

ESSAYS ON THE METAPHYSICS OF LAWS, PROPERTIES, AND GROUPS

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ESSAYS ON THE METAPHYSICS OF LAWS, PROPERTIES, AND GROUPS

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This dissertation is comprised of three papers: two on the metaphysics of grounding, laws, and properties, and one on the metaphysics of social groups. In Chapter 2, I argue that there are no fundamental laws of metaphysics and that metaphysical laws are not required for grounding. I offer a new view: the natures of properties explain grounding. Chapter 3 develops this idea. First, properties play their roles in grounding necessarily, so a Humean-quidditist-like view can be rejected. Next, a primitive-laws account of grounding can be rejected for not being sufficiently explanatory. Instead, we should embrace my proposal that there are “grounding powers.” I show that properties can be individuated by their powers to ground and argue for a kind of structuralism, according to which non-fundamental properties just are powers to ground. Shifting gears, Chapter 4 asks: how do groups of people persist through time? Social groups can change their members, locations, and structure. I first argue that four-dimensionalism better explains the context sensitivity found in some cases. I then exploit two unique features of the social to argue for the stage theory, a type of four-dimensionalism. First, puzzle cases involving social groups actually happen, and so cannot be ignored. Second, only the stage theory can explain fission cases because pre-fission spatial coincidence is implausible for many kinds of groups and only the stage theory does not require spatial coincidence to explain these cases.

BIOGRAPHICAL SKETCH

August “Augie” Faller was born on June 6, 1990 in Lewiston, Idaho. He left Idaho to attend Reed College in Portland, Oregon, where he studied philosophy and wrote a thesis under the guidance of Troy Cross. He began graduate school at Cornell University in the fall of 2013. Early on, he focused on the philosophy of language, but he later shifted to metaphysics (with side interests in philosophy of science and early modern philosophy), eventually asking Karen Bennett to be his primary adviser. Other committee members included Derk Pereboom (who became co-Chair once Karen Bennett moved to Rutgers University), Nico Silins, and Ted Sider, whom he visited at Rutgers for the 2017–2018 school year. While at Cornell, Augie was a Graduate Resident Fellow at Carl Becker House and helped organize the Cornell Skateboarding Club.

This dissertation is dedicated to Olga Marie Faller, whose kindness, patience, stubbornness, and love for the outdoors continues to inspire me.

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CHAPTER 1

INTRODUCTION

This dissertation is the result of an investigation into the metaphysics of grounding, properties, and, more recently, the metaphysics of social groups. Each chapter contains an introduction to the topics discussed within it; in this chapter I will provide an extended abstract of what each chapter contains.

Chapters 2 and 3 together offer a novel account of the metaphysics of grounding, metaphysical laws, and properties. Metaphysical laws connect more and less fundamental facts to form metaphysical explanations. For example, a law of metaphysics connects facts about my brain state to facts about my mental state. The brain facts *ground* the mental facts *via* that law. *Nomists* believe that metaphysical explanations *must* appeal to metaphysical laws, and *Fundamentalists* believe that some metaphysical laws are fundamental.

In Chapter 2, “Do the Laws of Metaphysics Govern?”, I argue that Nomism entails Fundamentalism, and then argue against Fundamentalism, thereby casting doubt on Nomism. Fundamentalism is committed to emergence, as it posits primitive laws connecting the more and less fundamental. For example, Fundamentalism is committed to there being fundamental laws connecting the physical and mental. But as Jaegwon Kim has pointed out, this leaves us in want of an explanation of the connection from physical to mental, and so does not yield an adequately physicalist account of the world. Further, Fundamentalism violates the Purity principle, proposed by Ted Sider, that fundamental facts involve only fundamental constituents. Finally, I sketch and defend a new picture of what explains metaphysical explanation: the natures of fundamental properties. Properties bestow *grounding powers*, and these powers offer a non-reductive

analysis of metaphysical explanation.

I further develop and defend my account of properties in Chapter 3, “Grounding and Properties.” I use accounts from the literature on natural laws and causation as a model for investigating how grounding and properties relate. Properties play their roles in grounding necessarily, so a Humean-quidditist-like view that allows properties to swap roles in grounding can be rejected. Next, a primitive-laws account of grounding explanations can be rejected. Instead, we should embrace a grounding powers account. I show that properties can be individuated by their powers to ground. For example, the properties *triangular* and *trilateral* can be distinguished because instances of the former are grounded in having three angles, while instances of the latter are grounded in having three sides. This account has several advantages over the causal account of properties, and can help us understand what grounds grounding facts: grounding facts are grounded in the natures of fundamental properties.

In Chapter 4, I argue that the *stage theory* of persistence offers the best solution to the following puzzle: In 1943, the NFL teams the Pittsburgh Steelers and Philadelphia Eagles each failed to field a sufficient number of players. So, they combined, forming the “Steagles,” but separated again the following season. Today, each team counts the Steagles in their record. So, it seems we should say that the Steelers and the Eagles are the same team as the Steagles. But then it seems we are committed to saying that the Steelers are the same team as the Eagles. How could they both be the same team as the Steagles, but not be the same team as each other?

According to the stage theory, groups like football teams are located at a single time, but persist through time by having temporal counterparts at dif-

ferent times. Both the Steelers and the Eagles can look back and say, “that was us,” since the Steagles were a temporal counterpart of each team. But the Steelers and Eagles are not counterparts of each other, because they are not related in the right way to be properly called the ‘same team’ (e.g., no team can play against itself in official matches, etc.), so we are not committed to saying they are now the same team.

The stage theory has few defenders, and no one has defended it as an account of how social groups persist in particular. However, important features of the social make the stage theory especially plausible as an account of how groups persist. First, the cases of fission and fusion familiar from the metaphysics of personal identity and material constitution *actually happen to social groups*, as in the Steagles case, and so cannot be sidelined as “pathological.” Second, pre-fission coincidence of non-identical objects is not plausible for many social groups because these groups require that special conditions obtain *before* they exist, such as a pronouncement, a vote, or broader social conditions.

The arguments of this chapter are therefore significant for both social ontology and the metaphysics of persistence. First, the arguments generalize to other kinds of social entities, and so we have reason to believe that the stage theory is the correct general theory of how social entities persist, including artifacts, the law, and firms. Second, a common defense of a rival theory does not succeed in the case of the social. These arguments either tip the theoretical scales toward the stage theory of persistence generally, or else show that we need a pluralist account of persistence. Both of these are significant conclusions.

CHAPTER 2

DO THE LAWS OF METAPHYSICS GOVERN?

Explanation comes in varieties. The *causal* explanation of Achilles' death is that he was struck by an arrow. But there is also a *metaphysical* explanation of Achilles' death: he died because his brain functions irreversibly ceased. Or consider:

- E1. Achilles' refusal to fight was wrong in virtue of the pain it caused, not because it violated a duty.
- E2. Achilles is in pain in virtue of being in brain state *b*.
- E3. Achilles is a composite thing in virtue of being *alive*.

The example explanations above do not depend on Achilles in particular. Assuming these are good explanations, then each would apply to Hector or Paris equally well. What, if anything, explains this pattern?

A recent prominent answer is that patterns of metaphysical explanation follow from lawful generalizations, which some call *metaphysical laws*.¹ Roughly, the idea is that explanations like E1–E3 succeed only by appealing to metaphysical laws like the following:

- L1. For any act *a*, if *a* brings about the most happiness all things considered, then *a* is morally right. (Utilitarianism)
- L2. For any person *s* and any mental state *m* associated with a role *r*, if *s* is in mental state *m*, then there is some brain state of *s* playing role *r*. (Functionalism)

¹See, for example, Rosen (2006, 2017a); Kment (2014); Wilsch (2015a,b); Glazier (2016); Schaffer (2017b); Wasserman (2017); see also Dasgupta (2014); Sider (2011).

L3. For any plurality xx , there exists a y such that xx compose y if and only if the activity of xx constitutes a life. (Organicism)

I will call the view that explanations like E1–E3 must appeal to metaphysical laws *Nomism*:

Nomism: Metaphysical explanations require metaphysical laws.

As I argue below, Nomism entails that at least some lawful generalizations like L1–L3 cannot themselves be metaphysically explained. In other words, there must be some brute connections between the more and less metaphysically fundamental.² I'll call this thesis *Fundamentalism*:

Fundamentalism: Some metaphysical laws lack metaphysical explanation.

Together, Nomism and Fundamentalism provide a primitive-laws account of metaphysical explanations. This account is analogous to anti-Humean views that posit primitive laws of nature that govern the evolution of the world.³

In what follows, I argue that we should reject Fundamentalism. If we do, since Nomism entails Fundamentalism, we must reject Nomism as well. We then have two surprising results: metaphysical explanations do not require laws of metaphysics, and no law of metaphysics is brute. Where does this leave us? I suggest properties are sufficient to explain metaphysical explanations.

In Section 2.1, I say a little more about metaphysical explanation. I then turn to Nomism and its motivations in Section 2.2. In Section 2.3, I argue that Nomism entails not only Fundamentalism, but a strong version of Fundamen-

²Schaffer (2017b); Wilsch (2015b); Kment (2014).

³This analogy is made by Schaffer (2017b) and Wilsch (2015b).

talism. In Section 2.4, I present my argument against Fundamentalism. There are two problems with taking laws of metaphysics as fundamental, both of which stem from the fact that the laws involve derivative properties. First, by taking these laws as fundamental, we commit ourselves to the derivative properties being problematically “over and above” the fundamental facts. In the case of L2, we have a kind of dualism about mind. Dualism might be the right account, but a meta-view like Fundamentalism shouldn’t decide the debate. Second, the laws violate the principle that a fundamental description of the world only needs to appeal to fundamental notions.⁴ In making these arguments, I respond to two important objections: that metaphysical laws are somehow not even apt for explanation, and that metaphysical laws do not involve properties at all.

In Section 2.5, I sketch a new picture, according to which the natures of properties explain the patterns of metaphysical explanation. Properties bestow *powers to ground*, and metaphysical laws merely generalize the connections between these powers. This account nicely captures the motivations for Nomism while avoiding the pitfalls of Fundamentalism.

2.1 Metaphysical Explanation

Much of the recent discussion on metaphysical explanation has taken place under the banner of *metaphysical grounding*.⁵ I will assume for argument that this literature has established that there is an interesting class of metaphysi-

⁴Sider (2011) calls this the ‘purity principle’.

⁵See, for example, Fine (2001), Fine (2012), Rosen (2010), Schaffer (2009), Audi (2012), and others. See Trogdon (2013b) for an introduction to metaphysical grounding.

cal, rather than causal, explanations along the lines of E1–E3. Further, I will assume *separatism* about grounding and metaphysical explanation: there is a relation of directed metaphysical dependence—metaphysical grounding—that is not identical to, but backs, metaphysical explanation (to identify grounding and metaphysical explanation is “unionism”).⁶ Separatism allows the laws to play a unique role in metaphysical explanations: the explanans *grounds* the explanandum *via* a law. The unionist collapses the ‘via’ into grounding: the explanans and a law *ground* the explanandum. This is because (i) the unionist identifies grounding and metaphysical explanation, and (ii) a metaphysical law from A to B partly metaphysically explains B.⁷

The term ‘explanation’ has at least three uses: it may denote the thing that does the explaining, the relation between the explainer and the explained, or the state of affairs of an explainer explaining the explained. When speaking generally of ‘metaphysical explanation’ I mean the second, the relation between explainer and explained. I will assume that there is such a relation between facts.⁸ For example, the fact that Achilles is in pain is metaphysically explained by the fact that he is in a particular brain state *b*. I take it that facts are structured entities like Russellian propositions, but nothing depends on a specific conception of facts. I will also refer to metaphysical *explanations*, as I do in the next paragraph; by this I mean the third thing, instances of some facts explaining a fact.

Though I assume that a relation of grounding backs metaphysical explana-

⁶The labels ‘separatism’ and ‘unionism’ are due to Raven (2015).

⁷Could the laws *enable* metaphysical explanations for the unionist, without being part of the explanans? I address this possibility below in Section 2.2. Thanks to an anonymous referee for helpful comments on this point about unionism.

⁸Rosen (2010) is representative of this approach; cf. Fine (2012), for whom grounding is a sentential connective.

tions, I will stay neutral on whether grounding ought to be analyzed in terms of more specific metaphysical relations, such as realization, constitution, or composition,⁹ or even whether metaphysical explanations simply encode counterfactual dependence.¹⁰ Discussion of laws of metaphysics crosscuts these debates. If there are metaphysical explanations at all, then we can ask if there are laws of metaphysics, whether they are required for complete metaphysical explanations, and whether their existence has an explanation.¹¹

In short, metaphysical explanation is a non-causal explanatory relation backed by grounding (or other metaphysical relations) and characterized by paradigm cases like E1–E3. There are other plausible assumptions to make about metaphysical explanation, some of which will come out below in the discussion of Nomism.

2.2 Nomism

Nomists believe that metaphysical explanations must proceed via metaphysical laws, much how causal explanations are often thought to require causal laws. In this section, I describe Nomism in more detail and spell out some of its motivations. I won't argue against these motivations. Instead, I will argue against one of Nomism's entailments—Fundamentalism—and then argue that the motivations for Nomism are captured by my alternative account.

According to Nomism, if some set of facts Γ grounds a fact F , then there must be some lawful connection—a metaphysical law—from Γ to F . Nomism

⁹Wilson (2014); Bennett (2011b, 2017) calls these “building relations”.

¹⁰Hofweber (2016), Chapter 13.

¹¹Schaffer (2017b).

is not necessarily a reductive view of metaphysical explanation or grounding; some nomists aim at reduction, others do not.¹²

For example, Nomists believe that to explain why $\{\text{Socrates}\}$ exists, we must appeal to both the fact that Socrates exists (the ground) and a general metaphysical law like:¹³

Set-law For any objects $a_1, a_2, \dots$, there exists a set S containing
 $a_1, a_2, \dots$

Diagrammatically, we can represent this explanatory connection as:

$$\begin{array}{c} \{\text{Socrates}\} \text{ exists.} \\ \uparrow \text{Set-law} \\ \text{Socrates exists.} \end{array}$$

How exactly do laws connect the explanans to explanandum? Some options include grounding, logical entailment, and primitive nomological entailment. How should we formulate the laws? I will assume for now that the laws are aptly represented as universal generalizations like L1–L3 and the Set-law, but will return to this question in Section 2.4.

For simplicity, we can restrict the definition of ‘metaphysical law’ to exclude candidates that do not connect ground to grounded, though there may be some candidates for law-like generalizations that, if true, could be considered laws of metaphysics. For example, if true, the identity of indiscernibles may plausibly count as a ‘metaphysical law’, but I set such examples aside.¹⁴

¹²For a reductive DN-style account see Wilsch (2015a,b).

¹³The example of the existence of $\{\text{Socrates}\}$ asymmetrically depending on the existence of Socrates is due to Fine (1994), and is presented as an example for metaphysical laws in Schaffer (2017b).

¹⁴Thanks to Martín Abreu Zavaleta for suggesting this example.

With this basic understanding of Nomism in hand, I'll now sketch four motivations for Nomism. I don't fully endorse these motivations. However, instead of challenging them, I will show in Section 2.5 that my preferred account can accommodate these motivations.

The first motivation for Nomism is that it offers a unified explanatory framework for metaphysical and causal explanation.¹⁵ Just as causal explanations cite general causal connections, metaphysical explanations cite laws of metaphysics. By unifying the two kinds of explanation, our theory of explanation gains theoretical unity and simplicity.

The second motivation is from three epistemic roles of explanation. Explanations unify patterns, give guides for manipulating outcomes, and aid our understanding.¹⁶ First, explanations should unify patterns, for example the pattern that the existence of any singleton set is explained by the existence of its member. A law like the Set-law unifies this pattern by subsuming it under a lawful generalization. Second, on the manipulationist understanding of explanation, to explain something is to give a recipe for how to bring it about. The Set-law offers one such recipe: to make a set containing x exist, make x exist. The third epistemic role of explanation is to increase our understanding of a phenomenon. And, to understand a particular phenomenon, we must have a grasp of a lawful generalization that explains how that phenomenon fits into the world. As Jonathan Schaffer summarizes:

It is through set formation that the general pattern connecting

¹⁵This motivation can be found in Schaffer (2016a) and Kment (2014).

¹⁶Schaffer (2017b). I count these as epistemic considerations because they relate the investigator to the world. Schaffer also argues by analogy with causal explanation and by paradigm cases of metaphysical explanation, but the motivations are sufficiently interrelated that I will set these aside.

Socrates to {Socrates}, Plato to {Plato}, and Aristotle to {Aristotle}, etc. is revealed. It is through set formation that one can see how wiggling the existence of Socrates wiggles the existence of {Socrates}. And it is through set formation that one can understand why {Socrates} exists, given that Socrates exists. (Schaffer, 2017b, 310)

The third motivation stems from the meta-question, *what's the explanation for a metaphysical explanation?*¹⁷ Suppose the existence of {Socrates} is fully explained by the existence of Socrates, contra Nomism, for reductio. What explains *that* fact? As we saw in the previous motivation, it seems to be part of the role of explanation that it ties together similar phenomena. So, it is natural to reply that the fact that Socrates' existence fully explains the existence of {Socrates} is explained by the fact that Socrates exists and the Set-law (in our separatist language, the fact that Socrates exists grounds the fact that {Socrates} exists via the Set-law). Call this explanation of an explanation the 'meta-explanation'.

We can generalize the idea that laws play a role in the meta-explanation in the following principle:

Laws-Explain-Explanation: To metaphysically explain that Γ metaphysically explains F , we need to appeal to a general, law-like connection between the members of Γ and F .

This principle needs much more discussion, in particular concerning in what sense the law explains the explanatory connection between Γ and F (does the law produce the connection, unify it, logically entail it, or what?). I will return

¹⁷See Bennett (2017) (who is not a Nomist) and the exchange between Bennett (2019) and Dasgupta (2019) (who is a Nomist) for this line of argument.

to this issue in Section 2.5.

Including the Set-law in the meta-explanation doesn't get us to Nomism, because the initial explanation of the existence of {Socrates} in terms of the existence of Socrates didn't include a law, as Nomism requires. But there is reason to think that once we have granted that the meta-explanation appeals to the law, the initial explanation must as well. The reason is that if the law plays a role in making the explanation succeed, then it also plays a role in bringing about {Socrates}. Without the law backing up the explanatory connection, there would be no {Socrates}. So, it seems the law does immediately explain the existence of {Socrates} after all. We thus have a second principle:

Meta-Explainers-Are-Explainers: If S partly metaphysically explains the fact that Γ metaphysically explains F , then S partly metaphysically explains F .

Together, Laws-Explain-Explanation and Meta-Explainers-Are-Explainers entail Nomism, for both the separatist and unionist about grounding. Consider an arbitrary metaphysical explanation of a fact F in terms of a set of facts Γ , in order to show that Γ must contain a law (notice that we are using 'metaphysically explains' neutrally between *grounds* and *via*):

Γ metaphysically explains F .

By Laws-Explain-Explanation, there must exist a law L such that:

L partly metaphysically explains that Γ metaphysically explains F .

By Meta-Explainers-Are-Explainers, we then have:

L partly metaphysically explains F .

The law L must therefore be a member of Γ . The law might be part of the grounds, or it might play a unique role. Either way, we have Nomism.

The fourth motivation is that Nomism can explain the *generality* and *modal force* of grounding explanations. We can state these features as two principles:¹⁸

Generalization: If a being F metaphysically explains why a is G , then for any x , if x is F then x is G .

Necessitation: If Γ metaphysically explains F , then, necessarily, if every member of Γ obtains, then F obtains.

First, the Nomist can capture Generalization because, for the Nomist, every metaphysical explanation requires the existence of a law, and that law will entail the consequent of Generalization. For example, and to simplify, suppose that the fact that Achilles is in brain state b grounds the fact that Achilles is in mental state m via the law that anything in brain state b is in mental state m . This law entails the consequent of the relevant instance of Generalization: for any x , if x is in brain state b then x is in mental state m .

Finally, the Nomist can capture Necessitation by assuming that the metaphysical laws hold with metaphysical necessity and are deterministic.¹⁹ For example, if the Set-law holds with necessity, then it follows that in any world in which Socrates exists, {Socrates} exists as well. The assumption that the metaphysical laws hold with metaphysical necessity fits with a plausible picture according to which varying degrees of necessity track kinds of laws: the laws of nature define the limits of nomological possibility, the laws of metaphysics de-

¹⁸See Wilsch (2015a) for presentation of this motivation and further discussion.

¹⁹Wasserman (2017) offers an account of metaphysical vagueness using indeterministic laws of metaphysics.

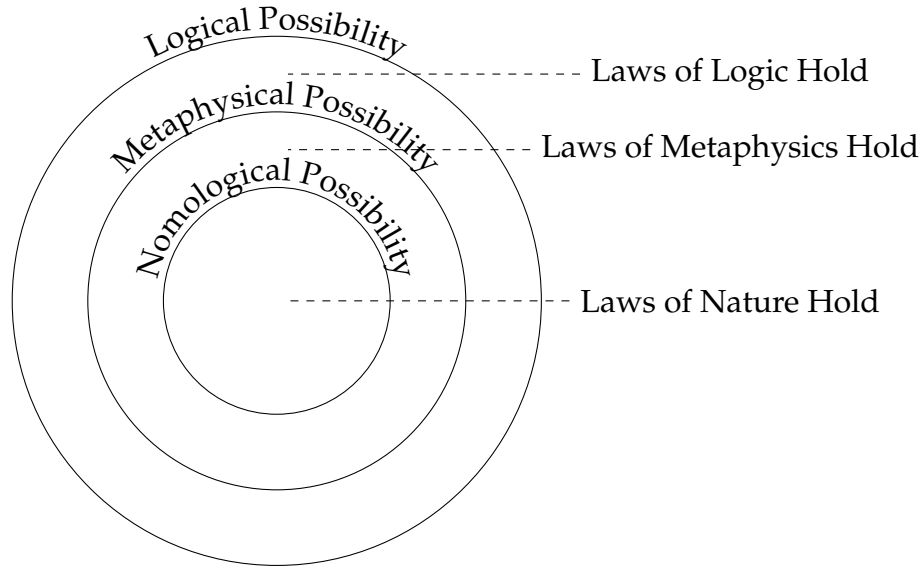


Figure 2.1: Spheres of Possibility

fine the limits of metaphysical possibility, and the laws of logic define the limits of logical possibility (Figure 2.1).

This concludes my presentation of the motivations for Nomism. In the final section, I will show how my preferred view, which appeals to *powers to ground* rather than laws, satisfies these motivations as well. In the next section, I present the argument from Nomism to Fundamentalism.

2.3 From Nomism to Fundamentalism

Fundamentalism is the view that the laws of metaphysics are fundamental, i.e., unexplained.²⁰ In this section, I present an argument from Nomism to Fun-

²⁰Note that Fundamentalism is not the view that some laws of metaphysics are more basic than all other laws of metaphysics, i.e., that there are some “metaphysically elite” laws. The notion of metaphysically-elite laws only relates laws to laws, and so is compatible with all the laws having an explanation in terms of anomic facts.

damentalism.²¹ This entailment is important because the rejection of Fundamentalism then entails the rejection of Nomism. I will use Peter van Inwagen's *Organicism* as an example—I assume it is at least a candidate for a law of metaphysics.²²

First, suppose that no metaphysical law is fundamental. Suppose also that *Organicism* is a metaphysical law. It follows that *Organicism* is grounded by some set of facts F . We can stay neutral on what exactly is included in F ; it's only important that the facts included in F ground *Organicism*.

By the assumption that metaphysical explanations require laws (Nomism), there must be some metaphysical law L_1 such that F grounds *Organicism* via L_1 . By supposition, L_1 is not fundamental. So there must exist some set of facts F_1 that grounds L_1 . Repeating these steps, we have the following series:

- (1) F grounds *Organicism* via L_1 .
- (2) F_1 grounds L_1 via L_2 .
- (3) F_2 grounds L_2 via L_3 .
- .
- .
- .

If $L_1, L_2, \dots$ are distinct, then this is an infinite series.

We should reject this infinite series in favor of a more plausible picture: $L_1, L_2, \dots$ all play the same explanatory role of connecting facts to laws, and so are in fact the same law, the "law-law." To see why, compare this case with set formation. We *could* say that there is a distinct law for each collection of things

²¹The argument in outline is due to Schaffer (2017b). See also Glazier (2016), Kment (2014), and Wilsch (2015b).

²²van Inwagen (1990).

such that the law explains why those things form a set. But it is much more natural to think that there is a single law:

Set-law For any objects $a_1, a_2, \dots$, there exists a set S containing
 $a_1, a_2, \dots$

Stating the metaphysical law for set formation is easy, since it is easy to pick a feature such that having that feature explains why a set is formed. For sets, any ur-element or set can be used to form a new set. To state the metaphysical law for law-explanation, we would need to know what connection there is between the laws and the facts that explain their obtaining. Whatever this feature is, the law-law will be something like:

Law-law If ϕ is instantiated by some facts Γ , a law L obtains.

Let's assume that there is just one law-law, i.e., $L_1 = L_2 = \dots =$ the law-law. Then at the second step of the series we have:

(2') F_1 grounds the law-law via the law-law.

On the unionist account that places the law among the grounds, (2') becomes: F_1 and the law-law ground the law-law. This violates the irreflexivity of partial ground.²³ On the separatist account, there is no violation of the irreflexivity of partial ground, since the law-law does not ground the law-law. However, (2') still violates a stronger irreflexivity principle:

Strong Irreflexivity: If Γ grounds F via L , then $F \notin \Gamma$ and $F \neq L$.

If the Nomist believes that the *via* relation is metaphysically “oomph-y”, then Strong Irreflexivity is especially plausible. On that understanding, it would

²³See, e.g., Fine (2012) for a discussion of some principles governing grounding.

seem that for (2') to be true, the law-law must play a role in making itself obtain (Schaffer (2017b)). But what if metaphysical laws play a purely epistemic role in metaphysical explanations, with no “oomph” at all? There is still reason, albeit weaker reason, to accept Strong Irreflexivity. Allowing a law to directly explain itself adds nothing to our understanding. And this violates the primary epistemic motivation for Nomism, that the laws add something to our understanding. So, it seems that we should provisionally accept Strong Irreflexivity. If so, we can reject (2') as a violation of the principle.

Even if one rejects Strong Irreflexivity, a simple, direct argument for Fundamentalism follows if one accepts a thesis about the completeness of the fundamental. According to this thesis, the fundamental must be sufficient for everything else; it provides a “blueprint for reality” (Schaffer, 2010, 39). This idea can be made more precise as the following principle:

Strong Completeness: Every fact has a purely fundamental explanation.

‘Purely fundamental’ here means that every chain through either the grounding relation or the *via* relation terminates in something fundamental. Strong Completeness and Nomism together entail that all explanations terminate in fundamental laws.²⁴

The anti-Fundamentalist Nomist might appeal to separatism to suggest that the completeness intuition only requires that every fact have a purely fundamental *ground*. If so, then it remains open whether there are any fundamental laws. However, then the Nomist must still reject Strong Irreflexivity (or some other step in the argument). But, Strong Irreflexivity is plausible, even on the epistemic understanding of the role of laws.

²⁴See Glazier (2016) for discussion. Thanks to Ted Sider for discussion.

To summarize, it seems that if we reject Fundamentalism, then Nomism entails that there must be a law-law that explains itself. But this kind of explanation looks implausible, because it violates Strong Irreflexivity and Strong Completeness. If it is, then it is plausible that Nomism entails Fundamentalism.

Strictly speaking, the foregoing argument from Nomism to Fundamentalism only establishes that if Nomism is true then at least the law-law must be fundamental. Call the view that the law-law is the only fundamental law of metaphysics *Minimal Fundamentalism*. Schaffer (2017b) rejects Minimal Fundamentalism, endorsing a Carroll-Maudlin-style account of metaphysical laws as primitive and governing.²⁵ On the Carroll-Maudlin account of physical laws, physical laws are primitive, non-supervening posits that govern the evolution of the state of the world.²⁶ Analogously, Schaffer holds that laws of metaphysics are primitive posits that govern the relations between more and less fundamental, e.g., relations between the mind and body. On this account, the laws of metaphysics are all primitive.

Why would one prefer this view to Minimal Fundamentalism? One reason is that we are after an analysis of metaphysical lawhood. To be a law is to play a special role in metaphysical explanation, and to not be apt for explanation.²⁷ Minimal fundamentalism, by contrast, sits in an unstable position with only one law as primitive. In what follows, I will assume that if Nomism entails Fundamentalism, then it entails a strong version of Fundamentalism.

²⁵Why not an Armstrongian account? For Armstrong, laws can be reduced to a relation of necessitation between universals, and so their existence has an explanation (Armstrong (1983)). If this explanation is law-governed, we run into circularity or an infinite series. If it isn't, then Nomism is false, and we lose motivation for Fundamentalism.

²⁶See, for example, Carroll (1994); Maudlin (2007).

²⁷Schaffer (2017a); Dasgupta (2014); Kment (2014). Thanks to Troy Cross for discussion.

2.4 Against Fundamentalism

So far I have focused on Nomism and the connection between Nomism and Fundamentalism. We now turn to Fundamentalism. Given that we reject Minimal Fundamentalism for the reasons given in the last section, we have:

Fundamentalism: Metaphysical laws lack a metaphysical explanation.

In this section I argue that Fundamentalism faces two related problems. First, it commits us to a kind of emergence for all derivative properties. Second, it violates the Purity principle, that fundamental facts involve only fundamental constituents. In the final section, I present my powers-based alternative and explain why it avoids these objections.²⁸

2.4.1 Fundamentalism and Emergence

In this section I argue that Fundamentalism is committed to a kind of emergence about each of the properties that figure in the laws.²⁹ Emergence may be plausible for isolated domains, but it is implausible as a general thesis about the non-fundamental. Further, it is inappropriate for a theory of metaphysical explanation to take such a substantive position with respect to these debates.

First, some clarification of what I mean by ‘emergence’. Suppose there is a fundamental metaphysical law that says that all *F*s are *G*s (and, to simplify, assume that this is the only law for things being *G*). If *G* is had by non-

²⁸See Berker (2019) for a different line of argument against a Nomist view of moral explanation.

²⁹By ‘emergence’ I mean what is often called ‘strong emergence’. For a discussion of the metaphysically-innocuous notion of weak emergence, see Bedau (1997).

fundamental things, then the Nomist-Fundamentalist is committed to G being emergent in the following sense: a full metaphysical explanation of x being G must appeal to a fundamental fact that involves G , namely, the fact that it is a law that all F s are G s. In other words, it's impossible to get fully "underneath" G ; the non- G parts of the world cannot alone fully explain why something is G . This irreducibility makes the property G emergent.³⁰

To see that this counts as a kind of emergence, consider Chalmers-style dualism.³¹ David Chalmers argues that there are fundamental psychophysical laws that connect psychological states to physical states. These are best characterized as metaphysical, rather than causal, laws for two reasons. First, they relate the mental to the physical synchronically, and so do not govern the evolution of the world like a physical law. Second, psychophysical laws do not interact with physical laws, which form a closed system. Further, if the psychophysical laws are primitive metaphysical laws, then Chalmers-style dualism is Fundamentalism about these laws. This implies that the Fundamentalist about all metaphysical laws is a kind of dualist about all non-fundamental kinds, as each is connected to the fundamental by a primitive law. The Fundamentalist is thus a kind of emergentist about everything.

One might object that the difference between Chalmers and the Fundamentalist is *modal*. For example, are phenomenal zombies possible? Chalmers says that they are, but, assuming that the laws of metaphysics are necessary, the Fundamentalist says they are not. In response, first, the modal difference is not at work in every example. In the case of ethical truths, even ethical non-

³⁰The link between emergence and irreducibility can be found in Kim (1998, 2006). There are many other definitions of emergence in the literature; see Bedau & Humphreys (2008) and Wilson (2015) for various approaches.

³¹Chalmers (2010); though note that Chalmers elsewhere defends a monist position, e.g., Chalmers (2015).

naturalists accept that ethical truths supervene on natural truths. Put another way, Chalmers' argument that phenomenal zombies are possible is sufficient to demonstrate that the mental is somehow over and above the physical, but not necessary. Second, modal connections are not in themselves explanatory. It is necessary that if I exist then $2 + 2 = 4$, since the latter is true no matter what. But there is no interesting connection between me and that fact. Instead, dualism is best interpreted as an explanatory thesis, namely, the claim that the physical cannot by itself explain the mental.³²

Given the deep parallels between Fundamentalism and dualism, there is good reason to think that Fundamentalists count as emergentists.³³ This means that Fundamentalists who think *all* laws are fundamental are emergentists about everything nonfundamental. Even those who manage to whittle their fundamental laws down to a small set will be emergentists about what is left in that set. And this whittling process is unlikely to get very far, since the true laws of metaphysics are plausibly a lot like L1–L3, as I argue below.

In response to this worry, a Fundamentalist might appeal to separatism about grounding. Recall that separatists separate metaphysical explanation from grounding, which they take to be a relation that backs metaphysical explanation. A separatist can consistently believe that metaphysical explanations require primitive laws like Chalmers' psychophysical laws without therefore being committed to the laws being part of the grounds of the facts involving the mental. Chalmers-style views, this response continues, *should* be construed as holding that the laws are part of the grounds. This difference drives a wedge between emergentist views like Chalmers' dualism and the Nomist-

³²See Kim (2006) and Wilson (2015), §3.2 for further reason to doubt that modality is important emergence.

³³See also the "bridge law non-naturalism" of Rosen (2017b).

Fundamentalist view I have been considering.

We can grant that the separatist Fundamentalist who distinguishes grounds from laws may consistently believe that the ultimate grounds don't include the laws. But this difference does not prevent the Fundamentalist from being committed to emergence. Granted, Chalmers has one "book of the world" that includes both the fundamental facts and the laws, while the separatist-Fundamentalist has two books, the fundamental-facts-book and the lawbook.³⁴ But both books are fundamental in that they lack any kind of explanation. Most importantly, they both lack grounds. So, if what made Chalmers a dualist is his primitive psychophysical laws, then it seems that the separatist-Fundamentalist must be a dualist as well, since the separatist-Fundamentalist also has primitive psychophysical laws. Chalmers has one book of the world, and the separatist-Fundamentalist has two; when it comes to emergence, the difference is book-keeping.³⁵

To summarize, I have argued that Fundamentalism commits us to a kind of emergence about the properties that figure in the fundamental laws. The example of Chalmers-style dualism drives home that this is a kind of *strong* emergence. We then have two (related) reasons to reject Fundamentalism. The first is that emergentism is not a plausible theory of the derivative generally (recall that Fundamentalism takes most laws as primitive). The second is that, even if it were a plausible thesis about the derivative generally, our account of metaphysical explanation should not commit us to controversial first-order views, such as in the philosophy of mind.

³⁴Cf. Schaffer (2017a), fn. 35. The phrase "the book of the world" is due to Sider (2011).

³⁵The same point applies, *mutatis mutandis*, to Dasgupta's (2014) distinction between ungrounded facts and facts not apt for being grounded ("autonomous facts"). I discuss this issue below.

2.4.2 The Argument from Purity

Recall the following examples of candidates for laws of metaphysics:

- L1. For any act a , if a brings about the most happiness all things considered, then a is morally right. (Utilitarianism)
- L2. For any person s and any mental state m associated with a role r , if s is in mental state m , then there is some brain state of s playing role r . (Functionalism)
- L3. For any plurality xx , there exists a y such that xx compose y if and only if the activity of xx constitutes a life. (Organicism)

Each of these violates the following principle, adapted from Ted Sider:³⁶

Purity: Fundamental facts involve only fundamental constituents.

I won't argue for Purity; I take it that it is sufficiently significant to show that a fundamentalist cannot accept it.³⁷ Fundamentalists have two options: argue for an exception to Purity, or argue that at the actual laws of metaphysics, unlike L1–L3, do not violate Purity. In this section I argue that neither strategy works.

Intuitively, candidate laws L1–L3 each violate the principle because they involve nonfundamental constituents like happiness, mental states, and life. But what is a 'nonfundamental constituent'? I will say an object is fundamental if

³⁶See Sider (2011), Chapter 7. For Sider, Purity is the principle that fundamental truths involve only fundamental notions. The arguments that follow can be adapted to this framework by thinking of laws as truths and considering the nonfundamental predicates that occur in the laws.

³⁷Sider argues for the Purity principle by pointing out that a truth like 'Rome is a city' is not a good candidate for being fundamental precisely because it involves the nonfundamental notion of a city (Sider, 2011, 127). It seems that no unexplained part of reality should involve cities.

and only if the fact that it exists lacks a metaphysical explanation. A property is fundamental only if all the property's atomic instances lack a metaphysical explanation. The condition for properties is only a necessary condition, in order to allow for uninstantiated nonfundamental properties.³⁸

Consider *Organicism* as an example. According to *Organicism*, some objects compose another if and only if their activity *constitutes a life* (van Inwagen, 1990, 90). By van Inwagen's own lights, the properties of being a life and being an organism are not metaphysically fundamental, but are micro-based in the properties of the parts of the organism. Along similar lines, L1 involves the property of happiness, and L2 involves the properties of being a functional role and being a mental state. Many consider these properties nonfundamental. In fact, it seems that any metaphysical law of the form 'All *F*s are *G*s' will violate Purity on one side.

Response 1: Purity Does Not Apply

One might object that the Purity principle does not extend to laws of metaphysics or essential connections. Shamik Dasgupta motivates these exceptions by arguing that metaphysical laws and essential connections are not apt for explanation.³⁹ For Dasgupta, the connecting principles in question are like definitions. Just as it does not make sense to challenge the truth of a definition, it does not make sense to challenge an essential connection. However, this argument depends on a problematic analogy between essential connections and

³⁸Why not define property fundamentality in terms of fundamental existence? As Bennett (2017), Chapter 7, points out, for the Nominalist that believes properties exist but reduces them to sets, no property exists fundamentally (since the existence of sets is explained by their members). But for the Nominalist some properties can still be fundamental in the sense that their instantiation is not explained in terms of other properties being instantiated.

³⁹Dasgupta (2014).

definitions in language. Definitions in language are stipulated, while essential connections are not.⁴⁰

Schaffer (2017a) offers a different analogy: the laws are like rules of inference. Just as rules of inference are not apt for proof, the laws of metaphysics are not apt for grounding. However, even if the laws play a unique role in explanations when they connect the ground to the grounded, this does not mean that the laws are not apt for explanation in *other* explanations. I have been arguing that they are, so it does seem that the question can arise (actuality remains the best proof of possibility). Without reason to make an exception, I conclude we ought to tentatively accept Purity, at least for the case of properties of and laws governing derivative things.

No special exception should be made for laws of metaphysics. If Purity holds, Fundamentalism is incompatible with most, if not all, plausible laws about the relation between the ethical and natural, physical and mental, composite and simple, and many other areas. The Fundamentalist must therefore reject these laws. This is clearly a bad result.

Response 2: Two Strategies for Defining Pure Laws

In this section I consider two ways of defining purely fundamental laws: by quantifying out mention of nonfundamental entities, and by substituting in a fundamental correlate for the nonfundamental entity. Both fail to offer a plausible response to the Purity objection.

First, one might claim that we can quantify out reference to all nonfunda-

⁴⁰See Sider (2019) for discussion.

mental entities in the laws. For example, Martin Glazier’s approach to defining laws quantifies out mention of particular objects.⁴¹ This is independently motivated, since it seems like laws shouldn’t mention particular objects like my dog Walter or the Eiffel Tower. But Glazier does not quantify out the properties mentioned in the laws. For example, Glazier offers as an example the law that if x is crimson then x is red. This violates Purity if anything does.

Tobias Wilsch goes further, defining principles that quantify out mention of particular objects *and* properties.⁴² All that remains in the law for Wilsch is a *construction operation*, of which there are many, and logical connectives. Consider, for instance, the case of determinables. The law for determinables says that determinables are constructed out of their determinates. Consider a crimson barn. Crimson is among the shades of red that construct redness via the determinable construction operation. So, since crimson is among the shades constructing redness, and the barn is crimson, it follows that the barn is red. We can state a schematic version of the determinable law as follows (Wilsch, 2015b, 3304):

$$\forall X \forall Y \forall x ((\exists ZZ (X = DC(Y, ZZ)) \ \& \ Y(x)) \supset X(x))$$

One can read this law as: for any properties X and Y , and any object x , if there exists some determinate properties ZZ including Y that construct a determinable X , and x is a Y , then x is an X .

A challenge for Wilsch is how to generalize this formulation of metaphysical laws. As Wilsch would have it, no law of metaphysics directly relates properties. Instead, laws only involve construction relations, like set formation, realization,

⁴¹Glazier (2016).

⁴²Wilsch (2015a,b).

composition, determinable-construction, etc. But some candidate metaphysical laws seem to be about relations between particular properties. Consider, for example, a candidate law like L1: For any act a , if a brings about the most happiness all things considered, then a is morally right. To cut happiness out of the law would remove its content. *Organicism* presents a similar challenge, as it involves the property of being involved in a life. Further, as I argue next, there is no clear strategy for reducing these properties into purely fundamental correlates. Wilsch's strategy cannot accommodate the rich variety of candidates for metaphysical laws, and so does not adequately respond to the Purity objection.

The second approach to avoiding Purity is to substitute a purely fundamental correlate for the nonfundamental property in the law. For example, one might try to identify a different law than *Organicism* that plays the same role but doesn't mention the property of being involved in a life. There are a couple options for pursuing this strategy.⁴³

First, one might try to substitute the fundamental properties such that having those properties constitutes being involved in a life. This law would need to be complicated, since life is complicated. It would need to include a list of fundamental properties $p_1, \dots, p_n$ such that whenever some objects' activity constitutes a life, the objects instantiate some subset of $p_1, \dots, p_n$. Call this law *Organicism_f*. The problem with this is that, whatever our theory of fundamentality, it seems unlikely that *Organicism_f* is a good candidate for being a fundamental law of metaphysics. Why? Because *Organicism_f* involves a long disjunction. Wildly-disjunctive truths are poor candidates for either fundamentality or lawhood.

⁴³Here I follow Sider (2013b), who raises possibilities like these to account for the multiple realizability of nonfundamental properties.

Another option is that *Organicism* could be explained by a law that avoids reference to life by means of a functional role *R*. We could rewrite *Organicism*:

Organicism_R: Some *xs* compose *y* if and only if the *xs* have some property *P* that plays functional role *R*.

There remain a couple challenges for the functional interpretation of *Organicism*. First, the functional role *R* does not seem like a good candidate for a constituent of a fundamental law, for the same reason that a long disjunction does not. *R* is a long, possibly infinite, description of a functional role. Again, this is a poor candidate for lawhood.

Second, it is not clear that every functional property can be specified in more-fundamental terms. The functional description of pain, for example, is typically specified in terms of other psychological states and behavior. But if the functional description involves nonfundamental terms, then we still have a violation of Purity.

In sum, neither the quantifying-out nor the substituting-in strategies offer a compelling response to the Purity objection. This is a bad result for Fundamentalism, since there are many other candidates for laws of metaphysics that involve nonfundamental entities. In response to this problem, one could (i) deny that the candidate laws mentioned above candidates for laws at all, or (ii) deny that there are genuine laws of metaphysics at work in these areas. The first option is too bullheaded. If L1—L3 are not laws, it is not because they fail to be candidates for laws. The second response risks totally hamstringing Fundamentalism. So, Fundamentalism cannot explain how these views are candidates for laws of metaphysics. Fundamentalism ought to be rejected.

2.5 From Laws to Properties

To recap: I first argued that Nomism entails Fundamentalism, and we just saw that Fundamentalism is implausible. So, we should reject both Nomism and Fundamentalism. Fundamental metaphysical laws do not explain the patterns of metaphysical explanation we began with. So, what does?

A natural suggestion is that patterns of grounding are explained by the natures of properties. As Karen Bennett puts it:⁴⁴

Consider physicalism. Physicalism says that this complex physical fact grounds, realizes, or otherwise builds my desire for a cup of coffee. In virtue of what does it do so? Well... in virtue of itself. Part of what it is to be that complex physical fact is to be a realization of a coffee desire. Or consider the fact that my shirt is purple. This grounds the fact that it is colored. What grounds the fact that its being purple grounds its being colored? Its being purple! It's in the nature of purple things to be colored. That's part of what it is to be purple. Nothing else is required.

We should take Bennett's suggestion seriously: the natures of properties are sufficient to make grounding obtain. The resulting theory is analogous to causal powers accounts of properties and causation. Instead of causation, the relevant relation is grounding, and, instead of causal powers, properties confer *powers to ground*.⁴⁵ In what follows, I first sketch a definition of a power to ground, and then use the sketch to argue that the proposed account can ad-

⁴⁴Bennett (2017), p. 196. See also Audi (2012) and Rosen (2015).

⁴⁵The phrase "powers to ground" is due to Troy Cross (in conversation).

dress the motivations for Nomism while also avoiding the Purity and emergence worries. The grounding powers account requires much more careful development; my only goal is to show that it is a promising alternative to the Nomism-Fundamentalism package.

As I will develop it, the properties-first alternative to Fundamentalism is a cousin of Sydney Shoemaker's powers-based account of causation.⁴⁶ On Shoemaker's approach, causation holds between events, and so the full causal story of a particular event only includes other events. The causal connection between events is then non-reductively analyzed in terms of the manifestation of the powers conferred by properties. This analysis must be non-reductive, as properties are themselves individuated by their causal roles. Laws of nature are not primitive, but summarize necessary connections between properties.

In the case of grounding, it is common to think that grounding holds between facts. In analogy with the case of causation, we can say that fact-fact grounding is the result of the manifestation of powers bestowed by properties: powers to *ground*. Properties may be individuated by their roles in grounding, in analogy to Shoemaker's suggestion that properties are individuated by their causal roles.⁴⁷ And, finally, metaphysical laws are merely useful generalizations about how properties relate.

To spell this theory out, we should first more carefully define the notion of a grounding power. Here is a first pass:

Definition of Grounding Power:

A property P confers the power to ground ϕ on e (the es) iff e (the es) instantiat-

⁴⁶Shoemaker (1980, 1998).

⁴⁷Audi (2016), Bader (2013), and Rosen (2015) suggest that properties can be individuated by their role in grounding.

ing P is sufficient to ground ϕ .

For example, the property scarlet confers the power to ground redness on scarlet objects, since an object being scarlet is sufficient for it to be red. Similarly, the property of being in a brain state b might give Achilles the ability to be conscious if being in b is sufficient to be conscious. There may, of course, be other states that are sufficient for consciousness.

This definition won't quite work. A property P might only play a role in grounding ϕ in the presence of other properties. For example, it may be that a 's being key-shaped only grounds a being a key if there is some lock that a opens.⁴⁸ So, we need a more complicated definition:⁴⁹

Definition of Conditional Grounding Power:

A property P confers a conditional grounding power to ϕ on e (the es) iff there exists a set of properties Θ such that e (the es) instantiating P in the presence of each member of Θ is sufficient to ground ϕ , and instances of the members of Θ cannot alone ground ϕ .

As I will use the terms, grounding powers are all conditional grounding powers: powers to ground in presence of other properties (where the set Θ may be the empty set). Arguably, these powers can be used to individuate properties, as any difference in property identity will lead to some difference in grounding. For example, consider the property of being triangular. Being triangular is distinct from being trilateral, as they result from different properties: being triangular is grounded in having three angles, while being trilateral is grounded in having three sides. The difference in grounding-story determines a difference in

⁴⁸The example of lock and key goes back to Boyle (1999)

⁴⁹Here I follow Shoemaker (1980), who defines the notion of a conditional causal power.

identity, and a difference in identity must trace down to a different ground, or else upwards to different complex facts. There may be causally-inert properties, but there are no metaphysically inert properties.⁵⁰

Now, what about the essence facts themselves, like the fact that red is essentially such that anything red is colored? If essence facts lack a ground, then we still have a violation of Purity. The answer is to recognize that *all* facts are grounded in purely fundamental facts, including essence facts. And this follows naturally on the grounding powers account. Just as non-fundamental causal powers are derivative from fundamental causal powers, so too non-fundamental grounding powers are derivative from fundamental grounding powers. In analogy with Derk Pereboom's account of higher-level causal powers, we can say that the lower-level grounding powers constitute the higher-level grounding powers.⁵¹ We then can add that this fact about constitution is itself grounded in the natures of fundamental properties. We thus dodge the threat of emergence: there are no primitive connections between levels, as the connections themselves issue upward from the fundamental.

Some find explanations in terms of essences or natures not very illuminating. If one asks, "why does {Socrates} contain Socrates?", the answer, "Because that's just *what it is* to be {Socrates}" may not sound helpful. However, I don't think we should be discouraged from appealing to essence in this case. To show why, I will steal some trade secrets from the literature on governing laws. David Armstrong famously reduced laws to a single relation of necessitation between universals. David Lewis complained in response that Armstrong's calling his re-

⁵⁰See Audi (2016) and Rosen (2015) for discussion of grounding and property individuation. McDaniel (2015) argues that propositions can be individuated by their roles in a primitive relation of "invirtuation."

⁵¹Pereboom (2011), Chapter 8.

lation ‘necessitation’ no more made it genuine necessitation than being called ‘Armstrong’ made one’s arms strong.⁵² As Schaffer (2016b) has argued, however, this is dialectically unfair. The proponent of governing laws is allowed to posit laws that genuinely govern as an axiom of their theory. The theory is then evaluated on its merits relative to other accounts. Likewise, we can posit that the fundamental properties and relations genuinely explain everything else, without proceeding via primitive laws or a primitive necessitation relation. If the governance theorist can do it, so can we.⁵³

Using this sketch, I will now argue that grounding powers can account for the motivations for Nomism presented in Section 2.2. Grounding powers earn their keep by doing this work.

First, like Nomism, the grounding-powers account offers a unified account of causal and metaphysical explanation by (i) recognizing the epistemic importance of laws and (ii) uniting both causal and metaphysical explanation under a powers framework. On (i), the denial of Nomism and Fundamentalism does not entail that laws play no role in metaphysics. The grounding-powers theorist should admit that laws often play an important epistemic role in metaphysical explanations, and that the general structure of many metaphysical explanations involves laws. On (ii), the the grounding-powers theorist can appeal to causal powers to draw a deep analogy between metaphysical and causal explanation: both are rooted in powers. The plausibility that the theory inherits from this analogy depends on the plausibility of the powers theory of causation, which

⁵²Armstrong (1983), Lewis (1983a).

⁵³Note that this theory is compatible with Fine’s observation that it is in the essence of {Socrates}, but not Socrates, that {Socrates} has Socrates as its sole member (Fine (1994)). I accept this, but claim that if the existence of Socrates metaphysically explains the existence of {Socrates}, then Socrates has some property *P* such that Socrates having *P* is sufficient to form a set. For set formation, this property may be trivial.

I will not defend here. It suffices for present purposes to point out the parity: the plausibility that the Nomism-Fundamentalism package inherits from the analogy with primitive causal laws likewise depends on the plausibility of the primitive-laws account of causation.

Second, we saw that Nomism is supported by the broader epistemic roles of laws, with respect to unification, manipulation, and understanding. This motivation is neutral between the Nomism-Fundamentalism package and the grounding powers account. First, these being the typical roles for laws does not imply that all explanations must include laws. But if explanations do not require laws, Nomism is false, and the motivation for Fundamentalism evaporates. Second, epistemic roles do not always carry metaphysical weight. For example, it may be that in order to understand why certain brain states bring about mental states, we must understand the law-like connection between the two. But this epistemic requirement alone does not indicate that the brain state is not itself wholly responsible for the mental state. Compare causation: to understand why the rock broke the window, we need to understand some dynamical laws. But this requirement on our understanding is neutral between those laws being primitive and being only a useful guide to a pattern of events or causal powers.

Third, we had the motivation from two principles:

Laws-Explain-Explanation: To metaphysically explain that Γ metaphysically explains F , we need to appeal to a general, law-like connection between the members of Γ and F .

Meta-Explainers-Are-Explainers: If S partly metaphysically explains the fact that Γ metaphysically explains F , then S partly metaphysically explains F .

The first principle, Laws-Explain-Explanation, has at least two readings: one epistemic, and one metaphysical.⁵⁴ On the epistemic reading, we have the following:

Laws-Explain-Explanation_E: To understand how Γ metaphysically explains F , we need to appeal to a general, law-like connection between the members of Γ and F .

I grant the epistemic reading, since it also captures something important about the grounding-powers account. Namely, the properties appealed to by the grounding-powers theorist are general. So, as a purely epistemic matter, to explain why both the scarlet flag and the scarlet tea kettle are red, we appeal to a general fact about scarlet things being red. The nature of being scarlet metaphysically explains this general fact.

Laws-Explain-Explanation_E cannot combine with Meta-Explainers-Are-Explainers to give us Nomism. The reason is that the plausibility of Meta-Explainers-Are-Explainers rides on it being a principle about what metaphysically determines what, not an epistemic principle. Recall the intuitive motivation for the principle: If S makes it the case that Γ explains F , then S must be at least partially responsible for F . It is important to this motivation that S be “out there,” making Γ explain F . If we read the first principle metaphysically in this way, we have:

Laws-Explain-Explanation_M: If Γ metaphysically explains F , then a general, law-like connection plays a role in making that fact obtain.

But what evidence do we have for this principle? It is too close to a statement

⁵⁴Bennett (2019) makes a similar argument.

of Nomism to be genuine motivation for the view. And given this principle combines with Meta-Explainers-Are-Explainers to entail Nomism, and so Fundamentalism, the argument against Fundamentalism applies to this principle as well. So, this motivation does not support Nomism+Fundamentalism over the grounding-powers account.

The final motivation was that Nomism nicely explained two further principles:

Generalization: If a being P metaphysically explains why a is Q , then for any x , if x is P then x is Q .

Necessitation: If Γ metaphysically explains F , then, necessarily, if every member of Γ obtains, then F obtains.

The grounding-powers theorist can capture each of these principles. First, if $P(a)$ metaphysically explains $Q(a)$, then the nature of being P metaphysically explains that things that are P are also Q . Therefore, anything else that is P is also Q .⁵⁵ The explanation of Necessitation is similar. If the nature of P metaphysically explains that everything that is P is Q , then it is necessary that if something is P then it is Q .

The grounding powers account can capture or diffuse the motivations for Nomism without violating Purity or failing to be sufficiently reductive. I conclude that we should adopt the grounding-powers account of metaphysical explanation. The implications of this result are broad. For example, combined with a causal-powers account of causation, we have a unified theory of causal

⁵⁵This simplifies, since it seems that metaphysical powers, like causal powers, can be “masked”. We can accommodate this complication by appeal to conditional grounding powers: P bestows the power to be Q in the presence of other properties.

and metaphysical explanation in terms of powers conferred by properties. Further exploration of the theory must await future work.

CHAPTER 3

GROUNDING AND PROPERTIES

The cover of a book on my desk is red. It is red in virtue of being a particular shade of red, scarlet. Or, as some say, the fact that it is scarlet *grounds* the fact that it is red. It is easy to see that this fact is not particular to my book; *anything* scarlet is red, and red *because* it is scarlet. Further, it is difficult to see how anything scarlet could fail to be red. How could the book remain scarlet but be, for example, blue?

These mundane observations suggest a theory of properties: properties by their natures each play a role in grounding. In this paper I develop this idea by arguing that we ought to recognize a new sense of power, a *grounding power*, that earns its keep by individuating properties and explaining both the generality of grounding and how the non-fundamental is “nothing over and above” the fundamental.

The present account takes as inspiration Sydney Shoemaker’s contention that causation is the manifestation of the causal powers conferred by properties.¹ The systematicity of Shoemaker’s account makes it appealing, but his anti-Humean arguments fail to convince many Humeans.² The grounding-powers account offers a new route to a powers ontology while leaving room for various accounts of the relationship between causation and properties.

To set the stage, I consider and reject the grounding analogue of causal Humeanism (§3.1) as well as the primitive-laws account of grounding (§3.2).

¹See, for example, Shoemaker (1980) and Shoemaker (1998).

²See Hawthorne (2001) for an overview of the challenges faced by Shoemaker’s arguments. By ‘Humeanism’ I mean the set of doctrines more closely associated with the work of David Lewis than David Hume.

In §3.3, I define the notion of a power to ground. I argue that properties can be individuated by their powers to ground in §3.4, and consider structuralist spins on this result in §3.5. I then compare the view with the causal account of properties in §3.6.

There are at least three important conclusions: (i) properties can be individuated by grounding powers; (ii) non-fundamental properties can be defined structurally in a particular sense, elucidating the claim that they are “nothing over and above” the fundamental; and (iii) fundamental properties play a central role in grounding the grounding facts, at least for a wide range of cases. While some version of (i) has been suggested by several authors,³ (ii) and this paper’s particular way of establishing (iii) are novel. Finally, it is significant that, if combined with a causal powers-account of causal explanation, we have a unified account of the metaphysics of causation and grounding: both flow from the natures of fundamental properties.

3.1 Ground Humean Quidditism

My jacket is blue because it is royal, and my water bottle is red because it is carnelian. Explanations like these are metaphysical explanations of a determinable property (red, blue) in terms of a determinate (royal, carnelian).⁴ Consider: could my water bottle have been *blue* because it is carnelian, and my jacket *red* because it is royal? A view I will call ‘ground Humean quidditism’ says *yes*, allowing that properties can freely swap roles in grounding. To carefully define

³See Audi (2012, 2016), Bader (2013), and especially Rosen (2015).

⁴Throughout I use ‘property’ to mean any property or relation. I assume that properties are universals in that they are repeatable: two distinct things may share the numerically same property. However, the arguments may also be taken to apply to tropes, where, for example, the higher-order identity between properties *P* and *Q* defines equivalence classes of tropes.

this view, we need to say something about *grounding* and what it is to *swap roles* in grounding. After doing so, I will consider how the ground Humean quidditist might best make their case.

First, a clarification of what I mean by ‘grounding’. By ‘grounding’ I mean a non-causal determination relation between facts.⁵ I take facts to be structured complexes built out of individuals and properties, but nothing that follows hangs on a particular account of facts (the main arguments also hold, *mutatis mutandis*, for grounding as a sentential connective). I will sometimes refer to facts using brackets: ‘[My jacket is red]’ refers to the fact that my jacket is red. I assume that if *A* grounds *B*, then *A* also at least partly metaphysically explains *B*. (Perhaps laws of metaphysics are also part of the explanation but not part of the grounds; see §3.2 and §3.7 below.) I do not assume that grounding cannot be decomposed into “small-g” grounding relations like composition, realization, and set formation.⁶ (We will explicitly take these relations into account in §3.4.) For ease of exposition, I will assume that grounding is transitive and irreflexive, but we could get by with exceptions to either.

Second, a clarification of what it is for a property to play *a role in grounding*. We will use this notion to more carefully define ground Humean quidditism (and, in §3.4, individuation conditions for properties). The goal, roughly speaking, is to come up with a way to describe how properties depend on each other and then use this description to define the way a particular property depends on or is depended upon by other properties. For example, the properties of *be-*

⁵For this characterization see, e.g., Audi (2012), Trogdon (2013a), and Skiles (2015). I thus assume *separatism*, the view that grounding is not identical to metaphysical explanation (Raven (2015)). In opposition is *unionism*, the view that grounding just is metaphysical explanation. Unionists typically still believe that some determination relation (or relations) “backs” grounding; they may substitute this relation (or these relations) in where I say ‘grounding’.

⁶The term ‘small-g’ grounding relations is due to Wilson (2014).

ing scarlet and *being red*: for any x , if x is scarlet, then x is red, and x is red *in virtue of* being scarlet.⁷

I will write this kind of law-like grounding connection between properties using a generic grounding operator ‘ $\Rightarrow$ ’ that allows us to bind variables for terms:⁸

$$x \text{ is scarlet} \Rightarrow_x x \text{ is red.}$$

We can read this as: scarlet bears a generic grounding connection to red. I will assume that this connection can hold even if there are no scarlet or red things. This is compatible with true grounding claims requiring that there relata obtain.

Generalizing from the previous example, we have:

$$\phi_1, \dots, \phi_n \Rightarrow_{v_1, \dots, v_m} \psi$$

In English, this says that there is a generic grounding connection between the properties involved in $\phi_1, \dots, \phi_n$ and those involved in ψ , where $v_1, \dots, v_m$ are variables bound by the operator.

For convenience, I will simplify these statements into a generic grounding connection directly between properties: $\text{Scarlet} \Rightarrow \text{Red}$. This idealizes in that it suppresses the order and identity of the arguments.

⁷Cf. Audi (2012), p. 693, and Bennett (2017), p. 196, who both make a similar point about properties doing the work in grounding.

⁸Cf. Glazier (2016), who uses an operator like this to define metaphysical laws, and the discussion of generic grounding in Fine (2016). Note that the operator is variably polyadic in the sense that it does not take a fixed number of arguments. See also Wilsch (2015a,b), who offers another approach to defining laws of metaphysics. The approach I present will be more convenient for capturing generic grounding connections between properties.

The next step in defining a role in grounding is take the conjunction of all true statements of generic grounding. We then have a kind of “metaphysical lawbook”:

... & (scarlet $\Rightarrow$ red) & (red $\Rightarrow$ colored) & ...

Given a set of fundamental facts, this lawbook determines what grounds what. If the fundamental facts are a complete basis for everything else, then it determines *all* the non-fundamental facts.

I will say that P is fundamental if and only if P never occurs on the right side of a generic connection but not on the left. (This allows that fundamental properties may be generically related to more logically more complicated constructions, e.g., $P \Rightarrow P \vee Q$.) Intuitively, the idea is that instances of fundamental properties are never grounded by instances of other properties. A complication arises if there are properties that are in some instances ungrounded and others grounded.⁹ To account for these, we could introduce the idea of a ‘fundamental instance’ of a property, but it won’t bear on the issues that follow.

We are now in a position to define what it means for a property to play a role in grounding, by swapping out a predicate for a variable in our metaphysical lawbook:

... & (scarlet $\Rightarrow P$) & ($P \Rightarrow$ colored) & ...

This open formula defines the role played by the property red. Using this notion of role, we can now make precise the claim of ground Humean quidditism:

Ground Humean Quidditism: For any property P that plays grounding role R_1

⁹Thanks to Ted Sider for raising this point.

and property Q that plays grounding role R_2 , P could have played R_2 , and Q could have played R_1 .

For example, the ground Humean quidditist would believe that the properties red and blue could swap roles. If so, then something being royal would ground it being red, and something being scarlet would ground it being blue. Many will balk at this possibility, and, I think rightly so. But we should be able to say why this reaction is justified.

The major reason to reject ground Humean quidditism is that grounding *necessitates*. I won't defend this assumption at length, but will only point out that the theoretical role that grounding is typically intended to play requires necessitation.¹⁰ In particular, grounding is intended to be an explanatory connection tight enough to secure physicalism.¹¹ But, if grounding fails to necessitate, then those who believe that the mental is grounded in the physical would fail to count as physicalists. To see this, consider the actual grounds Γ of my being conscious and some other physical state Δ that does not play a role in grounding any mental state, say the physical state of my chair. If the properties involved in Γ and Δ swapped roles in grounding, then I would no longer be conscious, though all lower-level causal facts would remain untouched. (And my chair would be conscious.) This possibility, that a physical duplicate of me lacks mental states, seems to imply dualism.¹² But then why did we introduce grounding in the first place? A theory of grounding should at least be apt for formulating theses like physicalism.

¹⁰See Trogon (2013b) for further defense of necessitation. For opposing arguments, see Leuenberger (2008), Skiles (2015), and Cameron (2007).

¹¹See Dasgupta (2014) for discussion. Audi (2012) questions whether grounding can serve this role; see §3.4 below.

¹²Kripke (1980), 153f. Note that we made no use of conceivability here. See also Bennett (2017), for example §3.3, who argues at length that relations like grounding, constitution, etc. (in her parlance, "building relations") necessitate what they build, at least in context.

The only line of defense I can see for ground Humean quidditism is to resort to a kind of idealism about grounding while holding fixed the existence of non-fundamental properties. According to grounding idealism, *we* impose grounding structure on the world; it isn't "out there" waiting to be discovered.¹³ If so, the grounding facts could have been different, supposing that we had been different.

Now, the grounding idealist might reject ground Humean quidditism *given actual explanatory practices*, just as a causal idealist would say that *A* causes *B* is causally necessary given our actual causal explanatory practices.¹⁴ Further, if the grounding idealist thinks that 'grounding' and related uses of 'because' and other terms rigidly denote a specific explanatory relation, then they will add that in alternative possibilities with different explanatory practices every actual statement of ground is true, given its actual interpretation. That is, even if the *sentence* 'the ball is blue in virtue of being scarlet' could have been true, it is not true on the same interpretation of 'in virtue of' as the actual truth that the ball is red in virtue of being scarlet. This grounding idealist believes that grounding facts depend on us in some way, and so is still a Humean in that sense.¹⁵ So, the grounding idealist has resources to endorse a view in the spirit of ground Humean quidditism without endorsing the possibility of role swapping.

A thorough examination of grounding idealism goes beyond the scope of this paper, but I will note that they face a dilemma. According to the grounding idealist, our explanatory practices are all that "glue together" the various layers

¹³See Kovacs (2019a,b) for an articulation of this kind of approach to grounding. Bennett (2017) leaves open that whether a given relation counts as a building relation depends on how we use language, and so may count as a kind of grounding idealist on that construal.

¹⁴Kitcher (1989).

¹⁵Compare the "Humean" account of modality of Sider (2011). Thanks to Trevor Teitel for discussion.

of reality. One kind of grounding idealist endorses the independent reality of the non-fundamental layers. This grounding idealist does not believe that the existence of minds, for example, depends on our explanatory practices, just the explanatory relations between the mental and the physical. They are in effect an emergentist about everything, for the same reasons as the believer in primitive laws of metaphysics, as discussed in §3.2 below. This commitment will damage the plausibility of the view in the eyes of many. The second kind of grounding idealist adds that the reality of non-fundamental layers also depends on us in a similar way as the glue between the layers: no glue, no layer.¹⁶ This is a thoroughgoing idealism about all that is non-fundamental, which few would endorse. So, it seems that either way grounding idealism faces an uphill battle. At any rate, I will set it aside.

We should conclude that properties play their roles in the metaphysical law-book with necessity. But what explains this? In the “postmodal” era many will think that modal connections should have some explanation; we haven’t yet satisfied our explanatory burden by noticing that properties are stuck in their grounding roles.¹⁷ To explain the necessity and law-like patterns of grounding, some have posited primitive laws of metaphysics, and say that each grounding fact is subsumed under such a law. To this view I now turn.

¹⁶This may accurately describe the view of Sutton (2012) with respect to composite objects.

¹⁷See Sider (2020) for a discussion of the “postmodal” turn. For an argument that modal connections can be explanatory, see Kovacs (2019c).

3.2 Laws of Metaphysics

Several authors have recently defended accounts of grounding that appeal to *laws of metaphysics*.¹⁸ Metaphysical laws are meant to explain patterns of metaphysical explanation, just as dynamical laws explain patterns of physical events. I will call the view that there are primitive laws of metaphysics *nomism*. In this section I argue against nomism, and in the following sections I lay out and defend an alternative view.

To be concrete, I will focus on Jonathan Schaffer's account, as it only depends on general features of metaphysical explanation, and Schaffer is explicit that his account is analogous to a Carroll/Maudlin account of natural laws, according to which natural laws are primitive posits.¹⁹ However, I will count anyone who believes in brute connections between ground and grounded as a nomist, whether these connections are spelled out in terms of essence, real definition, or laws.²⁰

Schaffer (2017b) argues that there are metaphysical explanations, and, if there are, there must be laws of metaphysics. But if metaphysical explanations must appeal to laws, then it seems that some laws must be fundamental, at risk of circularity or an infinite chain.²¹ Schaffer then argues that metaphysical laws are primitive posits, in analogy to the Carroll/Maudlin account of natural laws. Though primitive, the laws are aptly represented as having the structure of a

¹⁸See, for example, Rosen (2006, 2017a); Kment (2014); Wilsch (2015a,b); Glazier (2016); Schaffer (2017b); Wasserman (2017); see also Dasgupta (2014); Sider (2011).

¹⁹See Carroll (1994) and Maudlin (2007).

²⁰So, my usage of 'nomism' matches the 'brute connectivism' of Dasgupta (2014). I maintain 'nomism' because of the close analogy between this family of views and the primitive laws account of causation.

²¹Here is a sketch of the argument. Suppose A metaphysically explains B via a law L. If L is not fundamental, then something must explain its existence via some law. That law cannot be L itself, on pain of circularity. So, L's existence must be explained by some law L'. But we can repeat this process for L', and a kind of regress ensues. Conclusion: take some law as fundamental.

function, from grounds to grounded.

I do not deny that there are laws of metaphysics, nor that laws play an ineliminable role in our practical understanding of the world (even a Humean quidditist may admit that). I do, however, deny that the laws must therefore be metaphysically primitive. In a way, nomism is just quidditism plus primitive laws. By adding external constraints—laws of metaphysics—on properties, we do no justice to physicalist or ethical naturalist inclinations, which are about the natures of properties.²²

To put the point differently, the reason to be dissatisfied with nomism is that nomism fails to discharge an explanatory burden for those who endorse theses like physicalism or naturalism. Jaegwon Kim puts it well in his criticism of primitive Nagelian bridge laws between, e.g., the mental and physical:

C-fiber stimulation correlates with pain (in all pain-capable organisms, or in humans and higher mammals this makes no difference). But why? Can we understand why we experience pain when our C-fibers are firing, and not when our A-fibers are firing? Can we explain why pains, not itches or tickles, correlate with C-fiber firings? Exactly what is it about C-fibers and their excitation that explains the occurrence of a painful, hurting sensation? Why is any sensory quality experienced at all when C-fibers fire? When the emergentists claimed that consciousness was an emergent property that could not be explained in terms of its physical/biological “basal conditions,” it was these explanatory questions that they despaired of ever answering. For them reduction was primarily, or at least importantly, an

²²Here I echo Sider (2020), p. 30, in his criticism of a similar view of causation and properties.

explanatory procedure: reduction must make intelligible how certain phenomena arise out of more basic phenomena, and if that is our goal, as I believe it should be, a Nagelian derivational reduction of psychology, with bridge laws taken as unexplained auxiliary premises, will not advance our understanding of mentality by an inch. *For it is the explanation of these bridge laws, an explanation of why there are just these mind-body correlations, that is at the heart of the demand for an explanation of mentality.*²³

It may be that a full-blooded reductionism is impossible. But the point Kim makes in the passage remains: insofar as we can offer an explanation of the correlations between ground and grounded, we are a better explanatory position than those who take the connection as primitive. On the account I offer below, the natures of properties explain grounding connections, and so the laws are not primitive posits. They are summaries of the natures of properties.

In fact, the introduction of primitive laws between levels seems to commit us to a kind of emergentism à la C. D. Broad.²⁴ For the nomist, the fundamental non-nomic facts are not enough to explain the non-fundamental; we also need a fundamental “staple” between the mental and physical, moral and natural, and more and less complex composites. This is not to deny that the physical is enough to *ground* the mental on Schaffer’s account (Schaffer distinguishes the full grounds from the full metaphysical explanation). The point is that mental properties (for example) remain *explanatorily fundamental* in that a complete explanation of mental must involve both the physical grounds and a law connecting the physical to the mental. Because of this, nomism seems much closer

²³Kim (1998), pp. 95–96 (emphasis in original). Cf. Kovacs (2019b).

²⁴The analogy here is to the “trans-ordinal laws” of Broad (1925).

to the emergentism of C. D. Broad than physicalism.

In response, the nomist may argue that laws of metaphysics are not even apt for being grounded, and so nomism does not run afoul of physicalism. Shamik Dasgupta, for example, claims that there are brute essential connections that ground the grounding facts.²⁵ He argues that these essential connections should be thought of like definitions in mathematics. Axioms are apt for justification but lack it; theorems have justification; and definitions are not even apt for justification. The brute essential connections are thus “autonomous” of the grounding structure. However, the analogy is not successful. Essential connections between ground and grounded are substantive in a way that stipulated definitions are not. We don’t stipulate what grounds what, and so we can ask what makes grounding obtain. The view I defend below also makes use of essential connections between properties, but I argue that these essential connections have a ground.²⁶

Schaffer (2017a) splits metaphysical explanations into three parts: the grounds, the grounded, and the laws that connect the grounds to the grounded. While facts can be both grounded and ground other facts, laws do not enter into the grounding structure, and so are not apt for being grounded. One challenge, however, is to explain complex grounded facts that involve laws. For example, consider the fact [A law of metaphysics exists]. As an existentially quantified fact, it seems that it must be grounded by the existence of individual laws themselves. But then the laws *do* figure in the grounding structure. This challenge aside, it remains the case that the laws are still *not grounded*, and so primitive in that sense. A complete description of the world would still need to list all the

²⁵Dasgupta (2014).

²⁶See Sider (2019) and Kovacs (2019a) for further critical discussion of Dasgupta’s notion of autonomy.

laws, including those connecting, for example, carnelian to red. Following Kim, we should not feel that our explanatory burden has been satisfied.

The aim of this section has not been to decisively argue against the primitive-laws account of grounding and properties. Instead, I hope to have shown why we might prefer another theory. In the next few sections I describe and defend the grounding-powers account of properties. As will become clear, there are several independent reasons for adopting the grounding powers view.

3.3 Grounding Powers

In this section I define the notion of a *power to ground*.²⁷ I then I argue that properties are individuated by their grounding powers and defend a variant of structuralism about the non-fundamental.

In the case of causation, it is common to say that properties confer causal powers on entities, and these entities figure in events causing events. The case of grounding is analogous. Properties confer powers to ground on entities, and these entities figure in a variety of kinds of grounding, including fact-fact grounding or more specific small-g grounding relations that take various kinds of relata. So, as a first pass we can define grounding powers as follows:

Grounding Power, first pass:

A property P confers the power to ground ϕ on e (the *es*) iff e (the *es*) instantiat-

²⁷The general idea of a grounding power and its possible application to what grounds grounding are due to Troy Cross (in conversation). Audi (2012, 2016) suggests a view very close to the view I propose, though does not develop it in the same way. Nolan (2015) and Vetter (2015) both suggest that not all powers (dispositions) are causal, but do not go on to suggest that there are grounding powers.

ing P is sufficient to ground ϕ .

This definition is not quite adequate. Properties may confer powers to ground only in the presence of other properties. For example, assuming physicalism, facts about my mental state are grounded in a set of facts about a complex brain state. Each member of this set of facts individually makes a contribution, but can only succeed in grounding facts about my mental state in the presence of other properties. The following definition takes this into account:²⁸

Definition of Conditional Grounding Power:

A property P confers a conditional grounding power to ϕ on e (the *es*) iff there exists a set of properties Θ such that e (the *es*) instantiating P in the presence of each member of Θ is sufficient to ground ϕ , and instances of the members of Θ cannot alone ground ϕ .

Conditional grounding powers reflect the contribution of properties involved in partial grounds to the full grounds. For example, suppose Ferdinand being a bull is partially grounded in Ferdinand being male. Then *being male* confers on something the power to be a bull, conditional on it being bovine.

Each grounding power can also be specified in terms of a property's role in grounding, as defined above. For example, suppose that *being a bull* is generically grounded by *being male* and *being bovine*: male, bovine $\Rightarrow$ bull. Then the grounding role of *being male* is in part defined by being the property that, together with *being bovine*, generically grounds *being a bull*.

Why call these "powers"? First, like causation, grounding (or small-grounding relations) are *generative* (Bennett (2017)). If my brain state grounds

²⁸Here I follow Shoemaker (1980), who defines the notion of a conditional causal power.

my mental state, then my brain state *brings about* or *makes it the case that* I am in that mental state. Second, the explanations that grounding powers facilitate are disposition-like. For example, suppose person A goes into a permanent vegetative state, while person B goes into a deep, dreamless sleep. Both, we can assume, lack any phenomenal states. What's the difference between the two? Answer: person B, while sleeping, still has properties that confer the power to ground mental states/the ability to have mental states/the disposition to have mental states if awoken, while person A lacks these properties.

We can characterize grounding as the manifestation of grounding powers. Grounding “flows from” the natures of properties. This “flows from” talk can be made more precise in terms of essence. Let the predicate R pick out the grounding role of a property P (R in effect picks out all the laws of metaphysics that P plays a role in). Then, using Kit Fine's notation,²⁹ we can say that the property P is essentially such that it plays role R : $\Box_P R(P)$. In fact, as I argue in the next section, properties are individuated by their grounding powers. We thus have a circular, and so non-reductive, but illuminating analysis of properties and grounding.³⁰

3.4 Grounding Powers: Individuation

In this section, I argue that properties are individuated by their grounding powers, and then in the following sections I consider “structuralist” spins on this re-

²⁹See, e.g., Fine (1995).

³⁰The inspiration here is again Shoemaker (1980), who offers his account of causation and properties as circular but illuminating.

sult.³¹ The strategy is to use the notion of a role in grounding defined in Section 3.1 and argue that each role can only be played by a single property. In other words, once you have the grounding role, you have the property. However, I will also argue that it is not possible to go fully-structuralist. The reason is that while all properties are individuated by their roles in grounding, fundamental properties cannot be fully individuated using only the structure imposed by grounding. This rules out a completely structuralist account of properties in terms of grounding, but allows a structuralist account of non-fundamental properties in terms of the fundamental.

Recall that a role in grounding is defined in terms of a formula of generic non-factive grounding, as in the following example in which the variable ‘P’ has been substituted for ‘red’:

... & (scarlet $\Rightarrow$ P) & (P $\Rightarrow$ colored) & ...

As discussed above in §3.1, each property is “stuck” in its grounding role: properties can’t swap roles. This follows from grounding being necessitating.

It is also *prima facie* plausible that every property has its own role in grounding. Consider two grounded properties *P* and *Q*. If *P* and *Q* play the same role in grounding, then they bear all the same generic grounding connections to other properties. They are therefore necessarily co-extensive, as the ground for one will always be the ground for the other. To nevertheless maintain that $P \neq Q$ requires a level of hyperintensionality few would accept: necessarily co-extensive properties with no difference-maker.

³¹Rosen (2015), whose view I consider below, argues that properties can be individuated by the facts that ground them. Audi (2016) and Bader (2013) also suggest that properties can be individuated by their role in grounding, but do not spell out how this would go. McDaniel (2015) argues that propositions can be individuated by a grounding-like “invirtuation” relation.

I accept that there are necessarily co-extensive properties, but only in motivated cases. Consider, for example, the properties of being triangular and being trilateral. Arguably, these are distinct, as one is the property of being a polygon with three *angles*, and the other is the property of being a polygon with three *sides*. This result is predicted by the thesis that properties can be individuated by their roles in grounding. A polygon is triangular in virtue of having each of the three angles it in fact has, and something is trilateral in virtue of having the three sides it in fact has. The grounding role for triangularity will include formulas like the following:

... & (has angles $a_1, a_2, a_3 \Rightarrow P$) & ($P, \text{red} \Rightarrow \text{red triangle}$) & ...

This formula cannot be satisfied by the property of being trilateral, since being a trilateral is not grounded in having angles. It seems that nothing else can satisfy the formula except triangularity. But, if nothing else can, then the open formula individuates the property.³²

Note that nothing said so far explicitly prevents two *fundamental* properties from playing the same grounding role without being necessarily co-extensive. In each instance the properties would ground all the same non-fundamental properties, but there is nothing in the theory requiring co-instantiation of the fundamental properties. That said, there is still strong *prima facie* reason for thinking that no two fundamental properties play the same role in grounding. How could there be different fundamental properties that make no metaphysical difference? Any theory that posits such properties would immediately fall prey to Occam's razor. Without strong positive reason for positing such prop-

³²While I take on board hyperintensionalism, the view could be adapted by an intensionalist who uses the tools of essence and grounding in a more coarse-grained way. See Rosen (2015) for related discussion.

erties, we should provisionally accept that each fundamental property plays a unique role in grounding.

One might object that it could be that properties P and Q play a role in *constituting* an instance of some property R while also *realizing* some other property S . For example, the arrangement of gold molecules in Maurizio Cattelan’s artwork “America” both constitute a sculpture and realize the functional kind *toilet*. If there are two distinct things, America-the-toilet and America-the-sculpture, and the existence of each has the same ground, then we risk collapsing important distinctions by only appealing to grounding.³³ To avoid this risk, we will take into account which small-g grounding relation is at work in the next section.

One might also wonder about properties that seem essentially causal. For example, consider Robert Boyle’s example of a lock and key (Boyle (1999)). To be a key is to have a certain causal power: to open a lock. Without the lock, a molecule-for-molecule duplicate of the key would not really be a *key*. But, if so, the property of being a key is partly individuated by its causal role. This example makes it plausible to add a causal relation to our set of generic connections between properties. If we do, then the set of individuating relations is the set of what Karen Bennett calls *building relations* (Bennett (2011b, 2017)). I return to this issue below in §3.6.

The foregoing account is structuralist in that it places some structural constraints on the metaphysical lawbook. Suppose we had the following grounding lawbook: $P \Rightarrow Q$, $Q \Rightarrow R$, $P \Rightarrow T$, $T \Rightarrow R$, and nothing else. If this were the cor-

³³One might object that the existence of the sculpture, but not the toilet, is partly grounded in the artist’s intentions. In response, note that the artist’s intentions surely play a different role in bringing about America than the gold molecules. This difference is unlikely to be captured purely in terms of grounding. If so, we may still need to recognize metaphysical relations other than grounding.

rect lawbook, then properties would no longer be individuated by their role in grounding, since the role formulas would be the same for Q and T . But it is only modestly structuralist, in that we still refer directly to particular properties in defining the structure.³⁴ One reason to be less modest is that we cannot do justice to the thought that the grounded is “nothing over and above” its ground if non-fundamental properties have primitive (if constrained) identities. Below, I will argue that we can be less modest with our structuralism.

3.4.1 Comparison with Rosen

The modest structuralism defended in the previous section bears some similarities to Gideon Rosen’s illuminating account of real definition, through which he provides property individuation conditions.³⁵ However, Rosen’s account faces several challenges not faced by the present account.³⁶

According to Rosen, to give the real definition of something is to say what it is, metaphysically speaking. To give the real definition of a monadic property F is to specify some one-place propositional function ϕ such that for a to be F just is for a to satisfy ϕ . For example, it might be that for a to be a bull just is for a to be male and bovine. Here $F = \text{is a bull}$ and $\phi = x \text{ is male and } x \text{ bovine}$.

Rosen then gives the following definition of definition, where the backwards arrow ‘ $\leftarrow$ ’ means ‘grounds’ and ‘ $\rightarrow$ ’ is material implication:³⁷

³⁴See Hawthorne (2001), who discusses a modest causal structuralism.

³⁵Rosen (2015).

³⁶This section may be skipped without losing the main thread of the paper.

³⁷Rosen (2015), p. 200.

$$\text{Def}(F, \phi) \text{ iff } \Box_F \forall x((Fx \vee \phi x) \rightarrow (Fx \leftarrow \phi x))$$

In words, ϕ is the real definition of F if and only if it lies in the nature of F that if anything is F or satisfies ϕ , then it satisfying ϕ grounds it being F . The intuitive idea is that it is in the nature of properties to be grounded how they are. The definition is meant to be co-extensive with the modal version: $\text{Def}(F, \phi) \text{ iff } \Box \forall x((Fx \vee \phi x) \rightarrow (Fx \leftarrow \phi x))$.

As Rosen shows, the modal statement of the definition has as a theorem that $\text{Def}(F, \phi)$ entails that $\Box \forall x(Fx \leftrightarrow \phi x)$. In other words, Rosen embraces the conclusion that a property is always co-extensive with its definition, which is also its ground. But then it seems that Rosen is committed to an implausible kind of grounding necessitarianism: each property has either no ground or exactly one possible ground. For example, a monkey m and an octopus o are both capable of being in pain, though the grounds for [m is in pain] and [o is in pain] differ (and are indeed incompatible) at some level. By the theorem, it can't be that $\text{Def}(\text{Pain}, \phi_m)$ nor that $\text{Def}(\text{Pain}, \phi_o)$, since it's not the case that $\Box \forall x(\text{Pain}(x) \leftrightarrow \phi_m(x))$ (nor for $\phi_o(x)$). But then what is the real definition for pain? Positing an intermediate step between pain and ϕ_o/ϕ_m only pushes the problem back a step. It appears that Rosen must accept that the grounds of a pain state are always the same, an implausible result.

Could the real definition of every property be a disjunction of possible grounds of the property? Rosen requires that the real definition also be the ground of the property. So, on Rosen's account, if properties had disjunctions as grounds, then all instances of these properties are immediately grounded by infinite (or near-infinite) disjunctions. This seems implausible as a general the-

sis. For example, if I am in pain, then this seems to be fully in virtue of the particular brain state I am in. The grounds of my pain state do not include monkey, alien, or octopus brain states. Note that, on the view I defend, it is *in the nature of pain* to be grounded in all the various ways it is possibly grounded. Particular instances of pain, however, may have grounds specific to the circumstances, as my pain state is grounded in my brain state.³⁸

Rosen goes on to give the following criterion of property identity in terms of real definition:³⁹

Property Identity: F and G are the same property iff

- (a) F and G are definable and for all ϕ , $\text{Def}(F, \phi)$ iff $\text{Def}(G, \phi)$; or
- (b) F and G are indefinable and $\Box \forall x(Fx \rightarrow Gx)$

Notice that while non-fundamental properties get a hyperintensional individuation criterion in terms of real definition (and so in terms of ground), fundamental (indefinable) properties are individuated intensionally by the second clause.

Several points of comparison. First, Rosen's definitions demand that the very thing that is F also satisfies the propositional function ϕ , but this may not always be the case. For example, it may be that (i) my brain being in state B grounds my being conscious and (ii) I am not identical to my brain. The approach I outlined above takes the argument places into account by allowing binding on either side of the operator $\Rightarrow$.

Second, as mentioned above, it is not clear that grounding will be fine-grained enough to individuate properties. It may be that a satisfying ϕ grounds

³⁸If we introduce type-type grounding, then I am committed to the type Pain having as its grounds all the various physical states that can ground Pain. See Schaffer (2016a) for discussion of token-token vs. type-type grounding.

³⁹Rosen (2015), p. 202.

two distinct property instances. For example, suppose some stone constitutes a particular boulder. The stone also set-builds the singleton set containing the stone. The existence of the stone grounds both the existence of the boulder and the existence of the set. This motivates taking into account more specific relations than grounding.

Third, as can be seen in clause (b) of Property Identity, on Rosen's account fundamental properties are individuated intensionally. Fundamental properties get their own clause because his account only cares how a property instance is grounded, not what it grounds. The view I propose above, modest structuralism, takes both direction of grounding into account. In doing so, it allows (but does not entail) that fundamental properties are individuated hyperintensionally. Given that it is an open epistemic possibility that there be necessarily co-extensive fundamental properties, this is a virtue of my account.⁴⁰ A second virtue of modest structuralism is that it provides a non-disjunctive account of property individuation, as all properties are individuated by their roles in grounding. However, below we will see that there is an important sense in which Rosen is right that fundamental properties are indefinable: their essences are not exhausted by what they ground.⁴¹

⁴⁰Consider, for example, an anti-Humean account according to which a property's causal role is essential to it. It is an open empirical possibility that there be fundamental physical properties *P* and *Q* such that *P* is instantiated whenever *Q* is. Given the anti-Humeanism described, *P* and *Q* would be necessarily co-extensive fundamental properties.

⁴¹Thanks to Mack Sullivan for discussion of Rosen's view.

3.5 Grounding Powers: Structuralism

I have defended a modest structuralism about properties: properties can be individuated by their roles in grounding. However, it is unclear that we have yet secured a tight enough connection between the fundamental and non-fundamental to secure theses like physicalism. Physicalism is often thought to require that the non-physical be “nothing over and above” the non-physical. But, on the picture presented so far, properties like mental states *are* something over and above the physical, albeit brought about by physical states.⁴² So, it would be desirable to make better sense of how mental states (or other candidates for the non-fundamental) are nothing over and above the physical (or whatever is fundamental).

Here is my proposal. We begin by ramsifying our metaphysical lawbook by quantifying out all the non-fundamental properties.⁴³ By quantifying out the non-fundamental properties, we do justice to the idea that non-fundamental properties are “nothing over and above” their grounds. I will call the view that this lawbook fully describes the metaphysical laws *intermediate structuralism*.

To illustrate, consider a list of fundamental properties, with ‘ Fnd_n ’ referring to the n th property on the list. Then our metaphysical lawbook takes a form like the following:

$$\exists P \exists Q \exists R \exists S \dots ((Fnd_1 \Rightarrow P) \& (Fnd_1, Fnd_2 \Rightarrow R) \& (P, Q \Rightarrow S) \dots)$$

Call this statement of the laws ‘ L ’. L says that the fundamental properties (which are named directly) bear certain structural relations to non-fundamental prop-

⁴²Cf. Audi (2012), p.709–710.

⁴³This way of defining theoretical terms traces back to Ramsey (1978); see also Lewis (2009).

erties. It doesn't name the non-fundamental properties but only uses a higher-order quantifier to describe the structure. We can recover a role a property plays by either (i) substituting a variable for a fundamental property or (ii) removing a quantifier to make an open formula about a non-fundamental property.

Are properties individuated by this structure? Grounding is ubiquitous, so it is likely that there will be symmetries in the structure. If so, then the essence of non-fundamental properties won't be well-defined by the structure: for some distinct P and Q , it will be the case that $R(P) = R(Q)$. To get individuation, we need to be more specific.

To be more specific, we recognize the contribution of small-g grounding relations of constitution, realization, determinable-construction, and the like. This could either mean recognizing that a singular grounding relation holds in various flavors, or else we could introduce these relations as coeval with grounding. Either way, we then have more structure to work with:

$$\exists P \exists Q \exists R \exists S \dots ((Fnd_1 \Rightarrow^c P) \& (Fnd_1, Fnd_2 \Rightarrow^r R) \& (P, Q \Rightarrow^d S) \dots)$$

Call this revised sentence L' .

Importantly, the same style of argument for the individuation of properties as in the case of modest structuralism applies. Suppose for *reductio* that there are two properties P and Q at some non-fundamental level that play the same role. As before, it follows that P and Q are necessarily co-extensive, as any possible ground for P is also a ground for Q . Further, by assumption, no metaphysical tool like grounding, constitution, etc. distinguishes the properties, as in the case of triangular and trilateral. P and Q are two non-fundamental properties that are always grounded in the same way by the same things, but nevertheless

distinct.

Given P and Q as described, we have $P \neq Q$, with no plausible reason for distinguishing P and Q . It seems that if P and Q are non-fundamental but non-identical then that should make some metaphysical difference, either in their essences, real definitions, or grounds. But there is no such difference in this case. Each are grounded by the same fundamental properties combined in the same way. Thus it seems we should reject the *reductio* hypothesis that P and Q play the same role.

Given that non-fundamental properties are individuated by this structure, we may now add that non-fundamental properties are fully metaphysically defined by their place in the structure. For each property P , we have $\Box_P R(P)$, where $R(P)$ is specified by L' . In this sense the essence of each property is structural. Compare the case of spacetime points: there are spacetime points, but their essences are exhausted by place their place in a physical, e.g., metric, structure.⁴⁴ On the proposed account, non-fundamental properties are like spacetime points. They exist, but their essences are exhausted by their role in the grounding structure.

The view is anti-structuralist in that the fundamental properties are not fully defined structurally. Are the fundamental properties purely categorical? Though this is murky territory, we should believe they are not. In particular, on the grounding-powers account we have that $\Box_{Fnd_1, Fnd_2, \dots} L'$ (it is in collective nature of the fundamental properties that L' holds). The fundamental properties necessarily confer grounding powers, and so are essentially

⁴⁴See Teitel (2019) for a recent discussion of structuralism about spacetime. The analogy with spacetime is suggested by Cross (2013) with respect to causal dispositionalism and McDaniel (2015) with respect to the identities of propositions.

grounding-dispositional in that respect. Perhaps they are best considered to be the grounding version of Heil and Martin's "powerful qualities" (a mix of categorical and dispositional).⁴⁵ The fundamental properties are also (somewhat) like Leibnizian primitive forces: intrinsic properties that bring about the non-fundamental, including structural physical properties.⁴⁶ As such, on the intermediate structuralist position fundamental properties are best described as *ground Leibnizian quiddities*: quiddities that primitively confer grounding powers.⁴⁷

Are the non-fundamental properties, like mental properties, intrinsic to their bearers? First, we should distinguish absolutely from merely relatively intrinsic properties.⁴⁸ Relatively intrinsic properties of an object x are intrinsic to x and grounded in extrinsic properties of either x or parts of x . Absolutely intrinsic properties of x are intrinsic to x and not grounded in extrinsic properties of either x or parts of x .⁴⁹ Functionalists believe that mental states are not absolutely intrinsic, as they are realized by extrinsic physical relations, not intrinsic properties. On Derk Pereboom's account, mental properties are constituted by intrinsic physical properties, and so are absolutely intrinsic.⁵⁰ A virtue of the present account is that it is neutral with respect to these views. However, it places the following constraint on both: whatever the grounds are, they determine the identity of the mental state.

Why believe there is a fundamental level at all? This is a common assump-

⁴⁵See, for example, Martin (1997) and Heil (2003).

⁴⁶For discussion of Leibniz on primitive force, see Adams (1994) and Jorati (2019).

⁴⁷Alter & Pereboom (2019) suggests the term "Leibnizian quiddity" for a quiddity that is the categorical basis of a causal power.

⁴⁸This terminology is due to Kant (1998), A277/B333.

⁴⁹These definitions are due to Pereboom (2016).

⁵⁰Pereboom (2011), Chapter 8; Pereboom (2016).

tion, though some have challenged it.⁵¹ I have no direct argument for this assumption, but will only point to the theoretical benefits of the proposed theory: assuming physicalism, we have an analysis of how the mental can be “nothing over and above” the physical; we have an explanation of the modal connections between ground and grounded; and, assuming a causal powers account of causation, we have a unified theory of causal and metaphysical explanation.

3.5.1 Full Structuralism?

According to my proposal, the fundamental properties are not structural in that they cannot be defined solely in terms of grounding relations. The non-fundamental properties, I have argued, *are* structural in this way. So, why stop short of full structuralism? Why not quantify out even the fundamental properties, as in the following structuralist lawbook?

$$\exists P \exists Q \exists R \exists S \exists T \dots (P \Rightarrow^c Q \ \& \ R \Rightarrow^r T \ \& \ P, Q \Rightarrow^d S \dots)$$

First, it is unclear that there will be sufficient asymmetry to individuate properties if we don’t take the identity of fundamental properties as given. In other words, without mention of fundamental properties, more than one property will satisfy each variable. Alexander Bird, aware of this problem in his discussion of a pure dispositionalism about causal powers, argues that it is possible to draw graphs that have the requisite asymmetry.⁵² Each node in the asymmetric graph can be uniquely described with respect to the other nodes. But, given the ubiquity of even the small-g grounding relations, it is unlikely that any of these graphs represent the actual structure of the world. We need some

⁵¹For example, see Schaffer (2003).

⁵²Bird (2007).

positive reason to think that the lawbook has the requisite asymmetry to define each property.

Second, it seems possible that instead of the actual fundamental properties there be some other fundamental properties that enter into structurally isomorphic grounding and causal relations. For example, it seems that even if our world is fundamentally physical, there is a possible “ghost world” with fundamental properties $Fund_1^*$, $Fund_2^*$, ... that are all mental.⁵³ In the ghost world, there are ghostly particles that compose ghostly objects and even ghostly footprints that must be caused by a ghostly foot. The intermediate structuralist can capture the possibility of the ghost world by positing *being physical* among the fundamental properties (or some property F that determines that the world is physical). The full structuralist must reject that the physical world and isomorphic ghost world present distinct metaphysical possibilities.

I conclude that intermediate structuralism offers a stable middle ground between modest structuralism and full structuralism. To summarize:

- All properties are individuated by their role in grounding in the sense implied by modest structuralism (i.e., by small-g grounding relations and the fundamental properties).
- $\Box_{Fund_1, Fund_2, \dots} L'$ (The entire structure follows from the natures of fundamental properties).
- For each non-fundamental property P , $\Box_P R(P)$ (it follows from the nature of P that it plays its role in L'), and nothing else is part of the essence of P .

In the next two sections, I compare this account to causal accounts of the natures

⁵³See Leuenberger (2010) for cases like this.

of properties, and then in the final section I put it to work on the question of what grounds grounding.

3.6 Causation

In this section I argue that the grounding-powers account of properties can accommodate three analyses of causal connections: causal Humean quidditism, Armstrongian primitive necessitation between universals, and Shoemakerian dispositionalism. This flexibility is a virtue of the account. At the end of the section, I briefly argue for a hybrid view that builds in a Shoemakerian notion of causal power.

First, we might deny causation even the most derivative role in individuating properties by adopting causal Humean quidditism, à la Lewis (2009). On this account, it is typical to think of causal powers reducing to the truth of counterfactuals, which supervenes on the distribution of non-causal particular matters of fact (e.g., Lewis (1986b)). Intrinsic properties may freely swap causal roles across worlds.

Causal Humean quidditism is compatible with the grounding-powers account of properties; one could be a causal Humean quidditist but a ground Leibnizian quidditist. Given the Humean's commitment to Humean supervenience, this is a natural position to take. A proponent of this package of views recognizes that something about the intrinsic nature of the fundamental properties explains how each property can play functional roles, for example. But they can also admit that a different arrangement of fundamental properties could bring about different causal facts, meaning that fundamental properties could swap

causal roles in a suitably permuted mosaic. This is true even if causal facts are grounded in non-causal facts.⁵⁴

Moving now to anti-Humean accounts of causation, we can distinguish two anti-Humean accounts that are compatible with the grounding-powers account. First, the Armstrongian posits a primitive necessitation relation N between universals: FNG .⁵⁵ This necessitation relation only contingently holds between any particular universals, i.e., $\diamond\neg FNG$. The Armstrongian can be aptly represented as positing that one of the fundamental properties is this necessitation relation: for some n , $Fnd_n = N$. Causal facts are then grounded in facts about the distribution of fundamental universals and the necessitation relation. So, the Armstrongian about nomological necessitation can accept the grounding-powers account of properties.

Next, instead of primitive laws or necessitation, the Shoemakerian dispositionalist argues that properties have causal essences. It is in the nature of mass, for example, to play a certain role in the natural laws. We can capture this view by adding causation to our list of individuating relations. The resulting view is that it is part of the essence of each property to play its role in grounding relations plus causation, i.e., building. We thus have a *building powers* account of properties. Differences in causal role across worlds would then be sufficient for difference in properties. But difference in causal role is not necessary for difference in properties. For example, the sets $\{1, 2\}$ and $\{3, 4\}$ arguably play the same causal role (namely, they cause nothing). Yet, they have different grounds for their existence, and so are individuated by their role in building.

⁵⁴Audi (2016) suggests that if power-conferral is a case of grounding then sameness of causal role is necessary for property identity across worlds. But, as the foregoing discussion shows, this is only true if having the property is sufficient to ground having the power, i.e., context doesn't matter.

⁵⁵Armstrong (1983).

Why prefer the hybrid approach? The first reason has already been mentioned: Boyle's example of the lock and key. Examples like this demonstrate that some non-fundamental properties are essentially causal. The Shoemakerian approach captures this fact about properties by building causal facts right into the essences of properties. However, it is unclear that this kind of argument applies to fundamental properties.

A second reason to prefer the building powers approach is because there is no clear boundary between determination relations that are causal and those that are metaphysical. Consider, for example, Karen Bennett's example of a metal chain.⁵⁶ The chain is composed of particles, but at any instantaneous time slice there is no chain; a time slice of the particles that compose the chain cannot account for the fact that the links are linked together. So, the composition relation must go partly by way of a diachronic, causal connection between particles. But, if there is no sharp separation between causation and non-causal determination, then the foregoing arguments support including causation in our list of individuating relations.

Much more needs to be said, but these considerations lend some *prima facie* plausibility to welcoming causation into the fold of individuating relations. If we do, we open the door to a unified theory of causal and metaphysical explanation: both describe the manifestations of powers conferred by properties. Further, laws of nature and laws of metaphysics are both analyzed as summaries of the essential connections between properties.

⁵⁶Bennett (2017).

3.7 Grounding Grounding

Suppose A grounds B . What, if anything, grounds that fact?⁵⁷ By Ted Sider's principle of "purity", it seems that it should have a ground, since it involves B , which is non-fundamental.⁵⁸ Further, suppose physicalism is the theory that the world is fundamentally physical. Then if the facts about grounding are themselves ungrounded, physicalism is false, since the fact that a physical fact grounds a mental fact itself involves the mental. So, grounding facts need a ground if we are to adequately formulate theories like physicalism in terms of grounding.⁵⁹ In this section, I apply intermediate structuralism to the question of what grounds grounding. In lieu of a full comparison with rivals, I highlight some of the positives of the present account: (i) it bolsters a plausible account of what grounds the grounding facts, namely *upwards anti-primitivism*; and, in doing so, (ii) it allows that everything grounds out in the purely fundamental.

To begin, let's return to an earlier insight: if something's being scarlet grounds it being red, then this is in virtue of what it is to be scarlet. This insight motivates the view that Bennett (2017) calls "upwards anti-primitivism" about grounding: The fact [a is scarlet grounds a is red] is grounded by [a is scarlet]. Generalizing, if [A grounds B], then A grounds [A grounds B].⁶⁰

Dasgupta (2014) challenges upwards anti-primitivism, arguing that it is insufficiently explanatory. First, a single fact A can ground various facts B, C , etc. But then each of these grounding facts gets the same explanation, namely, A .

⁵⁷When we ask what grounds grounding, it must be that the first instance of 'ground' refers to fact-fact grounding, since we are in effect asking: what generates the small-g grounding facts? The second instance ranges over the various small-g grounding relations.

⁵⁸Sider (2011), pp. 106–107.

⁵⁹Dasgupta (2014)

⁶⁰See also Bennett (2011a) and deRosset (2013) for statements of this view.

Second, an explanation of why A grounds B ought to also capture the patterns of grounding of which $[A \text{ grounds } B]$ is an instance. For example, according to upwards anti-primitivism, $[\text{My jacket is red grounds my jacket is colored}]$ is grounded by my jacket being red. But, the challenge goes, this does not do justice to the pattern of red things being colored. An explanation of the grounding connection from my jacket being red to my jacket being colored ought to unify the red things under the pattern of red things being colored. To capture these features, Dasgupta argues we should include an essential connection in the grounds of the grounding fact.⁶¹ For example, $[\text{My jacket is red grounds my jacket is colored}]$ is grounded by (i) My jacket is red and (ii) it is in the nature of being colored that red things are colored.

Dasgupta's account is plausible and close to the account I propose. The primary differences are that I do not include the essence fact in the grounds of ordinary grounding facts and I do not think facts about the essences of non-fundamental things are ungrounded. Having assumed separatism (the thesis that grounding is not identical to, but "backs" metaphysical explanation), we have the option of allowing that essence facts are explanatory without being committed to them grounding the grounding facts.⁶² We should distinguish what *produces* $[a \text{ is scarlet grounds } a \text{ is red}]$ from what *metaphysically explains* that fact, where the latter notion may add ancillary conditions.⁶³ And, arguably, $[a \text{ is scarlet}]$ produces (generates, determines, brings about) $[a \text{ is red}]$ all on its

⁶¹In Dasgupta (2019), Dasgupta yields to pressure to include the essential connection in the initial grounds as well: A plus essential connection E ground B . This is a form of upwards anti-primitivism, but falls prey to the arguments against nomism. See also Kovacs (2019a) for arguments against this view.

⁶²Dasgupta himself does not endorse separatism, and so this may be a verbal dispute. See Bennett (2019) for discussion.

⁶³See Kovacs (2019a) for a discussion of various ways of understanding the question of what grounds grounding and how to incorporate ancillary conditions like laws or essential connections.

own, and so also produces the fact that it produces [*a* is red]. We can now say the following: (i) [*a* is scarlet] grounds [*a* is scarlet grounds *a* is red] and (ii) [*a* is scarlet grounds *a* is red] is metaphysically explained by the [*a* is scarlet] plus $\Box_{Scarlet}R(Scarlet)$. In other words, facts about grounding are explained by the ground and the natures of the properties involved therein. We thus have an explanation of patterns of grounding: patterns of grounding are due to the natures of properties.

Though I agree with Dasgupta that essential connections play an important role in metaphysical explanation, I take the essential connections themselves to be grounded. In particular, I propose that the natures of the fundamental properties (or, the fact that they have the natures they do) ground the fact that each non-fundamental property plays the role it does, e.g., $\Box_{Scarlet}R(Scarlet)$. This follows naturally from the claim that the whole grounding structure, and so $R(Scarlet)$, is essential to the fundamental properties: $\Box_{Fnd_1, Fnd_2, \dots}L'$. There is no violation of Sider's purity principle, since the natures of the non-fundamental properties are structural, and so do not directly mention the mental (assuming physicalism) or the ethical (assuming naturalism). Given that we have taken for granted the identities of fundamental properties, this is a natural position. After all, the fundamental properties generically ground the structure above them.

To summarize the proposal:

- All properties are individuated by their role in grounding (i.e., by small-g grounding relations and the fundamental properties), with the possible addition of causation.
- $\Box_{fnd_1, \dots}L'$ (The entire structure flows from the natures of fundamental properties).

- For each non-fundamental property P , $R(P)$ (where ' $R(P)$ ' refers to the role P plays in L') exhausts the essence of P .
- Upwards anti-primitivism holds of grounding. When it comes to meta-physical explanation, essence facts play a role, but non-fundamental essence facts are themselves grounded in the natures of fundamental properties.

CHAPTER 4

HOW SOCIAL GROUPS PERSIST

In 1943, the Pittsburgh Steelers and Philadelphia Eagles each failed to field a sufficient number of players. They combined for the season, forming the “Steagles.” The teams separated again the following season. Today, each team counts the Steagles in their record, for example in official sports statistics.¹ Respecting this practice, we seem to be committed to saying that the Eagles and Steelers are both the Steagles.² But it cannot be that the Steelers and Eagles are both numerically identical to the Steagles. If they were, then the Steelers would be identical to the Eagles, and they are clearly not. So, we have a familiar puzzle. The following statements cannot all be tenselessly true:

- (1) The Steelers are the Steagles.
- (2) The Eagles are the Steagles.
- (3) The Steelers are not the Eagles.

In what follows, I argue that, everything else being equal, the *stage theory* of persistence offers the best solution to this puzzle. According to the stage theory of group persistence, groups like football teams are located at a single time, but persist through time by having temporal counterparts connected by an “I-relation.”³ The stage theory has few defenders, and no one has defended it as an account of how social groups persist in particular.⁴ But, as I argue below,

¹See, for example, NFL (2018).

²The *franchises* did not combine, but teams are not just franchises. For example, the Cleveland Browns remain in Cleveland despite their franchise moving to Baltimore in 1996.

³The term ‘I-relation’ is due to Lewis (1983b). Perry (1972) calls this the ‘unity relation’.

⁴Sider (1996, 2001) and Hawley (2001) defend the stage theory as a general theory of persistence. Wahlberg (2014, 2017) presents but does not defend the stage theory of group persistence. Others, like Epstein (2017), mention it in passing but do not endorse it.

two important features of social groups make the stage theory especially plausible as an account of how groups persist. First, the cases of fission and fusion familiar to those who have worked on the metaphysics of personal identity and material constitution *actually happen to social groups*, as in the Steagles case, so they cannot be sidelined as “pathological” (Lewis (1986a)). Second, pre-fission coincidence of non-identical objects is not plausible for many social groups because these groups require that special conditions obtain *before* they exist, such as a pronouncement, a vote, or broader social conditions.

After exploring the puzzle in greater depth in Section 4.1, I present three familiar theories of persistence in Section 4.2: endurantism, the worm theory (perdurantism), and the stage theory (exdurantism). In Section 4.3, I argue that cases in which different contexts lead to different persistence conditions show that the worm and stage theories have an advantage over the endurance theory. Then, in Sections 4.4 and 4.5, I argue that the stage theory of groups should be preferred to the worm theory. I consider an objection in Section 4.6.

The arguments of this paper are significant for social ontology for a couple reasons. First, it is significant in itself to establish how groups persist. Second, as I flag below, the arguments generalize to other kinds of social objects. The arguments are also significant for the metaphysics of persistence. In Section 4.4, I show that a common defense of worm theory does not succeed in the case of the social, and, in Section 4.5, I provide novel, distinctly metaphysical reasons in favor of the stage theory of groups. These arguments either tip the theoretical scales toward the stage theory of persistence generally, or else show that we need a pluralist account of persistence. Both are significant conclusions.

4.1 The Puzzle

Very roughly, social groups ('groups' for short) are things made up of people. This includes teams, bands, committees, racial groups, and gender groups. There are, of course, many interesting differences between groups. Some seem to be defined in terms of their internal structure or by the way they fit into a larger structure, like sports teams or legislatures. Others seem to be defined by a common feature had by all members of the group, like redheads or Geminis.⁵ Some are created by intentional processes, like committees. Others seem to result from social structures, like races or genders.

A virtue of the argument that follows is that it does not depend on controversial assumptions about the metaphysics of groups. We need only assume that groups can persist through change, and sometimes split or combine. Consider the following scenario:⁶

Committee Depletion

The philosophy hiring committee is charged with hiring an epistemologist and a metaphysician. A bitter split between empiricists and rationalists leads to a standoff. The dean, an empiricist, intervenes and removes the rationalists from the committee. The dean also limits the committee to hiring one candidate.

In this example, it is plausible that the Philosophy Department hiring committee survives losing some of its members and some of its duties. There is no puzzle here, just a smaller committee. But what if the dean instead split the committees, in the style of Derek Parfit's fission puzzle of personal identity (Parfit (1971))?

⁵See Copp (1984) and Ritchie (2018). Epstein (2017) questions the utility of this distinction.

⁶The example of a faculty committee is borrowed from Epstein (2017), though Epstein does not discuss the case of a fissioning committee.

Committee Fission

As before, the Philosophy Department hiring committee is charged with hiring an epistemologist and a metaphysician, and a bitter split between empiricists and rationalists leads to a standoff. The dean splits the committee into two, allowing the rationalists to hire the metaphysician and the empiricists to hire the epistemologist.

Which of the committees is the original? It seems that it must survive as at least one, since the committee survives in Committee Depletion. (How can the presence of an additional committee make a difference to survival?) Given that the committee does survive as at least one of the later committees, and given the symmetry in Committee Fission, it seems that the committee survives as *both* new committees.

Committees can also combine:

Committee Fusion

The empiricists and rationalists cannot get along, and split their hiring duties between two committees. At a later date, a visiting Kantian converts both groups to a higher path, and the committees join to form one hiring committee.

In Committee Fusion, two committees combine. It seems that both survive as the later committee. But, again, this raises a challenge: how can they both be identical to the new committee, but not identical to each other?

As I discuss below, these puzzles are not limited to teams and committees. Many groups split into two or combine into one. And many cases are sufficiently symmetric to motivate their being genuine fission or fusion cases. These puzzles will be familiar to those who have worked on personal identity or ma-

terial constitution, but notice that there is a twist: they actually happen to social groups.

4.2 Approaches to the Puzzle

In this section I present the three dominant accounts of how things persist: endurantism, the worm theory (perdurantism), and the stage theory (exdurantism). These theories each offer a solution to the Steagles puzzle, but, as I argue in the following sections, the stage theory best accommodates group-specific considerations. All things being equal, we should prefer the stage theory of group persistence.⁷

In limiting my discussion to these three accounts, I assume that there are no temporary or “occasional” identities: if $a = b$ at some time t , then at any other time t' , if a exists then $a = b$ at t' .⁸ I also remain neutral on the best account of time itself, and only focus on the question of how things persist through time.⁹

4.2.1 Endurantism

Endurantists hold that, very roughly, objects exist wholly at each time at which they exist. The view is often combined with presentism about time, the theory

⁷Wahlberg (2014) also offers an overview of these three accounts of the persistence of social groups, and argues that the worm and stage theory support reductionist accounts of social groups. My argument differs in that I provide two new arguments for the stage theory over the endurance and worm theories.

⁸For an extended defense of “occasional identities” as a solution to fission cases, see Gallois (1998).

⁹Haslanger (2003) argues that accounts of how objects persist can be separated from accounts of time itself.

that only the present exists. Together, presentism and endurantism most closely describe the common sense account of objects in time. However, endurantism is also compatible with an eternalist account of time, according to which all times are equally real.¹⁰ For the endurantist, the relation between an object now and the same object in the past is numerical identity; things remain literally identical through time.

As we have seen, in fission and fusion cases numerical identity creates problems. It cannot be that the Steelers=Steagles and the Eagles=Steagles, since Steelers≠Eagles. In response, the endurantist might posit spatial *coincidence*: during the Steagles season, there were really two teams fully spatially overlapping the Steagles.¹¹ Or in the case of the faculty committees, pre-split there were two fully-overlapping committees. This move allows the endurantist to preserve numerical identity of teams through time.

We can make some sense of spatial coincidence by analogy with the example of a statue made of clay. Some, going back to Wiggins (1968), hold that the statue and the clay are not identical. Instead, the clay constitutes the statue, where constitution is not identity. Robinson (1985) extends this kind of case to amoebae: if amoeba A splits into amoebae B and C at t_1 , then B and C spatially overlap during the pre-fission period from t_0 to t_1 (Figure 4.1).

Robinson seems to hold that pre-fission B and C constitute each other. Applied to the Steagles case, the Steelers and the Eagles would constitute each other for the Steagles season. (Notice the claim is *not* that the Steelers and Eagles both constitute some third team.) This claim of mutual constitution stretches the

¹⁰See Haslanger (2003) and Sider (2001) for discussion.

¹¹The teams likely also *materially* coincide: they share the same matter, in this case people. In what follows I ignore the distinction between material and spatial coincidence.

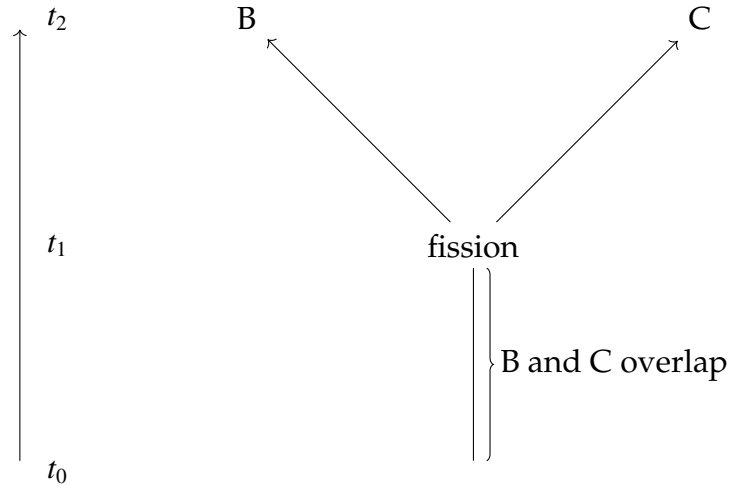


Figure 4.1: Amoebae Fission

intuitive understanding of constitution, of one thing being the material of another thing. First, constitution is usually taken to be asymmetric (Baker (1997) is a canonical example). Second, constitution is often taken to hold only between different kinds. In fact, Wiggins (1968) bans constitution between two things of the same kind.

Without a plausible account of constitution, the endurantist loses some motivation for their account of fission cases. But they are not at a complete loss. By positing spatial coincidence, the endurantist can account for the Steagles and faculty committee cases. In the Steagles case, the Eagles and the Steelers spatially coincide during the Steagles season. Likewise, both faculty committees meet from the beginning, the members unaware that their later split means that there are now two spatially coincident committees.

4.2.2 The Worm Theory

The idea that physical things can spatially overlap strikes many as strange. In particular, it violates the platitude that no two things can be in the same place at the same time. Four-dimensionalists offer an explanation for overlap.

Four-dimensionalists believe that objects persist through time by having temporal parts at times, much as objects are spatially extended by having spatial parts at various locations. These temporal parts are related by an ‘I-relation’. In the case of personal identity, the I-relation might be psychological continuity. The I-relation varies group to group. On the *worm theory*, also known as *perdurantism*, objects are literally extended in time—they are “spacetime worms”—and only exist at times by having parts at that time (Lewis (1983b)). A worm theory of groups is explicitly defended by David Copp (Copp (1984)).

The worm theorist explains spatial coincidence in analogy with overlapping roads. Consider two roads that diverge. Where they overlap, the roads coincide by sharing a segment. The roads are not identical because they part ways. “Two” roads that never diverge are really one road, perhaps with more than one name.

In the Steagles case, the worm theorist would say that the Steelers and Eagles share temporal parts for the Steagles season (Figure 4.2). Likewise, the two faculty committees in the faculty fission case share temporal parts pre-fission. So, like the endurantist, the worm theorist posits spatial overlap to account for how the teams combine and then split. Unlike the endurantist, the worm theorist explains overlap as the sharing of a temporal part. This removes much of the mystery of spatial coincidence.

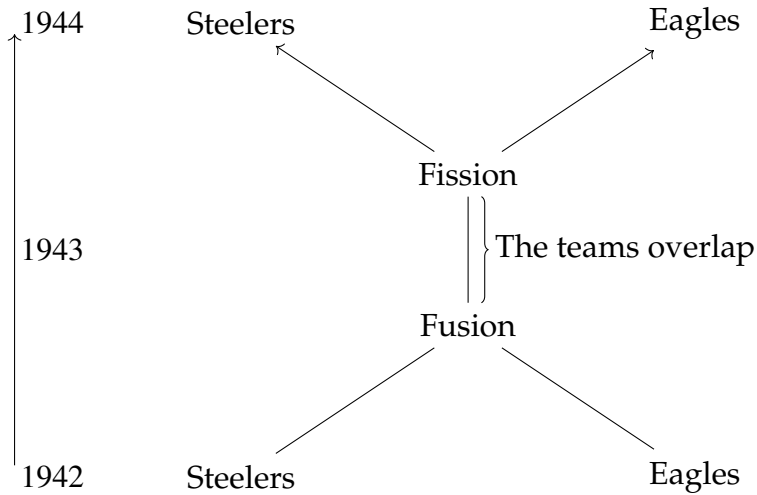


Figure 4.2: The Steagles According to the Worm Theory

4.2.3 The Stage Theory

Finally, the *stage theory*, a kind of four-dimensionalism, holds that objects are located at a single time, and persist by having *temporal counterparts* at other times. The stage theory is analogous to modal counterpart theory. Roughly, modal counterpart theory says that ‘I could have been a lawyer’ is true just in case I have a counterpart in another possible world that is a lawyer.¹² Similarly, stage theory says that ‘I was six feet tall’ is true just in case I have a temporal counterpart at some point in the past that is six feet tall. In the modal case, modal terms like ‘could’ or ‘possibly’ trigger the counterpart-theoretic interpretation. In the temporal case, tensed terms like ‘was’ trigger the temporal counterpart-theoretic interpretation. For social groups, the temporal counterpart relation is a group I-relation. Which I-relation gets selected depends on the context.

To illustrate group stage theory, consider again the case of the Steagles (Figure 4.3). At any time in 1942, the Eagles and Steelers are each a distinct team-

¹²See Lewis (1968, 1986a) more on modal counterpart theory.

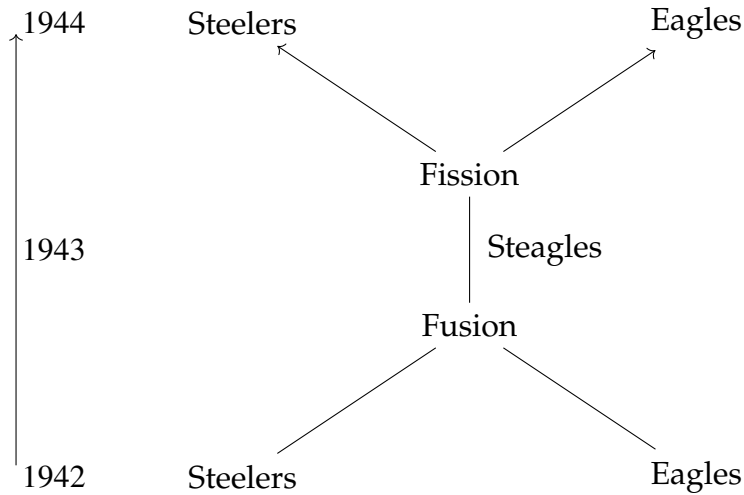


Figure 4.3: The Steagles According to the Stage Theory

stage. At some time in 1943, the series of stages merge into a single stage. By 1944, there are again two stages at each time. There is no overlap of teams during the Steagles season (though there may be other objects overlapping, like four-dimensional fusions of persons, which according to the stage theory are not teams). At any time in 1942, the sentence ‘The Steelers will play in 1943’ is true, because each Steelers stage in 1942 is I-related to a stage in 1943.

Note that, strictly speaking, a Steelers stage at any time is not identical to a stage at any other time. Suppose that the Steelers get a new player in 1944. If this player looks at a photo of the 1942 Steelers and says, ‘I am on that team’, then there is a sense in which what he says is false. *That* team only existed then. But that’s fine; what is true is that he is on a team that *was* that team. This is because he is on a team, the 1944 Steelers, and this team is I-related to the 1942 Steelers in the photograph.¹³

¹³See Sider (1996), Section IV for further discussion of this issue.

4.3 The Semantic Advantage of the I-relation

One important difference between three-dimensionalist theories like endurantism and four-dimensionalist theories like the worm and stage theories is that the latter appeal to an I-relation, rather than identity. For both the worm theorist and stage theorist, the relation that connects temporal parts of groups can vary group to group, even varying within a single group kind. This provides the four-dimensionalist an explanatory advantage. This explanatory advantage is important when it comes to social groups, because how we treat group persistence seems to vary context to context. Consider the following real-world cases:

Houston Football

In 1997, the Houston Oilers moved to Tennessee. In 1999, their name became the Tennessee Titans. In 2002, the NFL granted a new franchise to Houston, the Houston Texans.

In this example, the Tennessee Titans and Houston Oilers are treated as the same team. The Oilers moved to Tennessee, and are now called the Titans. The Houston Texans are treated as a new team.¹⁴ This makes sense, since the Houston franchise moved. However, as the following example demonstrates, in other cases the franchise does not determine the location of the team.

Cleveland Football

In 1996, the Cleveland Browns players and coaching staff moved to Baltimore to become the Baltimore Ravens. In 1999, the NFL awarded a franchise to Cleveland, reactivating the Cleveland Browns.

Today's Cleveland Browns are treated as the same team as the Cleveland

¹⁴See, e.g., NFL (2018)

Browns before the move to Baltimore (for example, in team statistics), while the Ravens are treated as having been founded in 1996.¹⁵ The difference between this and the Houston Football case is due to context-specific factors, like the outcry of Cleveland fans when the move was first proposed, and the subsequent choices of the owner of the Browns.

These cases illustrate the context sensitivity of the I-relation. The default I-relation likely tracks the franchise: team *A* persists to become team *B* if and only if *A* and *B* are the same franchise. But this default can be overridden. In the case of the Cleveland Browns, the persistence of the team comes apart from the franchise (the franchise goes to Baltimore, but the team remains in Cleveland).

This context dependence offers an explanation of the difference between the Houston and Cleveland cases. The teams are of the same kind, and so would typically have the same persistence conditions. But the unusual circumstances around the Cleveland Browns move to Baltimore caused a shift to a different I-relation.

The endurance theorist lacks a natural explanation for this kind of case. One response is to posit a plenitude of social groups that can be referred to by context-sensitive expressions. But, first, it is unclear what the semantic mechanism is of this context-sensitivity. For example, in the cases of Cleveland and Houston, it seems that there is neither vagueness nor ambiguity at work. Second, it is a widely-accepted constraint on the metaphysics of social groups that there be neither too many nor too few (Ritchie (2018) calls this the “Goldilocks Constraint”). Without an independent justification for the existence of a plenitude of groups, the endurantist lacks an explanation for the context sensitivity

¹⁵See, e.g., NFL (2018).

in specific cases like those above.

It is important to highlight that, unlike strange cases of persistence considered in the literature, puzzle cases actually happen for social groups. Theseus's ship may have never been rebuilt out of its old parts, but the Cleveland Browns really did get "reactivated" in 1999. As I discuss in the next section, Lewis (1986a) argues that actual cases should be the focus of an analysis of how objects persist. If so, then the actuality of these cases add to their explanatory weight.

4.4 Can't Count on Pathology

The previous section argued that the worm and stage theories of social groups have an advantage over endurantism. In this section and the next, we will see that the stage theory has advantages over the worm and endurance theories, again specific to social groups.

A major difference between the theories that posit coincidence and the stage theory concerns counting. For example, how many teams are on the field when the Steagles play the Cardinals? Strictly speaking, that is, counting by numerical identity, the endurantist and worm theorist say *three*. This is because the Steagles are really two overlapping teams, both playing the Cardinals. And how many faculty committees meet, pre-fission? The endurantist and worm theorist say *two*. But this seems wrong. If true, it would violate both the rules of football (play occurs between two teams, not three) and the understanding of the professors at their first meeting (they only intended to convene a single committee meeting, not two). A theory of group persistence ought to capture these plausible common sense beliefs if possible. This is the *problem of counting*.

In response to the problem of counting, the endurantist and worm theorist can claim that we do not always count by identity. Instead, we might count by constitution (Robinson (1985)), or by identity-at- t , where x and y are identical-at- t if and only if x and y share a temporal part at t (Lewis (1983b)). But as Sider (1996, 2001) argues, to literally count is to enumerate the numerically distinct things, which seems to require counting by identity. So, it is a theoretical cost to not count by identity.

In this section I will argue that (i) the stage theory does not face this problem and (ii) that one avenue of response to the counting problem is not plausible in the case of social groups. It follows that, insofar as we take the counting problem seriously, the stage theory presents the best solution.

First, the stage theory does not face the counting problem (though it faces a related problem, which I respond to in Section 4.6 below). According to the stage theorist, at each moment there are just two teams on the field when the Steagles play another team, not three, since there are just two team stages on the field at each moment. Likewise, at any moment pre-fission, just one faculty committee meets, not two. When counting teams at a time, the stage theorist counts by identity.

Both Lewis and Robinson argue that the cost of not counting by identity is low, since fission doesn't actually happen for people, and is otherwise rare. As Lewis puts it, fission cases are "pathological" (Lewis (1986a)). Given that they are pathological, the best theory should get to decide what to say about them; "spoils to the victor." While I do not endorse this response, it should be conceded that this kind of response is plausible in the case of an analysis of our ordinary concepts of person and amoeba. After all, our concept of person didn't

take shape in a world in which people split or combine. And while amoebae do fission, they are a marginal case, as most organisms do not reproduce by fission. So, the appeal to pathology is plausible in these cases (though see Sider (1996) for a different response). In the case of groups, however, pathology is irrelevant: fission and fusion are typical. The Steagles case is just one real-life example.¹⁶ But if these cases do happen, and across a wide variety of groups, then they are not pathological, and ought to be taken seriously.

To summarize, the fission and fusion of groups really happens. The endurantist and worm theorist therefore cannot appeal to the rarity or pathology of fission cases to avoid the counting problem when it comes to social groups. Because the stage theorist does not face this problem, the stage theorist has the advantage.

4.5 Against Pre-Fission Coincidence

In this section I argue that it is not plausible that groups overlap pre-fission. If they do not, then social groups are not mere four-dimensional fusions, as four-dimensional fusions do overlap pre-fission, as described in Section 4.2.2. I will focus on the case of a faculty committee, but the argument applies broadly to social and institutional objects. Unlike the typical arguments for the stage theory in the literature, the argument I provide is distinctly metaphysical in

¹⁶Examples abound in the corporate world. Many mergers are in effect group fusions (e.g., Exxon-Mobil). And corporations often split into two, with each having more or less equal claim to being the original (e.g., Hewlett-Packard's recent split). A prominent example outside the corporate world is when, in 1981, the United States Court of Appeals for the 11th Circuit was split from the 5th Circuit. The pre-1981 5th Circuit precedent is binding for both the 11th and the "new 5th" (see, e.g., Larry Bonner v. City of Prichard, Alabama, et al., 661 F.2d 1206 (11th Cir. 1981)).

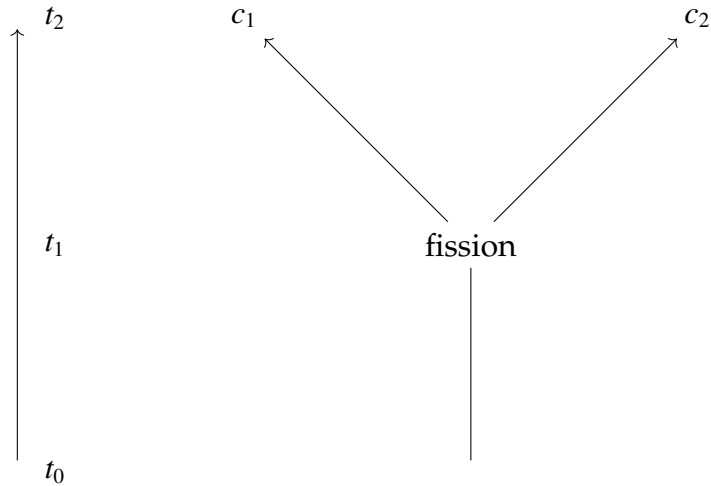


Figure 4.4: Faculty Fission

that the key premise is that groups metaphysically depend on certain facts that do not obtain pre-fission.

Here is a first pass on the argument. Suppose at t_0 the faculty vote to form one hiring committee and at a later time t_1 the faculty vote to split the hiring committee into two committees, c_1 and c_2 (Figure 4.4). Those that posit spatial coincidence require that c_1 and c_2 exist at t_0 . This means that, counting by identity, there are two committees created at t_0 . But this is incompatible with the fact that the faculty voted to create *one* committee at t_0 . Pre-fission, the appropriate process has not taken place for there to be *two* committees. Certainly *a* process has taken place; the faculty had a vote to create a committee. And there is *a* social structure realized by the committee members, that of a hiring committee. But pre-fission there is neither a vote nor a social structure to support there being *two* committees. So, there is no pre-fission coincidence of committees, and neither the worm theory nor endurance theory can account for the fission puzzle.

In order to sharpen this argument, we need to separate out a few different

concerns. First, institutional facts, like the existence of a committee, depend on certain intentional events occurring or social facts obtaining. Options include conventions (Hume (1740), Lewis (1969)); rules or norms (Hart (1961), Thomason (2016)); institutional facts (Searle (1995, 2010)), or collective attitudes that result in the conferral of a social status (Ásta (2013, 2018)). These facts or events, like votes and pronouncements, are necessary conditions on the existence of institutional kinds, like many social groups. In the case of the committee fissioning, pre-fission the faculty only voted to create one committee. So, there is only one committee pre-fission, not two, despite there being two overlapping four-dimensional fusions.¹⁷

A second concern relates to social structures. The structural approach to the metaphysics of social groups is widely recognized as applying to at least some groups, and can be seen most explicitly in the recent literature in Ritchie (2013, 2018), who defines social groups as social structures realized by people. Now, the structural approach to social groups does not say much about how groups persist. What it does say is that for a group *A* to be a different group than group *B*, it must be that group *A* has different members than *B*, or group *A* and *B* differ structurally, e.g., with respect to societal norms or powers. But, pre-fission, the “two” committees have all the same members and realize the same structure. So, again, there is just one committee pre-fission, despite there being two overlapping four-dimensional fusions.

The worm theorist is not entirely at a loss here. They could, for example, endorse Ritchie’s claim that groups are realizations of social structures, but then amend Ritchie’s account to say that groups are realizations of *four-dimensional*

¹⁷See also Wahlberg (2019), who sketches an argument that future institutional facts cannot ground present social facts at risk of violating principles of physics.

social structures, that is, social structures that are defined as networks of social relations across time, and so are realized by collections of people that span different times. This account can explain why there are two groups pre-fission: because there are two social structures realized, one for each branch in Figure 4.4. The challenge for the worm theorist is to make plausible this four-dimensional picture of social structures, and in particular that there are in fact two social structures realized at t_0 by the faculty members on the hiring committee.

Finally, there is a pressing worry that pre-fission coincidence commits us to a kind of circular explanation. Grounding is a lot like causation.¹⁸ Just as the world “unfolds” forward causally, it ought to unfold forward in grounding.¹⁹ In fact, if we allow the backwards-grounding posited by the worm and endurance theorists, it seems that we will be trapped in circles of explanation.²⁰ For example, in the committee case just described, we have a committee voting to split into two. On the worm and endurance theories, there are two overlapping committees pre-fission, and both voted to split. But then we have the following circular explanation: the two committees voted to split, and that is why there are two committees.

Granted, it may be that the vote at t_1 *causes* there to be two committees, while the fission *grounds* the existence of the two committees before t_1 . Assuming, however, that (i) grounding and causation are both a kind of generative, explanatory relation, and (ii) this kind of explanation cannot run in circles, this circularity ought to be avoided (Viggiano (2019); see also Lange (2013)). Further, the *prima facie* problematic source of this circularity is that the fission of commit-

¹⁸See, for example, Bennett (2017); Schaffer (2016a); Wilson (2018).

¹⁹A plausible exception is mere Cambridge change.

²⁰See Viggiano (2019), who presents a detailed argument for how backwards-grounding creates explanatory challenges in the case of the moral.

tees backwards-grounds the existence of both committees pre-fission, not that votes can create committees. The stage theory does not posit this backwards-grounding, and so avoids this problem.

In response, the defender of pre-fission coincidence may argue that we do not count by identity in these cases, but instead identity-at-*t* or by constitution. But, first, as I argued in Section 4.4, there is a theoretical cost to not counting by identity, and this cost cannot be chalked up to “spoils to the victor” in the case of social groups. Second, metaphysics doesn’t respond to how *we* count. If there are in fact two committees at t_0 , then the faculty created two committees at t_0 , even if we tend to count them as one.

A second response is to point out that the worm and endurance theories considered above already accept that future facts play a role in determining what is now the case. The fact that there are two amoebae overlapping pre-fission is grounded in facts after the fission event. So why can’t the worm theorist say the same thing about the committee? The difference is that social objects, unlike amoebae, often depend on the obtaining of certain institutional facts for their existence. Above, I cashed this out in two ways: in terms of an explicit act, like a pronouncement, and in terms of a social structure being realized at a time. Presumably the existence of an amoeba depends on neither kind of thing.²¹ So, in the case of the amoeba fissioning, there is no barrier of the kind described above blocking the pre-fission coincidence of amoebae.

To summarize, social objects, and in particular groups, have certain necessary conditions on their existence. These necessary conditions vary from a vote

²¹Though see Sutton (2012). If Sutton is correct that all things falling under natural kinds depend on conventions for their existence, then the argument of this section applies much more broadly.

to a complicated social structure. Absent these conditions, it is not plausible that the groups exist. But, if they do not, then neither the worm theory nor endurantist theory we have considered can offer a solution to fission cases, and we ought to adopt the stage theory.

It is important to emphasize what I have not argued. First, I have not argued for any particular account of what stages are, and so have not relied on a particular account of what groups are. They may be sets, fusions, realizations of structures, or *sui generis*. I have also not argued that groups can *never* coincide. It may be possible to vote to form two committees comprised of the same people, for example, thereby forming two overlapping groups.²² I have only argued against theories that entail that two or more groups coincide pre-fission. Besides endurance theories, this includes theories that identify groups with four-dimensional fusions, as well as four-dimensional set-theoretic theories that identify groups with sets of group members across time.²³ The stage theory is the only account considered that avoids this commitment.

4.6 Objection: Revenge of the Counting Problem

One of the major objections to stage theory is that it gets counting wrong when we timelessly count how many objects there are. For example, if people are stages and we ask, ‘How many people have been US President?’, then the answer will be far more than forty-five. Likewise for the case of groups: if you ask how many teams played in the game, the answer may be literally an infinite

²²See (Epstein, 2015, 146–149) for discussion, and Hawley (2017) for good reason to believe there are not two overlapping committees after all.

²³Effingham (2010) defends a set-theoretic account. Although he does not discuss fission cases, he would seem to be committed to pre-fission coincidence as well.

number, since, assuming time is continuous, there were an infinite number of instantaneous stages on the field.

In response to this objection, Sider (1996) concedes that in these cases we are counting the spacetime worms, or segments of these worms, not the stages. For Sider, this is a semantic, not metaphysical, concession. He is happy to recognize the existence of spacetime worms—he just doesn't think that we ordinarily refer to them.²⁴

The group stage theorist can say something similar. When we count how many faculty committees have ever existed at our university, we count the spacetime worms of committees, not committee stages. But here is the important point: the group stage theorist cannot admit that these 4-dimensional fusions are in fact committees. Only the stages are committees. If the 4-dimensional fusions were in fact committees, then there would be two overlapping faculty committees pre-fission. But, as I argued in the previous section, future fission cannot ground the existence of additional groups now. So, the group stage theorist should say that when we count groups that existed in the past, we count the spacetime worms, but these worms are not in fact groups.²⁵

Notice the difference between the stage theorist saying that we sometimes count four-dimensional fusions instead of stages and the worm theorist saying that we sometimes count using identity-at-*t*. In order for the worm theorist to appeal to identity-at-*t*, it must be that each of the post-fission groups has a temporal part pre-fission, which entails that each existed pre-fission. But, as I argued above, it is implausible that groups always coincide pre-fission. The

²⁴Though Sider later rejects unrestricted composition, e.g., Sider (2013a).

²⁵If we reject unrestricted composition, then the group stage theorist can say we timelessly count by sets or pluralities of groups.

stage theorist, on the other hand, does not face the analogous problem because the stage theorist has no analogous commitment to fusions being groups. Just because we sometimes count by aggregates, or “quotient” groups with respect to time, does not entail that on our final analysis we should consider these aggregates groups.

4.7 Conclusion

I have argued that social groups are momentary stages and persist through time by having temporal counterparts. The argument appealed to two notable features of social groups: their frequent fissioning, and that they cannot be guaranteed to coincided pre-fission. The latter feature can be generalized to social objects generally, and so supports a general stage theory of the social.

A more general lesson can be drawn once we recognize that social objects are a lot like natural objects. Both are (typically) made of matter, make a difference in causal explanations, and persist through time. Perhaps both depend on human conventions.²⁶ Further, the theoretical contest between worm theory and stage theory is close; every argument ought to be weighed carefully. Together, these considerations lend some support to generalizing the argument for a stage theory of social groups to a stage theory of all objects. And, even if we reject the stage theory of persistence of ordinary objects and people, we still have a significant conclusion, namely persistence pluralism: social groups persist by having stages, unlike other objects. This opens the door to other domain-specific theories of persistence.

²⁶Sutton (2012) argues that all composite objects depend on conventions.

Finally, I hope that this paper demonstrates the fruitfulness of the connection between metaphysics and social philosophy. As demonstrated in Sections 4.4 and 4.5, considerations specific to the social world impact the metaphysics of persistence. Metaphysicians studying persistence and social ontologists can and should learn from each other.²⁷

²⁷I would like to thank Karen Bennett, Trevor Teitel, Isaac Wilhelm, Ted Sider, Angélica Pena, Tom Davidson, and audiences at Cornell, UNAM, and the Social Ontology 2018 and 2019 conferences for many helpful comments and suggestions. Any mistakes are of course my own.

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