



Metaphysical Foundationalism and Theoretical Unification

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Abstract

Some facts ground other facts. Some fact is fundamental iff there are no other facts which partially or fully ground that fact. According to metaphysical foundationalism, every non-fundamental fact is fully grounded by some fundamental fact(s). In this paper I examine and defend some neglected considerations which might be made in favor of metaphysical foundationalism. Building off of work by Ross Cameron, I suggest that foundationalist theories are more unified than, and so in one important respect simpler than, non-foundationalist theories, insofar as foundationalist theories allow us to derive all non-fundamental facts from some fundamental fact(s). Non-foundationalist theories can enjoy a similar sort of theoretical unification only by taking on objectionable metaphysical laws.

1 Introduction

Some facts hold in virtue of other facts. For example, disjunctions hold in virtue of their true disjuncts, mental facts hold in virtue of physical facts, and social facts hold in virtue of facts regarding individuals and their interactions. The sense of “in virtue of” I have in mind is that picked out by philosophers’ talk of “grounding.” So, facts hold in virtue of other facts when the former facts are grounded in the latter facts.¹ There are different ways of thinking of the notion of fundamentality,² and many different notions of fundamentality may be compatible with the arguments given in this

¹ I would like to leave it open whether grounding is invariably a relation between facts (as in Rosen, 2010), any sort of relata (i.e., facts, objects, propositions, whatever—as in Schaffer, 2009), or whether grounding claims are most perspicuously expressed using a sentential operator, rather than by reference to a grounding relation (as in Fine, 2001). It will be convenient, however, to continue to write in terms of facts grounding other facts.

² See, e.g., Raven (2016).

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paper. But for concreteness's sake let's say that some obtaining fact is fundamental iff there are no other facts which partially or fully ground that fact.

One prominent metaphysical debate concerns whether reality is well-founded. To ask whether reality is well-founded is, as I understand it, to ask whether every non-fundamental fact is fully grounded by some fundamental fact(s).³ Call the thesis that reality is well-founded “metaphysical foundationalism” or just “foundationalism.” Foundationalism is generally contrasted with infinitism, the view that some or all grounding chains are infinite non-terminating chains of non-fundamental facts (e.g., where F_0 is grounded in F_{-1} , F_{-1} is grounded in F_{-2} , and so on indefinitely, where no component of the chain is grounded in a fundamental fact),⁴ and coherentism, according to which there are circles of non-fundamental facts (e.g., where F_0 grounds F_1 , which grounds F_2 , ..., which grounds F_n , which grounds F_0). Infinitism and coherentism, as I understand those theses, are both compatible with there being fundamental facts, but they are not compatible with those fundamental facts fully grounding all non-fundamental facts.

Grounding is generally thought to be an explanatory relation, in the sense that grounding relations are sufficient for corollary explanatory relations to obtain.⁵ So, for example, if F_1 grounds F_2 , then F_1 explains F_2 . Arguments for metaphysical foundationalism usually contend that non well-founded grounding chains are objectionable insofar as they fail to discharge some explanatory burden—in other words, there are facts which require an explanation, but which fail to be explained if reality is not well-founded.⁶ Such arguments are generally meant to lead us to conclude that reality is *necessarily* well-founded, since the explanatory constraints which non-well-founded grounding chains allegedly fail to satisfy are alleged to be necessary, rather than contingent, constraints.

In this paper I examine and defend some neglected considerations which might be made in favor of metaphysical foundationalism. I don't think that we can show that reality *must* be well-founded, but there is a case to be made for the contention that reality is in any case *actually* well-founded. The idea is that theories according to which reality is well-founded display one or more theoretical virtues which should lead us to regard those theories as antecedently more likely to be true than theories according to which reality is not well-founded. Cameron,⁷ gives an argument of this sort, although, as I discuss below, his argument is underdeveloped. Building on Cameron, I'll argue that, in one important respect, foundationalist theories are simpler than non-foundationalist theories, because of the theoretical unification foundationalism confers on our total picture of the world. I assume that simpler theories are, all else being equal, more likely to be true, although this is an assumption which

³ Cf. Dixon (2016, 446) and Rabin and Rabern (2016, 369).

⁴ It is worth noting that not all infinite grounding regresses are incompatible with metaphysical foundationalism. We might have an infinite grounding chain, for example, which is grounded in a fundamental grounding base (cf. Cameron, 2008, 4–5; Bliss, 2013, 416).

⁵ I'll leave it open whether the grounding relations just *are* the explanatory relations, or whether they instead underpin those explanatory relations. For discussion see Maurin (2019).

⁶ Cf. Bliss (2013, 2019).

⁷ 2008.

I don't have the space to defend here.⁸ The non-foundationalist can emulate the theoretical unification enjoyed by the foundationalist only by introducing objectionable metaphysical laws (in particular, they will either need laws which are objectionably complex, or they will need a conjunction of laws and grounding structures which are objectionably fine-tuned).

Here's the plan for the remainder of this paper. In Sect. 2 I describe Cameron's argument for metaphysical foundationalism from the theoretical virtue enjoyed by foundationalist theories. I'll point out what seem to me to be the main shortcomings of Cameron's argument. Building on Cameron's argument, I'll describe what seems to me to be the main respect in which foundationalist theories are preferable in terms of the theoretical virtues they exhibit: foundationalist theories are simpler than their competitors insofar as they exhibit a relatively high degree of theoretical unification. Section 3 continues the argument. There I argue that the non-foundationalist can simplify their theory in the relevant sense only by taking on objectionable metaphysical laws. Section 4 concludes the paper.

2 Explanatory Unification, Theoretical Unification, Simplicity

Cameron⁹ argues for metaphysical foundationalism from the explanatory unification foundationalism confers on our total picture of the world:

If we seek to explain some phenomena, then, other things being equal, it is better to give the same explanation of each phenomenon than to give separate explanations of each phenomenon. A unified explanation of the phenomena is a theoretical benefit... if there is an infinitely descending chain of ontological dependence, then while everything that needs a metaphysical explanation (a grounding for its existence) has one, there is no explanation of everything that needs explaining. That is, it is true for every dependent x that the existence of x is explained by the existence of some prior object (or set of prior objects), but there is no collection of objects that explains the existence of every dependent x . This is a theoretical cost; it would be better to be able to give a common metaphysical explanation for every dependent entity. We can do that only if every dependent entity has its ultimate ontological basis in some collection of independent entities; so this provides reason to believe the intuition against infinite descent in metaphysical explanation.¹⁰

In context it is clear that, according to Cameron, not only do foundationalist theories offer us better explanations, in the sense described in the passage I've just quoted, but insofar as foundationalist theories offer us better explanations foundationalism is thereby more likely to be *true*.

⁸ For some defense of the claim that simplicity should function as a criterion of theory choice in metaphysics see Paul (2012), Brenner (2017) and Bradley (2018).

⁹ 2008.

¹⁰ Cameron (2008, 12).

I think Cameron is on to something, but his argument has some shortcomings. For starters, Cameron does not tell us what might be wrong with non-foundationalist grounding circles. It seems to be true of at least some grounding circles that there is some “collection of objects that explains the existence of every dependent x .” In the simplest case, imagine the following grounding circle: A grounds B, B grounds C, C grounds A. In this case A (or B, or C) explains the existence of every dependent component of the circle.

A more pressing concern for Cameron’s argument is that Cameron doesn’t tell us *why* we should prefer theories which exhibit explanatory unification. Why should we think that “If we seek to explain some phenomena, then, other things being equal, it is better to give the same explanation of each phenomenon than to give separate explanations of each phenomenon”? Why should it matter that, on foundationalist theories, there are some facts which explain all dependent facts? Why should that make foundationalist theories more likely to be true? While I don’t know if this is what Cameron has in mind, the only plausible answer to the questions I’ve just asked is, as far as I can tell, that theories which exhibit this sort of explanatory unification will be, all other things being equal, *simpler* than theories which fail to exhibit this sort of explanatory unification.¹¹ When it comes to metaphysical foundationalism, the sort of explanatory unification cited by Cameron simplifies our total theory because it allows us to derive many components of our theory from a relatively simple starting point: you need only specify the fundamentalia and the laws governing the generation of non-fundamental entities/facts from the fundamentalia,¹² and everything else comes along for free. In other words, given a foundationalist conception of the world, we have some fundamental fact(s) F_0 , and metaphysical laws telling us how facts ground other facts. Using those laws we can derive fact F_1 from F_0 , fact F_2 from F_1 , and so on, until we’ve derived all of the non-fundamental facts (since, recall, according to metaphysical foundationalism all non-fundamental facts are fully grounded in the fundamental fact(s)). What’s important, on the foundationalist view, is not explanatory unification *per se*, but rather the more general *theoretical unification* which comes along with it—i.e., the fact that, on the foundationalist view, we can derive every fact we want to posit from just the fundamental fact(s) and the metaphysical laws.

Of course, I’m not the first to suggest that there is a connection between explanatory unification, theoretical unification more generally, and simplicity. For example, Schindler notes that theories which exhibit greater explanatory unity, in the sense that those theories leave fewer phenomena basic and unexplained, are thereby simpler theories: “when we seek to unify the phenomena, we seek to provide ever more *simple* theories. The idea of unification, then, appears to depend on some notion of simplicity, i.e., simplicity in terms of number of presumed basic phenomena, the

¹¹ At one point Cameron says that the preference for explanatory unification is *analogous* to the preference for theories satisfying Ockham’s razor (Cameron, 2008, 13). But he does not say that theories which exhibit explanatory unification thereby satisfy Ockham’s razor.

¹² Cameron ignores this detail, but it seems to me that metaphysical laws—i.e., those laws governing grounding relations—must be accounted for in any tallying of the theoretical costs associated with any theory which posits grounding. I’ll discuss metaphysical laws more below.

number of basic laws, the number of argument patterns, etc.”¹³ And that there is this close link between explanatory unification, theoretical unification more generally, and simplicity is born out in other examples where we seem to care about explanatory unification only because it gives us theoretical unification, and so gives us greater theoretical simplicity. For example, one of the triumphs of Newtonian physics was that it allowed us to explain a wide range of phenomena (e.g., the orbits of heavenly bodies, the tides, the motions of bodies on Earth) from a relatively sparse explanatory base, namely in terms of a few relatively simple physical laws. This explanatory unification is generally regarded as epistemically significant because it unified, and so *simplified*, our total worldview.¹⁴ For example, we no longer needed to regard motion inside the sublunary sphere and motion outside the sublunary sphere as being governed by distinct laws or principles of motion, since all observable phenomena (more or less) could be described using the same relatively simple set of laws or principles.

When I say that, given foundationalism, we are able to “derive” all of the non-fundamental facts from the fundamental facts, I do not mean simply that all of the non-fundamental facts are *grounded* in or *explained* by the fundamental facts, although of course that is true. Rather, what I have in mind is that, given the fundamental facts, and given the metaphysical laws, we are able to *discover* or *figure out* which non-fundamental facts obtain, simply given the fundamental facts and the metaphysical laws.¹⁵ This is the sort of “derivation” we should primarily care about when we try to determine whether a theory is simple. One way of putting this point is in terms of the amount of information we need to describe some theory. The less information we need to describe some theory, the simpler the theory.¹⁶ All of this can be given more or less rigorous or technical treatments, but I think that for our purposes we can keep the discussion at a more intuitive level. If some theory is such that we can derive component B of that theory from component A, then in order to describe the theory we need only mention A (and perhaps whatever laws or bridging principles, if any, are required to derive B from A). In other words, B will be a “free lunch” in the sense that, once we’ve postulated A (and perhaps appropriate laws or bridging principles), B does not represent any sort of additional theoretical commitment which was not already implicit in A. For example, one widely recognized epistemically significant feature of Newtonian physics was that it allowed us to derive Kepler’s laws of planetary motion from Newton’s laws of motion and law of universal gravitation. Once one postulated the latter laws, Kepler’s laws of planetary motion did not represent an *additional* theoretical posit, in any sense which

¹³ Schindler (2018, 12). Cf. Friedman (1974).

¹⁴ Cf. Swinburne (2001, 92–94).

¹⁵ Thus the direction in which we derive some fact from another fact need not follow the direction in which the more fundamental fact grounds the less fundamental fact. This observation becomes important in Sect. 3 below.

¹⁶ This idea comports well with the widely discussed notion that the simplicity of a statement is related to the *compressibility* of the statement, as described by the length of a computer program required to produce the statement (cf. Li and Vitányi, 2008).

might detract from the simplicity of one's total theory. In this and other respects, then, Newtonian physics allowed us to simplify our total picture of the world.

Here is one important point of clarification: when I say that, given some fact A and the metaphysical laws we are able to “derive” those facts grounded in A, I do not mean to suggest that *as a matter of fact* we will be able to figure out which facts are grounded in A. Various epistemic or computational limitations may prevent us from making the derivation. The point is just that, given A, and given the metaphysical laws, we can *in principle* make the derivations in question. This sort of in-principle derivation is relevant to our assessment of the simplicity of our total theory. So, for example, Newtonian physics allowed us to derive a wide range of phenomena from a sparse explanatory base, but of course nobody has ever derived, say, the future positions of heavenly bodies from the prior positions of those bodies (with the aid of relevant physical laws) in *exacting* detail. There are epistemic and computational limitations which prevent us from being able to make those sorts of perfectly precise derivations.

There is a clear sense, then, in which theories, such as metaphysical foundationalist theories, which allow us to derive a large part of the theory from some relatively small component of the theory, are *ipso facto* simpler theories.¹⁷ I do not mean to suggest that *all* foundationalist theories will be very simple, since foundationalist theories may have very complex fundamental facts, or very complex laws, or a large number of laws. But the important point to note is that foundationalist theories, which allow us to derive all facts from a relatively simple starting point (i.e., the foundational facts), are, other things being equal, thereby simpler than competing theories which do *not* allow us to derive all facts from that sort of relatively simple starting point. So, the fact that some theory is a *foundationalist* theory is a point in that theory's favor, since it allows us to derive many facts posited by the theory from the fundamental facts posited by the theory, and so makes the theory simpler than it otherwise would be.

It is worth pausing to discuss the significance of this conclusion. That foundationalist theories are simple in a respect in which non-foundationalist theories are not simple is an important observation. This is true even if there are other respects in which the theories in question may be more or less simple, and there are factors other than simplicity which should be taken into consideration in metaphysical theory choice. So, I concede a common objection, pressed by Schaffer,¹⁸ Orilia,¹⁹ and

¹⁷ Within metaphysics, both Schaffer (2015) and Bennett (2017, Ch.8 §2.2) commend methodological principles according to which, in assessing the simplicity of a theory, we should primarily be concerned with the simplicity of the *fundamental* (ungrounded) posits of the theory. This methodological principle meshes well with the simplicity-based argument for metaphysical foundationalism defended in this paper. Importantly, however, both Schaffer and Bennett overlook the crucial role that the *metaphysical laws* posited by a theory should play in our assessment of that theory's degree of simplicity. As we will see, proponents of non-foundationalist grounding structures can mimic the sort of theoretical unification found in foundationalist theories, but only at the cost of taking on objectionable metaphysical laws.

¹⁸ 2003, 501–502.

¹⁹ 2009, 340.

Morganti,²⁰ that simplicity considerations which might be thought to count in favor of foundationalism or similar theses are not the end of the story, that a complete evaluation of the theoretical merits of metaphysical foundationalism or non-foundationalism may require a comparison of other features of particular foundationalist and non-foundationalist theories. But simpler theories are nevertheless, as I've claimed earlier in this paper, "antecedently" more likely to be true than their rivals, all other things being equal. As I understand it, this amounts to a claim about prior probabilities. Prior to examining our evidence (that is, prior to conditionalizing the probability of our theories on relevant evidence), simpler theories have higher prior probabilities, holding fixed all other respects in which those theories may differ.

The total probability of any theory is, per Bayes' Theorem,²¹ a function of its prior probability ($P(T)$), its ability to predict our evidence (i.e., the probability of our evidence given the theory, $P(E | T)$), and the prior probability of the evidence ($P(E)$). Since the prior probability of some piece of evidence is the same for all theories, and so doesn't help us decide between competing theories, we can ignore it here. Assessing a theory's prior probability is a crucial step in the total process of evaluating that theory, since a theory's ability to predict the evidence by itself fails to determine the total probability of the theory.²² In fact, determining priors is *at least* as important as determining fit with evidence.

So, we can see now why, contra Schaffer, Orilia, and Morganti, we should not be dismissive of the importance of showing that one theory is simpler than another in some significant respect. It is true that, when we show that one theory is simpler than another in some significant respect, we must also go on to evaluate the two theories' relative satisfaction of other factors associated with their prior probabilities (e.g., other respects in which the theories may be more or less simple), as well as the relative abilities of those theories to predict our evidence. But it is nevertheless very important that we've identified one factor which significantly favors one theory's prior probability over the other theory's prior probability (that is, which shows that, with respect to one factor, we have reason to think that $P(T_1)$ is greater than $P(T_2)$). Compare: if we could show that some theory did a poorer job than another theory at predicting some piece of evidence, it would be odd to respond that this fact is unimportant, because we must compare the two theories with respect to their ability to predict our other evidence as well, and we must compare their prior probabilities as well. It would remain significant that we've identified one respect in which one of the theories fails significantly worse than the other theory with respect to their ability to predict our evidence (i.e., with respect to one factor which determines $P(E | T)$).

To fully settle the question of whether metaphysical foundationalism is true we'll probably have to turn to *a posteriori* considerations, beyond the merely *a priori* considerations laid out in this paper. This is largely because we will probably have to

²⁰ 2015, 568, 571.

²¹ $P(T | E) = \frac{P(E|T)P(T)}{P(E)}$

²² Simplicity considerations in particular are crucial in allowing us to distinguish between the infinite number of theories which are equally capable of predicting our evidence (cf. Swinburne, 1997, 15).

turn to *a posteriori* considerations (e.g., empirical evidence) in order to determine what many metaphysical laws actually look like.²³ We will also have to consider whether we have *a priori* grounds unrelated to simplicity which might count for or against foundationalist theories. For example, Morganti²⁴ complains that some philosophical problems do not have unobjectionable foundationalist solutions, and he cites as examples “the ontological constitution of facts and Bradley’s regress”,²⁵ “literal contact between extended objects”,²⁶ and “the analysis of partial similarity facts in terms of partial identity”.²⁷ I don’t have the space to examine these issues here. Needless to say, even though I think that the theoretical considerations I discuss in this paper count in favor of metaphysical foundationalism, they are certainly not the end of the story.

3 Non-foundationalist Grounding Structures, Theoretical Unification, Metaphysical Laws

For the remainder of the paper I will address an important objection to my argument for metaphysical foundationalism. As I’ll show below, it turns out that non-foundationalist theories can also be constructed in such a manner that we can derive all non-fundamental facts from some proper subset of those facts (in conjunction with applicable metaphysical laws), although this subset of facts will not be fundamental. This might lead us to think that the theoretical unification which, I’ve argued, supports metaphysical foundationalism might be cited in support of some non-foundationalist theories as well. I’ll now briefly describe two non-foundationalist grounding structures which seem to be amenable to this sort of theoretical unification. Later I will argue that the non-foundationalist theories which posit these grounding structures can only enjoy the relevant sort of theoretical unification by taking on board objectionable metaphysical laws.

Structure 1: $\dots \rightarrow F_{-3} \rightarrow F_{-2} \rightarrow F_{-1} \rightarrow F_0 \rightarrow F_1 \rightarrow F_2 \rightarrow F_3 \rightarrow \dots$

This is a grounding chain which is infinite in both directions. F_0 is grounded in F_{-1} , F_{-1} is grounded in F_{-2} , F_{-2} is grounded in F_{-3} , and so on. F_0 grounds F_1 , F_1 grounds F_2 , F_2 grounds F_3 , and so on.²⁸ In this case our theory need only posit F_0

²³ To give one example, if mental states are grounded in physical brain states, we need to engage in empirical investigation in order to discover which physical brain states ground which mental states.

²⁴ 2015.

²⁵ Here Morganti cites Orilia (2006, 2009).

²⁶ Here Morganti cites Zimmerman (1996).

²⁷ Here Morganti cites Morganti (2011).

²⁸ Infinitely descending grounding structures have been widely discussed, although they are not generally explicitly said to be infinitely *ascending* as well (i.e., such that every fact grounds some other fact). For some recent partial defenses of infinitely descending grounding structures, see Schaffer (2003), Bliss (2013) and Morganti (2014). Bohn (2009) defends the possibility of “hunky” worlds, in which every object has further proper parts, and every object is a proper part of something else. On the widely shared assumption that facts regarding composite objects are grounded in facts regarding their proper parts, a hunky world will be one in which grounding is infinite in both directions, in the sense described in the main body of the text.

(or, for that matter, any other fact in the grounding structure), and, given suitable metaphysical laws,²⁹ we can derive every other fact in the grounding structure. (I do not mean to suggest that we derive all of the other facts from F_0 because F_0 grounds all of those other facts. Rather, the idea is that, given F_0 , and given suitable metaphysical laws, we can infer that the other facts in the grounding structure obtain as well.)³⁰

Structure 2: $\dots \rightarrow F_0 \rightarrow F_1 \rightarrow F_2 \rightarrow F_3 \rightarrow \dots \rightarrow F_n \rightarrow F_0 \rightarrow \dots$

This a grounding circle. Grounding circles occur whenever some fact is among the facts which ground it. The most straightforward sort of grounding circle (and the one represented diagrammatically above) is one in which F_0 grounds F_1 , F_1 grounds F_2 , F_2 grounds F_3 , and so on, until we reach some fact F_n which grounds F_0 .³¹ In this case our theory need only posit F_0 (or, for that matter, any other fact in the grounding structure), and, given suitable metaphysical laws, we can derive every other fact in the grounding structure.

Are theories which posit these sorts of grounding structures simple, or otherwise unobjectionable? I'll start with a concern which we might be tempted to have, but which I also suspect is erroneous. In the case of both Structure 1 and Structure 2 we simplify our total theory by picking some component of the grounding structure, and deriving all of the other facts in the structure from that component of the structure (in conjunction with our metaphysical laws). The concern is that it seems entirely arbitrary *which* component of the structure we pick. If, for example, we have a grounding circle, and we choose some fact(s) in that circle as our starting point, from which we derive all of the other facts, what reason could we have to pick this fact rather than any of the other facts? The fact we chose will, by hypothesis, fail to be fundamental (since it will be grounded), and it is difficult to see on what other grounds it might call out for special attention.

But this concern can be sidestepped. The non-foundationalist in question need not think that there *is* anything special about the fact(s) from which we derive all of the other facts in the grounding structure posited by their theory. Rather, they're just arbitrarily picking that fact(s) as a way of simplifying our *description* of the grounding structure. *Metaphysical* arbitrariness is, perhaps, objectionable. But the arbitrariness here is not metaphysical arbitrariness, in the sense that the fact(s) from which we derive all of the other facts is supposed to be metaphysically privileged,

²⁹ Exactly which sorts of laws are "suitable" will be discussed below.

³⁰ A grounding structure similar to Structure 1 would be one which is infinite in only one direction: $\dots \rightarrow F_{-3} \rightarrow F_{-2} \rightarrow F_{-1} \rightarrow F_0$. One might be tempted to think that in this case we need only posit F_0 , and from there we can derive all of the other facts in the grounding structure. But this grounding structure is plausibly logically impossible (thanks here to an anonymous referee). For any two facts in the grounding structure, those facts plausibly ground a conjunctive fact to the effect that both those facts obtain. Similarly, for any fact in the grounding structure, that fact grounds the disjunction of that fact and some other (obtaining or non-obtaining) fact. So, we cannot have a grounding structure of this sort, where some facts in the structure do not ground any other facts, and so I do not discuss this grounding structure further.

³¹ Grounding circles seem to have been endorsed by Huayan Buddhist thinkers, as conveyed, for example, in their use of the metaphor of the Net of Indra (cf. Priest, 2015; Bliss and Priest, 2018). More recently, grounding circles have been defended by Rodriguez-Pereyra 2015, Thompson (2016), Barnes (2018), Calosi and Morganti forthcoming.

despite the fact that it is arbitrary to suppose that this fact, rather than some other fact, is privileged in this sense. Rather, the theoretical unification described above with respect to non-foundationalist grounding Structures 1 and 3 simply concerns a way of simplifying or compressing our *description* of a grounding structure which is, in a certain respect, arbitrary—we pick some fact(s), and derive or infer all of the other facts from there, but we might have derived or inferred the latter facts from some other starting point instead. (An instructive analogy is that of interdefinable terms. For example, it is generally thought that modal predicates are interdefinable: p is necessary iff it is not possible that not- p ; p is possible iff it is not necessary that not- p ; p is impossible iff it is necessary that not- p . Accordingly, in order to describe the modal predicates it is standard practice to take one of them as primitive/undefined, and define the other predicates from there. This strategy simplifies our total theory, since, rather than taking each predicate as primitive, we need only take one of them as primitive. But there need be nothing *metaphysically* privileged about the modal predicate we take as primitive, and it is just as appropriate to take one predicate as primitive as it is to take another one as primitive.)

What's really objectionable about the theoretical unification conferred on theories which posit either of these two non-foundationalist grounding structures is, I'll now argue, that the unification is bought at the price of objectionable metaphysical laws.

Above I've repeatedly written of "metaphysical laws," and I've said that such laws govern grounding relations, but it will prove useful to pause to say a bit more about what I've had in mind. Metaphysical laws are those laws governing the manner in which facts ground, or are grounded in, other facts. We need such laws to bridge the gap between facts linked by grounding relations.³² Think, for example, of a composite object and its proper parts. The fact that the composite object exists is grounded in the fact that its proper parts exist, and perhaps in the fact that those proper parts are appropriately configured—so, e.g., a table exists because its proper parts exist and are arranged table-wise. Similarly, many facts regarding the properties of the composite object are grounded in facts regarding the properties of its proper parts. If, for example, the composite object is in Montana, this fact is grounded in the fact that its proper parts are in Montana. The fact that composite objects have their locations in virtue of facts regarding the locations of their proper parts, and more generally the fact that composite objects follow their proper parts around in the first place, cries out for explanation. The grounding relations between facts regarding the existence and properties of some proper parts and facts regarding the existence and properties of the object which they compose are plausibly governed by metaphysical laws, specifically mereological laws.³³

There are competing ways of understanding metaphysical laws.³⁴ Here I try to avoid making substantive assumptions about how metaphysical laws work. On any

³² Schaffer (2017a).

³³ Brenner (2015, §3).

³⁴ For extant discussions of metaphysical laws, see Rosen (2006, 35, 2010, 131–133, 2017), Dasgupta (2014, 568), Kment (2014, 5–6, 167–173), Wilsch (2015), Glazier (2016), Schaffer (2016, 57), Schaffer (2017a, 2017b) and Grajner forthcoming.

way of thinking of these laws we should aim to posit simple, rather than complex, laws. The laws posited by our total theory contribute to the complexity of our total theory, just as natural laws contribute to the complexity of scientific theories. And just as scientists aim to posit simple, rather than complex, laws of nature, metaphysicians should aim to posit simple, rather than complex, metaphysical laws.

Metaphysicians generally work with an oddly restricted conception of those respects in which theories can be more or less simple. For example, one often finds metaphysicians who seem to think that theories can only be more or less simple with respect to their ontologies, and with respect to their ideologies—cf. Cowling, who writes that “The theoretical virtue of parsimony values the minimizing of theoretical commitments, but theoretical commitments come in two kinds: ontological and ideological”.³⁵ Metaphysicians sometimes also recognize a distinction between quantitative ontological or ideological parsimony and qualitative ontological or ideological parsimony. Scientists, however, generally, and correctly, take note of other respects in which our theories can be more or less simple. One way in which a theory can be more or less simple is, again, with respect to the complexity of the laws posited by the theory. We can get a sense for what simplicity with respect to laws amounts to in certain cases by turning to a well-known example from the history of physics: one respect in which Newtonian physics was preferable to its competitors was insofar as Newtonian physics allowed us to derive Kepler’s laws of planetary motion from Newton’s laws of motion. This derivation simplified the laws posited by our total physical theory, and in particular simplified our total physical theory in comparison with competing theories which require that we take on board both Kepler’s laws of planetary motion as well as Newton’s laws of motion as underived components in our theory. This example concerns simplicity with respect to *number* of (underived) laws, but we can also note that theories can be more or less simple with respect to the complexity of the individual laws required by those theories (although in practice it may often be difficult to tell when one law is simpler than another law).

Now we can see where the non-foundationalist goes wrong in their attempt to give relatively simple and unified descriptions of non-foundationalist grounding structures. The theoretical unification discussed above with respect to non-foundationalist Structure 1 will require relatively complex metaphysical laws. Proponents of Structure 2 will either have a disunified (and so complex) picture of reality, or they will require a conjunction of metaphysical laws and grounding structures which are objectionably fine-tuned.

3.1 Structure 1

Start with Structure 1: $\dots \rightarrow F_{-3} \rightarrow F_{-2} \rightarrow F_{-1} \rightarrow F_0 \rightarrow F_1 \rightarrow F_2 \rightarrow F_3 \rightarrow \dots$

In this grounding structure F_0 is grounded in F_{-1} , F_{-1} is grounded in F_{-2} , F_{-2} is grounded in F_{-3} , and so on. F_0 grounds F_1 , F_1 grounds F_2 , F_2 grounds F_3 , and so on. We can, it is alleged, derive all of the facts in the grounding structure from F_0 , with

³⁵ Cowling (2013, 3889).

the aid of appropriate metaphysical laws. But notice that the laws in this case must be both forward-looking (so to speak), as well as backward-looking (so to speak). Such laws must be forward-looking in the sense that they tell us how some facts ground some other facts: i.e., they tell us that F_0 grounds F_1 , which in turn grounds F_2 , and so on. But these laws must *also* be backward-looking, in the sense that they tell us how some facts are grounded in some other facts: i.e., they tell us that F_0 is grounded in F_{-1} , which in turn is grounded in F_{-2} , and so on.

This requirement, that the metaphysical laws governing our grounding structure are both forward- and backward-looking, is not a trivial one. In other words, it is not as if just any theory will require both backward- and forward-looking laws. Some grounding structures are such that we require forward-looking, but not backward-looking, laws in order to make sense of those grounding structures, while other grounding structures are such that we require backward-looking, but not forward-looking, laws in order to make sense of those grounding structures, and in principle a theory can get by with grounding structures which merely require one sort of law rather than the other (indeed, below I will argue that foundationalists only require forward-looking metaphysical laws).

I'll give two examples meant to illustrate the point that some grounding structures require forward-looking, but not backward-looking, laws. These are both cases where a grounded fact is multiply realizable, in the sense that that same fact can be grounded in multiple different grounding facts.

First, consider the metaphysical law governing disjunction, which tells us that disjunctions are grounded in their true disjunct(s). This law is forward-looking, in the sense that it allows us to derive a particular grounded fact from the fact which grounds it, but it is not backward-looking, insofar as it does not allow us to derive the grounding fact from the grounded fact. So, for example, this law allows us to derive from some true proposition P the truth of the disjunction " P or Q " (for any proposition Q). This law can potentially simplify our total theory in the following manner: once the theory posits the truth of P , as well as the relevant metaphysical law, then the truth of the disjunction " P or Q " follows automatically, and so does not add to the complexity of our total theory. By contrast, just given the truth of the disjunction " P or Q " the metaphysical law in question does not allow us to derive the truth of P .

Second, many mereological laws are forward-looking, but not backward-looking. For example, we might have some law to the effect that simples arranged table-wise compose a table. Given this law we can derive, from the fact that some simples arranged table-wise exist, that they compose a table, and so that a table exists. But we cannot derive, merely from the fact that a table exists, that there are simples arranged table-wise. This is because the table may be a big extended simple, or it may be composed of gunk (i.e., it may be such that all of its parts have further parts), or it may be composed of stuff, rather than simples.

Laws which are both forward- *and* backward-looking, in the sense described above, are, all other things being equal, more complex than laws which are merely

forward-looking.³⁶ This is because such laws *say more* about the facts governed by those laws: they describe not only the manner in which facts ground other facts (i.e., what sort of fact some fact F will ground, if any), but also the manner in which facts are grounded in other facts (i.e., what sort of fact some fact F is grounded in, if any). In other words, such laws say, of some fact governed by the law, not one, but *two* things about that fact: what that fact grounds, and what grounds that fact. This is not a trivial feature of these laws. As we saw above, simply because a law tells us how facts ground other facts, it does not follow that the law tells us how facts are *grounded in* other facts, and vice versa.

You might think that it would be a good thing if we had metaphysical laws which are both forward- and backward-looking. After all, isn't it better for a law to be able to derive *more* facts? Doesn't that make the law more informative? But it is only unequivocally better for laws to be able to derive more facts if this does not make the laws more complex. After all, we could always in principle come up with very complex gerrymandered laws capable of predicting all of our empirical evidence. One reason these laws are objectionable, even though they can predict all of our empirical evidence, is that they are very complex. What we want are laws which are both simple and capable of predicting or accounting for much or all of our evidence. In the case of grounding, what we want are laws which are both simple and capable of accounting for all of the facts in whatever grounding structure we are considering (e.g., a foundationalist grounding structure, or a non-foundationalist grounding structure such as Structure 1). And in this case the proponent of Structure 1 who wants to derive all of the facts in the structure from F_0 will require relatively complex laws, since they require laws which are both forward- and backward-looking.

More complex laws can in principle earn their keep by, say, explaining or predicting more phenomena. But in this case the proponent of Structure 1 can account for all of the phenomena (i.e., all of the facts in their grounding structure), but so can the foundationalist. The metaphysical foundationalist need only posit comparatively simple forward-looking laws in order to derive all of the facts in their grounding structure from the fundamental fact(s). If foundationalism is correct, then once one posits the fundamental facts, as well as the (forward-looking) metaphysical laws governing the manner in which those fundamental facts ground other facts, then one will be able to derive all non-fundamental facts since, per hypothesis, all non-fundamental facts are fully grounded in the fundamental facts. Since *all* the facts are either fundamental or non-fundamental, the foundationalist can in principle derive all facts from the fundamental facts plus forward-looking metaphysical laws governing the manner in which those fundamental facts ground non-fundamental facts.

My argument here is relatively modest. The argument does not tell us that, all things considered, any given foundationalist theory will have simpler metaphysical laws than any given non-foundationalist theory. It tells us rather only that if the non-foundationalist proponent of Structure 1 wants to enjoy the sort of theoretical unification enjoyed by the foundationalist, and derive all of the facts in their grounding

³⁶ Note that I am not suggesting that backward-looking laws are *by themselves* more complex than forward-looking laws.

structure from a relatively simple starting point (say, fact F_0), then they will have to complicate their total theory in this one particular respect: they will require both forward- and backward-looking metaphysical laws. It is often a difficult matter to decide whether, or why, some law (such as a metaphysical law) is simpler than some other law. But we can at any rate identify *ways* in which laws can be more complex than other laws, and that is what I have tried to do here. And while the non-foundationalist may have to complicate their metaphysical laws in this particular way, the foundationalist by contrast does not obviously need to complicate their metaphysical laws in order to derive all facts from the fundamental facts. That's a point in favor of foundationalism.

3.2 Structure 2

“Structure 2” is meant to encompass any sort of grounding circle. Grounding circles occur whenever some fact is among the facts which ground it. Not just any sort of grounding circle will accommodate the sort of theoretical unification which interests us here. If some fact is among the facts which ground it, that by itself doesn't allow us to derive the entire grounding structure from some relatively small subset of the facts included in that grounding structure. But some circular grounding structures can get the job done. Since we are interested in whether proponents of grounding circles can enjoy the sort of theoretical unification enjoyed by the foundationalist, I will confine my attention to grounding circles which are such that we can derive all of the facts in the circle from some relatively simple subset of those facts. Here is an example: $\dots \rightarrow F_0 \rightarrow F_1 \rightarrow F_2 \rightarrow F_3 \rightarrow \dots \rightarrow F_n \rightarrow F_0 \rightarrow \dots$ In this grounding structure some fact F_0 grounds F_1 , F_1 grounds F_2 , F_2 grounds F_3 , and so on, until we reach some fact F_n which grounds F_0 .

So, what is objectionable about this sort of grounding structure?³⁷ Unfortunately, the concerns I have with this sort of grounding structure cannot be so easily stated as the concerns I have with Structure 1. Circular grounding structures are not objectionable because they require backward-looking laws, since they don't seem to require such laws. Rather, I think that proponents of these sorts of circular grounding structures will either be committed to an objectionably disunified (and so complex) picture of reality, or they will be committed to an objectionable sort of fine-tuning (fine-tuned conjunction of laws and grounding structure).

The proponent of Structure 2 will maintain either that there are many grounding circles, or that there are just a few grounding circles (in the limiting case just one big grounding circle).

³⁷ Assuming that grounding is transitive, whether grounding circles are possible will depend on whether grounding is irreflexive (on which see Jenkins, 2011; Rodríguez-Pereyra, 2015), since, given the assumption that grounding is transitive, in a grounding circle every fact grounds itself. Since most philosophers think grounding is both transitive and irreflexive, it immediately follows that they would reject grounding circles. For the sake of argument I assume in this paper that such a quick refutation of grounding circles is inadmissible.

If there are many grounding circles, then while each *individual* circle might be describable in relatively simple terms, in the sense that we can derive all of the facts in the circle from some relatively simple subset of those facts, we will nevertheless be stuck with a complex overall view. This is because we cannot derive all facts *simpliciter* from some relatively simple subset of the total facts, but must rather derive, for each individual grounding circle, the facts in that circle from some relatively simple set of facts in that circle (i.e., for each grounding circle we will need to posit at least one fact from which we derive all the other facts in the circle). By contrast, the foundationalist derives all facts from a relatively simple subset of the total facts, by deriving all facts from the fundamental facts. So, the proponent of grounding circles who thinks that all facts are situated within a large number of grounding circles is committed to a very disunified picture of reality, one which could be simplified by becoming a foundationalist.

Suppose instead that there are just a few grounding circles (in the limiting case just one big grounding circle). Since all facts are situated within just a few grounding circles, the grounding circles will have to be very complex, since they must encompass the wide range of variegated facts which we know obtain. In this case we are left with a very odd coincidence, namely that the grounding structure starts at F_0 , and, through the complex intermediary network of facts in the grounding structure, ultimately arrives back at F_0 . In order for this to happen the conjunction of the metaphysical laws and the grounding structure must take a very particular form (in a sense to be spelled out shortly), to ensure that F_0 ultimately grounds itself. This feature of the grounding structure seems to me to be *prima facie* objectionable. For the remainder of this section I will explain why a grounding structure of this sort would be objectionable, and in particular why it would require objectionable fine-tuning.

We face exactly the same concern when it comes to certain sorts of causal loops, and so it may be helpful to begin by describing how this concern crops up in the latter cases. Causal loops are causal series where some causal relata (an event, say) is among its own causes. For example, starting at some causal relata C_0 , C_0 must cause C_1 , C_1 must cause C_2 , and so on, in such a manner that we end up where we began, at C_0 .

As Richard Hanley³⁸ notes, causal loops will often involve objectionable coincidences. Consider an example. A young man receives a pocket watch from an old woman. He travels back in time to give the pocket watch to a young woman, who, over many years, grows into the old woman, who then gives the pocket watch to the young man. The young man receives a pocket watch with particular properties: a certain size, a certain shape, a certain cleanliness, and so on. In fact, the pocket watch is made up of a very large number of molecules, which have a particular configuration when he receives the pocket watch. As he interacts with the pocket watch, the configuration of those molecules changes: molecules are moved around, and even torn from the pocket watch, as it is handled, scratched, polished, etc. And after the young man travels back in time and gives the pocket watch to the young woman, and she interacts with the pocket watch over the course of many years, the configuration

³⁸ 2004.

of the molecules changes a great deal. But after the young woman becomes an old woman, and she gives the pocket watch to the young man, those molecules must have precisely the configuration they had when he originally received the pocket watch, since, of course, his originally receiving the pocket watch and his receiving the pocket watch now are the same event. But isn't it highly unlikely that, over the course of the many years in which the young man and the young woman interact with the pocket watch, that all those molecules would reconfigure themselves so that they take precisely the positions they had when the young man originally received the pocket watch?³⁹

Now, the causal circle involving the pocket watch may be objectionable for other reasons as well. Perhaps the fact that the causal circle would involve backward causation is objectionable. Or perhaps there is some sense in which the pocket watch would lack a satisfying explanation for its existence, and this feature of the scenario is objectionable. These are all legitimate concerns. But a theme of this paper is that non-foundationalists who want to emulate the theoretical unification enjoyed by foundationalist theories will be stuck with objectionable *metaphysical laws*, and so I would like to explore a similar concern regarding the causal circle involved in the case of the time traveling pocket watch: there is something objectionable about the causal laws involved in that causal circle, or about the conjunction of the laws with other features of the causal circle. A rough way of putting the point is that we require a highly unlikely coincidence for the conjunction of the laws and other features of the causal circle to obtain. It would be a staggeringly large coincidence if all those molecules happen to be reattached, in precisely the right configuration. Every time the young man or the young woman in the story touches the watch, and every time it rubs against either of their clothing, many molecules are removed from the watch and scattered all over the place. Suppose, for example, that the young woman takes the watch to the beach, and some of its molecules wear off there and are blown by the wind into the ocean. It would be an astounding coincidence if, through subsequent causal processes (e.g., subsequent wind patterns, subsequent touching of the watch), all those molecules are *reattached* to the watch in precisely the configuration they originally had when they were given to the young man. After all, there is only one way for those molecules to be arranged in order for them to have that precise configuration, whereas there are vastly many alternative arrangements they could have where they will not have that precise configuration (including arrangements where they no longer form a watch—if, say, wear and tear on the watch results in its destruction).⁴⁰

It is true that the laws of nature might *conceivably* be such that, in conjunction with the state of the physical system (e.g., the arrangement of the molecules at some particular time), the reconfiguration of all those molecules occurs. But wouldn't it be

³⁹ This pocket watch thought experiment is described in Hanley (2004, 131, 133). The thought experiment is modeled after events contained in the movie *Somewhere in Time*.

⁴⁰ Note that the reasoning here resembles the standard explanation for why entropy tends to increase in isolated systems: there are many more ways for a system to increase in entropy than for it to decrease in entropy, and so it is more likely that over time the system's entropy will increase rather than decrease.

a shocking coincidence if the conjunction of those laws and that physical state of the world obtained? I suspect that what would be so shocking about the conjunction of those laws and that physical state of the world is that it would need to be very *fine-tuned*: the laws and the physical state must be such that together they steer the causal circle back toward this very narrow range of outcomes, in which all of the molecules of the pocket watch take the configurations they had when they were first given to the young man. If either the laws or the precise configuration of the molecules making up the pocket watch had been only slightly different, then it is highly unlikely that they would have nevertheless resulted in a causal circle of such astounding precision, in which the circle ultimately rearranges the molecules to precisely the arrangement they had when they were originally given to the young man.

Compare this sort of fine-tuning with the widely discussed notion that the universe is fine-tuned for life.⁴¹ Most such cases of fine-tuning are fine-tuning of boundary conditions (e.g., the initial state of the universe) and constants (e.g., the value of the cosmological constant): the range of possible boundary conditions and constants which are compatible with life are very small in comparison with the total range of nomologically possible boundary conditions and constants. The boundary conditions and constants are fine-tuned *given* a background assumption that certain laws obtain. We might say, then, that what is surprising is not just the fine-tuning of the boundary conditions or constants, but rather the fine-tuning of the *conjunction* of the laws and boundary conditions or constants, or the fine-tuning of the boundary conditions and constants *given* the laws. Similarly, in the story of the time traveling pocket watch, what is surprisingly fine-tuned is the *conjunction* of the laws and the state of the physical system (e.g., the arrangement of the molecules at some particular time), or the state of the physical system *given* the laws.

I have described at length why I take the causal circle involving the pocket watch to be objectionable, since very complex grounding circles seem to be objectionable for more or less the same reason.

Recall where we are in the dialectic: the proponent of grounding circles does not want to posit very many grounding circles, since then their overall picture of the world will be disunified. So, they instead maintain that all the facts which obtain are situated within a relatively small number of grounding circles. Since these grounding circles are meant to subsume *all* of the facts which obtain, they must be very complex. As we saw above, a very complex causal circle, of the sort we would have in the thought experiment involving the time traveling pocket watch, requires objectionable fine-tuning, in order to account for the staggering coincidence involved in the pocket watch's molecules being rearranged after many years into precisely the configuration they had when they were originally given to the young man. It seems to me that a complex grounding circle will require an exactly analogous staggeringly improbable coincidence, unless we have (objectionable) fine-tuning.⁴² Just as the

⁴¹ Lewis and Barnes (2016).

⁴² So, I don't mean to suggest that *all* grounding circles will require these sorts of objectionable coincidences or fine-tuning. For example, there might not be objectionable fine-tuning in the case of a very simple grounding circle wherein some fact directly grounds itself. By the same token, the pocket watch thought experiment presumably couldn't show that very simple causal circles are objectionable.

pocket watch causal circle requires that the molecules of the pocket watch reassemble into the precise configuration they had when the pocket watch was given to the young man, we might say that the complex grounding circle requires a conjunction of laws and states of the grounding structure which accommodate a similar sort of “reassembly.” The sort of “reassembly” I have in mind is the following: some subset of the facts in the grounding circle must be able to ground themselves, through all of the complex intermediary facts contained in the rest of the grounding circle, just as the complex arrangement of pocket watch molecules must reassemble itself through the complex intermediary events which constitute the history of the pocket watch. If one sort of “reassembly” is objectionable, then presumably the other one should be as well. The causal circle is *prima facie* improbable because there is only one way for the molecules to be rearranged in order for them to have the precise and complex configuration they need to have in order for the causal circle to obtain, whereas there are vastly many alternative arrangements they could have where they will not have that precise configuration. Similarly, the complex grounding circle is *prima facie* improbable because there is only one way for the facts to be configured in order for them to take on the precise and complex configuration they need to have in order for the grounding circle to obtain, whereas there are vastly many alternative configurations they could have which would not result in a grounding circle.

I realize that this discussion is occurring at a very high level of abstraction. It would help if I could give an example of the sort of “complex” grounding structure I have in mind here, just as I gave an example of a complex causal circle (namely, the causal circle involving the pocket watch). But it is difficult to give a detailed concrete example of a grounding circle of this sort. While we are familiar with pocket watches, and can readily grasp the causal history of the pocket watch in the story described above (however improbable that causal history might be), we are not used to describing in similar detail large complex grounding circles meant to encompass a sizeable chunk of all of the facts which obtain. It is understandable, then, that those who think that we should believe in grounding circles rarely if ever put forward concrete proposals involving such large complex grounding circles. Rather, the grounding circles they discuss are more likely to be simple small-scale grounding circles, which are not meant to subsume all, or even very many, facts.⁴³

But in order to help the reader grasp the sort of complex grounding circle I have in mind here, I will present a schematic and artificial example. Suppose, to simplify the example, that there are a finite number of times. Now imagine that all of the physical facts at some particular time enter into the following sort of grounding circle: all of the physical facts at time T_0 ground all of the physical facts at T_1 , which ground all of the physical facts at T_2 , and so on, until we reach all of the physical facts at time T_n , which ground all of the physical facts at time T_0 . While

⁴³ See, for example, one of Thompson’s (2016) proposed grounding circles: the mass, density, and volume of a sample of homogeneous fluid might be such that any two of them ground the other. Assuming that grounding is transitive, then in this case any of the three facts regarding the fluid (partially) grounds itself. Obviously, a grounding circle of this sort is only meant to encompass a very tiny portion of the total facts which obtain.

proponents of grounding circles need not endorse this particular grounding circle, they will, if they are committed to just a few (or perhaps just one) grounding circles which encompass all facts, endorse a grounding circle the complexity of which is similar to this one. I claim that there is a startling and *prima facie* objectionable coincidence involving this grounding circle, insofar as the extremely complex set of physical facts at T_0 just so happen to “reassemble” themselves, so to speak, in order to ultimately ground themselves through the complex set of intermediary facts at T_1 , T_2 , etc. The coincidence here seems to be *more* objectionable than the coincidence involving the pocket watch. This is because the set of facts involved in the grounding circle include, as a proper subset, all of the facts involving any given pocket watch (assuming that, in our toy example, the physical facts at T_0 include all of the physical facts involving some pocket watch which exists at that time). So, in this case the relata of the grounding circle is more complex than the relata of the causal circle involving the pocket watch, and so the coincidence required for the relata of the grounding circle to “reassemble” itself would seem to be at least as large as the coincidence required for the pocket watch to reassemble itself. Conceivably, the metaphysical laws in conjunction with the grounding structure might accommodate this sort of staggering coincidence. But in order for that to happen the conjunction of the laws and the grounding structure would have to be objectionably fine-tuned, since if either the laws or the grounding structure were only slightly different then the grounding structure would not circle back on itself. The “target” which the grounding circle must hit is the complex conjunction of facts at T_0 , and this is a very small target, since, given the large number of facts included in the conjunction, there are any number of ways in which the target could be missed: *this* fact might be missed, or *that* one, and so on, for all of the many facts at T_0 .

4 Conclusion

To recap: Metaphysical foundationalism is the thesis that there are some fundamental facts which fully ground all other facts. Metaphysical foundationalism simplifies our total theory by allowing us to derive many components of our total theory (namely, all of the non-fundamental facts) from a relatively simple subcomponent of that theory (the fundamental facts). Theories which posit non-foundationalist grounding structures can emulate this sort of theoretical unification only at the cost of objectionable metaphysical laws. For example, they may need laws which are both backward- and forward-looking, or they may need a conjunction of laws and grounding structures which are objectionably fine-tuned. I should be clear that I have not argued that non-foundationalists *must* endorse objectionable metaphysical laws of these sorts. I’ve simply argued that if those laws are not objectionable in the sense described above then metaphysical foundationalism enjoys greater theoretical unification than its competitors. So, the idea is that foundationalism will be preferable to non-foundationalism either in *this* respect (theoretical unification) or in this *other* respect (less objectionable metaphysical laws). I have not aimed to establish that foundationalist theories are, in *all* respects, less objectionable than

non-foundationalist theories. But the onus now lies on the non-foundationalist to detail respects in which non-foundationalist theories may be preferable to foundationalist theories.

A final point worth noting is that similar unification-based arguments could be given for theses which are similar to, but weaker than, metaphysical foundationalism. Orilia makes a similar point in response to Cameron's argument for metaphysical foundationalism, when Orilia notes that theists and priority monists can enjoy a certain degree of explanatory unification regarding *some* facts, even if they do not endorse full-blown metaphysical foundationalism regarding *all* facts.⁴⁴ I agree, although I won't develop the idea further here.⁴⁵

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⁴⁴ Orilia (2009, 339).

⁴⁵ In fact, some cosmological arguments for theism appeal to the explanatory unification afforded by theism, and the attendant simplification of our total theory afforded by theism. For example, an argument of this sort is defended by Swinburne (2004, Ch.7, especially pp. 149–152), who argues that God is a particularly simple terminus of explanation for the existence of the complex physical universe.

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