms of dependence relations and not rule out the sorts of possibilities which Wilson thinks should be left open by a characterization of fundamentality. Bennett does so as follows (2017, 136),

Independence* x is independent* just in case for all y such that y builds (grounds) x, x builds (grounds) y.

And then it could be said that to be fundamental is to be independent*. Thus, it doesn't look like Wilson's argument supports its conclusion. Relational views appear to be able to accomodate the kind of theory-neutrality she has in mind.

In conclusion, Wilson's arguments for primitivism about the fundamental are not convincing. Her first argument by way of analogy to axioms in a theory is, in its most charitable interpretation, innapropriately un-metaphysical. Her second argument by way of theory-neutrality fails to motivate primitivism because relational accounts of fundamentality are able to accomodate the sort of theory-neutrality she has in mind.

1.1.2 Fine

In his 2001 paper, "The Question of Realism," Fine argues in favor of primitivism about fundamental reality by way of arguing against understanding fundamental reality in terms of things being less fundamental than or reducible to another, where the fundamentally real things are those which are not less fundamental than anything else, or are not reducible to anything else. He says,

> It is natural to understand the concept of fundamental reality in terms of the relative concept of one thing being *less fundamental* than, or *reducible* to, another—the fundamental being whatever does not reduce to anything else (but to which other things will reduce). But...how

can an explanatory connection be determinative of what is and is not real? We may grant that some things are explanatorily more basic than others. But why should that make them more real? (2001, 25)

The solution to this apparent antinomy is to "reject the idea that the absolute notion of fundamental reality is in need of a relational underpinning" (2001, 25). Karen Bennett has written that Fine's argument rests on how the word 'explanation' is used. She distinguishes between two sorts of explanations.[5]

Explanation$_E$ a explains$_E$ b if a sheds light on b, or renders b intelligible. It is our normal epistemic notion of explanation (whether we think that is clear or not).

Explanation$_M$ a explains$_M$ b if a makes b exist, obtain, or happen.

She says with respect to the above Fine quote,

His idea here seems to be that a relation like grounding cannot make something fundamental or not, for it is an explanatory relation, and explanation can't affect how the world is. If Fine means that we ought not define absolute fundamentality in terms of explanation$_E$ then I agree. . . If fine means that we ought not define absolute fundamentality in terms of explanation$_M$, then I disagree, and do not see that he has offered any reason against doing so. Why *can't* a productive, generative relation be determinative of what is and isn't fundamental? (2017, 135)

However I don't think that Bennett has Fine's view straight, and I think this exegetical problem renders her argument unconvincing. In her defense, she is quite forthright about this lack of clarity:[6]

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[5]For more on this see (Bennett, 2017, 61)

[6]I too struggle with Fine's notion of reality, but I think that there is enough textual evidence to support the reading I am advocating for in this section.

> I confess that I do not fully understand Fine's notion of "Reality". But
> he does seem to use it as I would use the label 'absolute fundamental-
> ity'. (2017, 135)

And Bennett isn't wrong that Fine does sometimes say things that make one
think he things that being real is the same as being fundamental. For instance he
says "[I]t is this positive idea of the intrinsic structure of reality... that should be
taken to inform the relevant conception of what is fundamental or real." (2001,
25) which strongly suggests the two words may be used interchangeably. However,
I think that the text ultimately supports reading Fine as using the word 'basic'
to mean what Bennett means by 'fundamental' – which is just independent:

> In attempting to determine what is real... we cannot simply appeal
> to the fact that a given proposition is basic. For a basic proposition
> may be nonfactual; and clearly no nonfactual truth is descriptive of
> fundamental reality. (2001, 26)

Fine draws a distinction between factual and nonfactual propositions. Nonfac-
tual propositions might for instance be those regarding taste, like the proposition
that chocolate is delicious (2001, 13). And the nonfactual propositions might be
basic, which is to say ungrounded. It is for this reason that an explanatory re-
lation like ground cannot make something *real*. To be ungrounded is not to be
real. In sum, the correct mapping between Fine and Bennett is from Fine's notion
of basic to Bennett's notion of independent (or, equivalently, fundamental). His
notion of fundamental reality should be thought of as a seperate primitive notion
(2001, 1). In other words, it seems that Fine and Bennett disagree principally
about jargon.

With that on the table, though perhaps many questions left unanswered, I
think it can be replied on Fine's behalf that he does in fact have a explanation$_M$ in

mind, and the reason it is not suitable to characterize fundamental fundamentality is because nonfactual propositions are ungrounded but do not describe reality as it really is. Indeed, there is textual evidence in support of Fine thinking about ground as an explanatory relation in much the same way — perhaps as stronger even — as Bennett has in mind of explanation$_M$:

> 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. There are, of course, many other explanations among truths. But the relation of ground is distinguished from them by being the tightest such connection. (2001, 15)

Note in the case of a nonfactual proposition it may be ungrounded — thus be in virtue of nothing — but be that way precisely because they are appropriately connected to the real. So Bennett's challenge to the argument is misplaced. An explanatory relation of any kind cannot be determinative of which things are real, as long as nonfactual propositions are part of one's ontology.

There are two things I would like to highlight about Fine's argument. The first is that I agree with him that whether something is real or not is not determinable by looking to the grounding structure, though this assumes that nonfactual propositions are capable of grounding other nonfactual propositions. If this assumption turned out wrong, then the nonfactual propositions would be identifiable from the grounding structure by being both basic and not grounding anything. The second is that I am not convinced that we should take on board nonfactual ungrounded propositions. It seems reasonable to me to think that the nonfactual might be grounded in the factual, or that nonfactual propositions might simply be denied.

What I'm getting at is that Fine is trying to accomodate a particular view of

how the world might be, and given that view it might be that fundamental reality cannot be characterized in terms of basicness without admitting very strange things into reality in itself. However, the talk of reality that Fine is making use of, and the attendant world view, is obscure and it is not clear that we should grant it as providing good reason against defining fundamentality.

1.1.3   Seeing the Light

It is not my project in this thesis to convince anyone that fundamentality should be taken to be primitive. I reject a reductive account (See Chapter 3), and so I think that some sort of primitive metaphysical notion needs to be on the stage, but whether it comes from stage left or from stage right is not of utmost concern to me. I just think some primitive metaphysical posit needs to come from *somewhere* if there is to be any hope of making sense of the idea that some things are (metaphysically) prior to others. To that end, I do not need to stake a claim in favor of either primitivism about fundamentality or primitivism about ground. However I think more can be said in favor of primitivism about fundamentality than has been considered thus far.

My diagnosis of the problem of the various arguments in favor of primitivism about the fundamental is that they are principally arguments against the ability of relational theories to provide an account. I assume that the reason for this is that primitivism is, generally, a last resort. If we *can* define things in terms of other things then Occamist considerations dictate that we *should*. Thus, the antiprimitivist is given a straightforward job: show that their theory of the 'in-virtue-of' relation is robust enough to characterize metaphysical structure (including fundamental things!), or show that the structure the primitivist is trying to accomodate

is not worth accomodating.

I think the normative claims made by Wilson are a step in the right direction. My own argument is this. Fine seems to associate being more fundamental than with being more real than. This suggests that gradations of fundamentality are associated in some way with gradations of being. The non-fundamental entities like cities and economies are *real* in some sense — but less real (let us suppose) than atoms and quarks. The picture of reality as coming in degrees may not be appealing to some, but it seems to me that friends of priority-talk are naturally inclined towards accepting it in some form.

I don't venture a complete analysis of the word 'real' in this thesis, but we might think that there are at least two faithful interpretations of the word which are of interest here. The first is the notion of 'unqualified reality', which is either had by something or not. We might think that this notion applies sparingly to, say, subatomic particles and the like. A second interpretation of the word 'real' might be that of 'qualified reality', which we might think comes in degrees. Elections are real in this sense, but perhaps not the prior sense. I trust that this is more or less intelligible, though there are many unanswered questions as to the nature of these notions and their relation to one another.

If we grant those two notions of reality, it then remains to be said *how* degrees of fundamentality are associated with degrees of reality. I propose that the friend of primitive fundamentality should say that degrees of fundamentality *just are* degrees of reality. To say that cells are less fundamental than atoms is to say that they are less real than atoms. If this picture is adopted then fundamentality should be seen as primitive because to be absolutely fundamental is just to be real without qualification. This is predicated on one accepting that reality is a

primitive notion. But I know of no one who would attempt to define the notion of reality in other terms.[7]

This is not to say that one cannot define absolute reality in terms of being real to degree N, or relatedly in terms of being 'more real than'. It is clearly possible to do so. But one *shouldn't* because being unqualifiedly real is the primary way of being. Strong considerations would be needed to motivate the endeavor of characterizing the successful state in terms of the degenerate state. The idea is that starting with relative fundamentality is metaphysically backwards, and it is backed up by the strong intuition that starting with being real to some degree is metaphysically backwards.

This view implies that there are fundamental things. But who could deny that there are real things? It also implies that non-fundamental things are not altogether real. But it allows that they are kinda-sorta-somewhat real. I found such an idea initially grotesque. We are used to thinking of reality as binary: something is either real or it is not real. But why should we think that? Wars are real, in some sense, but perhaps not in the same sense — to the same degree even — as the people who wage them.

I am not proposing that any of this is fated to succeed. Primitive fundamentality is an opaque concept and this suggestion only demystifies it insofar as it accounts for it in terms of another mysterious concept. Further, there is a case to be made that this is not even an argument for primitivism about fundamentality — I am proposing to define fundamentality as being real. But the so-called definition is one of mere identity, and the latter concept is taken to be primitive, so it is primitivist at least in spirit.

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[7]It has been pointed out to me that J.L. Austin has ventured an account of reality in negative terms. See for instance (Austin, 1962, 70).

Before moving on to theories of priority built on a primitive notion of fundamentality I'd like to present an interesting case which urges a non-relational understanding of the fundamental. Consider the natural numbers as developed in Peano arithmetic, as well as the non-negative integers (thought of as a substructure of the integers).

Of the natural numbers, it seems reasonable to think of 0 as being the one 'fundamental' number, and the successor relation **S** as transmitting existence to the rest of the numbers. This is a natural thing to do because 0 is the only natural number which exists independent of anything else: all other natural numbers are defined in terms of 0 by way of the successor relation **S**. For instance 1 is just the successor of 0, or **S**0. So too for 2, which is just **SS**0, and all other numbers.

The relational anti-primitivist about fundamentality (who agrees with me that 0 is rightly seen as the one fundamental object of Peano arithmetic) will say that 0 is fundamental because it is unbuilt by **S** (is independent), or perhaps because it mediately builds all else via **S** (is complete). But the primitivist is on strong ground here. Peano arithmetic *starts with* the fundamental. That a relational characterization of fundamentality picks out 0 is not an argument that 0 is not fundamental.

And the very same structure (mathematically speaking) can exist without 0 being intuitively fundamental. The non-negative integers are the case I have in mind. While the non-negative integers *just are* the natural numbers with respect to their mathematical structure, it is not the case that the axioms which describe them make plausible that the non-zero numbers are built by zero by way of successor. However **S** can be defined in terms of $+$ and the number 1, and so the same successor structure exists in the non-negative integers.

So, I claim, it is not a purely *formal* matter which relations transmit priority. So there must be some story as to why in the one case it seemed as though successor was a relation of priority and not in another. Presumably that story is going to involve appeal to the axioms of the two theories in some way or another, but regardless of how those details are filled in I think the friend of primitivism is on strong footing against the relationalist. This is because it seems as though the difference in the two cases is not a relational difference, but rather a difference in the natures of the entities.

1.2   Emanating

So much for my motivation of the conception of fundamentality as primitive. If fundamentality is primitive, how does it color the world? Once God puts the fundamental things into the world and takes reprieve how does everything else come about? In this section I consider two rival views. The first will be familiar: a primitive dependence relation (or sentential operator) which philosophers call 'ground'. Enough ink has been spilled on various formulations, refinements, and clarifications of ground that I can't even begin to treat them all here. I'll specifically treat Finean ground. The second view is to my knowledge Jessica Wilson's alone, and it in many ways resembles the deflationary account I argue against in Chapter 3.

1.2.1   Ground

A number of authors have proposed a primitive 'in-virtue-of' relation to connect the fundamental to the non-fundamental. In this section I'll consider Kit Fine's

account which, insofar as a canonical development of ground can be said to exist, is the canonical development. Further, Fine's account is especially worth considering since he starts with fundamentality as primitive. Fine believes that ground is necessary to account for the apparent metaphysical reduction of certain things to others, or in other words to account for metaphysical structure.

> The history of analytic philosophy is littered with attempts to explain the special way in which one might attempt to "reduce" the reality of one thing to another. But I believe that it is only by embracing the concept of a ground as a metaphysical form of explanation in its own right that one can adequately explain how such a reduction should be understood. (2012, 41)

Wilson has claimed that Fine thinks of (or at least flirts with thinking of) Ground as an abstraction from the more specific small-'g' relations, rather than as a primitive (Wilson, 2014, fn. 63). I think she has in mind his affinity for seeing ground as a generalization of three basic forms of necessity. But his preference for seeing Ground as connecting metaphysical, natural, and normative necessity is not an anti-primitivism about Ground, insofar as those notions of necessity are themselves primitive notions of metaphysical explanation. Rather, it is more like three-fold primitivism about ground.

He advocates for expressing grounding claims by way of a sentential operator. Thus we would say,

$$P < Q$$

to say that P grounds Q — which is something like saying Q is because of P. While Fine has described a proof system and semantics for ground, we need not develop the theory in full here. The important thing to note is that ground is not to be seen as an abstraction from or generalization of particular small-'g' relations.

This feature is I think the primary target of Wilson's attack on ground. But it is not the case that Fine has no story about why grounding happens in some cases and not others. For him, it is a matter of the nature or essence of things in the world whether certain grounding patterns hold (Fine, 2012, 77). It may be either in the nature of the things involved in the facts which are involved in grounding claims, or it may be in the nature of the facts themselves. It might be thought that this is in fact a virtue of Fine's account: it does not wade into first-order issues whenever possible.

Problems

Ground is one way in which the fundamental might be said to give rise to the non-fundamental. Jessica Wilson (2014) (2016) has argued that Grounding is not suitable to connect the more and less fundamental objects. Her arguments can be classified as arguments against (1) the sufficiency of Ground to characterize metaphysical structure, and (2) the need for Ground to characterize metaphysical structure.

The first issue she raises is that Ground is too coarse-grained to characterize metaphysical dependence without appeal to other relations. One example is that claims of Ground seem to leave open whether the grounded exists at all. For instance, Fine says:

> In saying that the fact P & Q is grounded in, or consists in, the fact that P and the fact that Q . . . we are adopting a metaphysically neutral stand on whether there really are conjunctive facts (or truths). (2001, 15)

Fine uses 'really' and its cognates in somewhat unorthodox ways sometimes. He might mean either that conjunctive facts may or may not exist, or he may

mean that conjunctive facts may or may not be fundamental. In either case, such neutrality is objectionable to Wilson:

> Given that Grounding is supposed to illuminate metaphysical dependence—in particular, to illuminate *how* things are— such neutrality is perplexing. After all, naturalists do not care only whether, for example, normative goings-on metaphysically depend on naturalistic goings-on: they also care about whether normative goings-on exist; about whether, if they exist, they are reducible or rather irreducible to (though still nothing over and above) naturalistic goins-on; about how exactly normative goings-on are related to naturalistic goings-on…and so on. (2014, 546)

She thus takes the neutrality of grounding on matters of existence to be a *tu quoque* objection to the claim that Grounding is 'the primitive structuring conception of metaphysics' (2014, 548). This is because the questions which are left unanswered by claims of Ground are questions which, "*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."

Wilson is correct here that Grounding claims leave out important information and that this undermines their role as complete metaphysical explanations. This contradicts Fine's insistence that grounding claims entail that there is no fuller account of the grounded fact.[8] But, this is only if Ground is understood as not relating in any special way to the relations which would figure into a full account. Such a possibility exists and is the basis of Schaffer's most recent work on Ground which I consider in the next chapter.

Schaffer sums up the result of this argument in the following way (2016a, 151).

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[8]See for instance (Fine, 2012, 39), wherein he says of ground, amongst other things, that "there is no stricter or fuller account of that in virtue of which the explanandum holds".

Wilson's first lesson: An account of grounding must give one more than just the bare ideology of "this grounds that"; it must also allow one to make sense of follow-up inquiry into *how* the connection runs, in terms of the specific rule mapping the more basic inputs to the less basic output.

I assent to his description, and I think that the gloss of Finean Ground that I've provided clearly does not heed it. The second of Wilson's arguments against Ground is that once the first lesson is taken seriously — that is, once more specific ways of dependence are characterized in terms of small-'g' relations like determination, composition, etc. then Ground is no longer needed. The relevant metaphysical structure is determined by the small-'g' relations along with primitive fundamentality.

She first argues that Grounding is not needed to fix the direction of priority. The worry, as Fine put it to her in personal communications, is that "the mere holding of these other relationships may not in general be sufficient to establish a relationship of ground" (Wilson, 2014, 558). Moreover, Fine says, "there is a real question, it seems to me, whether talk of more specific relations will be adequate to convey what we want to convey unless it is coupled with a claim of ground" (Wilson, 2014, 559).

She grants that the more specific relations she has in mind are not on their own able to do the work of ground, but denies that Grounding is the best way of bolstering their metaphysical power. Her response distinguishes between two cases. The first is the case in which fundamental Ys bear some metaphysical relation R to non-fundamental Xs. Then, she claims, R is a grounding relation in that case.

Given that the Ys are fundamental, and that every X is a proper part

of some Y, *then* it follows that the Xs are grounded in the Ys, rather
than vice versa. (2014, 559)

That this is correct is apparently "encoded in the standard methodology in
existing debates over metaphysical dependence," and is not argued for (2014,
559). The second sort of case she considers is the one in which the Xs bear some
metaphysical relation to the Ys and neither the Xs nor the Ys are fundamental.
She again appeals to "the usual metaphysical methodology" (2014, 564).

> For investigating into which dependence relations may or may not hold
> between non-fundamental goings-on requires that one have in hand
> fairly specific accounts of the non-fundamental goings-on in terms sen-
> sitive, somehow or other, to which goings-on are considered fundamen-
> tal (else why characterize the former goings-on as non-fundamental?).
> As per the previous section, making sense of these accounts does
> not require an appeal to Grounding. But once these accounts are
> in hand, the direction of priority between different non-fundamental
> goings-on, if there is one, will plausibly follow from their respective
> accounts. . . (2014, 564)

Given that the fundamental is guaranteed to exist according to Wilson (and
Fine), and given that the relations which the fundamental bears to non-fundamental
things informs the direction that priority flows through various relations (by the
prior argument), this has some plausibility.[9]

1.2.2   ground

If Wilson is correct that Ground is not cut out to do the work it was hired to do,
then the primitivist about fundamentality needs to find another way to account

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[9]Though, Wilson is vague enough here that I have a hard time assessing it. If the direction
of priority both exists and does not follow from the account of the fundamental goings-on then
what is the practitioner to do?

for the priority structure. Wilson thinks that metaphysicians had an account all along: the ordinary 'small-g' relations which form the crux of her objection to Ground:

> Attention to metaphysical dependence is not new: many, perhaps most, contemporary metaphysicians have spent their careers investigating forms of such dependence,...These investigations take the idioms of metaphysical dependence ('in virtue of', 'nothing over and above', 'grounded in') to be schematic placeholders for *specific metaphysical relations* that we have independent reason to accept, and which serve, against the backdrop of some presumed more fundamental base, to characterize diverse forms of metaphysical dependence in a genuinely explanatory and illuminating way. (2014, 539)

From this quote it comes across as though Wilson is not actually selling us on anything we haven't already bought. That's not quite right, as Schaffer (2010, 156) points out. Wilson agrees with friends of ground that a primitive hyperintensional notion is needed to characterize the priority structure — her proposal is the notion of fundamentality:

> Though I endorse Fine's view that fundamentality is primitive, I think we can say more about this notion; namely that it follows from some goings-on's being fundamental at a world that these goings-on, individually or together, provide a ground — *nota bene:* in one or other specific 'small-g' fashion, *not* by reference to a distinctive relation of Grounding — for all the other goings-on at the world. Which entities are in the fundamental base is primitive; this primitive specification then *fixes the direction of priority* associates with a given specific 'small-g' grounding relation...(2014, 561)

Before we go on I want to highlight the following: If Wilson is right that a notion of primitive fundamentality is sufficient to explain the priority structure with the help of only the familiar relations of science and metaphysics, then this

is itself an argument in favor of her view over Fine's by way of parsimony. Even if her objections against the viability of Ground fall short, she has fewer primitive posits than Fine. Where he has at least two, she has (ostensibly) one. Thus, her view is *prima facie* simpler and thus by Occamist considerations better.

Infinite Descent of Priority

But is Wilson correct that the fan of primitive fundamentality can characterize priority structure? I'm far from convinced. The first matter I'll consider is whether (1) primitive fundamentality entails foundationalism and (2) whether that is a problem. I argue in the affirmative on both counts.

It's easy to see at least why one would presume primitive fundamentality implies foundationalism: it is the existence of fundamental goings-on that apparently generates a priority structure. Schaffer brings this up in his (2016a). Wilson's reply is two-fold. Firstly, she argues that priority can be fixed given certain non-well-founded patterns of 'small-g' grounding. Secondly she argues that the cases in which it cannot be are handled appropriately — or in other words, if her account can't fix a priority structure — then one does not exist.

Wilson gestures at two ways that non-well-founded 'small-g' grounding supposedly works. I'll argue that both suggestions are misguided, and so her most promising avenue of defense is that a foundational level really is required for priority talk to make sense.

The first, which we might call the "convergence picture", is extended from Barbara Montero's (2006) claim that "even successive decomposition can bottom out into something fundamental. For example, just as the infinite decreasing sequence of numbers $1/2, 1/3, 1/4, \ldots$ is still bounded below by zero, there could be

infinite descending sequences of decompositions, with fundamental entities below

them all" (2006, 179). Montero has a figure which both illustrates and undermines

her point.

$$
\begin{array}{c}
q_1 \\
| \\
q_2 \\
| \\
q_3 \\
| \\
\vdots \\
\\
q_\infty
\end{array}
$$
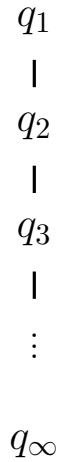
In what sense does the above structure bottom out in the fundamental? It is

instructive to consider how we might draw the grounding arrows between q_∞ and

the q_ns. There are two distinct pictures:

$$
\begin{array}{c}
q_1 \\
| \\
q_2 \\
| \\
q_3 \\
| \\
\vdots \qquad \cdots - q_3 - q_2 - q_1 \\
\qquad\qquad \diagdown \ | \diagup \\
q_{\infty-1} \qquad\qquad q_\infty \\
| \\
q_\infty
\end{array}
$$
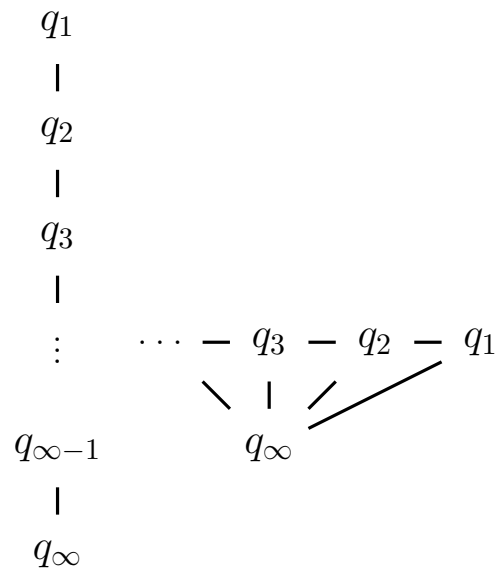
Each of these pictures corresponds to one way that someone might think that

the fundamental grounds an infinitely descending chain of things. Neither vindicate the idea that it is both the case that the grounding chain is infinitely descending and bottoming out in the fundamental. The leftmost idea is that we can find an $\infty - 1^{\text{th}}$ element which is directly grounded in the fundamental. This, if coherent, would seem to show Montero correct. However infinity is not a number. There is no available notion of a predecessor to infinity (under any relation!). Every element in the sequence leading up to ∞ is a non-finite number of steps away from ∞. We can not make sense of the idea that the fundamental things immediately ground any of the non-fundamental things given such a structure.

The picture to the right corresponds to the idea that the fundamental immediately grounds *all* of the elements in the sequence. In this picture the fundamental actually is grounding things, and it is perfectly coherent. But this is not a picture of infinite descent, since every non-fundamental thing is exactly one step along the grounding chain from the fundamental. Of course, every non-fundamental thing is also infinitely many steps from the fundamental if we follow the grounding chain in the right way, but that presents a very thin notion of being "infinitely descending towards the fundamental". Indeed, it presents such a thin notion of infinite descent that it does not support Montero's claim.

So I take issue with Montero's characterization of her case. It's true that the sequence converges towards the fundamental in some sense, but each element of the sequence is both ω steps away and one step away, so it's not the case that it bottoms out in the fundamental. Wilson piles on additional problems with her extension, which is that given a convergent sequence we can get a priority structure by making reference to the goings-on in the limit of the sequence even if those goings-on do not actually exist. She says,

> What I furthermore add (or take away) from Montero's line of thought is that even if the goings-on in the limit do not exist, the valence of priority may be established by reference to goings-on in this limit, much as the thermodynamic properties and behavior of a gas are properly modeled as non-fundamental features of statistical mechanical collections in the "thermodynamic limit", as the number of particles and the volume each approach infinity. In other words, goings-on in the limit may act as a fundamental level. (2016, 197).

As I've said, Montero's line of thought forms a shaky foundation on which to build even if the fundamental-goings on are alleged to exist. However, there is a further issue if there aren't even goings-on in the limit — no relation can obtain between non-existent things. So even if my challenge to Montero is resolvable, Wilson's extension is further troubled.

The argument I am making is just that it cannot be the case that things which don't exist determine facts about the things which do exist. It might be replied that Wilson has a counter-example: thermodynamic properties of a gas are properly modeled with respect to goings-on in the "thermodynamic limit". I resist the suggestion because there is an important distinction between *models* and *the things they model*. It may be that we can model thermodynamic properties by way of fiction, but it is not thereby the case that the properties themselves are dependent on such a fiction.

Let us turn to the second sort of not-well-founded priority structure which Wilson claims to be able to make sense of. This is the case in which, "there is a level at which the archeology of further dependence relations ceases to be relevant to priority relations at or "above" that level" (2016, 197). She thinks that in this case it is that level which acts as a fundamental base for all entities "above" it.

In her discussion of this issue Wilson cites Montero's characterization of physi-

calism in an infinitely decomposable world as the claim that "all mental properties are eventually determined by non-mental properties such that further determinations of these properties, if any, are non-mental" (2016, 198) (2006, 187). I don't think that Montero's discussion bears on Wilson's. Montero is just trying to characterize a first-order theory (physicalism) given a relation (determination) and the possibility that determination is not well-founded. She then claims that it would be reasonable to say that physicalism (about the mental) lives or dies on certain features of the determination structure.

Wilson, on the other hand, needs to show that a certain structure *exists* given certain features of the world. In this case, she is interested in vindicating the claim that certain things are more fundamental than others given that nothing is fundamental. Thus it's not clear what she can mean by the "archeology of further dependence relations". She plausibly has in mind the small-'g' relations which she claims transmit priority *from the fundamental* (if it exists). But then what does she mean by such structure ceasing to be relevant to priority relations at or above some level? I certainly see how one might use the notion of levels of the structure of a given small-'g' relation to assess things like physicalism. But Wilson needs to show how in general certain particular things are *more fundamental than others*. In the absence of a fundamental level it isn't clear why, for instance, the determination relation makes for priority.

As a final point on this issue, I do not know how to make sense of Wilson's notion of "acting like a fundamental base". My thinking on this keeps leading me to the conclusion that this flies in the face of her other commitments. She herself thinks that fundamentality is a primitive notion which we should not attempt to characterize in relational terms. But this notion of being relatively fundamental is

relational to the core. Indeed, to find which things are relatively fundamental, one actually looks at patterns of small-'g' relations for a relata with a particular (if somewhat vague) feature. This is to say that Wilson is claiming that metaphysical structure can be gotten out of things with certain relational features. This does not cohere with the rest of her project.

It also betrays her repeated insistance that the fundamental things are all those which God had to make to make the world. In the case of these relatively fundamental things, they certainly did not need to be made by God to make the world — anything lower on the ordering imposed by some particular small-'g' relation would have sufficed.

I turn finally to Wilson's last case: the case in which neither convergence nor irrelevance happens. In this case she claims that it really doesn't make sense to posit priority relations. The picture is something like this:

$$
\begin{array}{c}
\vdots \\
| \\
q_k \\
| \\
q_j \\
| \\
q_i \\
| \\
\vdots
\end{array}
$$

Certainly we can at least *make sense of* there being priority in the absence of fundamental goings-on. Just draw arrows on the graph:

$$\vdots$$
$$\uparrow$$
$$q_k$$
$$\uparrow$$
$$q_j$$
$$\uparrow$$
$$q_i$$
$$\uparrow$$
$$\vdots$$

One might think that this cannot be how the world works due to some prior commitments regarding what ground-like relations can and cannot do, but we can clearly make sense of the idea of there being infinite structures with orderings (which is just what metaphysical priority is). For instance on the integers the "more-big-than" (more commonly called the "greater-than" relation) relation is perfectly coherent.

So I think that Wilson is wrong when she says, "one may reasonably deny that it makes sense to posit any priority relations between non-fundamenta". I end this discussion with a brief consideration of something Wilson writes in support of her claim:

> In cases where there is no convergence, and no level of goings-on that
> fix the priority relations at higher levels—all the entities— that is,
> God would have to do, or create, everything. Hence, on the operative
> understanding of fundamental everything would be on a par, priority-
> wise–and that's just to be expected.(2016, 199)

This argument forms an argument against the prior suggestions by Wilson herself that priority can be fixed even in the case where there is no fundamental level, so I find it peculiar that she offers it.

Priority Between Non-Fundamenta

The second issue I'll take up is whether primitive fundamentality along with the 'small-g' grounding relations is actually able to fix the priority structure. Schaffer has argued that it does not.

> Suppose that what is fundamental are just particles in the void, and consider the following three non-fundamental entities: my whole body, my whole body minus my left shoulder, and my heart. Holding fixed that particles in the void are fundamental, and holding fixed the mereological and other "small-'g'" relations among these three entities, there still seems to be a residual question as to the direction of fundamentality (2016a, 159)

Wilson's response to this challenge is not to provide an account of how the 'small-g' relations fix a priority structure, but rather to absorb the criticism into her account:

> On my view, the direction of priority between non-fundamenta is not assumed to follow just from the (small-g) facts about what is fundamental coupled with facts about how non-fundamenta stand to fundamenta—hence it is that even the mereological atomist has options as far as understanding the priority relations between hand and body...nor would it it make sense to assume that priority between non-fundamenta of a given variety (e.g., fusions) is algorithmitcally determined with the help of "some general principle".(2016, 200)

You might take this as something of an admission that Wilson does not in fact have an account of relative fundamentality. It certainly reads that way to me, in any case. The puzzling thing about this is that Wilson writes frequently to the effect that her account details how the priority structure is fixed. For instance her response to Schaffer's attacks by way of foundationalism (considered above) is to

describe, "two ways in which priority might be fixed, on my account, in worlds with infinite chains of dependence" (2016, 197). There are many more cases of this kind of talk in her (Wilson, 2016).

And she *needs* to have at least something to say about how the fundamental along with the 'small-g' relations makes for a priority structure if her view is a rival to that of the grounding theorist. The solution to this apparent exegetical antinomy is that her account is something like the view that there isn't a totally general account to be found, and that her view alone respects this.

> what emerges from attention to metaphysical methodology is that relative fundamentality is a matter of suppositions/facts about what is fundamental and how the non-fundamental small-g depends on the non-fundamental, along with (not general principles, but) suppositions/facts about the natures of the non-fundamenta and how (via one or other small-g relation) the non-fundamenta stand to one another. So that my view does not entail or encode general principles of relative fundamentality is a feature, not a bug.(2016, 200)

I cannot see how this is an adequate reply to Schaffer. Certain general principles of relative fundamentality *must* be encoded in a theory which purports to characterize the world's priority structure. Within the constraint of providing certain general principles we might argue that more or less can or should be said about relative fundamentality, but there is no question that something must be said. Further, it seems clear that certain general principles should be common to all views. For instance, a view of relative fundamentality needs to say something about the transitivity of relative fundamentality. This is because any 'more X than' relation is going to be transitive, whether it characterizes fundamentality or anything else.

We can say more about the issue here, and this cuts to the core of the pluralist's

project. One of the reasons that Wilson cannot speak of general rules of priority is that 'small-g' grounding relations very plausibly run both ways. For instance, my body might be said to depend on my hand insofar as it's weight depends on the weight of my hand. But my hand might also be said to depend on my body insofar as it is a functionally specified entity (2014, 201). Given this, proposals like the following:

'small-g'→MFT   if x grounds y in some 'small-g' way then x is more fundamental than y.

are plainly non-starters. I think this is the primary reason that Wilson resists "uniformly applicable general principles". Wilson packages this as a problem for friends of Ground. If she is correct that a pluralistic view like hers is the only way of connecting priority to the rest of metaphysics, then maybe. If not, then so much the worse for the Wilsonite.

Outlining the Class

Wilson offers us an explanation of why the priority structure is given by certain relations as opposed to their inverses. For instance, if The One is fundamental then we know that priority does not flow through mereological fusion: it goes through its inverse![10]

But what seperates the 'small-g' grounding relations, the relations which are made special by their role in relating the fundamental to the non-fundamental, from the myriad other relations which might relate the fundamental to the less-fundamental? Why does priority flow through, say, parthood but not 'left-of'? For instance, suppose that our world is such that all fundamental things are

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[10]Given that fusions are commonly thought of as many-one, I am admittadly sloppy here.

related to the non-fundamental things through the 'older-than' relation: Every fundamental thing is older than every non-fundamental thing. Then, seemingly, Wilson's account would dub the 'older-than' relation a small-'g' grounding relation and then I would be rightfully seen as less fundamental than, say, the members of my orals board. Or if the only fundamental thing is God, and God bears the 'wiser-than' relation to every non-fundamental thing, then the same result would hold.

I say this because Wilson claims that the small-'g' metaphysical relations are those which hold between the fundamental and non-fundamental, and that the fundamentality between non-fundamental things is determined by such small-'g' relations. This is a problem for her insofar as (1) it results in a weird priority structure, and more importantly (2) it seems to admit grounding relations which don't strike me as transmitting priority.

Wilson can either accept the result or deny that the result holds. I think she should not accept it, since it is ridiculous on the face of it to suppose that those who are wiser or older or whatever are more fundamental. But if she rejects it then she needs to have some story about why some relations which relate the fundamental to the non-fundamental transmit priority while others do not that does not appeal to any primitive 'in-virtue-of' business. Given her affinity for standard metaphysical practice, she might say that only the relations which are generally taken to by relations of dependence like composition, determination, etc. can be small-'g' grounding relations, and the ways in which they relate the fundamental to the non-fundamental merely fix the direction that priority flows through them.

That dog don't hunt. The reason is just that the practices of metaphysicians

need to be justified in some way or other. That it is a live option whether parts are prior to wholes or wholes prior to parts but not a live option that wiser individuals are prior to the heedless amongst us (or the other way around!) presumably has a metaphysical, rather than social, underpinning.

I think Schaffer is on to this point, or something in the vicinity, when he writes in favor of thinking of the small-'g' relations as forming a genus of ground:

> without a genus notion one may be unable to *enumerate the species*. For instance, a theorist who refused the general notion of causation would have no clear way to enumerate her own "small-'c'" causal relations. . . the theorist who refused the general notion of grounding would have no clear way to enumerate her own preferred menu of "small-'g'" grounding relations. (2016a, 155)

1.3   In Conclusion

In this chapter we have considered arguments in favor of primitivism about the fundamental, and we have then considered how primitivism about the fundamental might make for an attractive view of priority structure. The result that I hope to urge is that existing arguments in favor of primitivism about the fundamental are not very convincing. As we have seen, it is clearly the case that fundamentality *can* be defined (relationally or otherwise). Further, the arguments provided by Wilson and Fine are not especially convincing.

My own normative arguments, that equating fundamentality with maximal reality and by analogy to Peano arithmetic, add novel considerations in favor of primitivism, but are far from decisive. Between the two I think the analogy to Peano arithmetic is the stronger, and I think it develops the intuitions of Wilson in particular in a compelling way. A stronger argument in favor of primitive funda-

mentality would be that the most parsimonious (or otherwise virtuous) adequate theory of metaphysical structure incorporates fundamentality as a primitive posit. We have not yet assessed rival theories, and as such such an argument cannot be ventured.

However, it can be seen that primitivism about the fundamental does not straightforwardly suggest a deflationary account of 'more-fundamental-than'. We saw that Wilson's account struggles in particular to make sense of why certain relations rather than others transmit priority. On the other hand, Fine opted for a kind of primitivism about 'more-fundamental-than', and ended with a theory which has the primary deficiency of not clearly mapping onto the garden-variety relations which we might take to figure into metaphysical priority. Importantly, this was not an issue of Fine's primitivism, but rather his monism about priority relations.

Thus I propose that there is reason to think that primitive fundamentality is not sufficient to characterize priority structure. Whether it is necessary will be considered in the next chapter.

Chapter 2

Super Added Force

We've considered two accounts of metaphysical dependence which start by taking fundamentality (or some similar notion) as primitive. Given absolute fundamentality, the goal was to characterize relative fundamentality in deflationary terms. The upshot was that primitive fundamentality did not seem adequate on its own to provide an account of priority, and thuswe have every reason to believe that an account of relative fundamentality is not going to come easily from mere primitivism absolute fundamentality. This was seen in the myriad difficulties of Jessica Wilson's account.

In this chapter we take up two possible routes forward. On the one hand, one might think that the correct way to proceed is to take ground as primitive and then define relative fundamentality in terms of it. The question then is how plausible the theory of ground is in the first place, and how plausible the connection between fundamentality and ground is in the second. On the other hand, one might respond to the apparently poor prospects for a reductive account by thinking that the correct way to proceed is to take relative fundamentality as primitive. The

question for such a view is how fundamentality then relates to ground or other generative relations, since as I'll argue an account of fundamentality has to relate to generativity in some way.

I begin this chapter by saying a few words about different theories of a primitive relation of ground and why some might be better than others. Then I'll describe how people have tried to cash out a notion of absolute fundamentality in terms of ground. I spend time with absolute fundamentality rather than relative fundamentality both because it illustrates the friend of ground's alternative to the theories in the prior chapter, and because very little work has been done to provide a plausible account of relative fundamentality in terms of ground.

I then speak to the second path, and distinguish between two sorts of primitivist theories of relative fundamentality and its connection to relations of generativity. With the two general avenues outlined I move on to one particular account of ground, relative fundamentality, and absolute fundamentality and consider its viability.

2.1   Theories of Ground

The theory of ground which I'll work with is Jonathan Schaffer's. But why pick Schaffer's? After all, there exist other accounts of primitive in-virtue-of relations which are supposed to at least partially characterize the priority structure of the world in the literature — notably those of Rosen (2010), Fine (2012), and Audi (2012).

I think all three views are interesting in their own right, and it should not be taken as an endorsement or condemnation of the various views that they don't get

their due here. Fine takes grounding to require a primitive notion of fundamental reality, and I've already spoken of his view in the prior chapter, so it would be inappropriate to revisit him here. Both Audi and Rosen could have been considered here, but they both take ground to be a relation amongst facts or propositions, and I prefer to think of dependence relations as concerning things.[11] Further, their formalisms for ground do not explicitly embed the role of generative relations (other than fact-grounding) in explaining why some things are more fundamental than others.[12]

Schaffer's newest work has the following virtue: the account he offers provides an explicit response to problems pointed out by Wilson in her (2014). People don't altogether agree as to the force of Wilson's (2014) critiques of grounding. Schaffer (2016a) has argued that at least parts of her critique must be taken seriously. I begin this chapter by explaining and defending his assessment. I think the upshot for the grounding theorist is that an account of ground which doesn't transparently relate to relations such as set formation, composition, determination, etc. is deficient. Schaffer (2016b) on the other hand has argued that existing theories like those of Rosen and Fine's (and indeed his own (2009)) conflate grounding with metaphysical explanation.

Wilson's argument is best seen as starting with the observation that mere grounding claims, like for instance the physicalist claim that the mental is grounded in the physical, are not the end of the story. They leave open, for instance, *how* the mental is grounded in the physical. And it is through appeal to a more specific

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[11]See Rosen (2010, 114) and Audi (2012, 686).

[12]This isn't to say that either of them are silent on the connection of ground to relations amongst things. Rosen for instance appeals to essences of things and natures of relations in the grounding of grounding claims (2010, 130). Audi also talks about the relation between 'in-virtue-of' facts and essences of things and natures of properties, but does not think that these necessarily figure in as the ground of various grounding facts (2012, 693-695).

relation that the further question is answered. But presumably it is because the
more specific relation obtains that the grounding claim is true. So grounding as it
is generally characterized is — at the very least — too coarse-grained to describe
metaphysical structure.

Wilson takes this to apply even to the paradigm cases of ground, like the often
suggested idea that conjunctions depend on their conjuncts:

$$P \wedge Q$$
$$|$$
$$P, Q$$

Of even these cases we can see that, "we have already gone beyond the mere
claim of Grounding, in that relata are specified in terms of the specific metaphys-
ical relation at issue [conjunction]" (2014, 550).

My worry about standard accounts of grounding is as follows. It is crucial
that grounding claims do in fact put one in the position to say more. If one says
that Baxter the Bergamasco is grounded in Nelly the Neutron, then one should be
prepared to say *something further*, for instance that Nelly is a part of Baxter or
whatever. On this Wilson is correct, and her challenge needs to be taken up. But
this places the burden on grounding theorists who think of ground as a primitive
to explain the connection between ground and e.g. composition.

This is complicated further if the connection between grounding and the plu-
rality of 'small-g' relations which figure into priority-structure is such that of some
'small-g' relation it is not always the case that its holding makes for ground to hold.
This would happen if for instance any of the 'small-g' relations hold in opposing
directions. Existing theories do not address this. Of course, one might suppose
that grounding is not asymmetric, but this is not generally done by practitioners

and it threatens the partial ordering of ground.

The title of this chapter is, like the last, somewhat in jest. I came across the phrase while reading Ted Sider's forthcoming *The Tools of Metaphysics and the Metaphysics of Science*. He uses it to characterize the view of ground as metaphysically fundamental.

2.2 Reducing Absolute Fundamentality to Ground

As far as we can tell, some primitive 'in virtue of' work is going to need to be done in order to explain how some things exist (obtain, etc.) in virtue of others. But if we are going to have to bring in a primitive relation anyway, why not just dispatch with primitive and absolute fundamentality altogether and try to work entirely in terms of a relation of ground?[13]

The virtues of this program are in the observation that explaining why some things exist (obtain, etc.) in virtue of others in terms of fundamentality is impossible without some additional story, but cashing out (at least absolute) fundamentality in terms of a primitive 'in-virtue-of' relation or relations is straightforward at least from a certain perspective. We need only point to a certain feature with respect to the relation(s) which make(s) for relative fundamentality. Two obvious definition-suggesting features jump out.

The first is that to be fundamental is to be independent: the fundamental things are all and only the things which are ungrounded. The second is that to be fundamental is to be part of a complete basis, where a complete basis is a collection of things which collectively ground all other things. To this latter suggestion we

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[13]I often speak of ground (or grounding like notions) as being a relation. This is done because I prefer to think of ground as a relation amongst things.

might adjoin a minimality constraint, though if infinitely descending chains of ground occur then there will not in general exist minimal complete bases. These two notions are very commonly mentioned if not as definitions of fundamentality then at least as essential properties of the fundamental.[14]

Depending on which features a world and the relations of metaphysical priority in it have it may be the case that the independent things are all and only the complete things. However the two notions can come apart extensionally in at least two ways. The first way they can come apart is if the relations of priority fail to exhibit something like transitivity:[15]


We see in the above figure that if transitivity does not hold of the relations of priority, then the independent things are just the node 1 while the complete minimal basis is the plurality of 1 and 2. If transitivity did hold then the notions would coinside. Thus, since friends of ground generally take grounding to be transitive, we might expect that from the perspective of the grounding theorist independence and completeness are a distinction without a difference. I think this is misguided for two reasons. The first is that even if transitivity holds, grounding

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[14]See Bennett (2017, 105-111) for a discussion of this.

[15]I say "something like" transitivity because partial building complicates the project of saying just what we mean when we assert that transitivity holds of some relation of priority. The argument being outlined is originally from Bennett (2017, 113-114).

must be terminating for the notions to coincide (Bennett, 2017, 114). Take the following structure of priority:
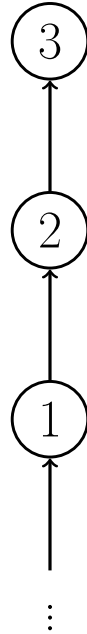
There exists no unbuilt entity, and thus nothing is independent. However, there *does* exist a complete basis: the plurality of all things in the world sans the vertex labeled 3 is one. Thus only views of priority relations in which it is part of the theory that (1) they exhibit transitivity, and (2) they are terminating could even begin to propose that completeness and independence are a distinction without a difference. Note further that whether a relation is terminating depends on the goings-on in its domain. Take for instance the predecessor relation.[16] Both the integers and the natural numbers are equipped with the notion of predecessor, and in both cases the notion is the same: the predecessor of a number is the closest number smaller than it. It's that number minus one. It's the thing to the left of that number on the number-line. However, for the natural numbers we all know

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[16]By which I mean the inverse of the successor relation.

that not everything has a predecessor: nothing precedes zero. In the integers on the other hand, the predecessor relation is non-terminating.

Thus it seems to me quirky in the first place to build termination into your conception of priority relations — regardless of whether you are a grounding theorist or part of some other relation(s)'s fan club. I have no problem with someone claiming that it is in fact the case that relations of priority terminate in our world, and it is precisely because I think it is a claim *about the world* that I consider it a faux pas to bake it into a theory of priority in general.

If one was a primitivist about fundamentality, and was attempting to characterize priority in terms of such a notion, then there would be no problem. But in this section we are concerned with those who have no such notion. Arguments for well-foundedness of priority relations will have to be waged in terms of worldly facts.

There is another reason to treat the notions as seperate even if one insists on maintaining that relations of priority have the features necessary to make them coincide extensionally: they are different reasons for being fundamental.[17] Is something fundamental because it is part of a complete (metaphysical) explanation of the world, or is it fundamental because it is not (metaphysically) explained by anything else? Even if, as I do not believe, independent things are necessarily part of the complete basis (and nothing else is), we presumably deserve an account of which property or properties make them so metaphysically special. I have shown that the properties are distinct in meaning, so it does a would be objector no good assert coextension in reply.

There may be vices to this project, but it seems to have at least a chance of

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[17]Bennett raises a similar point. See (2017, 111) for a detailed comparison of independence and completeness.

success. But what of characterizing *relative* fundamentality in terms of ground? Much less work has been done on that front. As Bennett writes,

> [T]he current literature is filled with discussions of grounding, ontological dependence, and the 'in virtue of' relation. But such discussions do not by themselves constitute an account of relative fundamentality. An account of relative fundamentality must say what it is for one thing to be more fundamental than, less fundamental than, or equifundamental with something else–and nothing of that form is automatically entailed by any theory of grounding. (2017, 138)

And the most straightforward accounts of relative fundamentality in terms of ground do not seem remotely plausible. For instance, to say that x is more fundamental than y if and only if x grounds y rules out that an atom in Nova Scotia might be more fundamental than a Polar Bear in the North Pole.[18] I do not sketch a more detailed account in this thesis, but I suspect that relative fundamentality is a trickier beast than absolute fundamentality.

2.3 Two Sorts of Primitivism

It is possible that there are so few accounts of relative fundamentality in terms of ground because relative fundamentality is taken as primitive by practitioners of ground. This is what Bennett seems to think, in any case:

> A [...] possibility is that relative fundamentality is an inexplicable primitive that cannot be characterized at all; there is nothing in virtue of which relations like *more fundamental than* obtain. This seems to be the view implicit in the literature—the received view that is typically neither articulated nor defended. (2017, 139)

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[18]Bennett also speaks to this issue. See (Bennett, 2017, 138).

In this section we map out two ways in which one might be a primitivist about relative fundamentality, and make some general claims as to the vices of each. The work in this section closely follows Chapter 6.2 of Bennett's (2017).

2.3.1   Extreme Primitivism

Extreme primitivism is the view that relative fundamentality is entirely divorced from generative relations. The idea is that whether φ is more fundamental than ψ is not only a primitive fact, but there is no connection whatsoever between that fact and any of the other relations which hold between φ and ψ. I do not consider any views which I would term extreme primitivism in this chapter, and I do not know if anyone seriously advocates for extreme primitivism.

The main reason that I neglect this view is that we in fact do connect claims of relative fundamentality to 'in-virtue-of' claims.[19] We saw in the prior section how intimately fundamentality talk and 'in-virtue-of' talk are — and it isn't just Fine and Wilson who speak that way. Questions of priority *just are* reasoned about by way of reasoning about generative relations. It may turn out that the right way of reasoning about relative fundamentality is by reasoning about ground, or it may be that the right way of reasoning about relative fundamentality is by reasoning about other generative relations. It may be that relative fundamentality can be made sense of by way of a primitive relation of ground, or it may be that it is best understood in terms of primitive fundamentality (as Wilson and Fine suggest). I myself do not think a primitive notion of fundamentality is of much help, but the point is just that relative fundamentality relates in some way to generation.

I further find it ridiculous to think that something could be more fundamental

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[19]Bennett goes into more detail on this point. See Bennett (2017, 141)

than something else, and yet exist (obtain, etc.) in terms of it. Grounding towards the fundamental is clearly possible if there is no relation between fundamentality and 'in-virtue-of' relations. No one who is a fan of fundamentality talk should accept such a possibility.

Finally, as Bennett points out (2017, 140), if extreme primitivism were true then there would be, or at least conceivably could be, worlds identical with respect to which things were in virtue of which things, but which differed with respect to which things (or indeed if any things) were fundamental. Such modal recombinability is absurd.[20]

2.3.2   Sophisticated Primitivism(s)

However, there are many ways of rejecting extreme primitivism. In the prior chapter we saw how Wilson attempted to make use of a primitive notion of fundamentality. In the next chapter I'll show how Bennett attempts to make use of something like social conventions. Between these two options there exists third. Bennett phrases sophisticated primitivism as any view under which "there is nothing in virtue of which the relative fundamentality facts obtain, and yet the relative fundamentality facts *are* systematically constrained by the building facts", where building facts can be seen just as facts about the generative relations we have gestured at throughout this thesis (2017, 143).

Bennett argues only that sophisticated primitivism is implausible, but does not claim that it is unworkable (Bennett, 2017, 144). I agree that there is something implausible about sophisticated primitivism in the abstract, and I think that the

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[20]I appreciate that absurdity does not entail falsity, but it seems to me that anyone who advocates for extreme primitivism simply does not grasp either the concept of relative fundamentality or the concept of generativity.

plausibility or implausibility of a particular view will be in what it says about the connection between fundamentality and generative relations.

2.4 Jonathan Schaffer's Multitudes

We lead into Schaffer's newest account of ground, and its relation to fundamentality, by detailing two exegetical questions. The first is what we should take the relationship between ground and fundamentality to be for him. The second is how we can square his objections to Wilson regarding infinitely descending chains of priority, considered in the last chapter, with his repeated claim that ground must be well-founded.

2.4.1 Jonathan Schaffer's Primitivism

I suspect that Schaffer is best viewed as a primitivist about relative fundamentality and seperately as a primitivist about ground. This would make him a certain kind of sophisticated primitivist — holding that the grounding facts line up with the relative fundamentality facts, but not because the relative fundamentality facts are reducible to the grounding facts. I take the following quote to provide evidence for this reading:

> Grounding—as I understand it—connects more to less fundamental entities and thereby imposes structure over what there is. Some entities are more fundamental than others (for instance, particles are more fundamental than chemicals, and chemicals are more fundamental than animals). Once one distinguishes more from less fundamental entities, it is natural to posit *a relation linking certain more fundamental entities to certain less fundamental entities which derive from them.* Grounding names this direct linkage. (2016a, 145)

It could be the case that he is best understood as thinking of relative fundamentality as best thought of as some kind of generalization of ground, but the above quote seems to suggest rather that ground is merely brought in to connect the more fundamental to the less fundamental. In this way, ground colors the already existing structure of relative fundamentality. Bennett has also attributed to Schaffer a kind of primitivism about relative fundamentality (2017, 139). She notes that in (Schaffer, 2010, 36) he writes that he is doubtful that relative fundamentality is amenable to analysis. However, in the passage she cites he also takes himself and others to have attempted to provide such an analysis by way of research on ground:

> Perhaps the notion of priority is amenable to further analysis (see Fine 2001; Lowe 2005; Schaffer 2009). I am doubtful but will remain neutral on that question here. (2010, 36)

So I do not think that the evidence that Bennett points to clearly establishes Schaffer as a primitivist in the sense of thinking of relative fundamentality as distinct from or irreducible to ground. It could be the case that he thinks of ground, a primitive 'in virtue of' relation as giving rise to a 'more fundamental than' relation in a manner such that the relative fundamentality of one thing is somehow reducible to the grounding structure.

If he does think that the relative fundamentality facts are primitive, then he has an odd tension in his view. This is because Schaffer has repeatedly *defined* absolute fundamentality in terms of ground. Take for instance Schaffer's (2009, 373):

> the key notions of *a fundamental entity* (a prior, primary, independent, ground 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

It would be very strange if relative fundamentality was primitive, while absolute fundamentality was reducible to features of grounding chains. Regardless, we will assent with Bennett that Schaffer is reasonably treated as taking ground and relative fundamentality as seperate primitive notions. Only Schaffer knows what is in his heart, and my interest is not in tearing his view down but rather in using his work as a concrete view with which to discuss relative fundamentality.

2.4.2   Jonathan Schaffer's Well-Foundedness

This short section presents a problem for Schaffer's stated commitment to well-foundedness. Schaffer is not alone in his belief that grounding must be well-founded, but his arguments seem to resist his stated commitment to a sort of reductionism about absolute fundamentality. Take for instance the following,

> Grounding must be well-founded because a grounded entity inherits its reality from its grounds, and where there is inheritance there must be a source. One cannot be rich merely by having a limitless sequence of debtors, each borrowing from the one before. There must actually be a *source* of money somewhere. Likewise something cannot be real merely by having a limitless sequence of ancestors, each claiming reality from its parents. There must be a source of reality somewhere. Just as wealth endlessly borrowed is never achieved, so reality endlessly dependent is never realized. (2016b, 95)

This passage on its own is a pretty standard argument in favor of foundationalism — it represents grounding as a relation which transfers "reality" from the absolutely 'real' to derivatively real. But what does Schaffer mean by 'real'? He

mustn't mean fundamental, since to be fundamental is just to be ungrounded. I take it that for Schaffer, the notion of being real must be a further primitive. I say this only because it cannot just mean fundamental — the fundamental things are only those which turn out to be ungrounded. And if it was the case that grounding only made sense in the case that there were fundamental things, but the fundamental things were just those things which turned out ungrounded, then it would seem that there is a vicious conceptual dependence in his theory.

Regardless of the relationship between the fundamental entities and the absolutely real entities on Schaffer's account, we can see from the above quote that for Schaffer relative fundamentality — insofar as either reducible to or extensionally in accordance with ground — makes sense only in the presence of an ungrounded base. This introduces a quandary. You'll recall that Schaffer has explicitly argued, as we saw in chapter 1, that it is a vice of Wilson's approach to priority, fundamentality, and related notions that she requires a fundamental level for her view to make sense. He says for instance,

> After all, when nothing is metaphysically fundamental, her [Wilson's] primitive gives no guidance. But the friend of relative fundamentality can still make sense of metaphysical structure in such scenarios, including the guiding idea that things are getting ever more fundamental without limit. (2016a, 158)

But it seems that, by his own lights, in order for anything to be grounded there must be a fundamental level. So I don't know what force he can attribute to his own arguments against Wilson. Further, it makes more sense for the Wilsonite to advocate for well-foundedness: she thinks of grounding relations as conferring priority from a (primitive) source. But Schaffer doesn't have such a source in his theory. Rather, he begins with the relation of transference as a primitive.

Before going on allow me to harken back to what I wrote earlier about well-foundedness according to the friend of primitive 'in-virtue-of' relations and foe of primitive absolute fundamentality. The friend of primitive 'in-virtue-of' relations might support foundationalism in two different ways. They might think that 'in-virtue-of' relations only make sense, are only coherent, or are otherwise only stipulable as terminating. I've mentioned my hostility towards such a view, and I take Schaffer's attack on Wilson to suggest agreement with me. Alternatively, they might think that 'in-virtue-of' relations make sense in the absence of a ground-floor, but that the world is not or cannot be such that 'in-virtue-of' relations are infinitely descending due to some other commitments about the nature of such relations. If one took held the latter view then it would make sense to criticise someone for building well-foundedness into their theory of what it is to be relatively fundamental, while also maintaining that well-foundedness must be true. Thus, if Schaffer is coming from the latter perspective, the tension is resolved — so charity considerations lead me to tentatively attribute it to him.

2.5   Structural Equation Models

With some sense of how Schaffer thinks of the relationship between ground and fundamentality, we turn to his latest development of ground. He thinks that ground is best thought of as a genus notion, and he introduces structural equation models as a means of arguing in favor of that view. The structural equation approach to grounding promises to accomodate a finer-grained structure than the mere 'on-off' formalisms provided by prior writers. Schaffer concedes that existing arguments for ground as a unifying concept of priority are wanting. However, if

the 'small-g' relations can be unified in a formal system, then grounding has a chance at success.

Structural equation models are, according to Schaffer at least, by far the most promising approach to causation. Why should we model ground with the same tools we use to model causation? Because causation shares many features with grounding, as Schaffer argues.

2.5.1 The Analogy to Causation

I don't intend to sketch the similarities in full here (indeed, one should see Schaffer's (2016b) for a full treatment), but Schaffer notes three similarities. In the first place, ground and causation seem similar with regards to their content. He writes,

> [B]oth relations feel—in an admittedly elusive way—like relations that may be aptly described in terms or "generation" or "production". . . it is apt to use causative verbs like 'making' in glossing grounding relations. Likewise it is apt to invoke general notions like "dependence" in glossing both causal and grounding relations. (2016b, 54)

Secondly, he claims that ground and causation share in their internal structures. In the first place, they are both standardly taken to be irreflexive, asymmetric, and transitive. Of course, the sheer number of irreflexive, asymmetric, and transitive relations renders such a similarity uninformative — but the structural similarities are deeper. For instance, there is a type/token distinction in both cases (2016b, 55). Here are two examples. For causation, we would say this exam caused anxiety — and also generally exams cause anxiety. For ground, we might say that disjunct grounds the disjunction — and also generally disjuncts ground

disjunctions. Ground and causation also apparently share in a compontent versus net distinction:

> For instance, birth control pills are a mixed cause of thrombosis: they contribute to thrombosis by increasing estrogen levels, but they also prevent thrombosis by preventing pregnancy. Overall it turns out that the net effect is preventative since the preventative component is stronger... Likewise, it is plausible—especially given neural interconnectivity—that a single chemical event in the brain such as the introduction of alcohol can (at a single fixed time) be a mixed ground of a given psychological state such as mood: the chemical might play a role in grounding multiple neural states, which might in turn play a role in grounding the person's psychological state. Overall it may turn out that one component is stronger... (2016b, 55-56)

The next way in which they share in internal structure is that both ground and causation can apparently exhibit overdetermination (2016b, 56). For instance, it might be the case that Kit and Spencer both break the tape at the finish line of a race at the same time — wherein either Kit or Spencer would have been sufficiently able to break the tape without the other one. Likewise that it is cloudy outside or 2019 might be grounded both in it being cloudy outside and, seperately, that it is 2019.

The third similarity between ground and causation is that they "seem similarly embedded in parallel surrounding networks of notions including law, necessity, conditionals, and—perhaps most interestingly of all—explanation" (2016b, 57). I won't unpack this comment in full, but it is worth noting that in distinguishing between ground and explanation Schaffer is deviating somewhat from other accounts of ground — for instance Fine's — which take ground not to *back* explanation but to actually *be* a form of explanation.

2.5.2 The Formalism

Supposing that we have given some motivation to the idea that ground might be similar enough to causation to be fruitfully treated in a similar manner, we move on to Schaffer's proposed account. Structural equation models for causation and structural equation models for ground are the same. The formalism, thus, can just be drawn from existing literature on causation. Here I present it.[21] There are three parts to a structural equation model. We begin with a signature S which is a triple,

$$S = \langle \mathcal{U}, \mathcal{V}, \mathcal{R} \rangle$$

where $\mathcal{U} = \{u_1, u_2, \ldots, u_n\}$ is a (finite) set of "exogenous" or independent variables, $\mathcal{V} = \{v_1, v_2, \ldots, v_n\}$ is a (finite) set of "endogenous" or dependent variables, and $\mathcal{R}$ is a function,

$$\mathcal{R} : \mathcal{U} \cup \mathcal{V} \to \mathcal{Q}$$

which sends each variable to some finite set $q \in \mathcal{Q}$ such that $|q| \geq 2$. This can be thought of as representing the system under study without encoding information as to what sorts of things have happened.

We then introduce the linkage $\mathcal{L}$,

$$\mathcal{L} = \langle \mathcal{S}, \mathcal{E} \rangle$$

where $\mathcal{E}$ is a set of structural equations, such that for each endogenous variables $v_i \in \mathcal{V}$, there exists an equation $e_j \in \mathcal{E}$ such that $e_j(v_i)$ is determined by the values

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[21]This section rehearses Schaffer's (2016b) with small notational changes in line with Halpern's (2000).

allotted to other variables, which we call v_i's parents. It is further the case that each e_j is acyclic — no variable is related to itself through parental ancestry. This encodes information about how the endogenous variables are affected by other variables.

Finally we define an assignment $\mathcal{M}$,

$$\mathcal{M} = \langle \mathcal{L}, \mathcal{A} \rangle$$

such that $\mathcal{A}$ is the smallest function mapping every $u \in \mathcal{U}$ to exactly one value of $\mathcal{R}(u)$.[22] An assignment is to be thought of as encoding what is going on with the endogenous variables.

Schaffer highlights the following features of structural equation models (2016b, 63):

- independent and dependent conditions are distinguished from the start,

- each condition is situated within a space of contrasts,

- each dependent condition is associated with a function evaluating it on the basis of the values of its parents (subject to global acyclicity constraints), and

- each independent condition is assigned a value.

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[22]That there exists a unique smallest function is taken for granted here. I have not myself seen a proof of such a fact. I suspect, but have not shown, that the existence of a unique smallest function is not needed — any function mapping every $u \in \mathcal{U}$ to exactly one value of $\mathcal{R}(u)$ ought to do. This is supported somewhat by (Halpern, 2000, 318).

2.5.3 Formalism, meet Ground

On its own, the formalism doesn't obviously say anything about the subject at hand. Let us run through one of Schaffer's examples to see if we can get some traction. Suppose that a shirt is red because it is maroon. Then we might construct a model as follows. Let,

$$S = \langle \{Determinate\}, \{Determinable\}, R \rangle$$

where R sends *Determinate* to $\{0, 1\}$ (corresponding, say, to the shirt's being red or blue) and likewise sends *Determinable* to $\{0, 1\}$ (corresponding, say, to the shirt's being maroon or navy). Then we need to construct a "bridge principle" or linkage L:

$$L = \langle S, E \rangle$$

Where E is $\{Determinable \leftarrow Determinate\}$ (thus E outputs a 0 for *Determinable* given a 0 for *Determinate* and 1 for *Determinable* given a 1 for *Determinate*).

Finally, we give an assignment,

$$M = \langle L, A \rangle$$

where A is the smallest function mapping each exogenous variable (in this case just *Determinate*) to a value (in this case either 1 for maroon or 0 for navy). Since we are considering a situation in which the shirt is maroon, we use the function,

$$\{(Determinate, 1)\}$$

Given a structural equation model, Schaffer claims that it can be determined whether x depends on y through the following test (2016b, 74):

Counterfactual dependence test for grounding: If X and Y are binary variables, there is a direct X → Y path, and no other distinct path to Y, then: X = x is a token *ground* of Y = y if and only if X = x, Y = y, and if X ≠ x then Y ≠ y.

In slogan form, this just says "wiggle the ground, and the grounded wiggles" and its application shows that the provided model captures the grounding of the shirt's being red in the shirt's being maroon by encoding structural facts about determination as well as the worldly state of the shirt in fact being maroon. Neat!

2.5.4   The Problems

The structural equation model has at least some virtues over a mere 'on-off' formalism of ground without any connection to other relations. Indeed, the structural equation formalism wraps up various 'small-g' metaphysical relations in a transparent way. Schaffer's formalism is underpinned by the idea that the connection of ground is specified by a particular function and it thus renders claims of ground as having a kind of internal structure.

However the account faces a number of objections. I'll consider three. The first, pressed by Koslicki (2016, 106) and bolstered by Wilson (2016, 184), is that the formalism doesn't yield the right sorts of results once all of the relevant contrasts are considered. Structural equation models rely on the entities designated by the dependent variables being counterfactually dependent on the entities designated by the independent variables. But this is not always the case in instances of

ground. For instance in the above case with the shirt we did not represent the fact that there are other ways for the shirt to be red. And if those are added to the model, then the model provides the wrong results.

The second, attributable to Wilson (2016, 180-183), is that even if structural equation models worked they would support a deflationary account of ground in terms of 'small-g' relations for Occamist reasons. I believe that this criticism is misguided (and that parsimony is on Schaffer's side), but the discussion brings out interesting considerations in the debate between pluralists and monists.

The third issue is my own, and it is that structural equation models apparently cannot make sense of infinitely descending chains of ground. This isn't to say that foundationalism is wrong, per se, but that one of the reasons for starting with a relation or relations of priority in one's theory is that foundationalism is taken to be problematic as part of an account of priority. This is at least what Schaffer uses as a bludgeon against Wilson's view, so it is surprising that his own account demands it *in order to make sense of priority.*

Counterfactual Dependence

We noted in the case of the shirt being red in virtue of being maroon that the test for ground on the structural equation model framework made use of the counterfactual dependence of the grounded on the ground. But the grounded does not always depend on its ground. Indeed it is not clear that the grounded even *typically* depends on its ground. For instance, consider the case of the shirt being red in virtue of it being maroon. Of this case, Wilson notes:

> On the face of it, there is no counterfactual dependence in this case; for both intuitively and on every similarity-based account of counterfactuals (i.e., on pretty much every live account), the counterfactual "if this

shirt weren't maroon, it wouldn't be red" is false, since in the closest
worlds where the shirt isn't maroon, it is some other determinate of
red. (2016, 186)

On Wilson's view, then, Schaffer has failed to aptly model the scenario. And
it does seem as though the model that we provided was juvenile in some ways.
For instance, its clear that in our world at least shirts may be more than maroon
or navy. But once we add in other determinates of red to the model to fix this
oversight, it no longer looks as if the Counterfactual test, or anything resembling
it, is going to correctly identify the grounding. This is Koslicki's observation:

> There is now reason to doubt whether [...] the model at hand actually
> encodes "how the shirt's determinate shade sets its determinable color",
> as Schaffer claims in the above cited remark. Given that *Maroon*'s
> being set to 0 leaves open, for example, whether *Crimson* should be set
> to 1 in the scenario in question... this result presents a counterexample
> to Schaffer's slogan, "wiggle the ground, and the grounded wiggles".
> (2016, 107)

As Wilson points out, this is but one instance of many paradigm cases of
ground which are not correctly modeled by structural equation models (2016,
191). Such a failure is on its own sufficient reason to reject (1) defining absolute
fundamentality in terms of ground (as Schaffer outlines it), and (2) relating relative
fundamentality to ground in any way — whether that be as a reduction or mere
correspondence.

Parsimony

Does formal unity provide a strong reason to posit a unified concept? Schaffer
thinks it does.

> It seems to me that the best way to decide when to be a monist, nihilist, or a pluralist for a given concept is to construct the best formalism one can for the concept. If there is no meaningful concept, this should show up in a lack of any clear formalism, and if there are many, this should show up in a need for a formal distinction. But if there winds up with a clear and precise formalism that embeds the concept in a unified way, then this is a good sign that there is a single unified concept. (2016a, 153)

Wilson has argued that Schaffer is wrong on this count. She claims that Occam's razor guides us in minimizing our ontology as much as possible, and thus the formal unification of small-'g' relations by way of structural equation models (even if successful) is to be taken in deflationary terms. Indeed, her claim is that an account of grounding which renders ground as a function of small-'g' relations is evidence of a deflationary account of ground:

> given Ockham's razor, if there is a strong (albeit defeasible) presumption in the vicinity of formal or other unity, it is in favor of deflationary rather than inflationary accounts of such unity. (2016, 183)

The idea being if ground *can be* seen as boiling down to a generalization of patterns of other relations, then it should be. I grant that there are Occamist considerations in favor of deflationary accounts when possible. Thus I agree that all things being equal, formal unity is not an argument in favor of a unified concept. However, sometimes unified concepts are desirable on their own terms, and formal unity makes them more tenable. In this case formal unity allows Schaffer to conceive of many of what Wilson would call small small-'g' relations as species of ground, and this provides a solves a key problem in pluralistic accounts: he is able to easily account for *why* they make for generativity. The primitivist about ground is able to say that it is just a primitive fact that if a grounds b then b is

in virtue of a, and adding in small-'g' relations as species of ground illuminatingly connects the generic notion of ground to the small-'g' relations.[23] This solves the problem that I identified in the last chapter that the pluralist has no obvious way of explaining *why* certain relations make for priority while others do not. This is a strong, though far from decisive, reason for positing ground.

Fundamentality

Recall that we distinguished between the view that relative fundamentality or ground only make sense in the context of a fundamental base and the view that while it makes sense to speak of generative relations or priority relations in the absence of a fundamental base it is not actually the case that the world is or can be like that. We attributed to Schaffer the latter view, in order to make sense of his criticisms of Wilson. In this section I argue that structural equation models are not well-suited to characterize infinite chains of dependence, and that thus Schaffer's own account falls to the same criticisms he levels against Wilson. This is because structural equation models entail that for ground to even make sense, there must be fundamental things — which are taken to be the exogenous variables.

That the endogenous and exogenous variables are each contained within finite sets in the provided formalism is no issue, since that requirement can be relaxed.[24] But, structural equation models when applied to ground treat the exogenous variables as fundamental. This is because the exogenous variables are, at least from the perspective of the model, determined by factors outside of it.

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[23]It should be noted that primitivism about ground is not the only way to unify the small-'g' relations, but it is *one* way.

[24]See (Halpern, 2000) for the formal details on such a relaxation.

It should be noted that he could provide an account wherein he uses an infinite number of structural equation models to characterize dependence. For instance, if he was trying to characterize a non-positive integer-like structure where each number was dependent on the number before it, and he had at his disposal the predecessor relation, then he could make use of an infinite number of structural equation models where each one describes the dependence of a number on its predecessor. This entails that in worlds of infinite descent of priority there exists no single structural equation model which is sufficient to characterize the priority structure. This isn't fatal to the view, but it seems at the very least a defect. We should hope that a single formalism will be able to describe the world in one breath.

2.6 The Upshot

I've shown that Schaffer's particular account of ground is far from satisfactory. It fails to make sense of infinite chains of dependence and it fails to provide the intuitively correct results in cases of preemption. I sum up the chapter by discussing some general lessons about sophisticated primitivism regarding relative fundamentality on the one hand and monism about generative relations on the other.

Regarding sophisticated primitivism, it seems outright mysterious that one would define absolute fundamentality in terms of ground but not relative fundamentality. Surely whichever motivations there were for defining absolute fundamentality in terms of a primitive 'in-virtue-of' relation, those same motivations apply to relative fundamentality. Further, that grounding facts are constrained

by fundamentality facts, or vice versa, is extremely hard to make sense of if there is not some kind of reduction of one in terms of the other. The claim, if one really does advocate for (sophisticated) primitivism about relative fundamentality is that somehow the grounding structure climbs up the relative fundamentality structure, but seemingly nothing more can be said.

Regarding ground, I don't think we have come down on any especially firm soil, but I take the failure of Schaffer's particular account to at least illuminate the challenge of wrapping up a bunch of relations into one in the way he proposes. This is not to say that it isn't possible to give a genus account of ground, but it is to say that the task is challenging — and we stumbled upon several ways it can fail. Of course, if one was to reduce relative fundamentality to patterns of ground, then the account of ground would need to, well, work.

Chapter 3

Building

Given the apparent difficulties of connecting ground to various heterogeneous relations by way of a species notion, as Schaffer does, we turn to the suggestion that it is best to characterize priority in terms of relations which each make for dependence without subsuming them under a single notion. In the absence of ground as a primitive 'in-virtue-of' relation, a pluralist account of priority needs to specify the conditions under and ways in which a relation might work as a grounding relation. In this chapter I consider Karen Bennett's view as developed in her 2016 book *Making Things Up*.

Bennett's view is similar to Jessica Wilson's insofar as she is a pluralist, but where Wilson thinks the relations of priority are picked out by their role in connecting the fundamental to the non-fundamental Bennett defines fundamentality in relational terms (and indeed argues against the necessity of well-foundedness of the 'more-fundamental-than' relation). Bennett's view also parts from Schaffer's in that she does not think of relations of priority as being part of a species of ground. Rather, she outlines a class of relations through a number of necessary

and sufficient conditions and subsequently argues that both relative and absolute fundamentality are to be understood in terms of their extensions. On a formal level we might represent the priority structure according to a grounding theorist as a directed tree. We should then describe Bennett's view as a directed multi-tree, where edges are labeled with particular relations.

In addition to the particular view of priority which Bennett favors, she provides illuminating discussion of various choice-points in the development of such a theory which together map a family of related but non-identical views. In my exposition I am unfortunately unable to canvas all of the rejected options.

Bennett's project is admirable for many reasons, but principal amongst them is that she attempts to give an account of metaphysical priority and fundamentality entirely in terms of many of the relations which metaphysicians already use. She terms the relations which she focuses on 'building relations'.

This chapter contains at least two and possibly three issues for Bennett's view. The first is that one of the distinguishing features of building relations, that they license 'in virtue of claims' is hard to justify without appeal to ground, but her view doesn't easily accomodate ground. This is by far the largest problem with her account, and I spend a majority of the space of the chapter exploring it. It is also a problem for deflationary pluralist views in general. For all the problems of ground vis a vis incorporating particular relations into the provided metaphysical explanation, there is no issue explaining priority.

The second is that the connection between building and fundamentality that would have to hold for her view to be a theory of *fundamentality* is not strong enough. In particular, I argue against her claim that the holding of certain of the relations in her class of relations of priority entails the truth of more-fundamental-

than claims. Technically, she defines 'more-fundamental-than' in terms of patterns of her preferred relations, so I argue that such a definition entails that something can be more fundamental than itself on her definition.

The third is that Bennett's view fails a certain standard of theory-neutrality. This is because her view entails the incoherence of generalism as posed by Dasgupta. This is perhaps not actually a problem for Bennett. Indeed, it may just be that generalism really is incoherent. However, one would have thought that generalism, the thesis that only properties are fundamental, was a live first-order view. I leave it to the reader to decide between generalism and the building view of fundamentality.

3.1   Building

Some of Bennett's so-called building relations are the same as the small-'g' grounding relations discussed by Jessica Wilson in her 2014 paper "No Work For a Theory of Ground". She has in mind relations such as proper composition, set formation, realization, and ground (construed as a relation between facts). Bennett departs with Wilson in that, as we have seen, Wilson locates fundamentality as a primitive fact about certain things in the world.[25] Bennett on the other hand provides a reductive account which locates the fundamental objects as those which have certain properties with respect to the class of building relations.

The relations which form the beginning of her inquiry have at least two significant types of differences. They differ first of all with respect to the sorts of relata they take. For instance we might imagine that proper composition holds

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[25]And in that she thinks of fact-grounding as being a particular generative relation, where Wilson denies this (Bennett, 2017, 12).

between objects whereas ground holds between facts. They differ also with respect to whether they unify — that is, whether they wrap up a multitude of things into one thing. Composition for instance relates many things to one, whereas ground does not do so characteristically.

Given at least these significant differences we might wonder to what degree they exhibit a sort of unity. Bennett characterizes the class of building relations in terms of three properties.

Directed

Bennett has in mind that building relations are (or in fact *ought to be seen as*) antisymmetric and irreflexive. This is to say that they look like this:
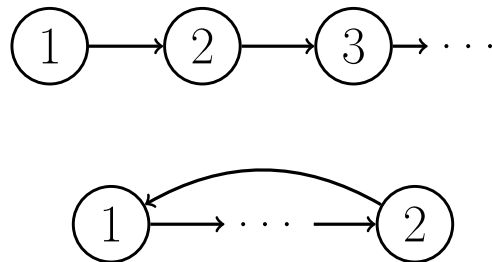
Rather than like either of these:
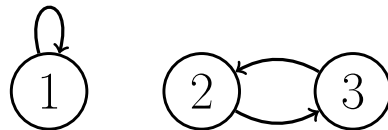
Necessitating

There several ways in which a relation could be necessitating. Bennett gives a detailed discussion of four distinct ways in *Making Things Up*. Here I consider just the two which she entertains most seriously. Of course other forms of necessitation are consistent with being a friend of the building view of fundamentality, but little

of my qualms with building views rests on the particularities of necessitation so I don't exhaust all possible options.

Building Necessitarianism   We follow Bennett in referring to any view which endorses the following principle a form of building necessitarianism (Bennett, 2017, 52):

(N) For all x and y, and all building relations B, if x fully Bs y, there is some z ($\neq y$) such that necessarily, $z \to y$.

The question for the friend of building necessitarianism is what z is. There are two obvious choices:

N_1 For all x and y and all building relations B, if x fully Bs y then necessarily if x then y.

N_2 Let C be some to-be-specified set of background circumstances that includes neither y nor anything that fully builds y. For all x and y and all building relations B, if x fully B's y then necessarily if x and C then y.

Between the two of these it is not altogether clear which should be preferred. Bennett herself prefers N_2, but insists that nothing important hangs on the choice (2017, 54). As she sees it, it is merely a matter of bookkeeping, and the preference for N_2 is something like my preference for chocolate ice cream over vanilla. As Bennett points out, the building bases under N_1 will be unintuitive, since they will presumably include background conditions which we wouldn't normally make reference to in 'in virtue of talk'.[26] On the other hand N_2 entails that builders only

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[26] Bennett notes that φ being taller than ψ is not true just in virtue of the heights of φ and ψ but also the curvature of spacetime (2017, 53).

build when certain background conditions are met, which might be thought of as too weak a connection between builder and built for some.[27]

Generative

The work that building relations are supposed to do is connect more and less fundamental entities. We want to be able to say that Ernie the electron is more fundamental than Butters the Bichon Frise (roughly) because some building relation holds between Ernie and Butters. The class of relations we have described thus far contains all directed relations which necessitate in the way outlined in BN_2. Not all relations in this class plausibly do the role which builders have in mind. For instance, the inverse relation of the relation of set membership, which we ordinarily take to hold between a set S and a thing x just in case $x \in S$, is (in well-founded set theories) directed, and according to both N_1 and N_2 necessitating, but it does not seem to be the case that sets are more fundamental than their members.[28] Rather, it would seem to be the case that members of a set are more fundamental than the set.

Thus another condition is required of the building relation:

(G): For all building relations B, and all x and y, x's B-ing y makes true certain explanatory and generative claims. For example if a builds b then b exists, obtains, is instantiated,... because a does, b exists, obtains, is instantiated in virtue of a, a make b exist, obtain, be instantiated..., and so forth (2017, 58) .

You may be reading this as saying that building relations have the metaphysical super-powers that we sometimes envoke when we talk about ground. Don't.

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[27]Bennett for instance attributes to David Armstrong the corresponding view for truth-making: "a truth-maker-in-the-circumstances is no truth-maker at all" (2017, 54).

[28]Sets necessitate their members because sets *just are* collections of their members. It is not possible for a set to exist at some world while its members do not.

Bennett means for this to be a requirement on our patterns of correct speech (and nothing more!):

> I have formulated (G) in terms of what we can correctly *say*. My claim is that building licenses certain statements — that if a building relation obtains, we are allowed to start talking in a certain way. That is all. (2017, 59)

I confess that I don't quite see how to interpret (G) such that it does not state that building relations explain and generate, since it seems that explanatory and generative claims true if and only if explanation and generation are happening, but I set this worry aside until...

3.2   Concerns about Generativity

now.

Bennett describes herself as a deflationist about both absolute and relative fundamentality. Ostensibly an adoption of her framework is supposed to make notoriously opaque fundamentality talk if not clear then clearer than the alternatives. With the resemblance class of building relations specified I now turn to my first objection: the generativity of relations in the class is just as opaque as any fundamentality talk.

As I've mentioned, Bennett intends for generativity to be sensitive to the ways we may speak. Thus, there is a further question of what underpins our correct speech. Bennett frames this as, if not a virtue, at least not a vice.

> (G) is compatible with a range of quite different understandings of what underpins or explains it. On one extreme is the claim that whenever a building relation obtains: a primitive *in virtue of* relation or

something along those lines…on the other extreme is the claim that
there is no such further relation; there is nothing but the generative
talk. Why do building relations license or make true that kind of talk?
They just do, as a matter of convention…The neutral (G), formulated
in terms of the legitimacy of certain ways of talking, is sufficient on its
own to [circumscribe the class of relations]. (2017, 59)

Insofar as Bennnett's goal is to simply describe a class of relations there is
nothing wrong with (G). From a level of *description* (G) describes an object in
the very same way as say $\{a, b \in \mathbb{R} \mid a^2 + b^2 = 1\}$ describes the unit sphere
in $\mathbb{R}^2$. Further, in virtue of what relations license 'in virtue of' claims has no
bearing on which particular relations license 'in virtue of' claims. However, if we
are to take building relations as the foundation of our notion of fundamentality,
what underpins (G) is of central importance. Bennett's project is not just to
define a class of relations, it is urge the view that what it is for some things to be
fundamental is for them to have a certain property with respect to the relations
in this class. Thus it matters *why* relations license 'in virtue of' locutions.

In particular it matters that the underpinning of generativity is not something
as mysterious as primitive fundamentality. This matters because Bennett takes
herself to be a deflationist about the fundamental. Thus it does her, at the
very least, a disservice to appeal to primitive fundamentality in her account.
One cannot define fundamentality in terms of building if one has already defined
building in terms of fundamentality.

3.2.1   Primitive *In Virtue Of* Relation

Looking at the supposed spectrum of explanations of (G) provided above, I pro-
pose we take the two extremes in turn. First I will consider the proposal that a

primitive *in virtue of* relation V holds whenever a generative relation R holds, and is the *reason* that R is generative. V is either a building relation or it isn't. If V is not a building relation, then that is because it is either not necessitating or not directed, since it is generative *ex hypothesi*. It is not easy to reason about such a primitive relation except through cases of 'in virtue of' talk which seem warranted — and this is not an altogether good method of inquiry since one has no real reason to expect that their intuitions grasp onto the behavior of such a relation. On the other hand, such a method seems to me to be the only game in town, so I propose we table whatever anxieties we might have.

Bennett does not propose that V is or is not a building relation. However she does suggest that at least some people will use the term 'grounding' for V, and that, "on such a view, grounding isn't one building relation among others; it's in a certain sense in common to all the various building relations." She rejects V firstly because she thinks it is most naturally paired with generalist monism, the view that there is one most general building relation of which the others are flavors. This leads me to believe that she thinks V is most likely a building relation. It is worth considering how this might cause chaos.

My plan is to first show that the extension of the union of all building relations (excluding V's if V is a building relation) is a subset of the extension of V. One quick proof gets us to the result.

First we prove that the extension of any particular building relation will be a subset of the extension of V.

Proof. Assume towards a contradiction that some relation B is such that the extension of B is not a subset of the extension of V. Then suppose that B is a building relation. Since the extension of B is not a subset of the extension of

V, some element $(\phi, \psi) \in EXT(B)$ is such that $(\phi, \psi) \notin EXT(V)$. But then, assuming that being related by V is the *only* way in which ψ could be in virtue of ϕ, it is not the case that ψ is in virtue of ϕ. Thus one is not licensed to make 'in virtue of' claims regarding ϕ and ψ. Thus B does not satisfy (G). Thus B is not a building relation. This is a contradiction, and thus we deduce that the extension of any building relation is a subset of the extension of V. $\square$

This implies that the union of the extensions of all building relations is a subset of the extension of V and is thus reason to worry about appealing to V to underpin the generativity of building relations, since it undermines the role of building relations in explaining the 'in-virtue-of' structure of the world.

Suppose that the extension of V is actually identical to the union of the extensions of all building relations. Then, given that the building relations are generative simply because V holds when they do, it seems like the 'in-virtue-of' structure of the world is rightfully mapped by V. Of course V might not be a building relation — it might be the case for instance that it fails to be directed (given that building relations might collectively form cycles). But that just means that the 'in virtue of' structure of the world is not directed. On Bennett's view there will be some reduction of relative and absolute fundamentality to the 'in virtue of' facts. And V is sufficient to describe the 'in virtue of' structure of the world. Thus, if one thinks that the structure of relative fundamentality is to be seen through the lense of the 'in virtue of' structure, then why bring in any (other) building relations? And even if the priority structure is not a simple inverse of the in-virtue-of structure it may be reconstructible from it.

One answer is that the building relations are together also (let us suppose) sufficient to describe the priority structure of the world, and they have the benefit

of being more specific about *the ways in which* things are prior to others. Thus there is still important work for building relations to do. The friend of such a reply faces the objection that the account Bennett is advocating for makes no connection between V and (other) building relations beyond the claim that whenever a building relation holds V also holds (and vice versa). Thus, from the claim that a exists, obtains, etc. in virtue of b, it follows only that *some* building relation holds between a and b. But we are not thereby in a position to know which one, and thus it seems Wilson's argument that ground is not well integrated into the rest of metaphysics is equally apt with regards to V. Unlike Schaffer's account, which takes the relations Bennett terms builders as members of the genus of the grounding relation, Bennett's account struggles to explain in what way the building relations relate to the 'in-virtue-of' work of V. Presumably there is some story to be told, but no one has successfully told it, and as we have seen in this thesis it is not straightforward to do so.

There is a second worry about V: what if its extension is actually strictly greater than the union of the extensions of all (other) building relations? This would be the case if there was some thing which existed, (obtained, etc.) in virtue of something something else, but such that nothing more could be said. Wilson has argued that there is no such case, but suppose for a moment that there *is* such a case. Then it is the case that not only is V sufficient to describe the 'in virtue of' structure of the world, but it is actually necessary to describe the 'in virtue of' structure of the world.

The above reply might be reprised: the building relations tell us the ways in which priority manifests in particular cases. However an even sharper response awaits it. If V holds when no (other) building relation holds, then there are

at least some cases in which things are just primitively more fundamental than others. But then the near-co-extension of V with the (other) building relations is no longer a compelling reason for thinking they are doing work to fix the priority structure. It would seem if there are cases where some thing w is just primitively in virtue of some thing u, then the task of telling a story which generally accounts for fundamentality in terms of building relations is intractible.

Is there some reason to think that things are ever grounded with no more specific relation to do the work? For some cases of ground, there is a candidate small-'g' relation which might underpin it. Take for instance the claim that P grounds $P \vee Q$. Perhaps, as Wilson has suggested, there is a 'disjunction' small-'g' grounding relation. But for other cases, I suspect that many relations together underpin a case of dependence, but no individual relation (other than V, perhaps) is sufficient to establish the grounding claim. This might be the case for instance of a war existing in virtue in various goings-ons regarding e.g. people. One might think that there are many ways that such an abstract object is dependent on lower level goings-on, and that it is only through a confluence of relations that the war is rightfully said to be built.

This has all been to say that I think Bennett is correct that underpinning generativity with a primitive in-virtue-of relation demotivates the pluralistic and reductionist account of priority that Bennett is developing. However, it has not been shown that V cannot make sense of priority — just that it does not fit well into Bennett's picture. Thus, it should be rejected just in case she is not stuck with it. In other words, it should be rejected only if there is an attractive alternative.

I do not believe Bennett's other suggestion is such an alternative. The story

would go as follows. Suppose that B is a building relation and x and y are two things and xBy. Since xBy, x generates y. This is to say that *one is licensed to say that* y exists (obtains, is instantiated...) because x does. One is correct in making various 'in virtue of' claims about x and y — nothing more. This is on the face of it a more attractive avenue of cacheing out (G) than the prior alternative since it doesn't bring in any mysterious relations to do the labor rightfully done by the respective building relations, but on reflection one can see that it doesn't bring *anything* in to do the work. To clarify, the suggestion is not that generativity implies that in y in fact exists (obtains, is instantiated...) because x does. It just says we talk that way, *as a matter of convention.*

This suggestion is not metaphysical in the appropriate way, since not only is there no suggestion that our patterns of speech correspond to the metaphysical goings-on — there is suggestion to the contrary that they are merely conventional. It is implausible that (G) thought of this way is likely to work out as part of the basis of a unified class of metaphysically interesting (special, important,...) relations. For those who are not content to leave it there, I come with two arguments.

I first offer a brief argument that if (G) is in terms of conventionally-licensed speech then a relation which is a building relation in some community could see its inverse being a building relation in another. Take the relation of set formation, which holds between some xs and S just in case the xs come together to form x. This relation is, for well founded set theories, directed. As I claimed earlier, it is also necessitating. Whenever the members of a set exist, so does the set. Given the notion of (G) under consideration I claim it is also generative: we say all the time that the singleton of Socrates exists in virtue of Socrates (and not the other way around!). Regardless of whether we in fact falk that way, though, we *could.*

In a world in which we do (which, again, I think is our own) set membership is a building relation. Recall further that Bennett herself cites set formation as a building relation.

But if it is in virtue of nothing but *convention* that we may speak that way, then in a peculiar world (or time, or location) in which our conventions differ such that the inverse of the set membership relation licenses 'in virtue of' locutions, then it will be the inverse which is a building relation. This is because the inverse of a directed relation is always directed, and because the inverse of set formation is necessitating: if a set exists then so do its members.

And this argument can be run whenever a building relation is such that its inverse is necessitating and directed. Thus, the class of building relations would have to be indexed to times and places at the very least. But presumably the priority structure of the world is not indexed in this way. This makes building relations unsuitable to do any heavy duty metaphysical lifting.

I next offer the following: suppose there are no thinking things around in some world, as was presumably the case in ours at some point. Did the world have metaphysical structure of the kind that this thesis concerns? One would hope so! But if (G) is interpreted in terms of the conventions of agents, and building relations are the guide to that structure, then one must say no. This is just because conventions exist with respect to communities. Thus there will not be any generative relations.

The prior two arguments show that underpinning generativity with something as weak as social convention threatens the unity of the class. If the class is unified only in communities of agents with general agreement as to which sorts of 'in virtue of' claims are just, then the class isn't really unified. Thus it seems to

me that the convention approach, which Bennett is sympathetic to but does not explicitly endorse, is a nonstarter.

As far as I can tell, things stand as follows. Using a primitive 'in-virtue-of' relation to explain the generativity of building relations undermines the plausibility of the claim that metaphysical structure is rightly viewed in terms of (other) building relations, and relying on the conventions of agents fails to provide the metaphysical oomph needed to glue the class together. In the absence of some better option, it seems that the building theorist is best off advocating for the existence of a primitive 'in virtue of' relation, but such a move threatens both how pluralistic and how deflationary the account is.

A suggestion   Bennett does, however, refer to the two suggestions as forming the extremes of a spectrum. It isn't altogether clear to me what she means by this, since it's hard to imagine exactly what views mark the middle-ground between the presented options. However, looking over the problems we've found, I can't help but develop a suggestion for the would-be fan of building. We might say that the generativity of building relations is that they *all* primitively make the appropriate in-virtue-of claims true. This is in some ways more radical than the positing of some primitive grounding relation V, but it is pluralistic in the relevant ways. This view, while not suggested by Bennett, is to my mind a sane way of caching out (G). On this picture every building relation licenses 'in virtue of' claims because they all have the magical powers the grounding relation was brought in to bestow unto them. In other words, the building relations (if there be any) are just special.

However if it is just a primitive fact that all the building relations do the work of ground, then two things happen. The first is that the view looks somewhat

unparsimonious. Where the grounding theorist like Schaffer makes use of one primitive in explaining why some things are more fundamental than others, the builder apparently makes use of many. The second is that it no longer makes a whole lot of sense why Bennett goes through all the trouble of outlining the class in terms of various features, when pretty clearly fundamentality should be understood in terms of whichever relations primitively make for priority. There is of course some question regarding how to develop the details — in particular it may be the case that multiple building relations run in opposite directions, and thus one would need to say something about how to adjudicate in those cases.

3.3   Against B→MFT

Let's get our bearings. We have described a class of relations obeying the following three properties:

i. directed, in that they are antisymmetric and irreflexive,

ii. necessitating, builders (possibly plus background conditions) necessitate what they build, and

iii. generative, in that the builders generate or produce what they build. Built entities exist or obtain because that which builds them does. Building licenses 'in virtue of' talk.

But classes are cheap and you are reading a thesis which is trying to pin down relative and absolute fundamentality. So presumably fundamentality should be coming on the scene soon. Well, here it is.

There are two distinct accounts that need to be given — that of absolute fundamentality and that of relative fundamentality. Bennett endorses a form of independence for absolute fundamentality. In particular she endorses the claim that to be fundamental is to be unbuilt by any building relation (2017, 134). Such a notion is just the pluralist's version of what Schaffer endorses. The account of relative fundamentality is a bit thornier. The friend of ground has things pretty easy, since they can just assert that ground never exhibits cycles. What matters for my purposes is just that Bennett endorses the following principle:

B→MFT: If x builds y then x is more fundamental than y

This is not an account of relative fundamentality, but it must be plausible if an account is to exist. I'll argue here that the specification of building Bennett provides allows for patterns of building which are incompatible with B→MFT. There exist solutions to this problem, and I sketch them at the end of the section.

My argument is that building relations can and do exhibit cycles. Bennett herself thinks that the union of the extensions of multiple building relations can form cycles — indeed she thinks they can even exhbit antisymmetry — which is why she rejects monism about building relations. For example, suppose that friends of Schaffer-style Monism are correct. Then cycles of building relations obtain (Bennett, 2017, 26). This is because The One is made up, by the parthood relation, of its parts. However, each thing amongst its parts is grounded in the Whole.[29] Note further that due to the transitivity of both ground and parthood, there are many cycles of only two elements:

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[29]Recall that we are thinking of ground as a relation amongst things.

The One

G   P

You the Reader
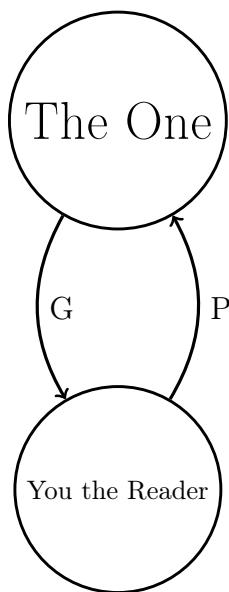
I go further: I think that building relations exhibit cycles themselves. The burden on me is straightforward here: I'll provide you with a clear case of a cycle in a building relation. For dialectical reasons, however, I argue for this position twice. First I'll provide a case of a building relation *in our world*. After defending the legitimacy of the case against three anticipated objections I'll argue generally that none of the three principles provided preclude cycles, and that any non-transitive building relation which relates the same sorts of things *might for all we know* have cycles.

One of the canonical examples provided by Bennett of a building relation is that of set formation. Surely she had in mind set formation amongst well-founded set theories. With some small modifications to the axioms of our set theory, we can generate an environment in which set formation forms cycles, but I claim still builds. Consider ZFC with the axiom of foundation replaced with the following:

AFA* All graphs except those with 1-cycles or 2-cycles have a decoration.

Where a decoration can be thought of as a mapping from a directed graph to a set such that the arrows of the directed graph correspond to ∈. Then consider G:
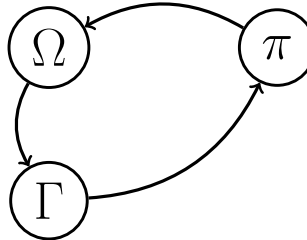
G has a decoration and the decoration of G yields the following membership structure:

$$\Omega \in \Gamma \in \pi \in \Omega \in \cdots$$

Thus, since set formation is a building relation, building relations are not acyclic. Before going on to my next argument let's consider some possible concerns. First, one might claim that *this* set formation differs from the set formation which we all know and love. After all, mathematicians like to talk about there being different mathematical worlds where various objects exist. For instance π lives in the real numbers, and i lives in the complex numbers. And relations live in mathematical worlds too! Consider for instance $+$ as defined on, say $\mathbb{Z}/5\mathbb{Z}$, vs $+$ as defined on $\mathbb{Z}/4\mathbb{Z}$. Thus we might say that there are different $+$ operations in play in different worlds. After all, it can't be the case that $3 + 2 = 0$ and also $3 + 2 = 1$, since $0 \neq 1$.

I'm sympathetic to the objection, but I think it is more natural to think of relations as holding across worlds. To think that the set formation relation differs in different set theories is to think that somehow the composition relation differs across possible worlds. I find this implausible, and I know of no good reasons to

adopt it. Further, it seems quite difficult to reason about possibility if relations never carry over from world to world.

Secondly, one might claim that the set theory I develop doesn't track how sets *really* work. Sure, it is relatively consistent, but that doesn't mean that sets "really" behave that way. This is not an attack on the mathematical legitimacy of the case, but rather the metaphysical underpinnings. To this I reply only that if one is enough of a realist to think there are such things as sets, but dogmatic in ones treatment of them to the degree required for this complaint, then it seems that the burden is on the would-be objector to provide principled reasons for thinking that one set theory is correct (in all possible worlds).

The third and final objection to the case that I'll consider is that it isn't proof that building relations form cycles — rather it is proof that set formation is not a building relation. This, along with the first objection, is probably the strongest. Its sharpest formulation is that if I had just chosen that AFA, then I would be able to show the existence of sets who contain only themselves as members. And this blatantly violates directedness. Thus, if set formation is the same in any mathematical world, then surely it is not a building relation.

Dispatching this puts me on the back foot. Briefly, I think that every relation — mathematical or otherwise — is such that in some worlds that relation will have different properties. Thus, we should not take the case to show that set formation is not a building relation *in general*, but rather we should take it to show that in some worlds (in the case set theories), it is not. The formal features of a relation are not always intrinsic to it. So in the set theory where AFA is true, then set formation is not a building relation. But this does not show that set formation is not a building relation in the set theory where AFA^* holds.

If set membership is still a building relation under AFA* then building relations exhibit cycles *ipso facto*. And I claim it is. Consider the three conditions. Directedness is the case, since transitivity is not true of the set formation relation, and we have excluded graphs which have 1-cycles or 2-cycles which guarantees antisymmetry and irreflexivity. Necessitation doesn't fail either: Since Γ *just is* the set containing Ω, clearly if Ω exists then so does Γ. Generativity is just the same given AFA^* as it is in conventional set theories.

So much for my argument in favor of the existence of a particular building relation which holds in cycles. I'll now urge that there at least *could be* building relations which hold in cycles (even if the odd set theory is unconvincing). It suffices to just review the three conditions. Clearly directedness does not preclude cycles of size 3 or greater. Necessitation also allows for cyclicity — indeed necessitation can even be reflexive! Generativity precludes cycles just in case it is underpinned by a transitive directed relation like ground, but I have argued that such an underpinning undermines the project of building — and in any case Bennett prefers to remain officially agnostic about just what underpins generativity. In the case of many underpinnings (for instance social-convention), there is no reason to expect that generativity entails acyclicity. Thus nothing in the specification of the class precludes some building relations from being cyclic.

So I take it that I've shown at the very least that non-transitive building relations *may* exhibit cycles (as far as the specification of the class is concerned), and I've tried to give an example of a building relation which clearly does exhibit cycles. What is the consequence of this argument for Bennett? Note that while building relations need not be transitive, the 'more-fundamental-than' relation *is* transitive. Thus in cases of cyclic patterns of building of a single relation it

will end up being the case that things are more fundamental than themselves. I take this to be an absurd result, and thus I think that either Bennett needs to change the specification of the class such that cyclic building is impossible or revise $B \rightarrow MFT$ in such a way as to preclude this result.

3.4   Theory-Neutrality

Relational theories of the fundamental ought to exhibit a sort of theory-neutrality regarding the first-order views crowding up metaphysics journals. When we propose that to be absolutely fundamental is to φ, it should not be the case that views about the fundamental goings-on which seem like live options according to rival second-order theories are suddenly dead in the water. Bennett seems to at least tacitly endorse this condition in the following passage:

> the issue is partly a matter of scholarship (what do particular philosophers mean when they talk about the fundamental?), partly a matter of conceptual analysis (what notions are live contenders for being concepts of fundamentality, rather than of something else altogether?), and partly a matter of job description (which concept is – or which concepts are – the best suited to do the work we want fundamentality to do?)...I will not, however appeal to any substantive judgements about what in fact is fundamental...Thus everything I say [] is intended to be equally compatible with 'atomism' and Schaffer-style priority monism. Indeed, I intend everything I say to be compatible with the claim that nothing is absolutely fundamental at all. (2017, 104)

Which I take to commit her account to not disrupting first-order theories unduly. Of course, any theory about what it means for something to be ϕ will impose *some* constraints on which things are eligibly ϕ. This is in line with the

Goldilocks account of neutrality I provided in Chapter 1. For instance, to say that what it means for something to be a Bichon Frise is for it to fulfill the American Kennel Club's Bichon Frise breed standard imposes certain limitations on which things are truthfully included in the class of Bichon Frises. Any thing which does not have a white color, soft and dense undercoat, and cheerful attitude is excluded.[30] A suitable account of what it is for something to be a Bichon Frise ought not exclude the things which people have tended to call Bichon Frises. Likewise for an account of the fundamental: it may rule out theories which are not already live, and it may restrict which things are eligible to be fundamental, but a reasonable account will not exclude anyone who is so to speak already at the table.

In this section I argue that relational views like Bennett's fail to uphold theory-neutrality because qualitative views of the fundamental such as those of Shamik Dasgupta and Jason Turner do not make sense in a relational framework. I have two arguments to this end. The first argues that a relational view of the fundamental based on independence undermines the descriptions of fundamental goings-on provided by the qualitativist. The second argues that relational views of fundamentality threaten in particular qualitativist views of the fundamental committed to the claim that some things in the world are (1) not fundamental and (2) not built by the fundamental. One might think that views like that are ultimately doomed to failure, but one should not think that a reasonable account of fundamentality settles the argument before it is underway.

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[30]http://images.akc.org/pdf/breeds/standards/BichonFrise.pdf

3.4.1   Building Properties

By qualitativism I refer to the view that the fundamental is solely made up of properties and relations. We can think of properties and relations as being the same sort of thing, but having different adicities, so I use the term property in general. The qualitativist then goes about describing the world by forming sentences which describe patterns of those properties holding. In this section I use an algebraic language developed by Shamik Dasgupta to characterize generalism, but I believe that the general arguments can be translated *mutatis mutandis* to other frameworks. I only require that the qualitativist proposes some way to describe the fundamental goings-on in terms of some (not necessarily finite) collection of properties and some method to describe some of them in terms of others.

The language $\mathbf{G}$ contains terms $P^i, Q^j, R^k, \ldots$ which correspond to properties $P, Q, R, \ldots$ with adicities $i, j, k,$. It also contains term functors $\&, \neg, c, p, \iota, \sigma$, which build complex terms out of terms. We are meant to think of the term functors as refering to properties through their relations to others.[31] So for instance if D^1 refers to the property of being a dog, then $\neg D^1$ refers to the property of *not* being a dog.[32] Most of the term functors do not bear on my discussion here, but the c functor is integral to their overall project. If L^2 refers to the property which we ordinarily describe as holding when x loves y, then cL^2 refers to the 1-adicity property of being loved and ccL^2 refers to the 0-adicity property, or state of affairs, of someone loving someone. 0-adicity properties have a special place in $\mathbf{G}$.

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[31]See the appendix of Dasgupta (2009) for a more detailed development.

[32]In his (2009) paper Dasgupta actually says that $D^1, \neg D^1$ *just are* the properties which I say they refer to, but since D is a term in a formal language I take him to be slurring over the distinction between referring expression and referent. If one insists on taking Dasgupta literally then one should read Dasgupta as being committed to the view that complex properties are built out of the properties which are parts of them.

There exists one predicate in $\mathbf{G}$, 'P^0 obtains', which takes a 0-adicity property and gives a sentence. It is in this way that the generalist may use $\mathbf{G}$ to describe the fundamental goings-on.

Let R^1 be a term of $\mathbf{G}$ which denotes the property of being red. Then consider the complex term cR^1. Does the property denoted by R^1 build the property denoted by cR^1? Let us take the two options in turn.

Yes If the property denoted by R^1 builds the property denoted by cR^1 then if to be fundamental is to be independent then the property denoted by cR^1 is not fundamental, since it is not independent. This poses a problem for the qualitativist. The generalist for instance proposes that all fundamental facts look as follows:

$$P^0 \text{ obtains.}$$

but they want P^0 to be possibly complex. Dasgupta says, "The term P^0 may of course be complex, formed from more basic terms along with applications of the term-functors" (2009, 53). If P^0 is complex, however, then it is non fundamental according to the theory of fundamentality under consideration. Thus the generalist is committed to denying that fundamental facts involve only fundamental things.[33]

Some care must be taken in establishing who this is a problem for. It is only a problem for relationalist theories of the fundamental if it is not the case that rival theories of the fundamental also imply the result that qualitativists may not assert purity. In that case it would be an issue with qualitative views, not second-order

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[33]Ted Sider (and others) use the term 'purity' to describe the intuition that fundamental facts involve only fundamental things. I don't here commit myself to an endorsement of purity, but I take it that the qualitativist ought to be able to assert purity.

theories. If it is a problem for some relationalist theories, then of each relationalist theory it is only a problem for that theory if that theory endorses independence as fundamentality.

It turns out that at least some theories of the fundamental do not imply the impurity of qualitativism. Take for instance a view on which fundamentality was primitive. Then the qualitativist would simply be asserting that all properties have this primitive feature, and there is no tension in saying that some of those are built by others. Insofar as certain flavors of primitivism are plausible this provides evidence that it is the combination of qualitativism with relationalism which lead to this result. Thus, it isn't the case that this is an issue for qualitativism. Thus it is a problem for relationalism.

No   If the property denoted by R^1 does not build the property denoted by cR^1 then the qualitativist may justly say that the property denoted by cR^1 is fundamental. I have not argued that nothing *else* builds the property denoted by cR^1, but no plausible candidates spring to mind. But then, if the property denoted by cR^1 is unbuilt, then the property denoted by cR^1 must be denoted by some simple term of **G**, since the term cR^1 is obviously built by R^1. Thus cR^1 denotes the same property as, say, T^0. But now consider that:

$$cR^1 \text{ obtains} \nLeftrightarrow T^0 \text{ obtains}$$

Since we can easily describe models which affirm that T^0 obtains but deny that cR^1 obtains. Thus **G** fails to describe the fundamental goings-on, since the generalist is placed in the unenvious position of defending that two logically distinct formulas describe the same class of worlds.

The above argument is done entirely in terms of **G**, and as I have said not all qualitative views are wedded to the use of **G**. But the flavor of the argument is independent from the mechanics of particular languages. What matters is that the qualitativist intends the description of the world in its most fundamental terms to have internal structure. If they are forced to provide an atomic term for each fundamental property then they will be unable to describe that structure.

Thus the qualitativist loses out either way. Either they are saddled with defending the view that the fundamental description of the world goes by way of non-fundamental terms, or they have to defend the view that the fundamental qualitative goings-on, or at least the description of them, lack internal structure. This is the first way in which the relational views under consideration fail to be theory-neutral.

3.4.2 Not Building Individuals

Qualitativists have the burden of explaining how the non-fundamental stuff, which on their view are individuals, depends on the fundamental properties. There are three possible accounts:[34]

(1) Individuals exist and are built by the fundamental.

(2) Individuals exist and are unbuilt by the fundamental.

(3) Individuals do not exist.

I claim firstly that (2) is the correct interpretation of Dasgupta's generalism, and secondly that this is incompatible with the relational views of fundamentality we have looked at thus far. This task is complicated somewhat by the fact

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[34]For a more detailed discussion of these, see (Dasgupta, 2009, 54).

that Dasgupta himself talks about individuals being (plurally) grounded by the fundamental in Dasgupta (2014). Thus I argue that even if Dasgupta the person thinks that individuals depend on the qualitative goings-on in the way outlined in Dasgupta (2014), his generalist position laid out in Dasgupta (2009) commits him to the weaker relationship which slots in poorly with relational views of fundamentality.

The arguments Dasgupta provides in support of qualitativism provide a nice guide to his commitments. The structure of his argument is as follows:

He first lays out the following three definitions,

Definition 1 (Physical Redundancy). *φ is physically redundant under laws $\mathcal{L}$ just in case given any two closed systems governed by (and only by) the laws of $\mathcal{L}$, if at an initial time they differ only in facts about φ but are exactly the same in all other respects, then they will continue to be exactly the same in all those other respects at all subsequent times. (2009, 40)*

Definition 2 (Empirical Undetectability). *φ is empirically undetectable under laws $\mathcal{L}$ just in case it is not in principle possible to construct a device to detect φ. (2009, 39)*

Definition 3 (Dangler). *φ is a dangler under laws $\mathcal{L}$ just in case it is empirically undetectable and physically redundant. (2009, 40)*

He then argues for the following proposition:

Proposition 1. *It is a consequence of every physical theory considered over the past 400 years that primitive individuals are danglers. (2009, 40)*

Which together with,

Proposition 2. *Consider two theories about the structure of the material world, and suppose you discover that the first implies that the world contains a dangler while the other does not. All else being equal, it is rational for you to prefer the latter over the former. (2009, 43)*

and

Proposition 3. *The benefit that generalism enjoys over individualism in virtue of dispensing with danglers outweighs its putative costs (or in other words, all else is equal) (2009, 57).*[35]

leads to the conclusion that it is rational to prefer generalism over individualism. So it is because our best physical theories imply that individuals are danglers that the generalist rejects that they fundamental. This is the feature which commits the generalist to denying that individuals are built out of the fundamental goings-on if they exist, but it is not clear from this alone that individuals exist in any way according to the generalist.

And indeed Dasgupta believes that generalism itself is agnostic about what to say about the non-fundamental goings-on:

> generalism is a claim about the structure of the fundamental facts, and so is neutral on the status of sentences that may be thought to presuppose a domain of individuals. (2009, 54)

However the generalist might make any number of claims about the non-fundamental. Dasgupta offers four suggestions. In the spirit of the anti-realist they might have an error theory about sentences which seem to presuppose a domain of individuals. They might also be a fictionalist — saying that sentences

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[35]Where individualism is the view that the fundamental goings-on are made up of primitive individuals.

which purport to be a bit individuals are true or false in a "fiction of individuals", but ultimately false outside of such a fiction. They might also be what Dasgupta terms a non-reductive realist, asserting that sentences which seem to presuppose a domain of individuals ultimately express the same thing as some sentence in a fundamental language like **G**. Finally, they might be a reductionist and say that our ordinary individuals-talk is true or false in virtue of the underlying qualitative facts. It is this final suggestion which I think he is most sympathetic to.

I think this because in "On the Plurality of Grounds" he explicitly argues that if qualitativism is true then individualistic facts are plurally grounded in the qualitative base. This is clearly taking a reductionist approach. And regardless of whether Dasgupta himself actually thought this, the reductionist approach seems to be a plausibly live option for the qualitativist — the kind of option which ought not be excluded by a theory of fundamentality.

I'll now argue that the reductionist qualitativist should not say that individuals are built by the fundamental. Indeed, if the motivation for a particular qualitativist view involves the physical redundancy of primitive individuals, then I say that *cannot* rightly say that individualistic facts are built.

Suppose that there are primitive individuals, and that individuals are physically redundant. Then imagine two worlds w_0, w_1 identical with respect to their qualitative facts but with entirely different primitive individuals. This is clearly possible on a qualitativist view, and thus it is clear the the qualitativist must reject the necessitation of individuals by the fundamental. Thus, if qualitativism is true then individuals are unbuilt, since building demands necessitation. Thus, on an independence view of fundamentality, individuals are fundamental. But the qualitativist rejects this characterization of the goings-on!

3.4.3 Objections to Neutrality

I've spilled some ink arguing that Bennett's view fails to be theory neutral insofar as it renders incoherent generalism, and I've said that this is a vice. Ted Sider has rejected exactly this claim — he's affirmed rather that metametaphysical reasoning may rightly wade into first-order disputes sword drawn. His argument makes a distinction between the claim on the one hand that some first-order state of affairs is *epistemically* possible and on the other that some first-order state of affairs is *metaphysically* possible.

One might urge theory-neutrality towards all epistemically possible theories. In other words one might urge that if it is even conceivable that the some goings-on might obtain then a theory of fundamentality must not rule them out. A theory of fundamentality which failed to meet this constraint would be epistemically contingent. According to Sider that is absolutely fine, since a theory of fundamentality is "intended to be an educated guess about the nature of the world, not as some sort of a priori deduction that must hold with certainty." (2011, 136).

On the other hand one might urge theory-neutrality only towards those theories which propose genuinely metaphysically possible states of affairs. Depending on how one thinks about metaphysical possibility this is either as strong as or weaker than the prior demand, but it is no stronger. Sider advocates for a certain Humean theory of modality which he claims renders this complaint inert.

Does my demand fall into either an exhortation for theory neutrality towards all epistemically possible theories or an exhortation for theory neutrality towards all metaphysically possible theories? It does not. As Bennett points out, the project we are collectively engaged in requires a mix of conceptual analysis and

scholarship. I do *not* claim that any conceivable or metaphysically possible state of affairs should be accomodated by a theory of the fundamental. I do not consider it a vice that relational theories of fundamentality rule out the view that only things to the left of me are fundamental, despite the fact that it seems *possible* on the fact of it, because no one is advocating that. I do not consider it a vice that most theories of the fundamental rule out the view that which types of things are fundamental change constantly, despite the fact that this too seems at least *possible*.

Instead I merely claim that views very much in the vicinity of first order theories, views which apparently have arguments to their credit *in the literature right now*, should not be ruled out. That a certain theory of the fundamental violates this is not akin to a death knell, but it is a deficiency of some sort. We might term this a pragmatic or soft theory-neutrality. Such a soft theory-neutrality is motivated by the conviction that philosophers in a dialectic are in general engaging with one another on substantive issues even when relevant metametaphysical disputes are not settled. Note that this position goes beyond the (hopefully) uncontroversial comments I made in Chapter 1 which we termed the Goldilocks account of neutrality. Thus, I expect it to be at least somewhat controversial.

3.5   And So

In concluding this chapter, let me wrap up what we have learned. Bennett's project is to define both relative and absolute fundamentality in terms of a class of 'generative' relations, which she termed 'building relations'. I showed that in the absence of some primitive metaphysical notion of generativity the class was not

suitable to characterize either relative or absolute fundamentality, because it was not sufficiently unified. However, if a primitive 'in-virtue-of' relation is thought to explain the unity of the class, then it seems as though the (other) building relations failed to actually do any metaphysical work. I then attacked the idea that the holding of building relations entailed that relative fundamentality ran "the other way" by showing that cycles of building relations may occur. This undermines the plausibility that a *definition* of relative fundamentality is to be found in an account of building relations. Finally I argued that Bennett's account, and indeed accounts which attempt to define relative fundamentality in terms of generative relations generally, fail a reasonable standard of neutrality.

The principal upshot of all of this is that deflationary accounts are fraught. Perhaps we already knew that — the history of philosophy is apparently filled with failed deflationary accounts — but working through it in the case of fundamentality is important for the fan of metaphysical priority. After all, it is an attractive idea that fundamentality (relative and absolute) should be cleanly reducible to some generative relation or relations. But giving an account of generative relations is hard, and the failures of accounts of generative relations are compounded when they are given the additional task of making sense of metaphysical layers.

Chapter 4

Curtain Call

The goal of this final chapter is two-fold. First, I aim to wrap up the first and third chapters by explicating their lessons, thus establishing my first thesis, that some primitive notion of generativity is needed to make sense of priority talk. Second, I aim to bring the whole thesis together in such a way as to establish my second thesis, that generativity is best located as a property of relations, rather than as a single primitive relation.

4.1   The Need for Generativity

As I mentioned in the introduction, my primary goal in this thesis was to show that primitive 'in-virtue-of' work needs to be done in order for the metaphysical structure fashionable amongst philosophers these days to make sense. I claim that I have provided ample evidence for this claim.

If a primitive 'in-virtue-of' relation satisfying certain nice properties (transitivity, directedness) is set aside, as both Bennett and Wilson propose to do, then some story about what makes some things more fundamental than others needs

to takes its place. Wilson attempted to fill in the missing details by making use of a notion of primitive fundamentality. We saw that this approach faces numerous (seemingly fatal) problems. The most significant of these was that it didn't seem as though there was any way of determining which relations were generative (small-'g' grounding relations) *even given a fundamental base*. This is a problem that any primitivist about fundamentality faces, and I take it as strong evidence that primitive fundamentality is not an attractive starting point for a theory of priority. We also saw that existing arguments in favor of primitivism are far from convincing, and thus there seems to be no reason to take fundamentality on board independent of its theoretical utility — which, again, is apparently non-existent.

Bennett, on the other hand, tried to forgo the need for any metaphysical explanation (beyond necessitation) of why some relations generate while others do not. As I argued, this avenue ends in a dead end. If Bennett was right, then which things were prior to others would depend more on the whims of humans than the facts of metaphysics.

But those two options are, as far as I know, the only ones which deny that some relations just primitively make it such that if a is related to b by one or more of them then a is more fundamental than b. Thus, since they both fail, we have good reason to think that if anything is more fundamental than anything else then there is some direct metaphysically primitive reason for that.

I also argued against just taking relative fundamentality as metaphysically primitive. In particular, we saw in Chapter 2 that taking relative fundamentality as over and above certain generalizations of ground or other generative relations makes for an unattractive picture on which we cannot straightforwardly explain the relation between generation and fundamentality. Thus, fundamentality —

relative and absolute alike — ought to be seen as a generalization of some class of generative relations, for there is apparently no remaining non-skeptical option.

4.2 The Case for Plurality

The second conclusion of this thesis is that it is more likely that an account of generativity which makes use of a number of distinct relations, versus an account of primitive ground, will succeed. This is because combining a number of generative relations under an umbrella of primitive ground faces a number of problems, and because it seems as though Bennett's account *could* succeed with a number of changes. What pluralists accounts lose in parsimony they gain in expressive power.

That Schaffer's attempt to unify apparently generative relations as a genus of ground failed is certainly not decisive evidence against primitivism about ground, but it illuminated problems which will common to any attempt. In particular, Occamist considerations rule against inflationary accounts whenever possible, and providing a formalism which unifies the various small-'g' relations is a daunting task.

Thus I think that the pluralist programme is more attractive. Of course, this is not to say pluralism is a voucher for a free lunch. Figuring out how to successfully unify the small-'g' relations is still an unsolved task, and my results in that domain have been purely negative: primitive fundamentality won't do it, social conventions won't do it, and primitivism about ground won't do it.

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