EXPLANATION, DEPENDENCE, AND ONTOLOGY:
ESSAYS IN META-METAPHYSICS

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EXPLANATION, DEPENDENCE, AND ONTOLOGY:

ESSAYS IN META-METAPHYSICS

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What conceptual tools should we use in our metaphysical theorizing? In recent years, it has become standard to understand a wide range of metaphysical debates in terms of grounding, ontological dependence, or joint-carving quantification. By contrast, my dissertation defends a conservative approach to metaphysical ideology.

Chapter 1 defends my minimalist theory of ontological dependence. According to this view, ontological dependence is an "aggregative cluster concept" whose application conditions are determined by a weighted total of the modal, mereological and set-theoretic relations between the putative dependence relata. Since the rules governing the concept are underspecified, ontological dependence isn't analyzable in terms of these relations, yet it is parasitic on them. One important upshot of the view is that ontological dependence isn't the central concept of metaphysical theory building that it's often taken to be.

Chapter 2 explores a popular argument to the effect that grounding is indispensable for certain explanatory purposes in metaphysics. In it, I argue that the existing criticisms of grounding have overlooked a distinction between two notions that have been assigned to very different explanatory roles. Then I show that neither role motivates the introduction of grounding. I also outline a hitherto overlooked view, according to which metaphysical explanations (unlike causal explanations) are distinguished by their subject matter, rather than by any particular "explanatory relation" underlying them; so, there is a

way to conceive of metaphysical explanation that doesn't confer commitment to grounding.

Chapter 3 argues against "modest" approaches to revisionary ontology, according to which revisionary ontologists should deny that there is deep disagreement between common sense and their views about the ontology of material objects. In place of these views, I defend what I call the uncompromising view: revisionary ontologists should give a causal explanation of why so many of our ordinary beliefs about material objects are false, and an evaluative account of why they nonetheless have some kind of positive epistemic status. I also argue that revisionary ontologists can endorse the uncompromising view without undermining their own arguments for their revisionary positions.

BIOGRAPHICAL SKETCH

The author works on issues in metaphysics and the philosophy of mind, with a particular focus on meta-metaphysics. He received a law J.D. from the Eotvos Lorand University of Science in 2010 and has been a graduate student at Cornell University since then. He will be an Assistant Professor of Philosophy at Bilkent University starting in the fall of 2016.

For Rina

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Introduction

What conceptual tools should we use in our metaphysical theorizing? In recent years, it has become standard to understand a wide range of metaphysical debates in terms of grounding, ontological dependence, or joint-carving quantification. By contrast, my dissertation defends a conservative approach to metaphysical ideology.

The dissertation's first two chapters focus on what one could call "stratified metaphysics": the area of inquiry whose main purpose is to understand the hierarchical structure of reality. How do the world's derivative aspects arise out of its more basic aspects? How do the explanatorily prior bits account for the explanatorily posterior ones? The notions of grounding and ontological dependence are often thought to play an indispensable role in any candidate answer to these questions. For example, it has been suggested that tropes ontologically depend on their bearers (Mulligan et al 1984), sets on their members (Fine 1995), and wholes on their parts (Conee and Sider 2005). In a similar fashion, grounding has been thought to be the relation that holds between the physical and the mental facts (Dasgupta 2014) or the moral and the natural facts (Rosen 2010).

Many philosophers have expressed skepticism about the posits of grounding and ontological dependence (Hofweber 2009, Daly 2012, Wilson 2014). However, we are yet to see a systematic account of how we can engage in the pursuit of stratified metaphysics without falling back on these primitives. The overarching goal of the first two chapters is to advance such a project: chapter 1 develops a "lightweight" theory of ontological dependence, whereas chapter 2 defends a theory of metaphysical explanation that doesn't appeal to grounding.

The dissertation's third chapter discusses the Problem of Reasonableness: the problem of how revisionary ontologists should explain the apparent discrepancy between their views and common sense beliefs about material objects. I defend what I call the uncompromising view: revisionary ontologists should give a causal explanation of why so many ordinary beliefs about material objects are false, and an evaluative account of why ordinary people are nonetheless reasonable in holding them. This view, too, meshes with a conservative approach to metaphysical theorizing. According to compatibilist solutions to the Problem of Reasonableness, revisionary ontologies are perfectly compatible with common sense beliefs about ordinary objects. Many of these views assert that metaphysicians aren't, or at least shouldn't be, interested in what exists; instead, they should ask what is fundamental (Schaffer 2009), what the fundamental truthmakers are (R. Cameron 2008), or which entities fall under the joint-carving quantifier (Sider 2009, 2011, 2013). Moreover, since ordinary people have no beliefs about what is fundamental, or what falls under the joint-carving quantifier, there is no real conflict between ordinary belief and the ontological truth. If the uncompromising view is correct, then the Problem of Reasonableness doesn't force us to re-conceptualize ontology: we can persist in thinking of material-object ontology as primarily revolving around which material objects there are, plain and simple.

Below, I give a more detailed breakdown of the chapters.

Chapter 1: The Minimalist Theory of Ontological Dependence

When an entity ontologically depends on another entity, the former "presupposes" or "requires" something about the latter in some metaphysically significant sense. Until

recently, ontological dependence has been widely assumed to be amenable to a straightforward modal analysis (Hoffman and Rosenkrantz 1994, Simons 1998). However, due to some powerful counterexamples by Kit Fine and others, this approach fell out of favor (Fine 1995, Correia 2005). Most philosophers today either accept ontological dependence as a theoretically indispensible primitive (Thomasson 1999, Potter 2004) or adopt a "heavyweight" analysis in similarly controversial terms, such as grounding or a non-modal notion of essence (Fine 1995, Correia 2005, Koslicki 2012).

This chapter defends Dependence Minimalism, a novel account of why ontological dependence is not analyzable in familiar (modal, set-theoretic and mereological) terms. According to Dependence Minimalism, ontological dependence is what I call an aggregative cluster concept: a concept which can be understood, but not fully analyzed, in terms of the various relations it "aggregates". I argue that the view has several benefits: it can account for clear cases of ontological dependence as well as explain the source of disagreement in controversial ones; it gives a nice story about why modal, mereological and set-theoretic facts can serve as evidence for ontological dependence theses; and it can explain why various views on the formal properties of ontological dependence strike their advocates as plausible, while at the same time staying neutral on which of these views is correct. One important upshot of the minimalist account is that questions about what depends ontologically on what don't deserve to be treated as the methodologically basic questions contemporary metaphysicians usually take them to be.

Chapter 2: Grounding and the Argument from Explanatoriness

In recent years, metaphysics has undergone what some describe as a revolution (Schaffer 2016): it has become standard to understand a vast array of questions as questions about grounding, a metaphysical notion of determination. Why should we believe in grounding, though? Supporters of the revolution usually gesture at what I call the Argument from Explanatoriness: the notion of grounding is somehow indispensable to a metaphysical type of explanation (Schaffer 2009, Fine 2012a, Trogdon 2013).

I challenge this argument and along the way develop a "reactionary" view, according to which there is no interesting sense in which the notion of grounding is explanatorily indispensable. I begin with a distinction between two notions of grounding, a distinction which extant critiques of the revolution have usually failed to take into consideration: grounding qua that which underlies metaphysical explanation (Audi 2012a, 2012b; Schaffer 2012, 2016; Skiles 2015) and grounding qua metaphysical explanation itself (Fine 2001, 2012a; Dasgupta 2014a, 2012b; Litland forthcoming). Accordingly, I distinguish between two versions of the Argument from Explanatoriness: the Unexplained Explanations Version for the first notion of grounding, and the Expressive Power Version for the second notion.

The chapter argues that neither of these arguments is successful. The Unexplained Explanations Version presupposes an implausible view about how explanatory relations are tied to the explanations they "underlie": it assumes that a relation is explanatory only if its instantiation is by itself sufficient, independently of the relata, for an explanation. I show that we have good reason to reject this assumption. The Expressive Power Version relies on a similarly implausible assumption about the range of concepts reactionaries can

draw from to express that a certain group of explanations is metaphysical. I also suggest that the notion of metaphysical explanation is best understood as a group of explanations falling under the conventionally demarcated domain of metaphysics. The chapter concludes that no version of the Argument from Explanatoriness is successful, and so there is no interesting sense of the word 'grounding' in which grounding is indispensable tool for metaphysical explanation.

Chapter 3: Revisionary ontology with no apologies

Revisionary ontologies seem to go against our common sense convictions about which material objects exist (Dorr 2005, Merricks 2001, van Inwagen 1990, Sider 2001, 2013). There are arguments for these views, but even after having laid them out, their advocates face the Problem of Reasonableness: they have to explain why most reasonable people don't seem to accept the true ontology (Hirsch 2002, Korman 2009). According to most approaches to this problem, the mismatch between the ontological truth and ordinary belief is merely apparent (Lewis 1986, van Inwagen 1990, R. Cameron 2008, Sider 2011) or at least superficial (Merricks 2001, Rosen and Dorr 2002, Eklund 2005).

Unfortunately, these views suffer from a number of problems: some have serious expressive limitations (Uzquiano 2004), some give rise to slightly different versions of the very puzzles that motivated the acceptance of a revisionary ontology (Eklund 2002, Hudson 2003, McGrath 2005, Bennett 2009), others are explanatorily impoverished (Korman 2009, 2015), and yet others rely on implausible semantic or psychological assumptions (Tye 1992, O'Leary-Hawthorne and Michael 1996, Korman 2008a, 2009).

In place of these views, in this chapter I propose an uncompromising view, which comprises a causal and an evaluative component. In the former, I argue that our beliefs about material objects were affected by selective pressures that were independent from the ontological truth. In the latter, I draw an analogy between the Problem of Reasonableness and the New Evil Demon Problem and argue that whatever epistemological framework the revisionary ontologist prefers, she can always find a positive epistemic status that accurately characterizes ordinary people's beliefs about material objects. Finally, I consider the worry that the causal component threatens to undermine the best arguments for revisionary ontologies. I argue that the uncompromising view can handle this worry, and thus emerges as a stable and unduly neglected solution to the problem.

Chapter 1

The Minimalist Theory of Ontological Dependence

1.1. Introduction

When something, *x*, ontologically depends on another thing, *y*, there is a metaphysically significant sense in which *x* "presupposes" or "requires" something about *y*: that *y* exist, that *y* have some property, or that something of the same kind as *y* exist, etc. For example, it is often thought that sets depend on their members, wholes on their parts, facts on their constituent individuals and properties, tropes on their bearers, holes and boundaries on their hosts, and so on (I will discuss these examples later). In recent years, we have witnessed a surging interest in ontological dependence.[1] The recurring thread has been that such a notion can play theoretical roles that more familiar concepts, especially modal ones, cannot. In Correia's words, most metaphysicians believe that ontological dependence "carves at the joints" (2008: 1013): it marks a certain form of "ontological non-self-sufficiency", informs us about what is metaphysically prior to what, and often tracks non-causal explanatory connections. These philosophers typically think that ontological dependence is a methodologically basic concept: questions about what depends on what are among the most fundamental questions of metaphysics, and our answers to such questions can be expected to shed light on how we should approach issues as diverse as material-object metaphysics, natural kinds, persistence over time, mathematical ontology, and the relation between universals and particulars.

[1] Especially influential are Mulligan et al 1984, Fine 1995, and Correia 2005.

Right at the outset, ontological dependence should be distinguished from another notion that has received even more attention in recent years: grounding.[2] If ontological dependence is a kind of metaphysical presupposition, then grounding is (or is linked to) a kind of metaphysical explanation. These might appear to be similar things, but they should not be confused: grounding is neither necessary nor sufficient for ontological dependence. It's not sufficient, since explananda don't need to "presuppose" or "require" anything about their explanantia. And it's not necessary, since a thing can "presuppose" something about another thing without being in any way explained by it. Perhaps there is some subtler connection between grounding and ontological dependence[3]; here I just warn against their straightforward conflation. In this chapter, I will exclusively focus on ontological dependence (I will discuss grounding in chapter 2).

Most of the literature on ontological dependence assumes that it is a relation, though some prefer to express dependence connections with a sentential connective. There is also a controversy over whether ontological dependence is a timeless relation or one that can only hold relative to times.[4] I have no interest in settling these questions, and they have no bearing on any of the discussion to follow. To keep things simple, I will assume that ontological dependence is a timeless, two-place relation.

Until recently, it was widely thought that ontological dependence could be cashed out in familiar terms that are by many philosophers' lights better understood than the idioms of dependence. For example, taking inspiration from Husserl, Peter Simons (1982)

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[2] Seminal works on grounding include K. Fine 2001, 2012a, Correia 2005: Ch. 3, Schaffer 2009, and Rosen 2010.

[3] Correia (2005: 66) proposes to define what he considers the most basic variety of ontological dependence in terms of grounding. See also Tahko and Lowe: §5.

[4] For a useful survey of these issues, see Correia (2005: Ch. 1).

developed a modal-mereological account of ontological dependence. More recently, Brian Ellis proposed a definition in terms of supervenience (2001: 82–83). However, by far the most well-known and influential account to date has been the so-called modal analysis. It goes as follows:

> (NEC): For any *x* and any *y*, *x* ontologically depends on *y* iff, necessarily, if *x* exists then *y* exists.

As Correia aptly notes, the Modal Analysis was once "so widespread that it would be pointless to give a list of its proponents".[5] Unfortunately, the Modal Analysis is subject to well-known counterexamples. For instance, as Kit Fine (1995: 271) has pointed out, it implies that Socrates ontologically depends on his singleton set, {Socrates}, since necessarily Socrates exists only if {Socrates} does. But, intuitively, the dependence goes the other way round: {Socrates} ontologically depends on Socrates but not *vice versa*. Worse yet, the view implies that everything ontologically depends on any necessary existent – for instance, Socrates on the number five.[6] These consequences are widely considered unacceptable.

Perhaps a bit surprisingly, virtually nobody responded to Fine's counterexamples by biting the bullet or by slightly modifying the modal analysis (as philosophers usually do when faced with counterexamples). Rather, modal approaches to ontological dependence

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[5] See Correia (2005: 42 f3). Proponents of the modal analysis include Moravcsik (1965: 107), Tlumak (1983), Kim (1988: 114), Hoffman and Rosenkrantz (1994: 95–6), and Simons (1998: 236). Kit Fine (1995: 270) traces the origins of the Modal Analysis back to Aristotle. This is a fairly common interpretation (see, e.g., G. Fine 1984); however, it has recently come under criticism (Peramatzis 2011, Corkum 2013)

[6] For further counterexamples along such lines, see K. Fine 1995: 271–4 and Correia 2005: 39–46.

have been abandoned completely. I also know of no attempt to upgrade the modal analysis to what one might think is the next best thing: an analysis in thoroughly familiar (but not exclusively modal) terms. Instead, contemporary philosophers writing on ontological dependence take either of two approaches. Some of them accept ontological dependence as an indispensible primitive. On this view, the notion is conceptually unanalyzable as well as methodologically primitive: some core questions in philosophy cannot even be properly formulated without reference to ontological dependence.[7] Others attempt to analyze ontological dependence in similarly controversial terms. The most influential view along these lines is Fine's own: *x* ontologically depends on *y* iff *x* is essentially such that *x* exists only if *y* does (Fine 1995: 273). Of course, this would be no improvement over the modal analysis if 'essentially' simply meant 'necessarily'.[8] But it is part and parcel of Fine's view that essence cannot be given a modal analysis either (Fine 1994a). Correia takes an alternative approach in offering an analysis of ontological dependence in terms of grounding: *x* ontologically depends on *y* iff necessarily, if *x* exists then *x* is based on *y*; where *x* in turn is based on *y* iff necessarily, the fact that *x* exists is partly grounded in some fact about *y*.[9] In what follows, I will collectively refer to these as *heavyweight* approaches.

The label 'heavyweight' is justified because these views presuppose controversial pieces of ideology. While there is a large swath of theorizing today that takes for granted

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[7] Thomasson 1999: Ch. 2, Potter 2004: 39–40, Schaffer 2009, and Barnes 2012: 879

[8] Mulligan et al (1984) give a similar definition of ontological dependence, though they don't elaborate on whether they think essence can be cashed out in terms of necessity. See Koslicki 2012 for a different essence-based analysis of ontological dependence.

[9] Correia 2005: 66. See also Schnieder 2006 for an analysis in terms of objective, non-causal *explanation* (which may or may not be identical to grounding; see chapter 2, section 2.3).

some primitive notion of ontological dependence, essence, or grounding, many remain unconvinced and find these notions obscure or in any case unhelpful for metaphysical theorizing.[10] (My own view, which I won't defend here, is that the notion of grounding is intelligible but explanatorily redundant, and that *pace* Fine, essence is amenable to a straightforward modal analysis.[11]) By contrast, the views I mentioned earlier – the modal analysis, but also Ellis's supervenience-based account, or more complex modal-mereological views – use concepts that are widely recognized as ones that we need for various purposes anyway, whether they are amenable to further analysis or not.

This is not to say that there would be no value in a heavyweight analysis of ontological dependence; after all, trading in two pieces of controversial ideology for clearly marks progress. Still, an alternative view that doesn't appeal to such controversial resources would be of interest. But what would such a view look like? One possible option is error theory: there is simply no such thing as ontological dependence, probably because the notion is unintelligible.[12] I don't think this is the most promising non-heavyweight view, though; unintelligibility claims are hard to defend, and we have no well-established method of deciding when a concept is intelligible. A less radical and more defensible approach would try to understand ontological dependence in relatively uncontroversial terms that we already need for other purposes. This was the original ambition of the Modal Analysis, and this is what more recent "miscellaneous"

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[10] See, for instance, Lewis 1983: 358, Oliver 1996: 69, Thomson 1999: 306, Hofweber 2009, Sider 2011: Ch. 8, Daly 2012, and Wilson 2014. Some authors adopt intermediate positions; for instance, Kosliski (2014) proposes to do away with grounding but not with ontological dependence.

[11] My views about grounding are defended in chapter 2 of this dissertation. My thinking about essence has been greatly influenced by Cowling 2013; for different approaches that are also critical of Fine-style primitivism, see Brogaard and Salerno 2007 and Wildman 2013.

[12] Daly 2012: 99–100; cf. Hofweber 2009

approaches, according to which ontological dependence is something like a long disjunction of various familiar relations, also strive to do.[13]

In the present paper, I will offer a novel "lightweight" view, *Dependence Minimalism*, which explains ontological dependence in modal, set-theoretic and mereological terms. To be clear, I don't believe that these concepts can be used to give us a reductive conceptual analysis of ontological dependence. But, I will argue, in an important sense they can still make the notion fully intelligible. The sections to follow will provide a detailed explication and defense of Dependence Minimalism. I won't try to persuade committed heavyweight theorists to prefer this view to their own. But I do hope to convince them that the theory deserves their attention. For one, it's a highly conservative lightweight view, in the sense that it respects most of the intuitions that have been thought to support heavyweight approaches. For another, it has significant theoretical benefits: it yields a simple epistemology of ontological dependence, and it suggests an elegant resolution of disputes about the relation's formal properties. So even if this paper doesn't convert you to Dependence Minimalism, at least it should convince you to regard the view (rather than eliminativism or the extant miscellaneous approaches) as your most serious competitor.

The rest of the chapter will go as follows. In section 1.2 I will explain the notion of an aggregative cluster concept, a concept that can be understood, but not fully analyzed, in terms of the various relations it "aggregates". In section 1.3, I will propose and explain the hypothesis that ontological dependence is an aggregative cluster concept that aggregates modal, mereological and set-theoretic relations. In section 1.4 I will test the

[13] See Bennett 2011 and forthcoming, J. Wilson 2014 and forthcoming, and section 1.5 for more on these views.

proposed view against several widely discussed examples of ontological dependence and argue that it can account not only for the clear cases, but also for the source of disagreement in more controversial ones. In section 1.5, I will offer two supplementary arguments for the view. First, it gives a nice story about why modal, mereological and set-theoretic facts can serve as evidence for claims about what depends on what. Second, it explains why various views on the formal properties of ontological dependence strike their advocates as plausible, but at the same time it can remain neutral on which of these views is correct.

Before moving on, I should make explicit two methodological assumptions. The first one is that the general notion of ontological dependence is a useful point of departure for our inquiry. Some philosophers ("pluralists") distinguish various different kinds of ontological dependence that all belong to the same family: rigid and generic, *de re* and *de dicto*, existential and essential, and so on.[14] Others ("generalists") tend to simply talk about ontological dependence and apparently don't find these distinctions very helpful.[15] In what follows I will mostly focus on ontological dependence in general, but I will briefly touch upon the specific types, too. This way of proceeding is justified for three reasons. First, it's difficult to find uncontroversial species of ontological dependence (as I just said, the very need for distinctions is under dispute), whereas all parties to the debate accept the need for a general notion.[16] Second, though I will use the generalist conception as a

[14] See Lowe 1994, K. Fine 1995, Thomasson 1999: Ch. 2, Correia 2005, 2008, Schnieder 2006, Koslicki 2012, 2013, and Tahko and Lowe 2015.

[15] See R. Cameron 2008b, Schaffer 2009, Paseau 2010, Rosen 2010, Barnes 2012, forthcoming, and Bennett forthcoming.

[16] Pluralists sometimes talk about different *kinds*, *species*, *types* or *forms* of ontological dependence (Lowe 1998, Koslicki 2012), sometimes about different *notions* or *concepts* (Correia 2008), and sometimes they go back and forth between these two ways of talking (Thomasson 1999, Correia 2005, Tahko and Lowe 2015).

convenient starting point, I won't rely it; as we will see in section 1.4, the Dependence Minimalist can also give a plausible account of the specific types of ontological dependence. Third, I will argue in section 1.5.2 that part of the motivation for pluralism stems from problems with generalism that Dependence Minimalism is even better positioned to handle. So, if Dependence Minimalism is a plausible view given generalist assumptions, then this also undermines the motivation to switch from generalism to pluralism.

The second methodological assumption concerns what a theory of ontological dependence ought to do. Some philosophers, e.g. Correia (2005: 9–11) are interested in giving a perfectly general and neutral theory of ontological dependence that is acceptable to metaphysicians of any stripe and is able to accommodate virtually any substantive first-order claim. At the other extreme of the spectrum, there are those, e.g. Chisholm (1994) who introduce more or less stipulative notions of ontological dependence and don't worry about their controversial features so long as they serve their goals in theory building. My own approach is somewhere between these two extremes. I aim to provide a general account that can accommodate a wide range of first-order views and examples about what depends ontologically on what. But the theory is not intended as a perfectly

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But I take it that they all think of the relations they distinguish as specific kinds of a more general relation, ontological dependence, not as disambiguations of the expression 'ontological dependence'. For one, otherwise it would be difficult to explain why they find it useful to theorize about the family of relations that happen to get lumped under 'ontological dependence'. For another, no pluralist I know of says explicitly that 'ontological dependence' is an ambiguous expression, a thesis that would be significant enough to warrant explicit statement by its potential proponents. I should note that K. Fine (1994b) does talk about "senses of essence", and accordingly, of 'ontological dependence'. However, the distinctions he draws (consequential vs. constitutive, mediate vs. immediate, and reflexive vs. reciprocal essence) are subdivisions within one particular species of ontological dependence, commonly referred to as 'essential dependence'. Hence, these distinctions are compatible with my interpretation of the pluralist approach. Thanks to Kevin Mulligan for a helpful conversation about this.

neutral arbiter for every first-order view that has ever been put forth, and I won't be too shocked to learn if it's incompatible with certain positions.[17] For example, since I reject non-modal notions of essence, one would search in vain for a discussion of essential dependence in the present paper. When speaking of ontological dependence, I'm interested in a concept that strikes a good balance between fitting our intuitions about what depends ontologically on what, on the one hand, and certain theoretical desiderata on the other. Such desiderata include a simple epistemology, the existence of tight conceptual connections between ontological dependence and other metaphysical notions, and fit with our intuitions about the relation's formal properties.[18] While I think the view I shall propose does quite well on these scores, it may, in the end, capture something that doesn't completely coincide with the standing notion of ontological dependence. In that case, you should read the paper in a somewhat revisionary spirit: we *should* use the words 'ontological dependence' to express the concept I will describe, since the theoretical benefits are worth it.

1.2. Aggregative cluster concepts

An analysis of ontological dependence is, at a minimum, a finite set of conditions such that *x* ontologically depends on *y* if and only if those conditions are satisfied. This is what philosophers who have tried to give reductive analyses of ontological dependence also mean by 'analysis': to analyze ontological dependence is to provide the necessary and

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[17] Peramatzis's (2011) advocates a similar balancing of "extensional" (case-based) against "intensional" (conceptual) considerations about what a good theory of ontological dependence should do.

[18] Koslicki (2013: 34–35) argues that it's not even possible to have pre-philosophical intuitions about what depends ontologically on what; it makes sense to talk about dependence intuitions only against a background of philosophical commitments. I agree, and in section 1.4 I will focus on which ontological

jointly sufficient conditions under which some *x* and *y* instantiate it. Fine's essence- and Correia's grounding-based accounts both fit this template. What I will offer below is not an analysis in this sense: I doubt that ontological dependence can be completely analyzed in terms of modal, mereological and set-theoretic relations. Heavyweight theorists might argue that this is because ontological dependence is "something over and above" these relations. While this is certainly a possible explanation, it's not the only one. As I will argue in this section, there is an important class of concepts – aggregative clusters, as I shall call them – that can be fully understood as "resultants" or "weighted totals" of certain relations, in terms of which they nonetheless cannot strictly speaking be analyzed. I will introduce the idea with a simple example, and make some general remarks on aggregative clusters along the way.

Consider the concept *is larger than*. Whether some *x* is larger than some *y* is a function of a variety of factors having to do with comparative size. Simplifying a bit, let's say it's a function of the pattern in which they instantiate the following four relations: being taller than, being wider than, being longer than, and being heavier than. Call these relations *relative largeness factors*. When some *x* and *y* instantiate a relative largeness factor, this speaks in favor of (but doesn't entail) *x* being all things considered larger than *y*. For example, that John is taller than Jim counts in favor of John being larger than Jim. At a first approximation, we can say that whether the concept *is larger than* applies to John and Jim is a function of the patterns of specific comparative size relations they instantiate. Let's call the set of principles that tell us how the relative largeness factors between any *x* and *y* should be weighted against each other the *rules of aggregation*. Of course, there is no fully

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dependence theses are intuitive once the putative relata and some further metaphysical relations between them are fixed.

specific knowable set of rules governing the concept. But some cases seem pretty obvious: for instance, if *x* is longer, taller, wider and heavier than *y*, then it's also larger.

This preliminary characterization needs to be qualified in a few ways. First, to figure out whether some *x* is larger than some *y* it's not enough to know whether *x* is taller, heavier, longer, or wider than *y*. It also matters *how much* taller, heavier, longer or wider *x* is; these relations are all quantitative and gradable, and their contribution to relative largeness obviously depends on the degree to which they hold. I take it that this is an accidental feature of *is larger than*, not an essential feature of aggregative clusters, and results form the fact that most of the properties we are in the habit of referring to are gradable. In what follows, I will ignore the gradability of the relative largeness factors, since this feature of the example is irrelevant to my present purposes.

Second, whether *is larger than* applies in a certain case is also sensitive to whether the putative relata instantiate relations along sufficiently many dimensions. Suppose *x* has a weight but *y* just isn't the right kind of thing to have any weight. Then *x* and *y* cannot instantiate *is heavier* than in any order, even though *x* is the kind of thing that *could* stand in this relation to other things. For *is larger than* to apply to *x* and *y*, it would "help", so to speak, if *y* had some weight – it would help even if it had the same weight as, or were less heavy than, *y*. Let's say that in this case, *x* and *y* have an *unsaturated relative largeness dimension*. If an ordered pair of entities has too many unsaturated relative largeness dimensions, it can happen that they stand in no all-in relative largeness relation, even if one member of the pair is larger than the other with respect to each saturated dimension. To take an extreme example, no ordinary object stands in any such relation with the empty set, since they don't instantiate relative largeness factors along *any* dimension. A bit

more controversially, compare a cube-shaped empty spatial region and an ordinary object (say, a chair) whose volume is a bit smaller than the region's volume, but whose shape prevents it from fitting into the region. In this case, I would say that the region and the object don't bear any comparative all-in size relation to each other because along one dimension (weight) they don't instantiate any relative largeness factor.

Third, *is larger than* aggregates not only the relations of being longer, taller, wider and heavier than (the *basic* relative largeness factors, as I shall refer to them), but also some *complex factors* that have to do with size but cannot be identified with any of the basic ones. For example, in certain contexts we ignore or discount certain dimensions of some parts (hair, horns, or the tail) when making size comparisons. So, the conditions under which some *x* is larger than some *y* are messy and complicated, and it's hopeless to try to list them all. Still, we have a pretty good sense of the *sorts of* factors relevant to relative largeness: they all have to do with differences in mass and extension.

Bearing these qualifications in mind, we can say that *is larger than* is an aggregative cluster concept: a concept that applies to some entities, *x* and *y*, just in case taken into consideration their weight, height, length, width, and other complex factors such as the presence and proportions of various extremities, *x* is all things considered larger than *y*. It should be reasonably clear why these factors yield a notion of all-in comparative size: to be heavier than is to be larger with respect to weight, to be longer than is to be larger with respect to length (etc.), and to have extremities with such and such proportions is to be larger (or smaller) in some respect other than the four size dimensions tracked by the basic relative largeness factors.

This is not a reductive analysis of *is larger than* in terms of the relative largeness factors, for at least two reasons. First, I left the list of complex size factors open-ended; presumably, there are other factors that influence our judgments in a way similar to the way we discount hair or horns, but I didn't even try to list them all. Second, I didn't specify the rules of aggregation; *is larger than* is a "resultant" of comparative height, width, length and mass relations, but I gave no recipe for how these factors should be weighted against one another. This is as it should be, since the knowable rules of aggregation governing the concept *cannot* be fully specified.

Despite the absence of fully specifiable rules of aggregation, there is an important link between the concept *is larger than* and the relations it aggregates: the former can be explained in terms of the latter, where the force of 'explanation' is conceptual. As I understand it, this is not a metaphysical but an epistemological thesis: among other things, it implies that *is larger than* can be made intelligible in terms of the relations it aggregates. Suppose someone describes two animals you have never heard of, A and B. Knowledge of the comparative relations of mass and extension between them would put you in a position to know, *within the limitations set by the undespecification of the knowable rules of aggregation*, whether A is larger than B. This last qualification is important because there are cases in which even when all the factors are in, you couldn't decide whether *x* is larger than *y*. Importantly, such cases can exist even if you are fully competent with the concept *is larger than*. Perhaps if there were further knowable rules, you would be able to decide whether *x* is larger than *y*. But there aren't, so in certain cases you cannot possibly know whether the concept *is larger than* applies to an ordered pair.

Given the large number of ways in which the rules of aggregation for relative largeness could have been sharpened, a natural account of the difficult cases readily offers itself: when there are conflicting relative largeness factors between *x* and *y*, they instantiate *lots of* abundant relations akin to relative largeness.[19] These relations all aggregate relative largeness factors, and each could have been meant by the predicate 'is larger than'. However, they differ in how much weight they assign to the various relative largeness factors: for instance, being larger than$_1$ treats height as a bit more significant, being larger than$_2$ assigns more importance to weight, being larger than$_3$ doesn't discount hair, etc. In many cases, the rules of aggregation could be made more precise in ways compatible with either verdict. Now, perhaps there is genuine semantic indeterminacy as to which relation is meant by 'is larger than'. Or perhaps there is a perfectly determinate but unknowable semantic fact; so far I have been talking about the *knowable* rules of aggregation because I didn't mean to rule out this option.[20] What matters is that there are various abundant relations that all aggregate relative largeness factors, and the knowable rules of aggregation don't decide which one is the semantic value of 'is larger than'.

It is also plausible that 'is larger than' displays a certain amount of context-sensitivity: in certain contexts some relative largeness factors are counted more heavily than others, and 'is larger than' expresses different, though very similar, relations in different contexts. Note that the context-sensitivity of 'is larger than' is perfectly compatible with the claim that the expression expresses an aggregative cluster concept even within each context. Perhaps in a basketball context, *x*'s being taller than *y* counts more heavily toward *x* being

[19] See Lewis 1983 on the distinction between sparse and abundant properties and relations.

larger than *y* than it would in a wrestling context. It remains true that the notion of being larger than$_{basketball}$ is a weighted total of relative largeness factors that jointly settle, according to some not fully specifiable rules of aggregation, whether something is larger than another thing.[21]

To demonstrate some interesting features of aggregative clusters, I used the example of *is larger than*. But many other notions also carry the mark of aggregative clusters: they are "weighted totals" of certain other relations, but there is no complete knowable set of rules that would decide how those relations need to combine for the concept to apply. Examples may include *beating in a battle*, *coloring, spicing up,* and many others. But why worry so much about these concepts? Aggregative clusters provide an interesting case study of how conceptual unanalyzability can come apart from theoretical indispensability.[22] Relative largeness is a case in point: in most theoretical contexts, any information conveyed in terms of relative largeness could be conveyed more accurately in terms of the

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[20] Cf. Williamson 1994. For what it's worth, I don't even mean to rule out the possibility of genuine metaphysical vagueness; I just don't think that the vagueness of *is larger than* (if it's a case of vagueness – see the next footnote) is a plausible instance of it.

[21] Some might want to go further and insist that 'is larger than' is not only context-sensitive but also kind-relative: even once we fix the context, we can find ordered pairs that, solely due to some difference in kind membership, differ in whether they instantiate *is larger than* (both Karen Bennett and Ted Sider raised this point in conversation). While I agree that the monadic property *is large* may be relative to kind, I don't think the same is true of the relation *is larger than*. To show that *is larger than* is kind-relative, one would need to find two ordered pairs, <*x*, *y*> and <*v*, *w*>, that don't differ in any of the relative bigness factors but which differ in their instantiation of *is larger than*. This would basically amount to two ordered pairs of things which are pairwise indistinguishable in their exact shape (and so most of their superficial properties) but differ in their internal structure, and thus kind membership. For example, take a tiger and a lion and their Twin Earth duplicates, a xiger and a xion. So far as I'm concerned, I cannot entertain the possibility that the tiger is larger than the lion but the xiger is not larger than the xion.

[22] See Dorr 2004: 157 for similar remarks on predicates that are unanalyzable because they are *vague*. Incidentally, Dorr chooses an example very similar to mine: 'small', whose extension, he argues, may be indeterminate between a mass and a volume property. For the record, I think that 'small' has a relatively well-delineated use in which it refers to something like a weighted total of such properties. This is even

relative largeness factors. This doesn't mean that the concept is completely useless, since overall largeness comparisons convey *some* information. Moreover, in certain practical settings we care about convenience more than about accuracy, and it may come handy to have a predicate like 'is larger than'. But in theoretical contexts, questions about what is larger than what tend to be less interesting than more specific questions about comparative size along some particular dimension.

1.3. Ontological dependence as an aggregative cluster

Above I gave a general characterization of aggregative clusters through the example of *is larger than*. I now want to propose the following hypothesis: *ontological dependence* is also an aggregative cluster concept, one that aggregates modal, mereological and set-theoretic relations. Call this view *Dependence Minimalism*. In line with the general picture of aggregative clusters sketched in the previous section, the view posits a tight connection between ontological dependence and certain set-theoretic, mereological and modal relations. Namely, ontological dependence can be made fully intelligible (though isn't analyzable) in terms of these relations; knowledge of the patterns in which *x* and *y* instantiate these relations puts you in a position to know, within the limits set by the imprecise rules of aggregation, whether *x* ontologically depends on *y*.

I expect many contemporary metaphysicians to object even to this rudimentary characterization. They might complain, for example, that we shouldn't assign too much significance to conceptual explanation; we should ask instead whether (say) ontological dependence *ontologically depends* on other relations. I disagree. Since my goal here is to

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more clearly true of 'is larger than' and of aggregative clusters in general. (Thanks to Matti Eklund and Brad Saad for pushing me on the link between unanalyzability and indispensability.)

present a view on which we shouldn't care too much about ontological dependence, it hardly counts against it that its formulation doesn't appeal to the notion of ontological dependence. I should also add that its silence about whether ontological dependence is an ontologically dependent relation is not a peculiar feature of Dependence Minimalism. The modal, essentialist and grounding-based analyses are also nothing more than candidate *analyses* of ontological dependence. They, too, are silent on what sorts of dependence and priority relations hold between ontological dependence and the relations used to analyze it.

This being said, one may reasonably want more details. Especially, we need to be clearer about what the phrase 'modal, mereological and set-theoretic relations' exactly covers.[23] The idea is that certain relations are dependence factors: they *speak in favor of* (though don't guarantee) ontological dependence, much like the relative largeness factors speak in favor of (but don't guarantee) that *is larger than* is instantiated. As a first approximation, we can say that each of the following is a dependence factor that speaks in favor of *y* ontologically depending on *x*:

a) *x* is an ancestral member of *y*, but not *vice versa*[24]

b) *x* is a part of *y*, but not *vice versa*[25]

c) necessarily, if *y* exists then *x* exists – but not *vice versa*

[23] Thanks to Karen Bennett and Ted Sider, who pressed me to get clearer about this.

[24] By adding the qualification "not vice versa" I intend to make explicit my intuition that if there are non-well-founded sets, then the fact that they contain themselves as members doesn't speak in favor of their depending on themselves (*pace* Paseau 2010).

[25] Note that this isn't trivially equivalent with the condition that *x* be a proper part of *y*. Most people deny that proper parthood can hold reflexively, but not everyone; dissenters include Kearns 2011 and Bacon & Cotnoir 2012.

In section 1.2 I said that the relative largeness factors qualified as such because they were relations of being larger than with respect to something. In a similar fashion, the relations listed under a)-c) are relations of *some kind of* dependence. Note that this doesn't mean that they are species of *ontological* dependence. They aren't. Rather, their presence licenses talk of dependence and priority at least in *some* sense.[26] The following claims could be endorsed by anyone, without any immediate commitment about ontological dependence:

> (i) If *x* is an ancestral member of *y*, but not *vice versa*, then *y* set-theoretically depends on *x*
>
> (ii) If *x* is a part of *y*, but not *vice versa*, then *y* mereologically depends on *x*
>
> (iii) If the existence of *y* necessitates the existence of *x*, but not *vice versa*, then *y* modally depends on *x*

(i)-(iii) state not controversial theses about ontological dependence but rather obvious (if you like, analytic) truisms about *other* notions of dependence. Anybody who accepts that sets form a cumulative hierarchy has a reason for saying that sets depend on their ancestral members at least in a merely set-theoretic sense: they "come after" their ancestral members in the set-theoretic hierarchy. This is a sense in which an ancestral member of a set is prior to that set, even if the priority involved is not the ontologically weighty relation that most metaphysicians posit between Socrates and his singleton set. Incurvati, for example, defends what he calls the *minimalist view* of sets: there is nothing

[26] Thanks to Matti Eklund for helpful discussion here.

more to the iterative conception of a set than that sets occur at one level or other of the cumulative hierarchy (2012: 82). Incurvati emphasizes that his minimalist conception doesn't commit him to saying that sets are ontologically dependent on their members. I agree. But to my mind, the mere fact that it's called a *hierarchy* makes it appropriate to say that sets depend on their members in some sense, which is not necessarily the ontological sense: they are posterior to their members, simply because they come later in the hierarchy. For this reason, we can say that sets depend on their members at least in a purely set-theoretic sense.

Similar considerations apply to the relation between a whole and its parts. Most philosophers think that wholes ontologically depend on their parts, while Schaffer (2010a) argues for priority monism, the view that every material object ontologically depends on the cosmos. I will discuss this view in more detail in Section 1.4.2; for now, I would like to confine myself to a brief remark. Even if priority monism were true, that wouldn't make it any less appropriate to say that wholes depend on their parts *mereologically*. In a purely mereological sense, proper parts are always prior to the wholes they compose; the question is only whether priority and dependence in this mereological sense coincide with the relation of ontological dependence most metaphysicians are interested in. The purely mereological notion of dependence has not gone completely unrecognized in the literature. For example, Ned Hall asks whether "the mereological hierarchy and the metaphysical hierarchy of properties and relations line up with each other".[27] Now of course, 'mereological hierarchy' and 'mereological dependence' can *also* be used in a way

[27] Hall 2010: Supplement, "Fundamental Entities".

that presupposes an affirmative answer to Hall's question.[28] But this is irrelevant; my contention is merely that there is *a* reading of these locutions that doesn't immediately imply an affirmative answer. In the sense I have in mind it is a truism, rather than a substantive metaphysical commitment, that wholes mereologically depend on their parts: priority monists or not, we all say that wholes are *made up* from their parts (and not the other way round).[29] If Schaffer is right, then an object's parts can depend on and be less fundamental than the object they compose. Still, it would remain true that the object is made up from its parts, and the locution 'making up' conveys the purely mereological sense in which wholes are posterior to their parts.[30]

Finally, I maintain that asymmetrical necessitation expresses a (purely modal) notion of dependence. After all, before encountering Fine's counterexamples many philosophers *identified* existential necessitation with ontological dependence, and if we want to avoid symmetric dependence, the most natural view in the modal account's vicinity would replace necessitation with *asymmetric* necessitation (Correia 2005: 35). Moreover, even many opponents of the modal analysis take seriously the idea that the analysis captures *some* notion of dependence, even if not the metaphysically significant notion that most

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[28] See, for instance, Cotnoir 2013 for this use of the expression.

[29] It is perhaps the obviousness of the claim that wholes mereologically depend on their parts that led some theorists, for example Laurie Paul, to conjecture that "we enjoy a direct grasp of the nature of proper parthood (or perhaps we enjoy a direct grasp on the nature of composition) that makes a compositional approach to world-building superior to any other sort of approach" (2012: 221–222).

[30] Bennett (forthcoming: Ch. 4) reports that in Schaffer's view, if wholes are not always "grounded in" (ontologically dependent on) their parts, then composition is not a building relation. I will say more about the similarities and differences between Bennett's theory of building relations and my Dependence Minimalism. For now, suffice it to say that unlike my dependence factors, Bennett's building relations *entail* ontological dependence: if R*xy* and R is a building relation, then *x* builds *y* and so *y* ontologically depends on *x*. If this is Schaffer's main reason for maintaining that composition is not a building relation, then I should stress that it doesn't force him to also deny that wholes mereologically depend on their parts.

contemporary philosophers are interested in.[31] My point can be further buttressed by considering some of the locutions frequently used to express dependence: when A depends on B, A's existence *requires* and *presupposes* the existence of B; for A to exist, B *needs* to exist; and so on. Of course, Fine's counterexamples taught us not to understand these locutions in a purely modal way. But this doesn't change the fact that they have *a* purely modal reading. And so, I say, when the existence of A asymmetrically necessitates the existence of B, it is appropriate to say that A modally depends on B.

Call the relations listed above *basic* dependence factors. Just like the list of basic relative largeness factors in section 1.2, this list needs to be qualified in a few ways.

First, whether *ontological dependence* applies to some *x* and some *y* is sensitive to whether the putative relata instantiate relations along sufficiently many dimensions. For example, *ontological dependence* may fail to apply to some *x* and *y* if they only instantiate one-way necessitation on the list but no mereological or set-theoretic relations. This is exactly the case with Socrates and the number five: though the only dependence factor present between them speaks in favor of Socrates depending on the number five (the modal connection is symmetric and thus doesn't point in either direction), there isn't enough of a connection between the two for this to suffice for ontological dependence. In this

[31] See, for instance, Correia 2008: 1023, Hoeltje 2013, and Tahko and Lowe 2015: §1. In recent years, the once-standard view that Aristotle accepted the modal analysis of ontological dependence has come under criticism; however, even some of the critiques accept that in the *Categories* (12, 14a29–35), Aristotle does accept *a* modal notion of priority, even if that is only one among several different notions (Peramatzis 2011: 234–235). In a similar spirit, many authors who otherwise reject supervenience analyses of dependence and priority agree that supervenience does capture a purely modal notion of dependence (Grimes 1988, McLaughlin 1997).

regard, the situation is analogous to the case of the empty region and the chair I described in section 1.2.[32]

Second, some readers may want to add relations to my list of basic dependence factors that resist characterization in modal, mereological and set-theoretic terms, for example property-bundling or emergence.[33] In this chapter I assume that parthood is a category-neutral relation, so for me, property-bundling is just a special case of composition.[34] But this assumption is admittedly controversial, and I have no space to defend it here. Instead, I just want to emphasize that those who reject it can still remain sympathetic to the basic idea behind Dependence Minimalism; all they need to do is amend a)-c) with some highly composition-*like* relations as dependence factors.[35] Likewise for emergence, which doesn't belong anywhere on my list: while I don't think it's a dependence factor, you can accept the basic idea that ontological dependence is an aggregative cluster concept even if you disagree about which relations it clusters.

Third, I'm not assuming any particular view about the interplay among the three primitive notions. Perhaps ancestral set-membership can itself be understood as a kind of parthood[36]; or perhaps necessity can be defined in mereological and spatiotemporal terms.[37] Here, I will stay agnostic on these matters.

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[32] Thanks to Karen Bennett for helpful discussion here.

[33] See Campbell 1990 and Barnes 2012 for views according to which property-building and emergence are, respectively, *sui generis* dependence relations.

[34] This view has been defended in Simons 1987, 1998, Armstrong 1997, McDaniel 2001, 2009, Paul 2002, 2006, and K. Fine 2010a, among others.

[35] For example, Bennett (Ch. 2) mentions the property-bundling relation, which many (but not all) would treat as a kind of composition. See also K. Fine 1991 for a general framework of constructional ontologies. Fine's basic concept is that of a constructor *operation*, rather than a construction relation.

[36] Cf. K. Fine 2010a and, with some important caveats, Lewis 1991.

[37] Of course, I have in mind the modal realism of Lewis 1986.

Fourth, some may object that by adding the qualification "but not *vice versa*" in a)-c), I assume without argument that ontological dependence is asymmetric. As we will see in Section 1.5.2, the formal properties of ontological dependence is a delicate issue, which cannot be discussed independently from the relation between ontological dependence in general and the various species (*de re*/*de dicto*, rigid/generic, etc.) often distinguished in the literature. For the time being, I will assume that ontological dependence is asymmetric. This assumption is completely harmless, since as I will later show, philosophers who think that these distinctions are important, or hold non-standard views about the formal properties of ontological dependence, can accept appropriately adjusted versions of Dependence Minimalism. If you are one of these philosophers, please hold off; I need to make *some* assumptions to get the discussion going.

Fifth, and perhaps most importantly: similarly to relative largeness, there are some complex dependence factors that aren't among a)-c). These relations include asymmetric versions of generic necessitation (for any x and y, x generically necessitates y iff Fy and necessarily, if x exists then there is a z such that Fz, where 'F' refers to a kind)[38], supervenience[39], realization[40], micro-basing[41], and possibly more. It's a matter of dispute how these relations should exactly be understood, but there is little controversy that *some* combination of modal, mereological and set-theoretical concepts figures in their proper

[38] See Correia 2005: Ch. 5.1 and Barnes 2012: 881.

[39] See McLaughlin and Bennett 2005 for a useful survey. See also Kim 1984, McLaughlin 1997, and Bennett 2004a, among others, for influential developments of the idea that supervenience is a "surface" relation that doesn't entail any "metaphysically deep" sort of dependence. The present proposal turns this popular conception on its head: it is ontological dependence that is a surface relation, parasitic on familiar relations like supervenience.

[40] See J. Wilson 1999, Melnyk 2003: Ch.1, and Shoemaker 2007: Ch. 2, among others.

[41] See Armstrong 1978: Ch. 18 and Kim 1998: 84.

characterization.[42] So, these relations are dependence factors because their instantiation involves the instantiation of complex patterns of modal, mereological and set-theoretic relations.

Since I'm not sure exactly which relations are complex dependence factors, my general list of dependence factors is somewhat open-ended. But it's not thereby vacuous: a)-c) specify the *sorts* of relations that make something qualify as a dependence factor. This open-endedness is unobjectionable, since it's *generally* impossible for aggregative clusters to specify all the relations it aggregates. The best we can do is what I did in the case of relative largeness: list the basic factors and use them to give a somewhat open-ended characterization of the complex ones.

Now we are in a position to state the minimalist position more carefully. *Ontological dependence* is an aggregative cluster concept: a concept that applies to some entities, *x* and *y*, just in case taken into consideration asymmetric ancestral set membership, parthood, necessitation, and other complex factors such as supervenience, realization, micro-basing (etc.), *x* all things considered depends on *y*. Analogously to the case of *is larger than*, the relation between *ontological dependence* and the dependence factors is conceptual explanation. This means, among other things, that complete knowledge of the pattern of set-theoretic, modal and mereological relations instantiated by *x* and *y* would put you in a position to know, within the constraints set by the imprecise rules of aggregation, whether *x* ontologically depends on *y*. To be clear, once it's accepted that it's something like a conceptual truth that if *x* has *y* as a part then *y* mereologically depends on *x*, or that if *y* asymmetrically necessitates *x* then *y* modally depends on it (etc.), it shouldn't be

[42] If you disagree, you can always just add these relations to the list of basic dependence factors in the way I suggested you could add emergence or property-bundling.

controversial that aggregating these relations yields *some* notion of all-things-considered dependence. The claim that I *do* expect to be controversial, and which I will defend in the sections to follow, is that we should identify the resulting all-things-considered notion with *ontological* dependence.

By now it should also be clear what makes this view minimalist. Similarly to the case of 'is larger than', there are lots of things we could have meant by 'ontological dependence', since there are lots of ways we could have specified the rules of aggregation. But then, any question of the form "Does *x* ontologically depend on *y*?" ultimately boils down to two sub-questions. First, which dependence factors are instantiated in the case at hand? This question is metaphysical, but it can be addressed without any mention of ontological dependence itself; all we need to focus on are the patterns of modal, mereological and set-theoretic relations instantiated by the putative relata. Second, what do the rules of aggregation say about how these relations should be weighed against each other? This question is chiefly semantic/conceptual, and it's no deeper than the analogous question about *is larger than*.

Given that every specific question about whether something depends on some other thing turns on these two questions, the upshot is that questions of ontological dependence are not methodologically basic (as heavyweight views would have it). Rather, they can be dispensed with in favor of questions about which dependence factors are instantiated and questions about the rules of aggregation encoded into the concept of ontological dependence. I consider questions of the first kind important, but not because they are relevant to ontological dependence; and I consider questions of the second kind

not particularly significant. If I'm right on both scores, questions about what depends on what don't deserve the attention they receive from contemporary metaphysicians.[43]

This is a good place to say a few words about the specific types of ontological dependence sometimes distinguished in the literature. Barnes (ms) has recently noted that, perhaps as "an after-effect of modal accounts of dependence" (ms: §4.3), many philosophers keep distinguishing different kinds of dependence according to their modal force; the distinction between rigid and generic or *de re* and *de dicto* dependence is a case in point. Barnes thinks that these distinctions are fairly arbitrary and are best seen as desperate attempts to explain away counterexamples to the asymmetry of ontological dependence. I agree that the standard distinctions among species of ontological dependence are rather arbitrary, and now we also have an explanation why: they are aggregative clusters in which one relation within the cluster is stipulated to hold. For example, rigid existential dependence can be defined as follows:

> *x* rigidly depends on *y* = $_{\text{def}}$ (i) *x* ontologically depends on *y*, (ii) necessarily, if *x* exists then *y* exists

Other kinds of ontological dependence, too, could be defined as restrictions on the general notion. As such, they are roughly on par with *being larger and taller than*. And admittedly, there is something artificial about such concepts: they are the results of

[43] It's hard not to notice the analogy with neo-conventionalism about metaphysical modality. Neo-conventionalists say not that modal truths are generated by linguistic conventions but that the meanings of our modal idioms are conventional and track no significant, metaphysically deep division in the world (Sider 2003, 2011: Ch. 12; R. Cameron 2009, 2010a). There are plenty of different things we could have meant by 'necessary', 'possible', etc., and the way we use these words is in no way superior to other, non-actual uses. See also Bennett forthcoming: §3.3.

choosing an otherwise negotiable factor within an aggregative cluster and imposing it on the cluster. For this reason, I'm sympathetic to Barnes's contention that the widespread practice of distinguishing different kinds of ontological dependence according to their modal force may be a hangover from the modal analysis.[44]

The exposition of the minimalist view ends here. Until now, I have done nothing to defend it; that is the task of the rest of this chapter. I won't provide any knock-down argument for Dependence Minimalism, but I think there are a few considerations that together provide impressive evidence for it. First, in Section 1.4 I will argue that not only can the view make good sense of our judgments of dependence in some fairly intuitive cases, but it can also explain why the direction of dependence is less obvious in the controversial ones. Then in Section 1.5 I will show that broadly minimalist views in general have a significant advantage over heavyweight ones: they provide an elegant account of how modal, mereological and set-theoretic facts can serve as evidence for various theses about what depends ontologically on what. Jessica Wilson (2014) and Karen Bennett (forthcoming) have recently argued on similar grounds for "small-g grounding" and "building" relations, respectively. While their views and mine share the aforementioned advantage, I will argue that Dependence Minimalism still has an edge on two counts: it makes better sense of disagreement over particular cases of ontological

[44] I would like to add, though, that it is no accident that so many philosophers find these specific types of dependence more useful than the generic notion. The *general* notion of ontological dependence bears few straightforward and precise connections to the dependence factors it aggregates; as we will see from the examples of section 1.4, this is one of the reasons questions about ontological dependence are often so intractable. The move from the general relation to the more specific kinds is a step in the right direction. Rigid dependence, for example, has simple and straightforward modal consequences. However, I think it would be best to go even a step further: we should altogether stop asking questions about what depends on what and redirect our attention to questions about the dependence factors themselves.

dependence (1.4, 1.5.1), and it confers no objectionable commitment to revisionary theses about the formal properties of ontological dependence (1.5.2).

1.4. Dependence Minimalism at work: some cases

In this section, I will discuss a number of putative cases of ontological dependence. The discussion to follow has two sources of motivation. The first is defensive: I want to show that Dependence Minimalism has no obviously counterintuitive consequences for first-order questions about what depends on what. This much is not too hard to demonstrate. While Dependence Minimalism posits a conceptual connection between ontological dependence and the dependence factors, this connection is not sufficiently precise to make the view vulnerable to straightforward counterexamples. According to the minimalist, the pattern of modal, mereological and set-theoretic connections between some *x* and *y* typically doesn't *logically entail* anything about whether either of *x* and *y* ontologically depends on the other. Some might think that this is a weakness of the view: in many cases when the dependence factor point in opposite directions, there is no clear verdict on what depends on what.[45] But I think this should stop looking like a problem as soon as we remind ourselves of the source of this unsettledness. In the unclear cases there are relations in the vicinity of ontological dependence that *x* and *y* instantiate, relations they don't, and the rules of aggregation don't decide between these relations.

This leads me to the second motivation for the enfolding discussion. It seems to me that Dependence Minimalism isn't merely compatible with our intuitive judgments of dependence; it can also explain why we disagree over the controversial cases. I will argue for this by starting with a fairly uncontroversial example of ontological dependence, the

intuitive dependence of {Socrates} on Socrates. As I will show, the dependence factors don't point into opposite directions in this case, which is why the dependence of {Socrates} on Socrates seems so obvious. Then I will proceed to cases that are more controversial, or at least *should* be controversial because they presuppose substantial (though sometimes long forgotten) first-order views about the dependence factors. The presence and direction of ontological dependence is less obvious in these cases, and as we will see, this is invariably paired with uncertainty about which dependence factors are present or (less typically) explicit disagreement over the nature of ontological dependence itself. A closer look at these debates will reveal that the disputing parties tend to agree on the relevance of modal, mereological and set-theoretic considerations to the direction of dependence. It is a significant advantage of my view that it predicts that these underlying considerations are indeed relevant to ontological dependence, and that it can also explain *why* they are relevant.

1.4.1. Socrates and {Socrates}

I have already mentioned Socrates and the singleton set, whose status as the decisive counterexample to the modal analysis has by now become a piece of philosophical folklore. Intuitively, the story goes, {Socrates} depends on Socrates but Socrates doesn't depend on {Socrates}. However, this cannot be captured by any sort of modal asymmetry; moreover, no quick fix on (NEC) is even remotely plausible.

Fortunately, there is a dependence factor present between Socrates and {Socrates}: the former is a member of the latter, but not *vice versa*. Asymmetric ancestral set-membership is one of the three basic dependence factors I listed in section 1.3: if *x* is an

[45] Ted Sider forcefully expressed this worry to me in conversation.

ancestral member of *y* but not *vice versa*, then *y* set-theoretically depends on *x*. Set-theoretic dependence is one of the factors that ontological dependence aggregates. If there are sufficiently many saturated dependence dimensions between Socrates and {Socrates}, and no dependence factor indicating the ontological dependence of Socrates on {Socrates}, then it's plausible that {Socrates} ontologically depends on Socrates. This is indeed the case: the two don't stand in the parthood, realization or micro-basing relations; moreover, whatever supervenience connections obtain between them, they obtain symmetrically. This, I say, suffices for {Socrates} to ontologically depend on Socrates.

I want to emphasize a recurring theme of this section that the present story brings out nicely. There are many controversial cases of ontological dependence over which philosophers fiercely disagree. The example of {Socrates} and Socrates is not one of them. I don't know of anybody who thinks that Socrates depends on his singleton set, and those who deny that either depends on the other think so because they adopt some general form of skepticism about ontological dependence (e.g. Incurvati 2012). In short, the ontological dependence of {Socrates} on Socrates is as uncontroversial as it gets. Furthermore, note that there is also consensus on the modal, mereological and set-theoretic relations between Socrates and {Socrates}. Everybody accepts that necessarily the one exists just in case the other does, and everybody accepts that Socrates is a member of {Socrates}. Of course, this could be just a coincidence. But in my view, it isn't: the ontological dependence of {Socrates} on Socrates is uncontroversial precisely *because* (i) the distribution of dependence factors between the two is uncontroversial, and (ii) these factors unambiguously favor the dependence of {Socrates} on Socrates. Later in

the chapter, we will also review some putative cases of ontological dependence that are, to varying extent, more controversial than this one. And as we will see, these disputes invariably come in tandem either with some disagreement over the modal, mereological or set-theoretic facts or (less typically) explicit disagreement over how strongly these facts weigh when it comes to the final assessment of what depends on what. This phenomenon cries out for explanation, and as we will gradually come to see, the minimalist view provides a rather nice one.

1.4.2. Material wholes and their parts

A somewhat more controversial case is the ontological dependence of wholes on their parts.[46] The sort of dependence at issue here is usually understood as not rigid but generic dependence: a whole depends for its existence on the parts that compose it, though it doesn't presuppose the existence of those particular parts; barring mereological essentialism, different parts would have done the job just as well. Or at least this is the standard view regarding ordinary objects; the relation between mereological sums and their parts is plausibly construed as rigid dependence. In what follows, I will focus on material objects in general, which have been at the center of recent debates about part-whole dependence.

Which dependence factors speak in favor of wholes depending on their parts? First, and most obviously, all wholes are composed of their parts. Second, the intrinsic properties of wholes are micro-based at least in the properties and relations of their *microphysical* parts: any macrophysical property had by a whole is identical to the micro-based property of having parts with such and such microphysical properties, standing in

such and such relations.[47] Since the micro-basing relation arguably doesn't hold between the properties of a whole and those of its *macrophysical* parts, fewer dependence factors speak in favor of wholes depending on their macrophysical parts than in favor of wholes depending on their microphysical parts. This indicates that it's less obvious that wholes ontologically depend on their medium-sized parts than that they do on their microphysical parts. I take this to be a good thing; Schaffer (2010a), too, argues that macrophysical parts are often just arbitrary abstractions from "integrated wholes", and that integrated wholes are more fundamental than such arbitrary parts.[48]

Now, it's not beyond dispute that every whole ontologically depends on its parts. Schaffer, for instance, defends *priority monism*, the view that all concrete objects ontologically depend on the cosmos. Two arguments are especially noteworthy in the present context. First, Schaffer argues that the intrinsic properties of the cosmos don't supervene on the intrinsic properties and relations of its parts (the cosmos might have emergent properties), whereas the intrinsic properties and relations of the cosmos's parts still supervene on those of the cosmos, since each such property and relation corresponds to the micro-based property of having parts with such and such properties and relations (2010a: 50–57). Second, he argues that the world must have a mereological top level (Universal Mereological Composition is necessarily true, so there has to be a fusion of all objects) but doesn't necessarily have a mereological bottom level (atomless gunk is

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[46] Philosophers sympathetic to the view that material wholes ontologically depend on their parts include Kim (1994: 67), Conee and Sider (2005: 68), Markosian (2005: §3), R. Cameron (2014), and Skiles (2015).

[47] See Kim 1998: Ch. 3

[48] Schaffer often uses 'dependence' and 'grounding' interchangeably. As I mentioned in section 1.1, I take these to be distinct notions; accordingly, I will interpret Schaffer as advancing a view about the direction of ontological dependence, not grounding. See also Trogdon 2013a: §3.

possible). Schaffer takes these asymmetries to give us some reason for thinking that the cosmos doesn't ontologically depend on its proper parts, but all other objects ontologically depend on the cosmos.

I don't want to give the impression that Schaffer's arguments for priority monism can be formulated purely in terms of relations that by my lights count as dependence factors; when making inferences from these relations to ontological dependence, he also appeals to intuitions about fundamentality. But we can at least say the following. Schaffer makes certain substantive claims about the modal and mereological connections between the cosmos and its parts, which he thinks support priority monism. Moreover, the dependence minimalist can agree that these claims, if true, provide some evidence for priority monism. Now take a look at the necessitation and supervenience facts, as they are according to Schaffer. If he is right, then we are left with two dependence factors (composition and micro-basing) that favor the ontological dependence of every whole on its parts, but also two others (asymmetric supervenience and generic necessitation) that favor the ontological dependence of all objects on the cosmos.

Whether this distribution of dependence factors makes priority monism true is far from obvious. I think this is a good thing. Even if Schaffer turned out to be right about the relevant modal facts, it would remain true that the cosmos is composed of its parts and that its intrinsic properties are micro-based in the properties and relations of its parts. So, priority pluralism wouldn't stop seeming somewhat plausible. The previous section hints at an explanation of why this is so. There are lots of ways to aggregate the dependence factors, and thus many abundant relations that could have been meant by 'ontological dependence'. If Schaffer is right about the necessitation and supervenience

facts, wholes bear some of these relations to their parts but fail to bear others. And if he is also right about the ontological dependence facts, then this is because the rules of aggregation happen to assign more weight to asymmetric supervenience and necessitation than to asymmetric parthood and micro-basing. I don't know whether this is the case; through the lens of Dependence Minimalism, it doesn't really matter. For the minimalist, once all the modal, mereological and set-theoretic facts are settled, asking what depends ontologically on what is a bit like investing a lot of time and money in comparing the mass, diameter and volume of two planets and, once all the data are in, pressing the question: "Okay, but which one is larger?"

1.4.3. Tropes and their bearers

A putative example of ontological dependence mentioned with relative frequency in the literature is that of *tropes*. Various classic works and more recent surveys mention tropes as paradigmatic cases of ontological dependence; for instance, the particular whiteness of a surface depends on that surface.[49] It bears emphasis that its proponents have usually formulated this thesis in modal terms: tropes cannot exist without a bearer that "supports" them. Mulligan, Smith and Simons (1984), for instance, emphasize that tropes are *non-transferrable*: no particular whiteness could exist without the very piece of cloth it is a whiteness *of*. Writing after Fine's extremely influential attack on the modal analysis it is easy to forget that the original statement of the view, which Correia and Lowe refer back to, never went beyond this modal characterization. Now of course, I'm not suggesting that this modal characterization entirely captures the idea that tropes depend on their bearers. I merely want to point that in the tropes literature it is *this* thesis that is usually at

issue. Moreover, the fall of the modal analysis notwithstanding, if the thesis is true it yields a modal dependence factor. Since trope-bearers can usually exist without the particular trope that they instantiate, we can say that in general, the existence of a trope asymmetrically necessitates the existence of its bearer. This speaks in favor of tropes depending on their bearers (most tropes, anyway – see below for more details).

It is important to emphasize that everyone who believes that tropes depend on their bearers also assumes that tropes are non-transferrable. Indeed, they typically think of tropes as dependent entities *because* they are incapable of independent existence. This raises a difficulty: don't then we have equally good reasons for thinking that trope-bearers depend on those tropes that they have necessarily? Non-transferrable essential tropes and their bearers mutually necessitate each other's existence. Since I work on the assumption that ontological dependence is asymmetric, the dependence cannot go in both directions; at best, mutual necessitation can make it easier for the tropes and their bearer to instantiate ontological dependence in some order. Some philosophers, however, draw a more radical conclusion and accept that there is two-way dependence between trope-bearers and their essential tropes. For example, Simons (1994) proposes a two-tier trope theory according to which some necessarily co-instantiated tropes form the object's *nucleus*, which is supplemented by further tropes ("fringe" tropes, as I will refer to them), which the object has only contingently. In effect, the nucleus plays the same role that the substratum plays for substratum theorists. In Simons's words:

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[49] See, for instance, Mulligan et al 1984: 290–291, Simons 1987: 304; 1994: 557, Correia 2008: 1015–1016, Koslicki 2012: 201, and Tahko and Lowe 2015: §6.3

> "[The] dependence [of tropes outside the nucleus] is partly one-sided, for while these accidental tropes depend on the nucleus for their existence, it does not depend on theirs, though it requires some trope from that family. The nucleus is thus itself a tight bundle that serves as the substratum to the looser bundle of accidental tropes…" (1994: 568)

On this view, then, fringe tropes depend on their bearers, so long as by 'bearer' we mean the trope-nucleus (this is what Simons seems to have in mind, instead of the fully qualified object). Accordingly, there is a modal asymmetry between the nucleus and the fringe tropes: necessarily, if the fringe tropes exist then so does the very nucleus that actually supports them; but the nucleus could exist without those fringe tropes (though it needs to be supplemented by *some* fringe tropes). On the other hand, the nucleus and the essential tropes within it mutually necessitate one another's existence. Simons's conclusion is that they mutually depend on one another, while the fringe tropes rigidly depend on both the nucleus and the essential tropes within it. Unlike Simons, I reject the possibility of mutual dependence. But I'm sympathetic to a more general moral we can gather from his discussion: the necessitation relations among tropes and their bearers have strong evidential weight when it comes to deciding what dependence relations hold among them.[50]

As we have seen, certain considerations about essential properties cast doubt on the universal thesis that all tropes depend asymmetrically on their bearers. This being said, it is far from obvious that *any* trope does, and the kind of trope theory one accepts makes a big difference to how plausible it is to think that some do. So far I have gone along with the assumption that tropes are non-transferrable. However, this assumption is controversial. Some trope theorists believe that tropes are transferrable, but only weakly:

[50] To complicate things even further, Simons also believes that the tropes within the nucleus depend on each other. I will return to this issue when discussing the possibility of mutual dependence in section 1.5.2.

a particular whiteness requires the existence of some bearer, but not necessarily its actual bearer.[51] More radically, some believe that tropes are *strongly transferrable*: it is possible for them to exist without having a bearer at all.[52] Some of these authors go even a step further and maintain that free-floating tropes are not merely possible but *actual*; for example, Campbell (1981) argues that the blueness of the sky is exactly that, a free-floating trope.

Obviously, these views are highly controversial. All I want to point out is that their falsity is presupposed by anyone who thinks that tropes depend on their bearers. Indeed, trope theorists who reject the thesis of non-transferability tend to treat tropes as the most basic kinds of things: Williams (1953) counts them as the "alphabet of being", and Campbell (1990) makes them the most basic ingredients of his "one-category ontology". These trope theorists are also bundle theorists and hold that objects are nothing more than bundles of tropes. Moreover, many of them identify the relation between objects and the tropes they bundle as a kind of part-whole relationship.[53] I cannot go into the details here; suffice it to say that if objects are (at least partly) composed by their tropes, then this creates further pressure to say that they depend on their tropes, rather than the other way round. I don't think this is an implausible result. Koslicki, too, notes that bundle theorists with reductive ambitions should *not* agree that tropes depend on their

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[51] R. Cameron 2006

[52] D.C. Williams 1953, Schaffer 2003.

[53] These authors include D.C. Williams (1953, 1986), Goodman (1966), McDaniel (2001), and Paul (2002, 2006). As Paul (2002) notes, we need not be either bundle or trope theorists to think that objects have "qualitative parts": substratum theorists, for instance, could agree that objects have repeatable universals as parts.

bearers; it would be more reasonable for them to insist that the dependence goes in the opposite direction (2012: 189 f4).

What can we say in conclusion? The direction of dependence between tropes and their bearers is far from clear, not least because the recent literature on ontological dependence rarely specifies what kind of trope theory is at issue. But we can at least say this much. The claim that tropes depend on their bearers seems most plausible if tropes are non-transferrable and the bundle theory of objects is false; and it is the least plausible if tropes are strongly transferrable and compose the objects they are tropes of. This not only meshes with the minimalist idea that the instantiation of ontological dependence is a matter of how the dependence factors are distributed but also lines up nicely with the way actual trope theorists are thinking about the dependence relation between tropes and their bearers.

1.4.4. States of Affairs and their constituents

Structured propositions, facts and events are often thought to depend on the entities they involve as constituents.[54] For the sake of simplicity, here I will focus on facts or as Armstrong calls them, states of affairs, but much of what I say would easily carry over to other sorts of structured compounds.

States of affairs are often thought to have as constituents the individuals and properties they concern. For example, the fact that John loves Mary – in usual notation: [John loves Mary] – has as constituents John, the relation of loving, and Mary, in that order. Why think that states of affairs ontologically depend on their constituents? For

[54] Such examples can be found everywhere across the literature on ontological dependence; see, for instance, K. Fine 1995, Thomasson 1999: 26, Correia 2008: 115, Lowe 2009, Koslicki 2012, and many others.

one, it's tempting to think of the relation between them as a kind of parthood. For another, states of affairs are often taken to have these parts necessarily: [John loves Mary] cannot exist unless John, Mary and the relation of loving exist too. The reverse, on the other hand, isn't true: John, Mary and loving *could* exist without [John loves Mary] existing. So there are two dependence factors that speak in favor of states of affairs ontologically depending on their constituents: asymmetric parthood and asymmetric rigid necessitation. (As Fine points out, there is two-way necessitation in the case of existential states of affairs: [Socrates exists] exists just in case Socrates does (1995: 271). Likewise for states of affairs involving individuals and their necessary properties. I'm happy to concede these points, since it does strike me as somewhat less obvious that such states of affairs ontologically depend on their constituents than that ordinary ones do.)

Not everyone believes that the true direction of dependence is from states of affairs to their constituents. Armstrong (1997) too posits structured states of affairs, but he does so with the ambition of providing a comprehensive metaphysics in which states of affairs are basic things: the world, he maintains, is in the first place a "world of states of affairs". However, Armstrong accepts both that states of affairs have their constituents as parts and that they necessitate the existence of these constituents (but not the other way round). How can we reconcile Armstrong's Tractarian ambitions with his acceptance of

these modal and mereological facts?[55] The answer lies in the special role that a certain (as we will see, non-standard) notion of supervenience plays in Armstrong's thinking.[56]

According to Armstrong's doctrine of ontological free lunch, supervenient entities are "no addition of being"; they don't incur real ontological cost. The doctrine of ontological free lunch has been widely criticized for being either false or obscure, and I don't aim to defend it here. What I want to focus on is something Armstrong emphasizes in several places throughout his monograph: that the individuals and properties that a state of affairs is about *supervene* on the state of affairs in question. Armstrong gives the following definition of supervenience:

> "[E]ntity Q supervenes upon entity P if and only if it is impossible that P should exist and Q not exist, where P is possible" (1997: 11)

As Bricker (2006: 267–8) has pointed out, this definition is fairly non-standard. Supervenience is usually understood as a covariance relation, but Armstrong's definition is neither necessary nor sufficient for any interesting kind of covariance. It is not necessary, since we would expect covariance theses to have a conditional form and not make any modal claim about the supervenience relata. And it is not sufficient, since P could entail Q without covarying with it. Take, for instance, the property of *being green* and the property of *being cubical and green*. By Armstrong's definition, the former property

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[55] Armstrong (1997: 119–123) often refers to the relation between states of affairs and their constituents as a "non-mereological" form of composition. This is consistent with my labeling of the relation as mereological, since by 'mereology' Armstrong means *classical extensional* mereology, not the general theory of part and whole.

[56] An alternative answer, suggested by Barnes (forthcoming), is to simply give up the asymmetry of ontological dependence and maintain that states of affairs and their constituents depend on one another. I will say more about this option in section 1.5.2.

supervenes on the latter, of which it is a conjunct. But there is no useful sense in which being green co-varies with being cubical and green. Any standard notion of supervenience would require that if Q supervenes on P, then there cannot be a Q-difference (between things, regions, worlds etc.) without there being some P-difference. But clearly enough, two things (regions, worlds etc.) *can* differ with respect to being green without differing with respect to the property of being cubical and green; for example, if a is green and b is not green but neither a nor b is both green and cubical.

I should hasten to add that all this is not to argue that Armstrong's definition doesn't capture "the true" notion of supervenience. Supervenience is a philosophers' term of art, and one is free to use it to mean whatever one wants so long as one is clear about the intended meaning. What I want to emphasize is that when Armstrong uses the expression, he deviates considerably from standard use: really, what he means is just existential necessitation with an extra possibility condition. This is remarkable because in effect it means that Armstrong takes something very close to the modal analysis of ontological dependence to capture the *converse* of ontological dependence. In virtually every case where the modal analysis predicts that A depends on B, Armstrong's definition of supervenience (and his apparent view that supervenience captures ontological dependence) will predict that B depends on A. It shouldn't be surprising, then, that his verdict about states of affairs and their constituents also runs contrary to philosophical orthodoxy: this is what one should expect if one uses a once-standard definition of ontological dependence to define the converse of the same relation!

This leaves us with two possible choices regarding how to interpret Armstrong. The less charitable one is that by 'supervenience' he really meant what he said he meant, and

that he was therefore simply mistaken about ontological dependence. I think this is an option we should take seriously, and which in fact has been defended by some authors. Brian Ellis, for example, notes that "the direction of ontological dependence has to be the same as that of existential entailment", and concludes that "Armstrong is simply wrong about the direction of ontological dependence" (2001: 65). But I think there is a more charitable reading on which Armstrong just wasn't very careful when defining supervenience, and all along had in mind something closer to the standard notion of covariance. Of course, this still wouldn't qualify as a correct *criterion* of ontological dependence, but it could at least serve up a genuine *dependence factor*. And indeed, supervenience relations as usually understood to obtain between Armstrong's states of affairs and their constituent individuals. For example, it seems clear that if two possible worlds differ in the individuals they contain and the properties instantiated in them, they also differ with respect to the states of affairs that exist in them; however, they might differ with respect to the states of affairs without a corresponding difference in which individuals exist and which properties are instantiated (perhaps the same individuals and properties are arranged differently)[57]. This asymmetry is captured by a fairly standard notion of global supervenience: which individuals exist and which properties are instantiated in a world asymmetrically supervenes on which states of affairs exist in that world.

In the end, there seem to be two dependence factors speaking in favor of states of affairs depending on their constituents: they have them as parts (but not *vice versa*), and

[57] Keep in mind that in Armstrong's view, not every predicate designates a property. So the proposed asymmetry cannot be disproved by appeal to counterexamples involving properties that make reference to individual states of affairs.

they can exist only if their constituents exist (but – typically – not *vice versa*). There is also a dependence factor that points in the opposite direction: which individuals exist and which properties and relations are instantiated supervenes on which states of affairs exist, but *not vice versa*. I suspect that overall there is a better case for thinking that states of affairs ontologically depend on their constituents. While I'm not completely sure about this verdict (the direction of dependence cannot be settled merely by mechanically counting the dependence factors), I am confident that these are the sorts of issues that matter to the direction of dependence.

To appreciate this, let's consider a possible deviation from Armstrong's actual view. Suppose that states of affairs stand in exactly the same modal relations with individuals and properties as according to Armstrong's view, but that they are mereologically simple. That is, the existence of [John loves Mary] necessitates the existence of John, loving, and Mary (but not *vice versa*), and if two worlds differ with respect to whether John and Mary exists and whether the relation of loving is instantiated, they also differ in whether [John loves Mary] exists (but not *vice versa*). However, [John loves Mary] in no sense has John and Mary as constituents; it is a simple, structureless entity. How plausible is it, then, that states of affairs depend on the individuals and properties they are about? My intuition is that it is *less* plausible than on Armstrong's own view. If states of affairs are simple, it is harder to see how they could depend on properties and individuals than it would be otherwise. Perhaps this is the view Armstrong should have defended all along.

1.4.5. Holes and their hosts

The next two theses are not discussed widely, but they are sometimes sympathetically mentioned as *bona fide* cases of ontological dependence. However, they ought to be controversial because they presuppose substantial background commitments about issues that are on the face of it not directly related to ontological dependence. This will be important to keep in mind because while these cases are often cited as intuitive examples of ontological dependence, they were originally defended as such in conjunction with some of these background theses. I will go over three such examples: the dependence of holes on their hosts, the dependence of boundaries on the objects they are boundaries of, and the dependence of constituted objects on their constituters.

Let's start with the case of holes and their hosts. Both Correia (2008) and Koslicki (2012) mention this as an intuitive case of ontological dependence, but only Correia attributes it to any actual philosopher: he cites Casati and Varzi, who do indeed claim that holes ontologically depend on the objects that host them (1994: 18–19). According to their view, holes are constituted by but not identical to empty regions of space (32). In section 1.4.7, I will argue that (barring hylomorphic conceptions of constitution) it is an error to regard constitution as a relation of ontological dependence, and that very few constitution theorists actually subscribe to such a thesis. However, even if constitution doesn't speak in favor of holes depending on their hosts, there might be other factors that do.

Unsurprisingly, the most obvious such factor is modal. It bears emphasis that after Casati and Varzi state their thesis of ontological dependence, in the same breath they go on to spell it out in modal terms: holes cannot exist without some host or other (they are

quite happy with holes being supported by different hosts at different times so long as there is *some* host to support them). Holes are "ontologically dependent entities", they write; "a hole cannot be removed from its host" (18). As in the case of tropes, it is worth taking this formulation seriously. Even though Fine taught us that the modal analysis is untenable, Casati and Varzi never officially went beyond this modal characterization of the dependence of holes on their hosts. Fortunately, though, even their conservative formulation gives us a genuine dependence factor. For while no hole could exist in the absence of some empty region or other, empty regions could of course exist without any surrounding matter, in which case they would not contain a hole. This speaks in favor of holes being *generically dependent* on their hosts. Whether this is enough to ensure the ontological dependence of holes on their hosts is a good question. The mere fact that asymmetrical necessitation doesn't suffice for ontological dependence in *other* cases wouldn't automatically show that it doesn't in this one. Moreover, if we think that holes and empty regions stand in mereological relations with each other (as we should on most theories of constitution)[58], then this would make it easier for the modal dependence factor to do its work and make for the dependence of holes on their hosts.

It is worth noting that on many alternatives theories of holes it is implausible that holes depend on their hosts. For example, if holes are empty regions of spacetime (Wake et al 2007) or qualified spacetime regions (Miller 2007), then they are only contingently holes and don't depend on (because *are*) their hosts. According to another, highly influential account, holes are the innermost boundaries of their hosts (Lewis & Lewis

[58] See the discussion of Section 1.4.7.

1970). Whether this view supports the dependence of holes on their hosts is a question we cannot answer without knowing some more about boundaries, to which I turn now.

1.4.6. Boundaries

Similarly to holes, boundaries are sometimes described as dependent particulars that ontologically depend on the objects they are boundaries of.[59] This view has been introduced into the contemporary literature by Chisholm (1983), whose primary inspiration was Brentano (1988). While Chisholm often summarizes his view in terms of dependence, he also defends an explicit definition of boundaries that makes no use of such concepts:

> D1 *x* is a boundary in *y* $=_{df}$ *x* is a constituent of *y*; and every constituent of *x* is necessarily such that there is something of which it is a constituent (1983: 90)

A few things need to be clarified about this definition. First, Chisholm uses the word 'constituent' to mean part in the broadest sense; he reserves the word 'part' for any part that is not also a boundary (1983: 88). So boundaries are special kinds of parts, namely, those whose parts couldn't exist without something they are parts of. This marks an important contrast with ordinary parts, which intuitively *could* exist without being embedded in some larger thing. Second, D1 is a definition of being a boundary *in* something. When speaking of boundaries, we usually have in mind the boundaries *of*

[59] See, for instance, Correia 2008: 1015 and Koslicki 2012: 201

objects, which we identify (roughly speaking) with their outermost surface. Any boundary *in* an object is a boundary *of* a proper part of that object.

Importantly, Chisholm's D1 – which he earlier informally introduced as the thesis that boundaries are dependent particulars – is stated exclusively in modal and mereological terms. Philosophers who write on boundaries and follow Chisholm in taking them to be dependent entities have likewise focused on this modal aspect:

> "[B]oundaries […] cannot exist independently, and presuppose those objects of which they are boundaries." (Bochman 1990: 77)
>
> "[B]oundaries are dependent particulars: entities which are such that, as a matter of necessity, they do not exist independently of the entities they bound […] every boundary is such that we can find an entity which it bounds of which it is a part and which is such as to have interior parts." (B. Smith 1995: 295)
>
> "[B]oundaries are "parasitic" entities, i.e., can only exist as boundaries *of* something." (Varzi 1997: 41, emphasis in the original)
>
> "[I]f something continuous is a mere boundary, then it can never exist except in connection with other boundaries and except as belonging to a continuum of higher dimension […] Boundaries are, in Chisholm's terms, dependent particulars." (Smith and Varzi 2000: 410)

As many of these authors imply, the modal connection at issue here is generic: the existence of a boundary doesn't require the existence of any particular object, only that there is some object it is a boundary of. Of course, since Fine we know that the modal analysis of rigid dependence is subject to counterexamples; moreover, a modal analysis of generic dependence faces very similar problems (Correia 2005: 91–92). However, it is not clear to what extent this has been appreciated in the boundaries literature, since none of the authors quoted above do so much as take note of the familiar problems that beset the modal analysis. More importantly, the supposed necessary connection between boundaries and their hosts doesn't even capture this particular instance of ontological dependence. This is because as much as boundaries couldn't exist without some objects,

it seems equally true that no object could exist without some boundaries. Indeed, Chisholm's view is sometimes described as the thesis that boundaries "are automatically present wherever one finds extended hosts" (Zimmerman 1996: 28). But then, why should we find it more plausible that boundaries depend on their hosts than that the dependence goes the other way round?

In what follows, I will argue for a twofold answer. First, Chisholm's followers have generally overlooked the fact that he had an explicit *definition* of what it is to be a dependent object. The dependent nature of particulars (but not their hosts) automatically falls out of this definition, but the definition itself is highly contentious. Without this definition – which most of us will presumably reject – we lose the most obvious reason for thinking that boundaries depend on their hosts. Second, there may nonetheless be further dependence factors that speak in favor of boundaries depending on their hosts. These factors are rarely discussed explicitly in the literature, but they might give us some reason for thinking that boundaries do, after all, depend on their hosts. Let me go over these points in due course.

First, while several authors follow Chisholm in treating boundaries as dependent entities, they rarely explain why they do so. They don't go beyond the aforementioned modal characterization, which as we have seen doesn't favor boundaries over their hosts as dependent objects. Chisholm, however, has a less well-known paper in which he *defines* what it takes for something to be a dependent thing. To this end, he first provides the definition of being a contingent substance:

> D8 *x* is a contingent substance = $_{df}$ (1) *x* is a contingent individual; and (2) *x* is possibly such that every contingent individual has a constituent that is also a constituent of *x* (Chisholm 1994: 502)

As Chisholm notes, the intuition behind D8 is that a substance could exist without anything else that is a constituent (in standard terminology, part) of that substance. With D8 in hand, he can now define the notion of a dependent thing:

> D9 *x* is an ontologically dependent thing = $_{df}$ *x* is a contingent thing that is not a substance (502)

These definitions have two immediate consequences. First, D8 entails that extended objects don't depend on anything; *a fortiori*, they cannot depend on their boundaries. Second, in conjunction with Chisholm's earlier definition of a boundary, D8 and D9 entail that boundaries are dependent objects. This doesn't quite entail that boundaries depend *on their hosts*, but given Chisholm's definitions this can begin to look like a fairly plausible option. (After all, *what else* could they depend on?)

If these assumptions are correct, the thesis that boundaries depend on their hosts starts making a lot of sense. This is a big "if", however. Chisholm's definitions rule out by fiat the possibility of dependent necessary existents, and they also imply that nothing whatsoever could depend on its parts – a commitment that not even priority monists should feel comfortable with! These consequences strike me as implausible to the extreme, and I also doubt that many contemporary philosophers would be happy with

them. But once these definitions are rejected, it is no longer clear *why* we would want to say that boundaries depend on their hosts.

This takes me to my second point: while Chisholm's followers usually borrowed his doctrine of boundaries as dependent objects without the background theory of dependent particulars that could justify this doctrine, it doesn't follow that there is no other way to justify it. In the background of Chisholm's theory of boundaries there is a frequently overlooked distinction that can be traced back to Aristotle: *being parts of* an object and *composing* an object. On this view, objects have two fundamentally different kinds of parts: extensionless parts (points, boundaries, surfaces) and gunky parts that infinitely decompose into ever smaller extended parts, but never into extensionless parts.[60] On this view, objects *have* pointy parts but are not *composed* by them: there is no plurality of *x*s such that (i) every *x* is pointy, and (ii) the *x*s compose an extended object. The idea that an object can have some pointy parts without those parts composing it is relevant because it allows for a supervenience asymmetry between an object and its extensionless parts. Consider two objects, A and B, whose extensionless parts are the *x*s and the *y*s, respectively. It seems that if there is any difference between the intrinsic properties of the *x*s and those of the *y*s, then there has to be a difference in A's and B's intrinsic properties, too. But the opposite doesn't have to be true: there might be a difference between A and B without a corresponding difference between the *x*s and the *y*s. It is, of course, highly intuitive that for any difference between two extended objects,

[60] Aristotle's own motivation was the conviction that magnitudes cannot be made up from pointy things, which lack magnitude (GC 1.2, 316a24ff). After Cantor, these Zeno-like considerations are unlikely to move anyone. However, some further puzzles concerning boundaries and contact remain, and Chisholm's view (and Brentano's, too) should be seen as part of a larger theory that was designed to solve them. I have no space here to get into the problems that supposedly motivate the theory; for a good overview, see Zimmerman 1996.

there is a corresponding difference between the properties or arrangement of their parts. What is important to keep in mind is that this intuition can be accommodated without assuming that there is any difference in the two objects' *unextended* parts. Since extended objects are gunky, for any two extended objects that differ in their intrinsic properties we can find a difference in their ever smaller extended parts, no matter how small the objects are; we never have to posit a difference at the level of their unextended parts. This is not so if we think of objects as entirely composed of unextended points. Since on this latter view extended wholes are not infinitely decomposable into further extended parts, we cannot keep the supervenience intuition without admitting that for two extended wholes to intrinsically differ there has to be some difference in the properties or arrangement of their simple parts.[61]

Where does this leave us? If we accept the general Chisholmian characterization of boundaries (except for his definition of being a dependent object), the case for their ontological dependence on their hosts is rather shaky. There is a mereological dependence factor that speaks in favor of hosts depending on their boundaries, and perhaps an instance of asymmetric supervenience that speaks in favor of the boundaries depending on the hosts. This is admittedly inconclusive, as I think it should be. Chisholm himself had a reason for thinking that boundaries depended on their hosts: he worked with an idiosyncratic definition of what it is to be a dependent object, and this definition makes it hard to avoid this conclusion. But his followers adopted the dependence thesis

[61] Of course, I am here ignoring Schaffer's supervenience-based argument for priority monism, according to which some objects may have properties that don't supervene on the properties of their parts (see section 1.4.2). If Schaffer is right about this, then the failure of the properties of extensionless parts to supervene on the properties of the objects they are parts of is just an instance of a general principle.

without the definition, and the former loses much of its plausibility once the latter is given up.

Above I listed the dependence factors most relevant to the question of whether boundaries depend on their hosts. Given that the presence of these dependence factors is subject to dispute, it should hardly be surprising that one's theory of boundaries affects how plausible one finds that they are dependent entities. The issue is too complex to discuss here in the detail it would deserve, but for illustrative purposes, it is worth mentioning Hud Hudson's recent take on it. Hudson is one of the few people who explicitly deny the thesis that boundaries are dependent things (not that most philosophers *endorse* it; the question just isn't widely discussed in the boundaries literature). Accordingly, he takes issue with some of the aforementioned dependence factors. For one, he doesn't accept that boundaries could not exist without some host (2005: 69). For another, he rejects the broadly Aristotelian picture on which extended objects have, but aren't composed of, unextended parts. This makes it considerably harder to maintain that the properties of boundaries asymmetrically supervene on those of the things they are boundaries of. Indeed, for Hudson boundaries are just material objects: they are neither essentially boundaries of something nor require any host for their existence. Though Hudson stops here, I think it would be plausible for him to go a step further and insist that it is in fact the hosts that depend on their boundaries. After all, his view in effect denies that there is an interesting metaphysical distinction between an object's boundaries and its other proper parts; and it is generally accepted that objects depend on their proper parts.

1.4.7. Constitution

I have left constitution to last. My reason for doing so is that although philosophers occasionally mention constituted objects and their constituters as an example of ontological dependence, a closer look reveals that they are wrong to do so unless they assume a fairly specific theory of constitution. On reflection, this should not be surprising. There is a variety of theories of constitution on the market, which operate with very different conceptual resources. We shouldn't expect to be able to decide the question of dependence without first consulting these theories in some detail. Below I will indicate the main dividing lines relevant to the question of whether constituted objects ontologically depend on their constituters.

Constitution is usually conceived of as a relation between material objects, or a relation between a material object and its matter. Minimally, it is widely assumed to involve material coincidence.[62] Some philosophers stop here and simply identify constitution with mereological coincidence.[63] I'm not concerned with these theories here. Material coincidence is a symmetric relation, and if constitution is symmetric, there is no reason to suppose that it tracks any kind of dependence (nor do constitution-as-coincidence theorists appear to think that it does). But it's important to note that that for many of the purposes for which constitution is frequently invoked, mere coincidence would do equally well. For example, the "puzzles of material constitution" are really just puzzles about material coincidence. Those who distinguish constitution from mere

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[62] This is true even of Baker, who refuses to use mereological terms in her definition of constitution: "[S]ameness of parts should be a consequence of constitution, not a condition of constitution", she says (2007: 162).

[63] See Rea 1995: 526–527, 2000: 190 f6, and Wasserman 2004: 704–705

coincidence are usually motivated by intuitions to the effect that there is an interesting kind of asymmetry between a constituted object and its constituter. Presumably, it is this notion of constitution that some philosophers think implies ontological dependence (cf. Bennett forthcoming: §2.1).

But does it? It has occasionally been suggested that constituted objects depend on their constituters, but it is surprisingly difficult to say why we should think that they do. Correia (2008: 1015), for example, lists the case of a table and the piece of matter that constitutes it as a plausible example of *rigid* ontological dependence. But that cannot be right: one of the main motivations for constitution views is precisely the intuition that mere masses of matter cannot change their parts, while ordinary objects can. And if that is so, then a table can exist without the mass of matter that constitutes it. It may be suggested that even if this is so, a table still couldn't exist without *some* mass of matter constituting it, while the mass of matter could exist without constituting a table; and this would speak in favor of the table generically depending on the mass of matter constituting it. Perhaps this is right, but it doesn't generalize to all cases. Constitution theorists often think that not only masses of matter can constitute, but also objects that are themselves constituted. Some of these philosophers believe that human persons are constituted by human animals, though they could have been constituted by other kinds of things as well (Shoemaker 1999, Baker 2000). If that is so, it is not generally true that constituted objects even generically depend on their constituters, so long as this is understood to entail that they can exist only if something of the same kind as the thing that actually constitutes them exists.

The absence of modal dependence factors may go a long way toward explaining why explicit statements to the effect that constituted objects depend on their constituters are very hard to find in the specialized literature on constitution. One exception is Koslicki (2004). Though Koslicki acknowledges that there is more to ontological dependence than supervenience, she proposes that an important aspect of this dependence can be cashed out by appeal to a supervenience thesis, which she refers to as "constitutional supervenience". It is questionable, however, that this thesis really captures any aspect of dependence, or that (as I prefer to put it) it qualifies as a dependence factor. As Koslicki herself readily admits, the supervenience of the relevant properties of constituted objects on those of their constituters is symmetric (2004: 347).

Being symmetric, constitutional supervenience cannot serve as a dependence factor. But it may still help establish a connection that helps other dependence factors do their job. One kind of connection that could do this is hinted at in Koslicki's later work, which argues that constitution is a special case of composition (Koslicki 2008). The theory presupposes an Aristotelian distinction between formal and material parts. Mainstream theorizing about mereology only recognizes the latter, but Koslicki argues that composite objects also have a formal component. This allows her to provide an account which posits a straightforward mereological difference between a constituted object and its constituter: the former has a formal component that the latter lacks. Accordingly, she offers the following definition of constitution:

> (Mereological Analysis of Constitution, MAC): Some objects, $m_1,\ldots, m_n$, *constitute* an object, O, just in case $m_1,\ldots, m_n$ are O's *material components*, i.e.,

> $m_1,\ldots, m_n$ are those among O's *proper parts* which satisfy the constraints dictated by O's *formal components*, $f_1,\ldots, f_n$.[64]

Koslicki's mereological approach to constitution nicely dovetails with her intuition that constituted objects ontologically depend on their constituters. I don't think that this is an accident; other philosophers who have the dependence intuition also happen to adopt neo-Aristotelian approaches to constitution. For example, Johnston (2006) defends a view that also identifies constitution with a kind of parthood: constituters are parts of the objects they constitute, unified under a certain principle of unity. The most important difference between Johnston's and Koslicki's views is that Johnston doesn't think of principles of unity as further parts of the resulting object. As a consequence, he ends up rejecting the widely accepted principle of Weak Supplementation, the thesis that if an object has a proper part, *x*, it also has another proper part, *y*, which doesn't overlap *x*. Never mind if this is a serious cost of his view; what matters for our present purposes is that similarly to Koslicki, he thinks that the relation between constituted objects and their constituters is proper parthood. And so it should hardly surprise us that Johnston, too, thinks that constitution is a relation of dependence. Constituted objects are hylomorphic

[64] Koslicki 2008: 185. This is the timeless version; not much later, Koslicki also offers an alternative formulation for constitution conceived of as a time-relativized relation (190). It may appear to be an odd feature of both definitions that Koslicki construes constitution as a many-one relation. This oddity could easily be removed by redefining constitution as a special case of MAC, namely when the relation defined by MAC holds between O and a material proper part of O that is such that it overlaps every material proper part of O.

complexes, he says, and in "each instance a hylomorphic complex may seem to be ontologically dependent on its genuine parts, the parts related by its principle of unity".[65]

You might at this point think that neo-Aristotelian approaches to constitution are pretty non-standard, and that it would be good to give a more general account of why constituted objects depend on their constituters. However, I doubt that such a general account is available. As we have seen, constitutional supervenience is symmetric and and such cannot serve as a dependence factor. And if constitution is not a special case of asymmetric parthood, we have lost the only dependence factor that would speak in favor of the general thesis that constituted objects depend on their constituters. The presence of asymmetric necessitation may give us some reason for saying that objects generically depend on their masses of matter; but then we should simply say *that*, and leave constitution out of the story.

The upshot is that barring the assimilation of constitution to parthood, Dependence Minimalism predicts that constituted objects *don't* depend on their constituters. You might think that this is at best a serious cost of the theory and at worst something like a

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[65] Johnston 2006: 676. Koslicki and Johnston have both been deeply influenced by Kit Fine's work. Through a series of papers, Fine also developed a hylomorphic account of material objects, which he used among other things to make sense of constitution. The theory underwent several stages of development (see, for instance, K. Fine 1982, 1999 and 2008), but Fine has never explicitly weighed in on the question of whether constituted objects ontologically depend on their constituters. Nonetheless, I think that a positive answer recommends itself. In an early formulation of the theory, he describes constituted objects as "qua objects" and their constituters as their "basis" (101). To me, 'basis'-talk suggests that constituted things ontologically depend on their constituters.

McDaniel defends a fairly different picture, on which constituters are proper parts of the objects they constitute: objects are fusions of tropes, and constituted objects contain polyadic tropes as parts that their constituters don't contain (2001: 275). However, he is silent on the question of ontological dependence. Paul (2002, 2006) focuses on giving an account of material *coincidence*, rather than constitution. Accordingly, she argues for the weaker claim that coincident objects share their material parts but differ in their qualitative parts.

counterexample. I disagree, and below I will show that the extant literature on constitution confirms my view.

Outside the neo-Aristotelian camp, constitution theorists rarely ask whether constituted objects depend on their constituters. But when they do, their answer is virtually always negative. For instance, Thomson – a prominent constitution theorist – dismisses questions about metaphysical priority on the basis that they are cast in terms of "dark notions" (1999: 306); it is unlikely, then, that she would subscribe to any general dependence thesis about constitution.[66] Zimmerman, another constitution theorist, notes that if constituted objects were processes then they would be dependent entities, which would explain the puzzling nature of coincidence. But then in the same breath he rejects this view, and apparently along with it the claim that constituted objects are dependent entities (1995: 91–93).

Even more surprisingly, in her recent book Baker defends the exact *opposite* of the idea that constituted things depend on their constituters: "[t]he constituted thing", she says, "has ontological priority over its constituter".[67] It is not very clear why Baker is saying this, but her specific account of constitution involves an element that might go a long way toward explaining it. Following her notation, let 'F*x' stand for 'x has F as a primary kind property', where x has F as a primary kind property just in case x is necessarily F and there is no kind F' such that F' is a more specific kind than F and x is necessarily an F'. Suppose then that F*x, G*y, and x constitutes y. According to Baker's

[66] Thomson (1998, 1983/1999) offers the following analysis of constitution in mereological terms: x constitutes y at t just in case (1) x and y are parts of each other at t, (2) x has some of its parts necessarily at t, but y has none of x's parts necessarily; (3) but not vice versa (1998: 157). Clearly enough, the mutual parthood she posits between constituter and constituted is not a dependence factor.

[67] Baker 2007: 166; cf. Baker 2000: 33.

definition, it is necessarily true of any z whose primary kind is F that if z is in G-favorable circumstances then there is some entity of primary kind G coincident with z. However, not the other way round: since there are primary kinds whose instances can be constituted by things of multiple primary kinds, a w of primary kind G can exist without anything of primary kind F coincident with it (that w is in G-favorable circumstances is already entailed by its being G).[68] Now, this is not *quite* asymmetrical generic necessitation: the existence of the constituter alone doesn't necessitate the existence of the constituted thing, only the existence of the constituter in G-favorable circumstances. But it is a kind of modal asymmetry nonetheless: so long as G-favorable circumstances obtain, it is generally true that the constituter couldn't exist without the kind of thing it constitutes, while the constituted thing could exist without the kind of thing that constitutes it. My intuition is that this is not enough for ontological dependence, not even in conjunction with mereological coincidence (a perceived consequence of Baker's spatial coincidence requirement). But it could explain why someone like Baker could find the dependence of the constituter on the object it constitutes somewhat intuitive. In any case, even if Baker's claim about metaphysical priority is an overstatement, given her account she seems to be right to deny that constituted things ontologically depend on their constituters.

The literature on constitution is vast, and above I could provide no more than a quick survey. This survey suggests that the ontological dependence of constituted things on their constituters is hostage to a fairly non-standard neo-Aristotelian conception, which assimilates constitution to parthood. However, I have argued that rather than a

[68] For more details and for Baker's precise multi-clause definition of constitution, see Baker 2007: 161.

cost of the minimalist view, we should simply accept this as a lesson. Unless constitution is a kind of parthood, there is no good reason for thinking that constituted objects in general depend on their constituters. Nor do constitution theorists typically think that they do.

1.5. Two arguments for Dependence Minimalism

I began this chapter with an abstract characterization of Dependence Minimalism. Then I went over a couple of widely cited examples of ontological dependence, going from the almost entirely uncontroversial to the fairly controversial to the (by my lights) probably mistaken. In each case, I cited a variety of dependence factors that explain the direction of dependence pretty well, and I pointed out that cases in which the direction of dependence is unclear are usually undergirded by a corresponding controversy over the dependence factors. Even if my assessment of these cases is correct, all we can conclude so far is that there is *some* sort of connection between ontological dependence and the dependence factors. This is a weak claim, but I think we can go further: by now we have the raw materials for two *arguments* on behalf of the minimalist view. In this section, I will present these arguments.

1.5.1. The epistemic argument[69]

Consider the literature on the various issues about which theses of ontological dependence have been formulated: sets, material wholes, tropes, states of affairs, and so on. In each case (except for the first) it's controversial what depends ontologically on what. But all parties to these debates seem to agree that somehow the pattern of modal, mereological and set-theoretic relations are *evidentially relevant* to the direction of

ontological dependence: putative facts about these relations are frequently invoked in arguments for various dependence theses. We can also glean from these debates that the presence of none of these relations is usually thought to *settle* the dispute in question. For instance, that a whole is composed of its parts doesn't *prove* that it ontologically depends on them; and even if the properties of the world's parts asymmetrically supervene on those of the world, Schaffer never implies that this would constitute a knock-down argument for priority monism. Dependence Minimalism does a good job making sense of this philosophical practice. The presence of dependence factors constitutes evidence in favor of dependence claims because ontological dependence is an aggregative cluster concept that aggregates these factors. Yet none of these relations settles what depends ontologically on what, since ontological dependence doesn't require any particular relation in the cluster. This gives us some reason to think that Dependence Minimalism is true. Call this the *epistemic argument*.[70]

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[69] Thanks to Karen Bennett for helpful in-depth discussions about this section.

[70] I'm not claiming that Dependence Minimalism is the *only* possible way to make sense of the evidential role of the relations I call dependence factors. But it provides an especially simple explanation, and it uses far less controversial resources than any of the rivals I can think of. For example, Fine believes that both necessity and ontological dependence can be understood in terms of essence (K. Fine 1994a, 1995; see Kment 2006 for a more thorough attempt to define necessity in terms of essence). Perhaps this view can explain the evidential weight of modal considerations to questions of ontological dependence, but it does so at the cost of relying on a controversial non-modal notion of essence. Moreover, it does little to explain why those dependence factors that don't have uncontroversial modal consequences, or at least not the ones we would expect if we accepted an essence-based definition of necessity, are also thought to be evidentially relevant to ontological dependence. Of course, the heavyweight theorist is always free to declare that her rivals are simply wrong about what sorts of considerations are relevant to what depends ontologically on what. Barnes (forthcoming), for example, goes so far as to suggest that ontological dependence should be completely separated from necessity, and that the two have nothing to do with each other. But I think this is both too radical in that it dismisses large chunks of theorizing as confused, and also not warranted by recent developments in the literature. Even if ontological dependence doesn't entail necessitation, it doesn't follow that ontological dependence has nothing to do with modality. One overlooked way in which the two could be related is by ontological dependence being an aggregative cluster and necessitation one of the factors it aggregates.

This epistemic argument for Dependence Minimalism bears some similarities to a recent argument by Karen Bennett against primitivism about relative fundamentality: we use various putative facts about "building relations" as evidence for claims about relative fundamentality; but such facts could count as evidence only if they bore some causal or constitutive link to the relative fundamentality facts; the former option is out, so we need to conclude that the building facts in some way constitute the relative fundamentality facts (Bennett forthcoming: §6.2). Obviously, there is a very similar argument for the thesis that the ontological dependence facts somehow consist in facts about what Bennett calls building relations.

Bennett's core concept is that of a building relation, rather than a dependence factor. Her list of building relations is longer than my list of dependence factors, and it doesn't contain any particular relation whose building status Bennett officially commits herself to. But it seems fair to say that Bennett thinks of building as a kind of ontological dependence (forthcoming: §2.3). Jessica Wilson (2014) has recently defended a similar view about grounding: grounding claims serve as schematic placeholders for theses about various "small-g" grounding relations. Similarly to Schaffer, Wilson often uses 'grounding' and 'dependence'-talk interchangeably.[71] So without much of a stretch, she too can be interpreted as defending a kind of reductionism about ontological dependence. Despite some otherwise significant differences between the two versions of this general approach, in what follows I will generally refer to it as "the Bennett-Wilson view".[72]

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[71] In later work, Wilson (forthcoming) indicates that she now distinguishes between the two notions. However, the positive view about ontological dependence she gestures at is very similar to the view she defends about grounding in Wilson 2014.

[72] Importantly, J. Wilson doesn't endorse Bennett's reductionism about fundamentality. Rather, she argues that we should accept fundamentality as a primitive, and that some relations serve as "small-g" grounding

The most important difference between Dependence Minimalism and the Bennett-Wilson view is that the former treats ontological dependence as a weighted total of dependence factors, while the latter as existential quantification over them. On my view, for *x* to be a part of *y*, but not *vice versa*, is not a way for *y* to ontologically depend on *x*. It is a relation that merely contributes to, but isn't by itself sufficient for, ontological dependence. By contrast, according to the Bennett-Wilson view if *x* is a proper part of *y* or *x* is a member of *y* or *x* realizes *y*, or bears some other designated relation to *y*, then *y* ontologically depends on *x*.

This feature of the Bennett-Wilson view has an undesirable consequence that my view can avoid. Namely, so long as some relation R is a dependence relation, its instantiation by *x* and *y*, in that order, *guarantees* that *y* ontologically depends on *x*. For example, if the *x*s compose *y* then *y* ontologically depends on each of the *x*s. While this view explains neatly why parthood is evidentially relevant to ontological dependence, it yields a radically revisionary view about the evidential *weight* of parthood and the other dependence factors. While it is plausible that parthood is evidentially relevant to the direction of ontological dependence, hardly anyone thinks that the mereological facts simply *settle* whether wholes depend on their parts, rather than the other way round. But this is exactly what the Bennett-Wilson view seems to predict: if composition is a species of ontological dependence, then *y* ontologically depends on each of the *x*s if it is composed by them. By contrast, my view can make sense of the intuition that the direction of dependence is an open question *even once all the mereological facts are in*.

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relations only in conjunction with the absolute fundamentality facts. In what follows, I will ignore this aspect of Wilson's view, since what I'm interested in is a general approach to ontological dependence, not the details of Bennett's or Wilson's particular versions of it.

Asymmetric parthood is a basic dependence factor, but it is only one of the dependence factors: if the *x*s compose *y*, then other things being equal *y* depends on each of the *x*s; but other things may fail to be equal, in which case it could turn out that some of the *x*s depend on *y*. If Schaffer's arguments for priority monism are sound, this is exactly the case with the world and its parts.

1.5.2. The argument from formal properties[73]

This brings me to the second argument. As we have seen, the Bennett-Wilson view can explain the epistemic relevance of certain relations to ontological dependence, but it's bound to be revisionary about the weight of this evidence. In this section, I will argue for two claims. First, this threatens to make the Bennett-Wilson view revisionary about the formal properties of ontological dependence, too, while my view can stay neutral on the issue. Second, Dependence Minimalism can also explain why philosophers often disagree about these formal properties. Below I will go over these points in due order.

Ontological dependence is widely thought to be asymmetric: for any *x* and *y*, if *x* ontologically depends on *y* then *y* doesn't ontologically depend on *x*.[74] But there are possible cases in which *x* bears R to *y*, *y* bears R' to *x*, and both R and R' are dependence factors. If ontological dependence is something like existential quantification over specific dependence relations, we cannot avoid concluding that *x* and *y* depend on each other in such cases (cf. Bennett forthcoming: §2.6). Combined with certain first-order views, non-pluralist views suffer from essentially the same problem. For example, intuitively, the fact that properties conceived as Aristotelian universals cannot exist uninstantiated counts in

[73] I'm particularly grateful to Karen Bennett and Alex Skiles for helpful feedback on this section.

[74] See Lowe 1994, R. Cameron 2008b, Schaffer 2009, and Koslicki 2013, among others.

favor of their dependence on their instances, but the fact that the instances cannot exist without having their essential properties counts in favor of their dependence on their essential properties.

One might think that this is unlikely to pose a serious problem for pluralist views: with sufficiently fine-grained distinctions, we can always ensure that no two things bear *the same species* of ontological dependence to each other (for example, the standard answer in the case mentioned above is to say that Aristotelian universals generically depend on their instances, which in turn rigidly depend on their essential properties).[75] However, this answer gets things backward. As Barnes (ms) points out, the primary motivation for introducing these distinctions in the first place was precisely to avoid violations of asymmetry: even if ontological dependence turns out to be an asymmetric relation, the thought goes, at least each specific type of ontological dependence is asymmetric.[76] So, pluralism is already a defensive measure to solve the problem, rather than simply a view that avoids it.

Bennett argues, and pluralists often seem to suggest, that ontological dependence is a very general relation, and that for this reason it's not so bad if it fails to be asymmetric: what matters is that each specific dependence relation is asymmetric. However, I don't see how this addresses the worry either. The worry is that in many of the problem cases, it's implausible that two things ontologically depend on each other. (Note that one can share this worry even without assuming that ontological dependence is asymmetric; the point is merely that many particular instances of it appear asymmetric, despite featuring

[75] Barnes (forthcoming), however, argues that there are potential counterexamples even to the asymmetry of particular species of ontological dependence. See footnote 72 for discussion.

[76] See Lowe 1994: 38–40, K. Fine 1995: 286, and Correia 2005: 45 f11.

opposing dependence-inducing relations.) Now we are told that the general relation of ontological dependence is less basic than the specific ones. But why is this supposed to have any bearing on the asymmetry intuition? Compare *is larger than*. Andy the anaconda is longer, but lighter, than Elsa the elephant. Yet it seems patently false that they are larger than each other. If someone denied this claim, it wouldn't help to emphasize that *is larger than* is less basic than the specific comparative size relations, which are asymmetric; our intuition of asymmetry has nothing to do with that issue. The same goes for ontological dependence. If we started out with an asymmetry intuition about a particular case, it's far from clear why this intuition should go away merely upon accepting that ontological dependence is a general relation comprising several more fine-grained species.

For this reason, it's a significant disadvantage of a theory if it has to deny the asymmetry of ontological dependence. Dependence Minimalism doesn't have this disadvantage: just because there are opposing dependence factors between *x* and *y* it doesn't follow that *x* and *y* ontologically depend on each other, even if these factors balance out each other. Compare: even when the opposing relative largeness factors balance out each other, we are inclined to say that neither of two things is larger than the other, not that they are larger than each other. Likewise, we can say that in the case of a tie neither entity depends ontologically on the other, rather than that the dependence is mutual. At any rate, in the absence of precise rules governing aggregation it will likely be very hard to cite a plausible case in which the dependence factors exactly balance out one another. Furthermore, even if we did find such a case, there is nothing in the concept of an aggregative cluster that would force us to admit a single case of mutual dependence. Compare: even when the opposing relative size factors are even, we are inclined to say

that neither of two things is larger than the other, not that they are larger than each other. Likewise, when the dependence factors push into opposite directions with equal force, we can simply say that neither entity depends on the other, rather than that they depend on each other.

You might suspect that there is a tension here. If Dependence Minimalism makes it practically impossible to find a single instance of symmetric dependence, then why did I say a few paragraphs ago that the view was *neutral* with respect to the formal properties of ontological dependence? My answer will quickly bring out the second advantage of the view. Roughly, we can distinguish three positions in the extant literature on ontological dependence: (a) ontological dependence is asymmetric, (b) ontological dependence is not asymmetric, and not even antisymmetric: some things depend on each other; and finally, (c) ontological dependence is antisymmetric, but it fails to be irreflexive in a rather trivial way: while no two distinct things can depend on each other, everything ontologically depends on itself. All along I have been assuming the most popular position, (a). But this choice was not mandatory. With appropriate adjustments, we can make perfect sense of the rival views. Let me explain.

First, those who – like me – accept Dependence Minimalism and think that ontological dependence is asymmetric can nevertheless easily make sense of (b)-type views. We can appreciate this fact by asking what happens when (suppose) the dependence factors exactly balance out one another. If we take seriously the analogy with *is larger than*, the minimalist should say that neither entity depends on the other in such cases. However, there is nothing in the mere notion of an aggregative cluster that would force this verdict. The relation *is larger than* cannot hold asymmetrically, but the relation *is*

at least as large as, to just mention the closest example, can. If ontological dependence is more like the relation of being at least as large as, then it is possible that all things considered both *x* depends on *y* and *y* depends on *x*. Better yet, once we recognize that nothing in the notion of an aggregative cluster forces asymmetry, we can easily help ourselves to a promising conciliatory resolution of the dispute between (a) and (b)-style views. Recall what I said in section 1.3: there are *several* dependence-like relations in the vicinity of ontological dependence. It is entirely possible that some of these only differ in what the rules of aggregation say about cases in which there are enough dependence factors to make dependence plausible, but the factors are distributed too evenly to tilt the direction of dependence either way. I would say that there is a concept allowing for symmetric aggregation, ontological dependence*, and a concept ruling it out, the one I have been calling ontological dependence all along. 'Ontological dependence' can be used to mean either ontological dependence or ontological dependence*. Perhaps the linguistic conventions favor one candidate over the other. But even if this is so, the rival party's mistake is fairly superficial, and they are free to just *stipulate* a notion of ontological dependence with the desired formal properties. This resolution also meshes well with many of the putative examples of symmetric dependence. These examples often cite opposing dependence factors, and our verdict about them will presumably reflect on how we are thinking about the rules of aggregation.[77]

[77] I'm not suggesting that my strategy can deal with *all* putative cases of symmetric dependence. Barnes (forthcoming) cites two examples that I think require separate treatment. First, she mentions the problem of free mass about tropes: what forces certain kinds of tropes, for example shape and color tropes, to bundle – why cannot there be a color trope that doesn't combine with any shape trope? Barnes suggests that the problem goes away if we assume that the tropes symmetrically depend on each other, and cites Simons (1994) and Denkel (1996, 1997) as proponents of this view. Once we look into the details of Simons's and Denkel's work, however, we find that the idea of mutual dependence is inessential to their solutions. The notion of dependence Simons operates with is Husserl's foundation, which Simons defines

At this point, I need to discuss an important objection. One might worry that if ontological dependence is indeed an aggregative cluster, then *there is no* asymmetric notion in the vicinity of ontological dependence. To see why, take a toy model according to which there are exactly 3 dependence factors, R_1, R_2 and R_3, and something ontologically depends on another thing if the former bears a majority of dependence factors to the latter. Then we can construct a case in which *x* bears R_1 and R_2 to *y*, *y* bears R_1 and R_3 to *z*, and *z* bears R_2 and R_3 to *x*. Since the first member of each of these pairs bears two of the three dependence factors to the second member, we get that *x* depends on *y*, *y* depends on *z*, and *z* depends on *x*. Assuming that ontological dependence is transitive, we get a violation of asymmetry (as well as irreflexivity). Moreover, the details of the toy

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in purely modal and mereological terms (1994: 559); so his talk of mutual dependence could have been replaced with talk of complex patterns of modal and mereological relations. Denkel believes that the compresence of tropes is a mere physical (not metaphysical) necessity (1996: 37, 1997: 603–604), and in explaining this necessity he appeals to the Fregean notion of saturation: *in the actual world*, objects are compresences of tropes that completely saturate one another (1996: 191–192; 1997: 604–605). Denkel's solution makes no essential reference to mutual dependence, which is all the more obvious from the fact that he *criticizes* Simons's view as one that "proliferates principles, making use of both an internal relation binding properties and of a relation of dependence" (1996: 192 f31). This leaves us without any reasonably detailed view on which tropes could mutually depend on one another.

Barnes borrows her second example from Linnebo's (2008) discussion of non-eliminativist structuralist approaches to mathematical ontology. As Linnebo notes, structuralists sometimes claim that each entity in a mathematical structure depends on each other entity, but they rarely spell out what this means. Unfortunately, the details of Linnebo's story don't support Barnes interpretation. Linnebo's main contention is that mathematical entities are *individuated* by the structure in which they appear, and the notion of dependence Linnebo defines in terms of this notion of individuation markedly differs from any relation commonly recognized as a kind of ontological dependence. His claim is that certain mathematical entities weakly depend on each other, where "*x weakly depends* on *y* if and only if any individuation of *x* must make use of entities which also suffice to individuate *y*" (78, emphasis in the original). Now of course, one is free to use the expression 'ontological dependence' for whatever one wants. But this doesn't change the fact that what Linnebo calls mutual weak dependence is really just joint dependence on the realization of a mathematical structure (2008: 79).

Thus it seems to me that citing these examples as cases of mutual ontological dependence is simply misguided. Barnes offers three more examples of mutual dependence (events and their necessary constituents, immanent universals and their instances, and Armstrongian states of affairs and their constituents), which can be explained in terms of opposing dependence factors. The last one of these I discussed earlier; details of the other two are left to the reader.

model aren't important for the counterexample: all we need to assume is that ontological dependence doesn't require the instantiation of all dependence factors, and that no single dependence factors outweighs all the others by itself. With these assumptions we can always construct chains, which, if sufficiently long, will provide counterexamples to asymmetry.[78]

I think that the objection does show something significant: we can never ensure that an aggregative cluster concept is asymmetric merely by putting restrictions on the rules of aggregation; no matter how these rules are specified, *they* will leave room for chains that loop in the way described above. However, that doesn't mean we cannot often rule out loops on an independent basis. For instance, to keep things simple let's pretend that in our toy example, the three factors are three relations I described as basic: asymmetric necessitation, parthood, and ancestral set membership. Suppose that necessarily if *x* exists than so does *y*, but not vice versa, and that *y* is a part of *x*, but not vice versa. Suppose also that necessarily if *y* exists then so does *z*, but not vice versa, and that *z* is an ancestral member of *y*, but not vice versa. To complete the loop, *z* then would need to be both a part and an ancestral member of *x*, which seems impossible (assuming that parthood and membership are different relations, as I do throughout the chapter). While I have no space to go through every logically possible combination of dependence factors, I'm yet to be convinced that we can find one that credibly yields a loop. So even if it's true of any

[78] Thanks to Mike Raven and a very helpful audience at the 2016 Central APA for pushing me on this. As I learned from Nick Huggett and Gabe Rabin, the problem can be seen as an analogue of Arrow's Theorem: granting some fairly weak and independently plausible assumptions, we cannot coherently determine a group's preference profile. For example, in a group comprising of three people who rank their options as A>B>C, B>C>A, and C>A>B, respectively, we cannot coherently rank the preferences of the group as a whole. See Morreau 2014 for a survey.

aggregative cluster concept that nothing in the rules of aggregation forces it to be asymmetric, it's arguably still often the case that the nature of the relations it aggregates is such that the aggregate notion is asymmetric, after all. I submit that this is the case with ontological dependence.

On to irreflexivity: how can the dependence minimalist make sense of (c)-type views according to which everything trivially depends on itself? In laying out Dependence Minimalism I stipulated each dependence factor to be asymmetric, but this might be negotiable. It's easy to think of a concept – call it "ontological dependence**" – in the vicinity of ontological dependence that aggregates the broader notions of parthood, set-membership and necessitation, rather than their asymmetric versions. Presumably, everything bears to itself a significant subset of the "dependence** factors". It is then plausible to think that everything ontologically depends** on itself. After all, it is necessarily true of any *x* that if *x* exists then *x* exists. Moreover, if we assume that anything could stand in parthood relations, it is similarly plausible that everything is an (improper) part of itself. Furthermore, everything that can be a relatum of these relations trivially supervenes on and realizes itself. If this is all true and we treat the broader (non-asymmetric) notions as the genuine dependence factors, we will likely conclude that everything ontologically depends** on itself. So, my diagnosis is that the debate between those who think that nothing depends ontologically on itself and those who think that everything does boils down to disagreement over whether 'ontological dependence' means ontological dependence or ontological dependence**.

I find these diagnoses highly attractive, especially when it comes to irreflexivity. Though most philosophers assume without argument that ontological dependence is

irreflexive and asymmetric, some write as if it was not just true but *obvious* that everything depended on itself.[79] The fact that two such seemingly contrary theses strike their advocates as so obvious as to not even require argument stands in need of explanation, which my minimalist framework can provide. I side with the mainstream in thinking that ontological dependence is irreflexive, but even if I'm right, the opposing view is mistaken only in a fairly superficial way. In particular, those who think that ontological dependence is antisymmetric but not irreflexive could stipulate an aggregative cluster that uses non-asymmetric versions of my dependence factors and aggregates them using rules that allow for reflexive cases. The fact that Simons, Lowe and Thomasson treat the universal dependence of everything on itself as so obvious as to be barely worth mentioning is some evidence that they have all along had in mind something like this notion.[80]

Let me wrap up. If ontological dependence is asymmetric and irreflexive, as most philosophers think it is, then this is because it is an aggregative cluster that, even if the dependence factors "even out", yields the holding of the cluster in neither direction, rather than both. But there are also more liberal notions in its vicinity: one that aggregates the same relations but allows for symmetric cases, one that doesn't only aggregate asymmetric relations to begin with, and probably several further, less widely discussed relations, too. Which of these concepts is expressed by 'ontological dependence' is a question I cannot conclusively settle here. Perhaps it's irreflexive; perhaps not; it might even vary with the context. We don't need to choose from these options here. Suffice it

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[79] See, e.g., Simons 1987: 295, Thomasson 1999: 26, and cf. Tahko and Lowe 2015: §4.2.

[80] Jenkins (2011) may be an outlier: she offers several counterexamples to irreflexivity, indicating that she doesn't consider failures of irreflexivity a trivial matter. Her examples point beyond the scope of this chapter, since she also gives up the assumption that ontological dependence is a two-place relation, in

to say that the account sketched in the preceding paragraphs nicely explains why any of the extant views could appear entirely reasonable to its proponents: for any set of hypothesized formal properties there *is* an aggregative cluster in the vicinity of ontological dependence that really has those properties. I count this as a significant virtue of Dependence Minimalism.

1.6. Concluding remarks

Heavyweight approaches are usually motivated by the thought that ontological dependence cannot be defined in more familiar (especially modal) terms. However, even if the standard counterexamples conclusively demonstrate the failure of the Modal Analysis, ontological dependence may still have a conceptual explanation in familiar terms. It may be an aggregative cluster that aggregates various modal, mereological and set-theoretic relations, and whose unanalyzability is due to the lack of a knowable set of fully specific rules governing aggregation. In this chapter, I attempted to spell out this view in some detail and cited three sources of motivation for it. First, it delivers plausible results in a wide array of frequently cited cases. While I predict that Dependence Minimalism will strike most metaphysicians as a counterintuitive *theory* of ontological dependence, it delivers good enough results to serve justice to much of our philosophical *practice*. Second, the view explains a set of intuitive principles about ontological dependence that metaphysicians implicitly accept. When the relations I called dependence factors are instantiated, this constitutes significant but defeasible evidence for the instantiation of ontological dependence. Dependence Minimalism does a remarkably

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which case it fails to be irreflexive for a rather obvious reason: only two-place relations can be either reflexive or irreflexive.

good job explaining not only why the presence of such relations counts as evidence for ontological dependence, but also why this evidence is nonetheless defeasible. Third, the view can stay neutral about the formal properties of ontological dependence and can even explain disagreement over these formal properties.

What, then, is the resulting theory of ontological dependence? It's not quite analytic reductionism, since I didn't offer a full-blown conceptual analysis. It's also not exactly eliminativism, since I haven't said that there was no such thing as ontological dependence. But in spirit, Dependence Minimalism shares important features with both. Ontological dependence is a mere aggregative cluster and not the methodologically basic notion it's widely taken to be. We shouldn't structure our inquiries around it, since the questions we formulate in terms of it can be asked and addressed with more precision in broadly modal, mereological and set-theoretic terms. I therefore propose that 'ontological dependence' be altogether excised from the philosopher's vocabulary. It will cause no harm, and it will do a great deal of good: it will help us focus more on the deeper philosophical questions that all along underlay many of our inquiries into what depends ontologically on what.

Chapter 2

Grounding and the Argument from Explanatoriness

2.1. Introduction

In the last ten years or so, metaphysics has changed profoundly: it has become standard to understand a vast array of questions as questions of *grounding*, a supposedly explanatory and probably unanalyzable notion of metaphysical determination.[81] For a taste, here are some examples:

(*Socrates*) The fact that the singleton set {Socrates} exists is *grounded in* the fact that Socrates exists

(*Torture*) Torturing innocent people for no reason is wrong *because* it doesn't maximize utility

(*Mental*) S is in pain *in virtue of* the fact that her C-fibers are firing

Advocates of this trend are eager to speak of a "grounding revolution", to use the words of one of its leading advocates, Jonathan Schaffer (2016). Various expressions not long ago regarded with suspicion ('grounds', 'in virtue of', a distinctively metaphysical reading of 'because', etc.) are now gaining widespread acceptance as legitimate and even indispensable tools that are clear enough to speak for themselves.[82] According to

[81] See, for instance, K. Fine 2001, 2012a, Correia 2005: Ch. 3, Schaffer 2009, Rosen 2010, and many works to be cited later.

[82] Famously, Alex Oliver (1996: 69) not so long ago said that '"In virtue of" really ought to be banned'. I think his remark expressed a sentiment that was widely shared at the time.

revolutionaries, as I will refer to supporters of this trend, various philosophical theses and theories should be spelled out in terms of grounding.

Without doubt, in a purely sociological sense the grounding revolution succeeded, and it succeeded in an astonishingly short amount of time: just a few years ago Gideon Rosen could write that expressions like 'because' and 'in virtue of' "are no part of anyone's official vocabulary" (2010: 109), and this is clearly no longer the case. Theorizing about grounding became a legitimate area of inquiry in its own right, and formulating philosophical claims explicitly in terms of grounding is now widely accepted across various domains. But of course, that the revolution succeeded doesn't mean it was justified. I, for one, think it was a mistake: the ultimate wrong turn of contemporary metaphysics.

Anyone who shares my conviction faces the obvious question: if the grounding revolution was a mistake, why did it succeed so quickly? History is written by the victors, so, unsurprisingly, the standard answer is the revolutionary's. The notion of grounding, we are told, is nothing new. It is as old as Western philosophy, and philosophers have always been interested in questions about what grounds what. For example, Plato's famous Euthryphro dilemma – is what is holy holy because the gods love it, or do the gods love holy things because they are holy? – is best understood as a question about the direction of grounding. Moreover, an implicit interest in grounding was already in the background throughout the second half of the 20th century.[83] What is surprising is not

[83] For the Euthryphro dilemma as an example of grounding, see Schaffer 2009: 375, 2016, Correia and Schnieder 2012: 2–4, Raven 2012: 692–693, Chudnoff ms and A. Wilson ms. Berker ms provides some textual evidence that moral philosophers have been interested in questions of grounding at least since Hare 1952, but that following Hare many conflated grounding and supervenience. For more on this, see footnote 94.

that grounding receives so much attention today but that anyone ever thought it could be analyzed in other terms, for example entailment or supervenience. These analyses fail; if the revolution taught us anything, it is that the notion of grounding is clear enough to speak for itself. A few remaining advocates of the *ancien régime* may hold on, but one day skepticism about grounding will entirely be a thing of the past, much like Quinean skepticism about *de re* modality is today.[84]

As I will explain in section 2.2, I see the dialectic a little differently. I suspect that many philosophers who reject grounding – *reactionaries*, as I will refer to them – will be sympathetic to my reconstruction of the debate. (You might be just a conservative for resisting the revolution, but if you fight it even after it triumphed, you probably deserve to be called a reactionary.) In my view, we shouldn't accept as a datum that philosophers have always been interested in grounding. They have been interested in many different things, and their interests often had an explanatory aspect. Many revolutionaries are led to accept grounding on the basis of some sort of indispensability argument: grounding, they think, is indispensable to a certain kind of explanation. This argument, which I will refer to as the *Argument from Explanatoriness*, has been the primary motivation to add grounding to the metaphysician's toolkit. It is, to be sure, not the only one: it has also sometimes been argued that grounding is useful and perhaps indispensible for making sense of

[84] I'm not saying that all revolutionaries treat grounding as a notion we are already familiar with; see Trogdon (2013a) for a discussion of quotidian and non-quotidian views. I'm also not saying that all revolutionaries think of the pre-history of grounding as a history of failed attempts to analyze it; Schaffer (2009), Correia (2010) and Berker (ms) fit this description, while Rosen (2010), for example, doesn't. To complicate things further, there is also some disagreement over what the standard revolutionary story is; J. Wilson (2014), for example, criticizes most revolutionaries for assuming that the contemporary interest in questions about dependence and priority is new with Fine. As I see it, however, most revolutionaries only believe that it's the explicit recognition of grounding as an acceptable primitive that is new with Fine, not more general notions of priority and dependence.

fundamentality, ontological priority, or ontological dependence. I don't agree with any of these claims, but in this chapter I won't discuss them; I will focus exclusively on the Argument from Explanatoriness.[85] In section 2.3, I will distinguish between two concepts of grounding: grounding *qua* a type of explanation and grounding *qua* that which "underlies" such an explanation. Accordingly, I will distinguish two versions of the Argument from Explanatoriness: the *Expressive Power Version* and the *Unexplained Explanations Version*. I will discuss these arguments and explain why I find them unpersuasive in section 2.4 and sections 2.5-2.6, respectively. Finally, in section 2.7 I will address the worry that somehow my view leads to skepticism about causation. My conclusion in section 2.8 will be twofold. First, it's far from clear what the Argument from Explanatoriness even *is*. Second, no version of the argument establishes its intended conclusion.

Before moving on, let me make two clarificatory remarks about the broader project. The first concerns the scope and motivation of this chapter. My goal is to argue that there is no interesting sense of 'explanation' in which grounding is explanatorily indispensable. But lots of things get discussed under the label 'grounding', and my conclusion won't affect everything that people have ever meant by it. For example, on one way of understanding 'grounding', it refers to a relation of explanation whose subject matter conventionally falls into the domain of metaphysics (section 2.6). Perhaps some first-order debates about grounding could be understood as debates about this (by my lights not very interesting or distinguished) category of explanations. For example, perhaps

[85] See Correia 2005: 66 for a definition of ontological dependence in terms of grounding. For grounding-based definitions of fundamentality, see Schaffer (2009: 373), Rosen (2010: 116), and Leuenberger (2014a: 151), among others. For my own views on ontological dependence, see chapter 1.

certain questions concerning the pure logic of grounding could be raised as questions about metaphysical explanation in this sense. So, my question is not whether all grounding-talk is in bad standing; given how elusive the concept is, the answer to this question is almost certainly 'No'. My main concern is with the "applied grounding" literature: the recent trend in philosophy (not just in metaphysics) to reformulate otherwise familiar theses and disputes in terms of grounding.[86] I consider this an unfortunate trend; a "step backward", as Koslicki (2014: 307) puts it, which hinders rather than enhances our understanding. But whether I'm correct in thinking this is independent from whether there is, for example, a pure logic of grounding *qua* explanation in the conventionally demarcated domain of metaphysics. Perhaps there is; as it will emerge from the sections to follow, this wouldn't help us understand what distinctively explanatory value grounding is supposed to have.[87]

This leads to my second remark: I don't think there is any single thing that all revolutionaries mean by 'grounding', even if sometimes they write as if there is. The failure to appreciate this point is, I believe, the chief shortcoming of earlier criticisms of grounding. For example, Hofweber (2009) and Daly (2012) argue that grounding is unintelligible, while J. Wilson (2014) and Koslicki (2014) maintain that it cannot play the

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[86] In the last few years, many philosophers gave accounts of various phenomena explicitly in terms of grounding. See, among others, Witmer et al 2005, Rosen 2010 and Bader 2013 on intrinsicality, Rodriguez-Pereyra 2005, Schaffer 2010b and many others on truthmaking, Chudnoff 2011 on knowledge, Whitcomb 2012 on divine omniscience, Sartorio 2013 on free will and moral responsibility, Dasgupta 2014b on physicalism, and Carmichael 2016 on theories of properties. Examples could be multiplied; the applied grounding literature is already vast and steadily growing.

[87] The pure logic of grounding (Fine 2010b, 2012b) is about the logical connections among grounding statements, with no regard to their internal structure. The impure logic of grounding (Correia 2010, 2014; Schnieder 2010), on the other hand, concerns how grounding interacts with the logical connectives and the quantifiers. Other grounding skeptics who regard narrowly logical questions about grounding as largely irrelevant to their concerns include J. Wilson (2014: 576 f100).

explanatory role it was originally assigned to, and instead we need several ground-like notions.[88] However, I think it's a mistake to read the contemporary grounding literature as if it even *aimed at* a single shared subject matter. Consequently, we should be highly suspicious of any sweeping criticism that is meant to apply to all the different things revolutionaries have meant by 'grounding'. It's better to proceed by divide-and-conquer: I will distinguish two basic notions of grounding, and several possible ways to understand them. I will ask whether there is any more precise notion in the vicinity that is both explanatorily indispensible in some sense *and* a good candidate to be meant by some advocates of the grounding revolution. I will argue that there isn't.

2.2. The Argument from Explanatoriness

Recall the three examples we started with. These examples use three different locutions to express grounding, each familiar from the grounding literature: (Socrates) uses a relational idiom, (Torture) uses a connective, and (Mental) uses the prenective 'in virtue of' (prenectives are hybrid expressions with an argument place for formulas and another for terms). In this chapter, I will officially use the relational expression 'ground(s)' and will treat it as aiming to express a a two-place relation whose first argument place takes one or more facts and whose second argument place takes exactly one fact. My primary reason for treating grounding as a relation is convenience: the two most common theoretical roles grounding has been assigned to in the literature (metaphysical explanation and metaphysical production) are naturally cashed out in relational terms. Some philosophers

[88] See also Bennett 2011a and forthcoming for a related view. According to Bennett, 'grounding' has a broad use, in which it stands for a variety of "building relations", and a narrower use, in which it picks out one particular relation among these. Bennett's view about the first (but not necessarily the second) sense of 'grounding' is similar to Koslicki's and Wilson's.

prefer thinking of explanation and the worldly connections underlying it in non-relational terms. With little effort, the discussion to follow could be rehashed only using connectives. Due to space limitations I won't discuss how in much detail, though occasionally I will briefly indicate in the footnotes how certain issues could be formulated on the connective view.[89]

Examples like the aforementioned three are typically used to help the undecided reader get on board with the general notion of grounding. Of course, locutions like 'in virtue of', 'because', and 'ground', are often used to indicate causal connections. But, as revolutionaries are quick to point out, sentences like the ones listed above are more plausibly understood as positing some sort of non-causal link. A stronger claim is that these non-causal connections are intimately tied to a certain kind of explanation. This is a bit more controversial; some philosophers would contend that causal explanations are the only ones we can have and whatever is the relation between, say, the mental and the neurophysiological facts, it is not an explanatory relation.[90] Others would agree that there are meaningful 'Why?'-questions admitting of non-causal answers but add that these answers never provide explanations that deserve to be called metaphysical; perhaps they are explanatory in an evidential or teleological sense, but metaphysicians aren't (or

[89] For the connective view, see K. Fine 2001, 2012a, 2015, Correia 2010, 2014, and Litland forthcoming; for the relational view, see Rosen 2010, Audi 2012a, 2012b, Raven 2012, and Skiles 2015; and for a liberal version of the relational view according to which entities of any ontological category (not just facts) can stand in the grounding relation, see Rodriguez-Pereyra 2005, R. Cameron 2008b and Schaffer 2009. I am sympathetic to Trogdon (2013a), who suggests that liberal relationists are most charitably read as using the word 'grounding' for what facts-only theorists would call 'ontological dependence'.

[90] Lewis (1986: 221–224) is often cited as a famous defender of the view that all explanations are causal (see also Salmon 1984). The situation is not entirely straightforward, though. Lewis's main foil is the theorist who thinks there is non-causal explanation in the sciences, and accordingly his official thesis is that there are no non-causal explanations of particular events. He is silent on whether it is possible to non-causally explain things that are not events.

shouldn't be) in the business of *explaining* anything.[91] Still, I take it that even this stronger claim can be accepted by theorists of many stripes regardless of their attitude to grounding-theoretic metaphysics.

The interesting claim, which I want to focus on, is that the notion of grounding plays an indispensable role in a distinctively metaphysical kind of explanation, which at least some of the unstarred sentences express. Let me explain what I have in mind. Philosophy, and especially metaphysics, has always been replete with informal statements using 'because', 'in virtue of', 'grounds' and their kin. As I mentioned in the introduction, revolutionaries often treat this as evidence that the notion of grounding is familiar and has always been a central concern for philosophers.

This is where my story starts diverging from standard revolutionary folklore.[92] It is true that philosophy, and especially metaphysics, has always been replete with informal statements using 'because', 'in virtue of', 'grounds' and their kin. But these words were used differently before the grounding revolution than they are today. Sometimes they were used for a very general notion of explanation that is compatible with causal, evidential, and other non-causal readings. Even more often, they were used to express broad programmatic theses, usually made in the chapter's introductory paragraph later to be replaced by something more precise. Typically, before the grounding revolution philosophers would go on to clarify the three examples above with the following claims, or some more sophisticated versions thereof:

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[91] This seems to be Hofweber's view (2009: 269–70). Even more radically, Daly argues that grounding is unintelligible. He also rejects a proposed identification of grounding with metaphysical explanation, arguing that this would merely amount to re-baptizing the same concept (2012: 94). This indicates that he regards metaphysical explanation as unintelligible, too, though things are somewhat complicated by the fact that a few sentences later he also suggests that metaphysical explanation be understood in broadly modal terms.

(Socrates*) The existence of Socrates *necessitates* the existence of {Socrates}

(Torture*) The fact that torturing innocent people for no reason doesn't maximize utility *constitutes* the fact that it is wrong

(Mental*) The firing of S's C-fibers *realizes* S's pain

Call statements like the starred ones *reactionary counterparts* of the unstarred ones.[93] Now, it is important to emphasize that despite revolutionary claims to the contrary, such reactionary counterparts have typically *not* been proposed as analyses of sentences like the unstarred ones. To be sure, it was customary to start with 'in virtue of' claims and then move on to talk about supervenience, entailment, composition, and the like. But there is no good reason for thinking that anyone tried to use these relations to *analyze* 'in virtue of' or 'grounds'. First, textual evidence doesn't support this reading (I relegate my defense of this claim to a footnote).[94] Second, it seems too obvious that philosophers of various

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[92] Thanks to Karen Bennett for helping me rethink the dialectic in the next few paragraphs.

[93] You have probably noticed that none of these reactionary counterparts mention *supervenience*. The reason for this is largely pragmatic: today even most reactionaries believe that supervenience is not an explanatory relation (Daly 2012: 94 is an exception in this regard). As it will emerge in the sections to follow, I think it's far from clear what it means to say of a relation that it's explanatory; so I'm also not sure what the slogan that supervenience isn't an explanatory relation exactly amounts to. I have serious doubts about the contemporary consensus that supervenience is unexplanatory, but I won't rehash these doubts in the present chapter (however, see Kovacs ms-1).

[94] I have little to say about the frequently cited ancient sources. Obviously, both Plato's Euthryphro dilemma and many of Aristotle's works are concerned with notions of dependence and priority, and perhaps some of these notions are meant to be explanatory in some sense. But I find it anachronistic to assume that they match any contemporary notion of grounding. Revolutionaries usually mean something highly specific by 'grounding', which presupposes certain conceptual distinctions (e.g. between causal and non-causal determinative explanations) that Plato and Aristotle didn't make. Some Plato scholars, like Evans (2012), do construe the Euthryphro dilemma in terms of grounding, but this reading is far from

mandatory. Judson (2010), for instance, argues that though Plato did rely on some notion of dependence in setting out the dilemma, he was not clear in his mind about what that notion was. For a thorough discussion of Aristotle's various notions of priority, see Peramatzis (2011).

Whether contemporary philosophers recognized anything in the vicinity of grounding before Fine's work is a vexed question, but one I think should also be answered in the negative. Schaffer (2009: 363–4) interprets David Lewis as having subscribed to a supervenience analysis of grounding, but the quotation Schaffer provides to back this claim merely describes supervenience theses as amounting to "a stripped-down form of reductionism, unencumbered by dubious denials of existence, claims of ontological priority, or claims of translatability" (Lewis 1983: 365). This can at best be read as an *explication* of priority-talk in terms of supervenience (see below in the main text), not as an analysis of grounding. Loewer (2001), too, is widely but mistakenly cited as anticipating grounding. While Loewer does use 'in virtue of' in his preliminary characterization of physicalism, he then goes on to ask how physicalism should be "formulated" – he clearly doesn't think he already formulated it using the 'in virtue of' locution, which only needs to be analyzed. Similar remarks apply to Poland: he uses the words 'ontological grounding' (with quotation marks!) to sketch the broad idea of physicalism (1994: 18), but later identifies the problem of formulation as the "problem of making precise the physicalist dictum that *the physical facts determine all the facts of nature*" (1994: 201, emphasis in the original), and goes on to specify the relation in terms of realization (1994: Ch. 4).

Berker (ms) argues that grounding has been recognized in moral philosophy several decades ago. Among other things, he argues that years before Fine's work on grounding Michael DePaul (1987) pointed out that 'in virtue of' couldn't be analyzed in terms of supervenience. In fact, though, DePaul formulates his main point in many different (and not clearly equivalent) ways, none of which mentions analyzability: supervenience, he writes, cannot "explain" (427, 433), "underwrite" (430), or be used to "understand" (429, 438) 'in virtue of' claims in ethics. Berker also mentions Dancy's (1981) notion of resultance as an early predecessor of grounding, and interprets him as arguing that supervenience and resultance are distinct notions. Dancy indeed endorsed the distinctness claim, but this provides scant evidence that he anticipated grounding. In fact, he explicitly admits that 'because of' and 'in virtue of' locutions are "obscure" and not "at all helpful" for grasping the relation between the resultant and the resultance base (2004: 85). So, I think Dancy is more plausibly read as simply *leaving it open* what the relation between the two is, and indeed, he is often interpreted that way even in fairly recent work in metaethics. For example, FitzPatrick asks, "What exactly is the relation between the resultance base and the resultant property" (2008: 186)? Clearly enough, this question wouldn't make much sense if it could be answered by the one-word sentence, 'Resultance'. Instead, Fitzpatrick goes on to cash out 'in virtue of' talk in terms of constitution. In a similar spirit, Shafer-Landau identifies the relation between moral facts and that in virtue of which they obtain as constitution or realization (2003: 72–78), and so does Ridge (2007) in criticizing him. So, while Berker is right that many debates in metaethics and normative ethics are phrased in terms of 'in virtue of', 'because' and 'grounds', this doesn't show that moral philosophers long ago gave implicit recognition to grounding. What it shows is simply their (quite reasonable) preference to engage with issues in normative ethics and the theory of reasons without being sidetracked by difficult questions in moral metaphysics; this is exactly the sort of thing vague weasel words are good for! I should add that when spelling out 'in virtue of' claims, some recent works in ethics and value theory do explicitly mention grounding (or something in the vicinity). However, these works are already influenced by (and cite) Fine's work; see, for instance, Wedgewood (2007: Ch. 6) and Chang (2013).

Of the many alleged predecessors, it is probably Bolzano's *Grund* (see Bolzano 1837) that comes closest to some contemporary notion of grounding. However, even this is a bit of a stretch. Bolzano was mainly interested in what he called "objective explanation", thought of causal explanations as a special case of it,

stripes could agree on the unstarred sentences without agreeing on their reactionary counterparts. For example, it's easy to agree that *somehow* people are in pain in virtue of their C-fibers firing without agreeing on the precise relation between pain and C-fiber firing.

Offhand remarks using the words 'in virtue of', 'because' or 'grounds' give no indication that grounding has always been recognized as part of the metaphysician's toolkit. Rather, before the grounding revolution, statements using such expressions were typically *meant to be vague*. They gestured at impressionistic ideas to be sharpened later on, not already sharp ideas that may or may not lend themselves to analysis in ground-free vocabulary. So, the relationship between 'ground'-sentences and the reactionary counterparts philosophers offered in their place is better seen as *explication* in Carnap's sense: the replacement of a vague and unclear expression with a clearer and more precise one that plays the original expression's core functions.[95] Unfortunately revolutionaries often miss this point, and reactionaries rarely address it explicitly (though see Daly 2012: 89).[96]

Thus the dispute between the revolutionary and the reactionary shouldn't be understood as one about the analyzability of grounding. Virtually no reactionary believes today that 'in virtue of' or 'because' can be analyzed in reactionary terms. Instead, they

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and didn't seem keen on carving out an interesting class of metaphysical or otherwise non-causal explanations. For more on Bolzano's views, see Tatzel 2002 and Schnieder 2014. (Thanks to Ghislain Guigon and Tuomas Tahko for helpful remarks on the history of 'grounds'.)

[95] Carnap 1947: §2; cf. Quine 1960: 258–259

[96] J. Wilson (2014: 556) credits Ted Sider with the insight that idioms in the vicinity of 'ground' are often used to state sweeping doctrines. Note that Wilson doesn't accept my view about pre-grounding-era uses of 'ground' and 'in virtue of'; she thinks that these locutions have always been "schematic placeholders for *specific metaphysical relations*" (2014: 539, emphasis in the original).

usually treat these expressions as weasel words, in the sense that any sentence using them has a cheap substitute: a corresponding reactionary counterpart that also has the desired element of explanation, whatever that exactly means.[97] As I see it, this is the crucial point of disagreement between reactionaries and revolutionists: the latter will insist that the unstarred sentences cannot be traded in for reactionary counterparts, whether my starred sentences or more complicated ones. Reactionaries think that some reactionary counterparts can capture this element of explanation; revolutionists think that none can, so we should stop thinking of 'in virtue of', 'grounds' and 'because' as weasel words.

At this point, we need to smooth a wrinkle. Revolutionaries often emphasize that the sort of connection they want to capture with grounding cannot be captured in *modal* terms.[98] But of course, this much would hardly be contested even by the most hard-headed reactionaries. They typically think that many other relations – set membership, parthood, but probably also realization, constitution and micro-based determination – are also legitimate parts of the metaphysician's toolkit.[99] I say "probably" because sometimes the latter three are also informally introduced using the locution 'in virtue of'. But in the technical literature these relations are usually defined in fairly uncontroversial

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[97] I think Rosen has in mind something like this when he entertains (and then rejects) the idea that even if grounding is not analyzable in more familiar terms, it may still be "always dispensable in practice" (2010: 113). (Rosen's original point was about dispensability in favor of modal notions, which, I will shortly argue, is a bit of a straw man.)

[98] See, for instance, Schaffer 2009: 364–5, Rosen 2010: 110–114, K. Fine 2012a: 41 and Dasgupta 2014b. Koslicki (2014: 306) interprets these authors charitably: in their view, she points out, grounding would need to be distinct not only from purely modal relations like necessitation or supervenience, but also from familiar non-modal relations such as composition and realization.

[99] J. Wilson (2014) makes a similar point, though ultimately she concedes that these relations don't license 'in virtue of' claims all by themselves; they need to be amended by ancillary theses about fundamentality. As it will later emerge, I make no such concession.

(mereological, modal, spatiotemporal etc.) terms.[100] Perhaps the list could be further amended, but I will stop here; reactionaries may differ on exactly which notions they are happy with.

Bearing these qualifications in mind, the core revolutionary idea seems to be that 'grounds'-sentences such as (Socrates) capture the relevant explanatory connection between an explanandum and its explanantia, whereas sentences about necessitation, parthood, constitution etc., like (Socrates*), don't. Call this the *Argument from Explanatoriness*.

As stated this argument is fairly elusive, and much of the present chapter will focus on precisely how we should understand it. But it's clear that some version or other of this argument has been a recurring theme in many contemporary discussions of grounding. It is this argument Schaffer gestures at when he says that "supervenience is invoked to fake ordering structure within a flat ontology" (2009: 363–4) and approvingly cites Kim's famous remark that supervenience is "not an explanatory relation" (1993: 167). It is also this argument that Fine alludes to when he emphasizes that unlike modal idioms, 'in virtue of claims' also express "an explanatory or determinative connection" (2012a: 28). And it is this line of reasoning that Trogdon has in mind when he notes that "there is a close connection between grounding and explanation", but "no corresponding connection between explanation and either supervenience or modal entailment" (Trogdon 2013a: §2). My sense is that the argument also enjoys a wide underground

[100] See, for example, Robb 1997, J. Wilson 1999, Clapp 2001, Melnyk 2003, Polger 2007, and Shoemaker 2007 on realization; Armstrong 1978, Kim 1998 and Gillett 2002 on micro-basing (somewhat confusingly, Gillett refers to micro-basing as "dimensional relation"); and Thomson 1998, Baker 2000, 2007, and Koslicki 2008 on constitution. Baker is a good example of someone who uses 'in virtue of' locutions in informal contexts but not in her official formulations (see, e.g., 2007: 167–8).

support among people who never straightforwardly endorsed it in print.

In what follows, I won't be too concerned with how individual revolutionaries exactly formulate the Argument from Explanatoriness. Clearly, *something* with the general shape of this argument is widely thought to show that grounding is indispensible for certain explanatory purposes. It's this general style of argument that I'm interested in, but since it usually flies by in a few sentences, we need to spell it out in more detail. In the course of doing so, I will take the liberty to abstract away from certain (in the present context irrelevant) insider controversies and focus on the main dividing lines. On the other hand, I will introduce some conceptual distinctions that are not all familiar from the grounding literature. I do this to bring some clarity into a debate that is often muddled by the lack of a consistent terminology and (sometimes) a lack of recognition that the terminology is not used consistently. If some of my distinctions don't fit the way you are used to thinking about these matters, please bear with me. Hopefully, toward the end of the chapter my rationale for cutting up the terrain the way I chose to will become clear.

2.3. Two concepts of grounding

Until now, I have been deliberately speaking vaguely. This is because while all revolutionaries agree that there is a close connection between grounding and explanation, there is little agreement over what this connection is. Consequently, it is not clear what it would take for a reactionary counterpart to capture the desired explanatory element and adequately replace the relevant grounding sentence. The answer depends on how grounding fits into a popular picture that distinguishes between explanations and their worldly correlates. It helps to start with a familiar distinction between causation and causal explanation. Take the following two sentences:

($John_{c\text{-}expl}$) John's eating spoiled meat *causally explains* his food poisoning

($John_{cause}$) John's eating spoiled meat *caused* his food poisoning

The first sentence is about causal explanation; the second is about causation. It's easier to understand the distinction once we disambiguate the obscure expression 'explanatory relation' (to bring out the analogy with grounding, let's assume that the relata of both causation and causal explanation are facts; nothing turns on this). In one sense, an explanatory relation is something similar to causal explanation: a species of the general relation of explanation. ($John_{c\text{-}expl}$), for example, purports to be about the fact that the fact that John ate spoiled meat caused the fact that he got food poisoning. In the '[', ']' notation customarily used to represent facts: [John ate spoiled meat] causally explains [John got food poisoning]. Call such facts about what explains what *explanation facts*.

By contrast, ($John_{cause}$) purports to be a fact about causation: the fact that [John ate spoiled meat] *causes* [John got food poisoning]. Causation is an explanatory relation, but not in the sense of being a species of the explanation relation. Rather, if the relata stand in the relation of causation, then this is somehow responsible for the fact that they also stand in the explanation relation (more on what this means in a moment). Accordingly, let's call facts like [[John ate spoiled meat] causes [John got food poisoning]] *explanation-making facts*. We don't need to reify facts to make sense of the kind of distinction I have in mind: we could make an analogous distinction between two kinds of 'because'-sentences. But for reasons that are best relegated to this footnote[101], I think that 'because'-talk

[101] I prefer to avoid 'because'-talk because the expression introduces ambiguities that are better avoided. Namely, 'because' can be understood either as expressing explanation (Fine 2012a, Schaffer 2012: 23) or

encourages certain confusions that don't arise with 'explains'. So, I will stick to the relational idioms.

While the analogy with causal explanation is often noted, there is disagreement over whether 'ground' expresses explanation or explanation-making. Consider

(Socrates$_{\text{met-expl}}$) [Socrates exists] metaphysically explains [{Socrates} exists]

(Socrates$_{\text{met-expl}}$) is *about* explanation. But if the kind of explanation revolutionaries have in mind is anything like causal explanation (a big "if", as I will argue in sections 2.5-2.7), there is also an explanation-making fact "responsible" for this explanation fact. Since it is a matter of controversy how far the analogy between grounding and causation goes, I will use the word 'production' to express whatever is supposed to be the non-causal analogue of causation.[102] That is, 'metaphysically explain'-sentences express metaphysical

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whatever connection is responsible for explanation (cf. Correia and Schnieder (2012: 23), who argue that 'because' expresses existential quantification over "priority relations"). Long before grounding was anywhere on the scene, Strawson (1985: 116) also noticed that various expressions in the vicinity of 'because' – 'due to', 'the reason why', 'responsible for', 'owed to', etc. – are systematically ambiguous between causation and explanation. These ambiguities don't arise with 'causally explains' and 'causes', and their soon-to-be-introduced non-causal analogues (except for a complication I will discuss in Section 2.5). That being said, we could simply *introduce* the connective-counterparts of these notions, for example 'because$_{\text{causation}}$' and 'because$_{\text{causal explanation}}$', and say that each true 'because$_{\text{causal explanation}}$'-sentence is true because$_{\text{explanation}}$ a 'because$_{\text{causation}}$'-sentence is true. Note that those who deny that causation is a relation would need such connectives anyway, irrespective of what they think about grounding (cf. Lewis 2004: 76–77). Many thanks to Louis deRosset for helping me think more clearly about these issues, and about what, if any, difference the connective view makes to the debate.

[102] This might be a relation or a unified set of relations; or we can allow that 'produce'-sentences are elliptic for whatever is expressed by 'because$_{\text{production}}$'-sentences. Sider (2011: 145), Schaffer (2012: 122; forthcoming) and A. Wilson (ms) use the expression 'metaphysical causation' for what I call 'production' (see also Sosa 1980 for an early anticipation of this notion). It's hard to find a word that has not already been used for something else. Hall (2004) distinguishes between two concepts of causation, causal dependence and causal production, and A. Wilson (ms) follows him in drawing a similar distinction between metaphysical causal dependence and metaphysical causal production. The one he thinks best captures the notion of grounding is dependence, not production. However, when I speak of 'production' I

explanation, and 'produce'-sentences express that which "underlies" metaphysical explanation the same way causation underlies causal explanation. Then revolutionaries can maintain that if (Socrates$_{\text{met-expl}}$) is true, the existence of Socrates also has to *produce* the existence of {Socrates}:

(Socrates$_{\text{prod}}$) [Socrates exists] produces [{Socrates} exists]

Contemporary revolutionaries roughly divide into two groups: those who understand (Socrates) as (Socrates$_{\text{met-expl}}$), a sentence about metaphysical explanation[103], and those who understand it as (Socrates$_{\text{prod}}$), a sentence about production.[104] These two concepts of grounding correspond to two different versions of the Argument from Explanatoriness. Suppose that by 'grounding' we mean a kind of explanation. Then 'ground'-sentences are about this sort of explanation, and the complaint against reactionary counterparts is that they cannot say anything about it: no combination of reactionary-friendly expressions expresses that this distinctively metaphysical kind of explanation takes place between an explanans and an explanandum. Call this the *Expressive Power Version*.

Suppose, on the other hand, that by 'grounding' we mean not metaphysical explanation but production instead. Then the debate between the revolutionary and the reactionary will be about what sort of facts are responsible for the relevant explanation facts: facts about production, or facts about necessitation, parthood, realization, etc. This

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don't have in mind this distinction. I simply mean a relation that isn't identical but is in some yet-to-be specified sense intimately related to metaphysical explanation.

[103] K. Fine 2001, 2012a; Dasgupta 2014a, 2014b; Litland forthcoming

[104] Audi 2012a, 2012b; Schaffer 2012, 2016; Leuenberger 2014b; Skiles 2015; A. Wilson ms

raises the general question of what the relation is between the worldly phenomena and the explanations they "make for". Philosophers often rest content with vague expressions ("underlies", "backs", "underwrites", etc.) without specifying what the precise connection is supposed to be.[105] This may be appropriate for some purposes but is not sufficiently clear if one's goal is to *argue* that grounding *qua* production is explanatorily indispensable. The reading I find most plausible is that production *explains* certain explanation facts. More precisely:

> (*Backing = Explanation*) If $\varphi_1 \ldots \varphi_n$ produce ψ, then [$\varphi_1 \ldots \varphi_n$ produce ψ] explains [$\varphi_1 \ldots \varphi_n$ metaphysically explain ψ][106]

Someone who accepts (Backing = Explanation) could press the following version of the Argument from Explanatoriness. It should be agreed on all hands that there are metaphysical explanation facts in at least some sense of the word 'metaphysical'. We still need an account of what *explains* these facts. The revolutionary has such an account: every such fact is explained by a production fact, just like every causal explanation fact is explained by a causation fact. The reactionary has no such story because she doesn't appeal to production, and the reactionary counterparts can't do this job. It is in this sense that grounding (production) is explanatory but necessitation, constitution, composition

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[105] This is as true in the philosophy of science literature on explanation (Ruben 1990: 201, Kim: 1994: 57, Strevens 2008: 25) as in the grounding literature (Audi 2012b: 687, Schaffer 2016).

[106] See Schnieder 2010: §1.d and 2014: 333–334 for a similar view. Readers may at this point start wondering how the forthcoming discussion relates to a puzzle recently raised about grounding: what grounds the grounding facts? I have no space to get into this here; see Bennett 2011b, forthcoming: Ch. 7, Sider 2011: 106–112, deRosset 2013, Dasgupta 2014b, and Litland forthcoming.

and the like are not. Call this the *Unexplained Explanations Version*.[107]

Before proceeding, let me make two more remarks. First, I presented the Expressive Power Version and the Unexplained Explanations Version as representing two different ways of thinking about grounding. This might give the impression that adherents of the two arguments have a serious disagreement over what grounding *is*, but I think the two parties simply mean different things by 'grounding'. For instance, Schaffer (2016) criticizes Fine for "conflating" grounding with metaphysical explanation, but in my book there is no conflation at all: Fine simply isn't interested in the relation that Schaffer calls 'grounding' and focuses instead on metaphysical explanation itself.[108] Second, given the way most grounding theorists write, it is natural to read adherents of grounding *qua* metaphysical explanation as endorsing the Expressive Power Version and friends of grounding *qua* production as endorsing the Unexplained Explanations Version. But these choices are not mandatory. Whether we mean production or metaphysical explanation by 'grounding' is a matter of bookkeeping, so either theorist could adopt either argument. One could also easily combine the two, insisting that production and metaphysical explanation are *both* indispensable for metaphysics. I won't consider this view, since I don't think it would add anything to the discussion; if we can answer the two arguments separately, surely we also have a response to their combination.

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[107] Perhaps some revolutionaries would prefer to say that facts of the form [$\varphi_1 \ldots \varphi_n$ produce ψ] *produce*, rather than explain, facts of the form [$\varphi_1 \ldots \varphi_n$ explain ψ]. However, this principle cannot be used to make anything in the ballpark of the Argument from Explanatoriness. For now the argument would need to be that the reactionary has no story to tell about what produces the production facts. And this would obviously beg the question, since the reactionary is not yet on board with the notion of production.

[108] Schaffer also criticizes Fine for representing grounding with a sentential connective rather than a predicate, arguing that this might be acceptable for explanation but clearly isn't the right approach to grounding (*qua* production). But as I argued in footnote 101, the debate between relationists and connective theorists is in fact orthogonal to the production / explanation distinction. Thanks to Eric Rowe here.

All this may appear a bit complicated, for which the double life of 'grounding' is at least in part to blame. What is important is that there are two different versions of the Argument from Explanatoriness that, on the face of it, aim to establish quite different conclusions. In the forthcoming sections, I will discuss them in more detail. For the sake of clarity, from now on I shall stop using the word 'grounding' in my official formulations and will stick to the clearer expressions 'production' and 'metaphysical explanation' instead, except in contexts where it's important to keep the ambiguity. Accordingly, I will refer to revolutionaries who identify grounding with production as p-theorists (short for 'production theorist') and to those that identify it with metaphysical explanation as e-theorists (short for 'explanation theorist'). I will start with the Expressive Power Version.[109]

2.4. The Expressive Power Version

The first version of the Argument from Explanatoriness is concerned with expressive power: grounding sentences *express* the relevant sort of metaphysical explanation, but their reactionary counterparts don't. (I'm using 'express' broadly, to also include

[109] In his recent work, Trogdon (ms) defends a view that doesn't neatly fit the e-theory / p-theory distinction (he presents it as neutral between the two). The basic idea is that grounding explanations are similar to what Jackson and Pettit (1990) call "program explanations": roughly, grounding claims are explanatory because whenever they are true, the entities that make true the grounding proposition constitutively determine the entities that make true the grounded proposition (Trogdon construes grounding as a relation between propositions; with little difficulty, his characterization could be reframed in terms of the entities the grounding and grounded facts are about). 'Constitutive determination' serves as a placeholder for any of the following relations: singleton set membership, the determinate-determinable relation, material constitution, realization, and micro-basing. Trogdon's view certainly deserves further discussion. Here I just note that he proposes it in a defensive manner, to address a version of grounding skepticism according to which grounding claims are unexplanatory. However, it's not clear how the view could be used to make a version of the Argument from Explanatoriness. It seems to me that all the explanatory work is done by the five relations Trogdon considers constitutive determination relations, in which case the notion of grounding isn't indispensible for metaphysical explanation.

conceptual entailment.) In the case of Socrates and {Socrates}, for example, the argument will go as follows:

Expressive Power Version

(E_1) ($Socrates_{met\text{-}expl}$) expresses the explanatory connection between [Socrates exists] and [{Socrates} exists]

(E_2) Nothing acceptable to the reactionary expresses the explanatory connection between [Socrates exists] and [{Socrates} exists]

Therefore,

($Socrates_{met\text{-}expl}$) is indispensable for expressing the explanatory connection between [Socrates exists] and [{Socrates} exists][110]

The argument's upshot is that if we want to highlight the explanatory aspects of a metaphysical thesis, we cannot avoid grounding-talk. It should be clear that for all the argument says the "underlying" explanation-making connections, or "the fundamental nature of reality", may well be captured in modal, mereological, set-theoretic (etc.) terms; it's just the fact *that* these connections are of the intended explanatory sort that cannot be so captured. So the natural question to focus on is what it is about metaphysical explanation that cannot be expressed in reactionary vocabulary. We can distinguish two readings of (E_2):

[110] See K. Fine 2012a, Dasgupta 2014b, and Litland forthcoming. Litland is the one who comes closest to explicitly making this argument. As above, formulating these premises in relational terms is convenient but not essential. We could rephrase the argument in terms of the connective '$because_{met\text{-}expl}$' and ask whether reactionary counterparts can express what '$because_{met\text{-}expl}$'-sentences express.

(E_2^{gen}) Nothing acceptable to the reactionary expresses that the relation between the existence of Socrates and the existence of {Socrates} is a relation of *explanation*

(E_2^{spec}) Nothing acceptable to the reactionary expresses that the relation between the existence of Socrates and the existence of {Socrates} is *metaphysical*

The two readings press very different charges against the reactionary. (E_2^{gen}) says that no reactionary counterpart of ($Socrates_{met\text{-}expl}$) can be found because no candidate acceptable to the reactionary can express that there is *any* kind of explanation relation between the existence of Socrates and the existence of {Socrates}. Theses formulated in modal, mereological, set-theoretic (etc.) terms can't express metaphysical explanation for the simple reason that they cannot even express explanation *simpliciter*. By contrast, according to (E_2^{spec}) the problem lies not with the general notion of explanation but with the ability of sentences like (Socrates*) to convey that the explanation relation holding between the explanans and the explanandum is metaphysical. Call the first reading the *General* and the second the *Special* Expressive Power Version.

The General Expressive Power Version in effect assumes that the concept of explanation itself is not acceptable to the reactionary. This is a strange assumption to begin with, since the reactionary agrees that the notion of explanation is in good standing. Perhaps the problem is supposed to be that the reactionary has to accept 'explains' as a primitive (or some cognate such as 'because', 'in virtue of', etc.) and cannot express it in non-explanatory terms. But if this is what the argument is trying to show, there is

something very odd about mainstream discussions of grounding. First, the general literature on explanation reached this conclusion long ago; we can learn this much from the series of failed attempts to fix Hempel's D-N model of non-probabilistic explanation.[111] Very few philosophers think today that *any* sentence that doesn't use explicitly explanatory terms expresses explanation. Second, while it required philosophical insight to conclude that supervenience, necessitation, and other familiar relations don't always "back" explanations, it is plainly obvious that they don't conceptually entail them. Even in the heyday of reactionary metaphysics, nobody would have thought that sentences about set membership, necessity, composition (etc.) had explanatory content. We can see this merely by reflecting on the relevant concepts, without getting into tricky cases involving intensionally equivalent explananda and explanantia. Accordingly, the familiar reactionary-friendly notions have never been introduced with the intention to express explanatory connections. Their role was, rather, to "back" or explain them. For this reason, I think that (E_2^{gen}) is false: the general concept of explanation *is* acceptable to the reactionary.

I will proceed on the assumption that if there is an interesting argument here, it is the Special Expressive Power Version: the question is not whether the *general* notion of explanation can be expressed in reactionary terms. We should instead interpret the e-theorist as accusing the reactionary of not being able to express that some explanations are *metaphysical*. Consider, for instance,

[111] See, for example, McCarthy 1977, Achinstein 1983: Ch. 5, and Ruben 1990: 196–198. As Nickel (2010) points out, even most of the seemingly more ambitious theories of explanation are really just theories of explanation of a special kind.

(Socrates$_{\text{gen-expl}}$) [Socrates exists] explains [{Socrates} exists]

(Socrates$_{\text{gen-expl}}$) only uses the *general* notion of explanation. The e-theorist could argue that (Socrates$_{\text{gen-expl}}$) still suffers from a deficiency: it fails to express that the explanation is of the right sort. And the same goes for other 'ground'-free sentences, even if they use the general notion of explanation: they don't express that the explanation is metaphysical.

This variety of the Expressive Power Version aims at the right target. However, it still strikes me as unconvincing. There are various interpretations of the 'metaphysical' in 'metaphysical explanation' that don't require us to go beyond the conceptual tools available to the reactionary. They all emphasize features that e-theorists (as well as p-theorists) frequently cite when characterizing metaphysical explanations.[112]

First, the reactionary can say that metaphysical explanations are simply *non-causal* explanations. Though sometimes revolutionaries write as if this is what they have in mind[113], it's unlikely that they really mean it. On the face of it, teleological or mathematical explanations, or scientific explanations that only cite laws, are non-causal

[112] We need to get a potential complication out of the way. "Moderate grounding pluralists", as Berker (ms) calls them, think of grounding as a disjunction – an importantly unified disjunction, but disjunction nonetheless – of normative grounding, metaphysical grounding, natural grounding, and perhaps some further primitive notions, analogously to the more familiar distinctions among normative, metaphysical and natural necessity (Fine 2012a). Other revolutionaries ("grounding monists"), such as Berker himself, take issue with this view. Unfortunately, it is hard to characterize the target notion of metaphysical explanation without choosing between these views: Fine will think that metaphysical explanation is a special case of the kind of explanation associated with grounding, while his opponents will think that it's simply *the* kind of explanation associated with it. Below I will discuss three possible ways to understand the 'metaphysical' in 'metaphysical explanation'. The first and the third are closer in spirit to grounding pluralism, while the second seems to square better with the moderate pluralist view. (A fourth option, an essentialist understanding of 'metaphysical', will be relegated to a footnote.)

[113] Correia and Schnieder 2012, Correia 2014

too.[114] But it's pretty clear that revolutionaries don't mean to include them in the targeted set of explanations. Either way, reactionaries can simply take the non-causal characterization as a starting point and then exclude other types of explanation to express that a certain explanation is metaphysical in the intended sense. For example, they can say that (i) [Socrates exists] non-causally explains [{Socrates} exists], and (ii) [Socrates exists] doesn't F-explain [{Socrates} exists], where 'F' encompasses whichever kinds of non-causal explanation we want to exclude from the range of metaphysical explanations.

Second, the reactionary can use 'metaphysical explanation' to mean something like "constitutive explanation" in which the explanandum (or the entities it involves) somehow "consists in" the explanantia (or the entities they involve).[115] How should we understand the word 'constitutive'? There are two options. It might be used as shorthand for a finite list of relations, for example composition, material constitution, set-membership, and micro-basing. In that case, all the reactionary has to do is replace 'metaphysical' with a disjunction of the relations on this list. Alternatively, one might use 'constitutive' as a vague expression for an open-ended list: metaphysical explanations are constitutive explanations, and constitutive explanations are those that appeal to "roughly" those relations on the list. This use, too, is available to the reactionary, since reactionaries (of the kind I'm interested in) already accept 'ground', 'in virtue of' and 'because' as vague

[114] The general explanation literature usually follows Hempel 1965 in mostly focusing on causal explanation, but most philosophers (including Hempel himself) also recognize non-causal forms of explanation. Achinstein (1983: Ch. 7–8), for example, discusses in detail all of the following: (i) special-case-of-law explanations, (ii) classification explanations, (iii) identity explanations, (iv) derivation explanations, (v) functional explanations. None of these plausibly belongs to the set of explanations revolutionaries intend to capture with 'grounding'. For mathematical explanation, see Steiner 1978 on explanatory proofs and A. Baker 2005 on mathematical explanations in the empirical sciences.

[115] This notion of metaphysical explanation seems to be at work in Rosen 2010, K. Fine 2012a, Raven 2013, and Skiles ms.

expressions used to state programmatic sweeping claims.[116]

A third possibility is to claim that an explanation is metaphysical when it belongs to a certain subject matter.[117] Thus understood, 'metaphysical explanation' is akin to 'biological explanation': the metaphysical explanation facts all belong to the same conventionally demarcated domain, but they aren't necessarily explained by explanation-making facts featuring the same relation. This interpretation yields a fairly heterogeneous set of explanations, but the reactionary has no problem expressing that her explanations belong to that set. Relations frequently discussed in metaphysics textbooks, taught about in philosophy classes with the word 'metaphysics' in their title, etc., count as metaphysical according the linguistic conventions in place, but there is no deeper reason why they do.[118] Modally robust relations tend to make for metaphysical explanation, but so do

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[116] Recently, Skiles (ms) – otherwise a p-theorist – has attempted to spell out the constitutive connection in terms of fact-constituency: roughly, facts $f_1 \ldots f_n$ ground fact g just in case the obtaining of g consists in the obtaining of f_1, the obtaining of f_2 … and the obtaining of f_n. Views like Skiles's may be useful in dissolving the worries of extreme grounding skeptics who think that the notion of grounding is unintelligible (Daly 2012). But seen as an attempt to address the worry I expressed above, they just push around the bump in the carpet (note that Skiles's theory wasn't designed to address my brand of grounding skepticism). Our goal is to find an interesting species of explanation that the reactionary supposedly cannot express but the revolutionary can. To convince the reactionary that such a species exists, the revolutionary has to show that various putative cases fall under it – pointing at the similarities among constitution, composition, micro-basing (etc.) may go a long way in this regard. Skiles, however, employs a highly abstract and general notion of the obtaining of one fact consisting in the obtaining of others. And it seems hopeless to convince the reactionary that all putative cases display this kind of fact-constituency without antecedently convincing her that they are all cases of metaphysical explanation. Note that the problem is not that the putative cases are not similar enough (as argued in Koslicki 2014 and J. Wilson 2014). Rather, it is that *if* there is a precise way to state what belongs to the relevant similarity class, it either has to include a finite list of relations acceptable to the reactionary or a blanket reference to fact-constituency. In the former case, the reactionary can replace the 'metaphysical' in 'metaphysical explanation' with a reference to this list, while in the latter case she can reasonably deny that the revolutionary provided an independent way of picking out the relevant similarity class.

[117] Sometimes this seems to be Schaffer's (2009) notion of metaphysical explanation, though being a p-theorist, he uses 'grounding' for production, rather than metaphysical explanation itself.

[118] Trenton Merricks put this better than I could: "Consider [statements about determinisim, fatalism, the property ontology, persistence, composition, and the like]. It is false […] that there is some […] single unified topic that every one of these claims is about. Yet they all are metaphysical claims. Maybe they are all

"constitutive" relations. For this reason, any competent user of the word 'metaphysical' can infer that sentences about explanation citing set-membership, composition, or even entailment, express metaphysical explanation: they obviously express explanation (they use the word 'explain'!), and they express further information that according to the linguistic conventions in place makes their subject matter metaphysical. Thus '[Socrates exists] necessitates and constitutively explains [{Socrates} exists]', for example, does express *metaphysical* explanation.[119]

These interpretations aren't exhaustive. But they all allow the reactionary to reject (E_2^{spec}): there *is*, as it turns out, a way to understand metaphysical explanation that can be expressed in vocabulary acceptable to the reactionary. Below, I will address two objections to the conclusion I have just reached. The first objection is that none of the above interpretations captures what the revolutionary means by 'metaphysical explanation'. The second objection is that at least one of them does, and precisely for this reason the view I presented belongs to the revolutionary camp.

Let's start with the first objection. The e-theorist might complain that the characteristics mentioned above (that metaphysical explanations are non-causal, or

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metaphysical because their content is interrelated by 'family resemblances'. Or maybe they count as metaphysical not only because of their content, but also in part because of historical accident. Or maybe there is some other explanation. Here we have a question about why we taxonomize philosophical claims as we do. But I do not think that much hangs on the answer to this mildly interesting question." (2013: 722)

[119] A fourth option might be to understand the 'metaphysical' in 'metaphysical explanation' in terms of essence. For example, perhaps an explanation of [a is F] by [b_1 is G_1]…[b_n is G_n] is metaphysical iff it lies in the essence of [a is F] that for any x, if x is F then there are $y_1 \ldots y_n$ such that [y_1 is G_1]…[y_n is G_n] explain [x is F] (this suggestion is loosely based on K. Fine 2012a: 75–78; see also Audi 2012b: 693–696). I don't think this is a promising way to understand the 'metaphysical' in 'metaphysical explanation'. It presupposes a non-modal notion of essence (cf. K. Fine 1994), about which many of us remain skeptical (I'm especially influenced by Cowling 2013 here; see also Brogaard and Salerno 2007 and Wildman 2013). Whether my skepticism is warranted or not, it would be odd if the master argument for the indispensability of grounding turned on the indispensability of a notion at least as controversial as grounding itself.

constitutive, or belong to the subject matter of metaphysics) are imperfect ways of gesturing at what she means by 'metaphysical explanation'. This shouldn't be surprising; after all, revolutionaries tend to agree that grounding is unanalyzable. But if that is so, none of the uses of 'metaphysical explanation' considered above quite expresses the *e-theorist's* notion of metaphysical explanation.[120] My response is that I didn't intend to express the e-theorist's notion. As I argued in section 2.2, pre-grounding era reactionary views should be seen as attempts to explicate, rather than analyze, 'in virtue of'. I take a similar approach to 'metaphysical explanation': the non-causal (or non-causal and non-F), constitutive, and subject matter based approaches aren't intended as analyses of the e-theorist's notion but as replacements thereof with something (by the reactionary's lights) more serviceable. What is important to see is that the three explications sketched above undermine the motivation for the e-theorist's notion. It's undeniable that '[Socrates exists] necessitates [{Socrates} exists]' fails to express the explanatory connection between the relata. We can even grant that ($\text{Socrates}_{\text{gen-expl}}$) fails to express the *kind* of explanatory connection at issue. However, we would need some further reason to accept that anything is missing from '[Socrates exists] necessitates and constitutively explains [{Socrates} exists]' (where 'constitutive' stands for the disjunction of the relations I mentioned above). So, the point is not that the reactionary can express the e-theorist's notion of metaphysical explanation, but that she can express any notion of metaphysical explanation *worth expressing*.

The second objection is that one of my interpretations *does* capture the e-theorist's

[120] According to one version of this complaint, metaphysical explanation might be cointensional with one or more of the above notions, but if so, this is a surprising discovery rather than a matter of stipulation. Thanks to Jon Litland here.

notion, and that this is grist in the e-theorist's mill.[121] For example, even if 'metaphysical explanation' can be understood as constitutive explanation, this notion is useful if metaphysical explanations in this sense share some interesting features. My answer is twofold. First, as I use the term, one is a revolutionary in so far as one deems a salient candidate notion of grounding *indispensable*. The present proposal makes the far weaker claim that it's sometimes *useful* to speak broadly of metaphysical (*qua* constitutive) explanation. Second, though 'grounding' has been used in so many different ways in the literature that it's virtually impossible to cut up the terrain in an uncontroversial way, my way of drawing the line between revolutionaries and reactionaries is not arbitrary. I consider it a core revolutionary thesis that we can do things with grounding we couldn't do without it. This assumption plays a significant role in the "applied grounding" literature: grounding-based formulations of physicalism, moral realism and intrinsicality deserve our attention, we are told, because they introduce concepts that philosophers before the grounding revolution deprived themselves of but cannot do without. But if 'grounding' stands for nothing more than an explanation citing one of the relations that figure on the list of constitutive relations, this assumption is false, and it's hard to make sense of the recent enthusiasm about grounding. In fact, this use of 'grounds' and 'in virtue of' was the standard use *before* the grounding revolution.

At this point it's worth reminding ourselves of something I said in section 2.1. Given the variety of ways philosophers use the word, we should be skeptical of sweeping attacks on every possible use of 'grounding'. If all you mean by 'grounding' is metaphysical explanation, and by this you mean an explanation that cites familiar relations from some

[121] Thanks to Jon Litland and Shamik Dasgupta, who pressed this worry to me and forced me reframe the argument of this section.

well-defined list, or whose subject-matter conventionally belongs to metaphysics, and you think this makes you a revolutionary, then count me in as your comrade. Just keep in mind that even the fiercest reactionaries can concede that there are explanations with these features (e.g. Daly 2012: 88–89).

2.5. The Unexplained Explanations Version

When discussing the Expressive Power Version, we focused on sentences that purport to be about metaphysical explanation facts and asked whether there was anything acceptable to the reactionary that could replace them. By contrast, the Unexplained Explanations Version is concerned with the explanation-*making* facts: facts that explain the metaphysical explanation facts. In the previous section I argued that the reactionary could express any concept of metaphysical explanation worth expressing. The p-theorist can grant this point and press a different question instead: what could explain the explanation facts that he and the reactionary agreed to call "metaphysical" – for example, what could explain [[Socrates exists] metaphysically explains [{Socrates} exists]]? The p-theorist will contend that while he has a simple answer – it is explained by [[Socrates exists] produces [{Socrates} exists]] – the reactionary has none. In other words:

Unexplained Explanations Version

(U_1) Assuming a reation of production, [[Socrates exists] produces [{Socrates exists}]] explains [[Socrates exists] metaphysically explains [{Socrates exists}]]

(U_2) Nothing acceptable to the reactionary can explain [[Socrates exists] metaphysically explains [{Socrates exists}]]

Therefore,

Production is indispensable for explaining [[Socrates exists] metaphysically explains [{Socrates exists}]][122]

Let's focus on U_2. Take the simplest candidate explanans of [[Socrates exists] metaphysically explains [{Socrates exists}]] the reactionary could come up with: [[Socrates exists] necessitates [{Socrates exists}]]. Why think that this cannot serve as an explanation-making fact? The standardly cited reason is that necessitation is "not an explanatory relation". A bit more carefully, and in my preferred terminology: necessitation facts don't guarantee, irrespective of the relata, the existence of a corresponding metaphysical explanation fact. In the present case, for example, not only does [Socrates exists] necessitate [{Socrates} exists], but also *vice versa*:

(Backwards-Socrates*) [{Socrates} exists] necessitates [Socrates exists]

Without doubt, (Backwards-Socrates*) is true. But the following is false:

(Backwards-Socrates$_{\text{met-expl}}$) [{Socrates} exists] metaphysically explains [Socrates exists]

[122] Cf. Audi 2012b: 687–688 and Schaffer 2016. As above, the argument could be stated without any reference to relations: the connective theorist could say that only 'because$_{\text{prod}}$'-sentences can explain 'because$_{\text{met-expl}}$'-sentences.

The existence of {Socrates} necessitates, but clearly doesn't explain, the existence of Socrates. And what goes for necessitation also goes for other relations available to the reactionary: they cannot do the job of production because they are subject to confounding cases.[123] The following is a natural way to make this thought more precise:

> (*Generality Constraint*) For any relation, Φ, if [$\Phi(f_1 \ldots f_n, g)$] explains [$f_1 \ldots f_n$ metaphysically explain g], then for any $x_1 \ldots x_n$ and any y, if $\Phi(x_1, \ldots x_n, y)$ then $x_1 \ldots x_n$ metaphysically explain y.[124,125]

The idea behind the Generality Constraint is that a fact involving a relation cannot explain a metaphysical explanation fact unless no fact involving that relation can exist without there being a corresponding metaphysical explanation fact. Production facts – if there are any – satisfy this constraint, while necessitation facts don't. This is why [[Socrates exists] metaphysically explains [{Socrates} exists]] cannot be explained by a necessitation fact.[126]

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123 Thanks to Ted Sider for many helpful discussions about the precise role of confounding cases in the Unexplained Explanations Versions.

124 This requirement is similar to deRosset's "Determination Constraint", according to which if the fact that individual r is F is explained by a fact of the form $\varphi(r, t_1 \ldots t_n)$, then there are no individuals t and $a_1 \ldots a_n$ such that they satisfy the form $\varphi(x, y_1 \ldots y_n)$ but t doesn't satisfy Fx (deRosset 2010: 79–81). However, while deRosset's thesis is about the relation between explanantia and explananda in first-order non-causal explanations, the view I'm talking about concerns the relation between the explanation-making facts and the explanation facts, causal or otherwise. See also Audi 2012b: 697–698 for a similar constraint.

125 As elsewhere, the basic idea could be formulated without any reference to facts and relations. For example, a connective p-theorist could say that if 'because$_x$' is an explanation-making connective, then it's true that (A because$_{explanation}$ $B_1 \ldots B_n$) because$_{explanation}$ (A because$_x$ $B_1 \ldots B_n$) only if for any χ, $\upsilon_1 \ldots \upsilon_k$, if χ because$_x$ $\upsilon_1 \ldots \upsilon_k$ then χ because$_{explanation}$ $\upsilon_1 \ldots \upsilon_k$.

126 There is a wrinkle: not all p-theorists can quite accept this line of reasoning. Some p-theorists deny that production is sufficient for metaphysical explanation and argue that certain pragmatic and epistemic factors

A natural complaint the reactionary can make at this point is that even if a necessitation fact cannot by itself explain [[Socrates exists] metaphysically explains [{Socrates} exists]], it doesn't follow that only a production fact could. Why couldn't the reactionary say that what explains this fact is that [Socrates exists] necessitates [{Socrates} exists], *and that {Socrates} is the singleton set of Socrates*? After all, it does seem true that for any x, if [x exists] necessitates [{x} exists] then [x exists] also metaphysically explains [{x} exists]. We can put the point a bit more generally, so that it doesn't only apply to *singleton* sets and their members. We could say that for [α_1 exists]…[α_n exists] to explain [β exists] it's not enough for the former to necessitate the latter, but β also has to be constructible from $\alpha_1 \ldots \alpha_n$ by repeated applications of the set-builder operation. Here's one stab at how we could capture this intuition: [α_1 exists]…[α_n exists] explains [β exists] if each of $\alpha_1 \ldots \alpha_n$ is an ancestral member of β, no member of β is an ancestral member of any of $\alpha_1 \ldots \alpha_n$, the null set and every Ur-element is an ancestral member of β just in case it is an ancestral member of some of $\alpha_1 \ldots \alpha_n$, and none of $\alpha_1 \ldots \alpha_n$ is an ancestral member of any other one of $\alpha_1 \ldots \alpha_n$.[127]

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also have to be in place (Audi 2012a: 119–120; Trogdon 2013b: 468–473). In what follows I will ignore this wrinkle, since doing so only makes my task harder. Later in this section I will get back to the related issue of whether the revolutionary's notion of production is already tainted with explanatory intuitions.

[127] More formally, let '$\in^a$' stand for the ancestral of set membership; then a relation R* that guarantees the explanatory connection between [Socrates exists] and [{Socrates} exists] can be defined as follows: R*([α_1 exists]…[α_n exists], [β exists]) iff

a) [α_1 exists]…[α_n exists] necessitate [β exists]

b) $\forall x\,(x \in \{\alpha_1 \ldots \alpha_k\} \rightarrow x \in {}^a\beta)$

c) $\forall x\,(x \in \beta \rightarrow x \notin {}^a\{\alpha_1 \ldots \alpha_k\})$

d) $\forall x\,(\sim\exists y\, y \in x \rightarrow (x \in {}^a\{\alpha_1 \ldots \alpha_k\} \leftrightarrow x \in {}^a\beta))$

The basic strategy is to say that it isn't simply necessitation that guarantees the metaphysical explanation of [{Socrates} exists] by [Socrates exists], but a complex pattern of modal and set-theoretic facts: necessitation is explanatory when holding between facts about a *set* and facts about its *ancestral members*. The case of Socrates and {Socrates} no longer looks like a confounding case, then, since the pattern of modal and set-theoretic relations between them *is* sufficient for [Socrates exists] to explain [{Socrates} exists]. And of course, there is nothing special about this case: we can place similar restrictions on other putative explanantia to explain the metaphysical explanation facts without appealing to production. Call this strategy the *Restriction Approach*.[128]

There are two ways of understanding the Restriction Approach. On one reading, metaphysical explanations require "explanatory relations"; it's just that these relations are quite miscellaneous, and they are different from the relations metaphysicians usually have in mind when talking about explanatory relations. For instance, one such relation could be one that holds between a plurality of facts and a fact iff they stand in the complex pattern of modal and set-theoretic relations described two paragraphs earlier. On an

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e) $\forall x \forall y\ (x \neq y \rightarrow (x, y \in \{\alpha_1 \ldots \alpha_k\} \rightarrow x \notin^a y))$

[128] Koslicki (2014: 331) outlines a strategy similar to the Restriction Approach, but her main concern is how we can make sense of the fundamental or derivative status of various kinds of entities, rather than explaining the first-order metaphysical explanation facts. Some might also notice certain similarities between the Restriction Approach and Dancy's (2004) particularism about moral explanation: for example, it's perfectly possible that *x*'s uttering S was wrong because it was a lie, even though *y*'s uttering T was also a lie and yet not morally wrong. While both Dancy and I are denying a kind of generalization, the similarities don't go much deeper than that. Dancy's view (just like deRosset's Determination Thesis) focuses on the relation between first-order explanantia and explananda, whereas my view concerns the relation between an explanation-making fact and the explanation fact it explains, each of which connects the same explanantia and explananda. Nothing in Dancy's view prevents him from saying that there is a relation between moral facts and the facts in virtue of which they hold that always suffices for explanation; indeed, on one interpretation (though not the one I find the most plausible; cf. footnote 94) he does posit such a relation, namely *resultance*. (Many thanks to Louis deRosset, Dan Korman, Kelly Trogdon and Ted Sider for helpful discussions about the dialectic in the next few paragraphs.)

abundant conception of properties and relations, we can always define up a relation that guarantees explanation by starting with a familiar relation (necessitation, composition, etc.) and introducing restrictions on its relata.[129] Thus understood, the Generality Constraint is trivially satisfied: for any explanation, we can find a relation that is exceptionlessly sufficient for explanations of the same kind.

On another reading, we have little reason to care about such abundant relations in explanatory contexts. To be sure, it's Socrates and {Socrates} standing in a complex pattern of modal and set-theoretic relations that explains [[Socrates exists] explains [{Socrates} exists]]. But this shows not that some explanatory relations are abundant, but that we should altogether stop thinking about metaphysical explanation in terms of "explanatory relations". The intuition fueling the Generality Constraint is that if a fact explains a metaphysical explanation fact, then *similar* facts also explain corresponding metaphysical explanation facts. The p-theorist thinks that facts are similar in the relevant sense only if they involve the same explanatory relation, whereas on the present proposal, when we determine the relevant similarity classes we should consider not only the relations involved in the putative explanation-making facts, but also the kinds of entities that stand in those relations. On this reading, the Generality Constraint is false: sometimes the standing of certain things in a certain relation explains why there is an explanatory connection between facts about those things, even though other things could stand in the same relation without the corresponding explanatory connection. In a slogan form: explanation ultimately happens at the level of facts, not at the level of relations.[130]

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[129] See Lewis 1983 for the sparse/abundant distinction.

[130] In response to connective p-theorists, the reactionary can deny that it's true that (A because$_{explanation}$ $B_1 \ldots B_n$) because$_{explanation}$ (A because$_x$ $B_1 \ldots B_n$) only if for any χ, $\psi_1 \ldots \psi_k$, if χ because$_x$ $\psi_1 \ldots \psi_n$ then χ

The choice between these two interpretations of the Restriction Approach is largely a matter of bookkeeping; the important point is that we shouldn't expect to settle whether some facts explain another fact purely on the basis of the sparse relations they stand in. But I think that the second interpretation sits better with most philosophers' use of the words 'explanatory relation', according to which only a few (presumably sparse) relations count as genuinely explanatory.[131] So below I will defend the Restriction Approach under the second interpretation, though everything I have to say could be easily rephrased in lines with the first.

Understood as a principle about sparse relations, we have reasons for doubting the Generality Constraint that are independent from considerations pertaining to *metaphysical* explanation. Philosophers attracted to the constraint often talk of "explanatory relations" that "back" explanations. But even when it's natural to speak of such relations, it's hard to think of any that by itself guarantees explanation, irrespective of the relata. Causation is a case in point, as causation can fail to be explanatory in several ways. Extremely fine-grained details about the causes are often explanatorily irrelevant to the explanandum even if they are causally relevant (Ruben 1990: Ch. 5, Ch. 7: 187–193; Lewis 1986: 226–227). The same goes for causes that are too far back in the causal chain: they can be causally relevant to the explanandum without being explanatorily relevant (Lipton 2001: 49).

Of course, one might take issue with the above examples and maintain that once the explananda are individuated with the proper level of grain in causal explanations,

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because$_{\text{explanation}}$ $\psi_1 \ldots \psi_k$. She can maintain that for some explanation-making connectives this principle is true only if certain restrictions are placed on χ and $\psi_1 \ldots \psi_k$.

[131] Cf. Kim 1994, Audi 2012a, and Schaffer 2016.

explanatory irrelevant entities will turn out to be causally irrelevant, too. However, this move reveals a deeper problem. As Strevens (2008: Chs. 2, 6) points out, our ordinary talk of causation is thoroughly steeped in explanatory considerations: in most everyday contexts, assertions of the form 'c causes e' express propositions about causal explanation.[132] There may well be a sparse, low-level physical relation of causation, which may or may not be reducible to familiar phenomena (like energy transfer). But this sparse relation is emphatically not what answers our intuitions about the puzzle cases that dominate the literature on the analysis of causation. Thus any appearance of a neat one-one correspondence between the causal facts and the causal explanation facts stems from our tendency to confuse causation (the sparse relation) with causal explanation. It is therefore naïve to just assume that every causation fact explains a corresponding explanation fact. Instead, we would need to investigate in detail which low-level causal relations in an event's history are explanatorily relevant and which ones aren't. The result of such investigation could be an ideal D-N text (Railton 1981), or perhaps a causal model (Woodward 2003, Strevens 2008), depending on one's general views on explanation. But either way, the explanation-making facts will be something far more complicated and less transparent than a bare causal fact connecting the explanans to the explanandum. So it's just false that that the totality of some events' causes always *explains* that event; if it seems that it does, it's only because we already implicitly switched from pure causation to causal explanation.

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[132] Strevens's point also goes a long way toward explaining why in contemporary debates over causation it often feels like it's a matter of bookkeeping what we build into the causes and what we regard as background conditions: many of these disputes, ostensibly about the metaphysics of causation, are implicitly influenced by explanatory considerations. See Strawson 1985 for an early anticipation of this insight.

A similar problem besets simplistic construals of the relation between the metaphysical explanation-making facts and the metaphysical explanation facts. Suppose there is a causation-like relation that plays a central role in many metaphysical explanations. Even if this were so, when trying to find the explanation-making facts that explain the metaphysical explanation facts, we shouldn't expect them to have the simple form, "f produces g". Instead, we should expect them to be facts involving complex patterns of individuals instantiating various properties and relations. Perhaps some of these relations deserve to be called 'grounding', or perhaps not. I think not, but the important thing to recognize is that the issue cannot be decided simply by asking which, if any, of these relations guarantees explanation irrespective of the relata. Causation is not such a relation, and there is no good reason to expect that there is any other interesting relation that is.[133] It is presumptuous to ask which relation guarantees that those facts, irrespective of the entities they concern, instantiate metaphysical explanation. Causation – the sparse, worldly relation, if there is one – is not such a relation, and as of yet we have been given no good reason to expect that there is any other interesting relation that is.

Properly understood, then, the Restriction Approach ought to be the default view about explanation in general, not just metaphysical explanation. In the remainder of this

[133] Of course, on an abundant conception of properties and relations it will be possible to define all sorts of relations by introducing restrictions on the relata of another relation. This way it's also possible to ensure that a relation suffices for explanation, but we should realize that all we really do in such cases is pack all the explanatorily relevant information from the relata into the relation. Some of the literature on realization is a case in point. For example, Shoemaker notes that his first gloss on realization has the consequence that it makes any conjunctive property a realizer of each of its conjuncts. "Obviously this must be avoided", he says, and goes on to propose a more complicated definition that avoids this consequence (2007: 13ff.). One may wonder *why* it is important to avoid this consequence, though. The best answer I can think of is simply that the original, simpler definition doesn't answer our explanatory intuitions about realization. If this is the answer, it's unsurprising that realization as Shoemaker defines it suffices for explanation, given that the notion is tailor-made to our explanatory concerns.

section, I will discuss a few examples to illuminate how the view works in practice. They are all controversial, but I don't think this is a bad thing: they are controversial precisely because they are detailed and informative. Fellow reactionaries are free to replace them according to their own theoretical leanings. What I expect them to be on board with is that this is the general shape that a reasonably detailed, informative story about the metaphysical explanation-making facts should take.

First, what could explain the fact (if it's a fact) that the moral facts are explained by natural facts? On one view, whenever a moral property is instantiated, so is a natural property that necessarily, whenever instantiated, *constitutes* an instantiation of the relevant moral property.[134] The idea is that the relation between mental and natural properties is akin to the relation between a statue and the lump of clay it's made of: one that implies an intimate connection between the relata but is looser than identity. Constitution is usually understood as a relation between material objects[135], or between objects and their matter[136], but on the present view it can also hold between properties or property instantiations.[137] Statues can be constituted by pieces of clay, gold, or other materials, but aren't identical to them. Analogously, moral rightness may be constituted by happiness maximization in the actual world and divine command in other possible worlds, without being identical to either.[138] Obviously, there is a lot more to be said about this account. What I want to emphasize is that neither constitution nor necessitation does all the work

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[134] See Shafer-Landau 2003: Ch. 3 for this view, and Ridge 2007 for a refined version and a critique thereof.

[135] Wiggins 1968, Thomson 1998, L. R. Baker 2007

[136] K. Fine 2003, Koslicki 2008

[137] Shafer-Landau is not alone with this view; for a detailed account of property constitution, see Shoemaker 2003.

[138] Cf. Shafer-Landau 2003: 75–76

in it. Necessitation doesn't by itself imply explanation, for the reasons we already discussed. But neither does constitution, at least not without further substantive assumptions. For example, Baker (2007) develops a theory of constitution according to which constituted material objects and their constituters mutually inherit some of their properties from each other, in which case the existence of the latter could hardly explain the existence of the former.[139] What's doing the explanatory work is that both constitution and necessitation hold between natural and moral properties, or property instantiations.

Second example: why are mental facts explained by physical facts (assuming that they are)? One view, defended by Ehring (2011: Ch. 5), relies on *tropes*. Tropes are abstract particulars: for instance, the trope that is the redness of some specific shirt is akin to the universal of redness in being abstract, but is more like the individual shirt it characterizes in being particular. According to Ehring, mental properties are classes of physical types, which in turn are classes of physical tropes. Physical properties, on the other hand, are classes of physical tropes. Moreover, each mental trope belongs to a class of physical tropes. Since according to the theory under consideration the relation between a class and its subclasses is that of a whole to its parts[140], it follows that the relation between physical and mental properties is composition. This view is a close cousin of the more familiar subset account of realization, according to which mental properties have a proper subset of the forward-looking causal powers of the physical properties that realize them.[141] I

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[139] Baker goes even further to say that "the constituted thing has ontological priority over its constituter" (2007: 166), apparently implying that if there's any explanatory connection between the two, it goes in the opposite direction. (See also my discussion of constitution and dependence in chapter 1, section 1.4.7.)

[140] Ehring is relying here on Lewis 1991.

[141] For the subset view of realization, see J. Wilson 1999, 2002, 2009, 2011, and Shoemaker 2001, 2007. It's

chose the part-whole account as an example because it's better suited to illuminate a core feature of my view. Realization is usually taken to be sufficient for explanation on its own, whereas it's controversial whether facts about wholes are always explained by facts about their parts.[142] But on my view, what's doing the explanatory work in part-whole physicalism isn't just the composition relation; it's the distribution of a complex pattern of mereological and membership relations over classes that involve such and such tropes.

Third example: why are disjunctions explained by their true disjuncts (assuming they are)? The reactionary can borrow Fine's "truthmaker semantics" here, which relies on a notion of verification familiar from situation semantics. Generally, $A_1 \ldots A_n$ logically explain (in Fine's terminology, "are a strict full ground for") C iff the following holds: if f_1 verifies A_1, f_2 verifies A_2,…, f_n verifies A_n, then the fusion of $f_1 \ldots f_n$ verifies C, but not *vice versa* (2012a: 72). Therefore, for any fact that verifies some sentence, A, the fusion of this fact with another fact that verifies another sentence, B, is a verifier of AvB. This is why A explains AvB. Again, what's doing the explanatory work isn't any single explanatory relation; it's the pattern of mereological relations among facts and the verification relations they bear to sentences.[143]

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worth noting that Ehring proposes part-whole physicalism as "a *metaphysical explanation* for why the sets of causal powers of mental properties stand in the subset relation to the sets of causal powers of certain physical properties" (2011: 172, emphasis in the original).

[142] For example, according to priority monism the cosmos is prior to all its parts; so plausibly, facts about the cosmos explain facts about its parts, rather than the other way round (Schaffer 2010a).

[143] Cf. K. Fine 2012a: 73; 2012b: 8. Of course, if grounding is a relation between facts it's not entirely obvious what is *logical* about logical grounding. Perhaps in that case we should just say that the perspicuous rendering of 'AvB because A' is '[A] metaphysically explains [AvB]', and say that what explains the fact expressed by this sentence is that the verification story given in the main text is correct. Some readers may find it surprising that I appeal to Fine's own views about logical grounding to advance the reactionary view. Note, however, that in the present context my main opponent is the p-theorist, and Fine himself is clearly not a p-theorist; he doesn't assume that there is any one kind of explanation-making fact that explains all the metaphysical (including logical) explanation facts. I should note that Fine proposes his truthmaker

To be clear, the foregoing paragraphs were not intended as a positive argument for the reactionary view. The idea instead is that if we are looking for a relation that plays a role in metaphysical explanations similar to the role of causation in scientific explanations, we shouldn't expect a relation that by itself *guarantees* explanation. We should expect one that often occurs in explanatory patterns, but which is neither necessary nor sufficient for explanatoriness. And as of yet, we have been given no reason for thinking that the reactionary's familiar relations couldn't play *this* role. Necessitation, composition, constitution, micro-basing, realization, and many other relations, may not by themselves suffice for explanatoriness, but they often occur in patterns of facts that do.

It's worth drawing a comparison between my view and an alternative proposal recently defended by J. Wilson (2014). Wilson agrees with the revolutionary that familiar metaphysical relations, such as parthood, constitution and realization, don't by themselves settle the direction of explanation (she usually talks about the direction of priority, but this difference is irrelevant in the present context). However, instead of settling the direction relying on "big-G Grounding", as she calls it, she appeals to primitive fundamentality facts. For example, the existence of the cosmos is explained by the existence of its simple parts *if the latter are fundamental*, whereas if the cosmos is fundamental, the explanation goes in the opposite direction.[144] On my view, however, no

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semantics only as a representational tool that shouldn't be taken at metaphysical face value. All the same, reactionaries are free to do so if it serves their purposes.

One may also worry that Fine's notion of verification is already tailor-made to certain explanatory intuitions. Even if this is a fair complaint, it doesn't pose any problem to the reactionary that the p-theorist doesn't have to face, since (as I earlier argued) appeals to production raise exactly the same concerns. Moreover, the reactionary is free to say that no sparse explanatory relation underlies logical explanation. Logical explanation would then turn out to be similar to mathematical explanation or explanations only by laws.

[144] Wilson has a more complicated story about the direction of explanation for non-fundamental entities,

such appeal to fundamentality is needed. Wilson is looking for a relation that guarantees, irrespective of the relata, that explanation goes in a certain direction. Since composition doesn't seem to be such a relation, in effect she introduces another relation (call it "composition*), which holds between some *x*s and *y* iff the *x*s are fundamental and compose *y*. By contrast, in my view it's a mistake to look for such relations in the first place: they are not needed for scientific explanation, and we have no reason to expect them in metaphysical explanations either. To the extent that appealing to a primitive notion of fundamentality is a step in the direction of revolutionary views, my view is thereby also more reactionary in spirit than Wilson's.[145]

Since the Generality Constraint is *generally* implausible, we should also reject it in the case of metaphysical explanation. This opens the door wide before views according to which there need be no "explanatory relation" that occurs in all the metaphysical explanation-making facts; and therefore, cases when a non-explanatory fact and a putative explanation-making fact involve the same relation aren't "confounding cases" to any explanatory hypothesis the reactionary may want to propose. Now, one may think that U_2, the indispensability premise of the Unexplained Explanation Version, could be supported without relying on confounding cases. Perhaps production helps *unify* our metaphysical explanations: if the explanation facts about sets and their members, but also the moral and the natural, the mental and the physical (etc.) are all explained by

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but for lack of space I will focus on the simpler case described in the main text.

[145] One might nonetheless press the question: is there anything general we can say about what settles the direction of metaphysical explanations, if not any particular "explanatory relation"? This depends on one's general theory of explanation. Though in this chapter I won't attempt to develop a detailed account, I am attracted to a unification view: the direction of explanation is settled holistically by which deductive systematization of the total set of accepted sentences is the most unified. For more on unification, see also the next section, and for a detailed development of unificationism about metaphysical explanation, see

explanation-making facts featuring production, then we can thereby unify the explanantia of the metaphysical explanation facts. To this argument I turn in the next section.

2.6. Metaphysical unification

Perhaps the explanatory value of production lies in its unifying potential: if the same explanatory relation is present in all metaphysical explanation-making facts, the resulting explanations are thereby more unified. But what does it mean for a set of explanations to be unified in the relevant sense? There is little explicit mention of explanatory unification in the grounding literature. The few existing discussions tend to focus on the unity and coherence of grounding itself.[146] But if 'grounding' is understood to mean production, this is an unfortunate way of framing the debate. My brand of production skepticism doesn't say that the concept of production is incoherent or disunified; it just denies that it's indispensable for explanatory purposes. So if there is a serious unification-based *argument* for the explanatory indispensability of production, it should focus not on whether production is unified, but on whether it would make our metaphysical *explanations* more unified. To my knowledge, no such account has been offered to date.[147] But in personal communication several people suggested to me that there is a unification-based argument for production[148], which makes it worth our while to look more deeply

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Kovacs ms-2.

[146] See Schaffer 2009: 376–377 and 2016: §3, §4.4, M. Cameron 2014, Koslicki 2014, J. Wilson 2014, and Berker ms: §5–7.

[147] Schaffer's (2016) structural equation models (cf. A. Wilson ms) don't amount to the kind of argument I have in mind. Production itself plays little role in these models; the heavy-lifting is done by non-trivial counterpossibles, which in turn are supposed to give us a better grasp of the *concept* of production. Perhaps this is an efficient strategy against production skeptics who think that the concept is incoherent or disunified (though see Koslicki 2016), but I don't see why it should move those of us who just think it's superfluous.

[148] Ted Sider was the one who made the suggestion first and the most forcefully.

into the issue. Appeals to unification are hard to assess, however, without having some idea of what unification is. Here, I won't try to choose from the various competing accounts.

Fortunately we don't have to reinvent the wheel, for there has been extensive theorizing about explanatory unification in the philosophy of science. Here, I won't try to choose from the various competing accounts. Instead, I shall focus on the common core that all unificationists accept: that unified explanations decrease the number of phenomena we need to accept as unexplained.[149] The two most influential proponents of explanation as unification seem to agree on this much:

> "Scientific explanations do not confer intelligibility on individual phenomena by showing them to be somehow natural, necessary, familiar, or inevitable. However, our over-all understanding of the world is increased; our total picture of nature is simplified via a reduction in the number of independent phenomena that we have to accept as ultimate." (Friedman 1974: 18)

> "Science advances our understanding of nature by showing us how to derive descriptions of many phenomena, using the same patterns of derivation again and again, and, in demonstrating this, it teaches us how to reduce the number of types of facts we have to accept as ultimate (or brute)." (Kitcher 1989: 432)

As these quotations show, Friedman and Kitcher mainly focus on *scientific* explanation. But nothing in the general idea that explanation is in essence unification prevents us from applying it to metaphysical explanation. In fact, one of the several reasons Kitcher is dissatisfied with many rival views is that they cannot do justice to non-causal, for instance mathematical, explanation (1989: 422–428).

The guiding idea of unification theories is that explanatory power is a holistic matter.

[149] On the so-called "winner-take-all" conception of unification, any putative explanation that doesn't belong to the most unified set of explanations is not an explanation at all, while according to a less radical graded view it is just a less good explanation (Woodward 2011). For simplicity's sake I will assume the winner-take-all conception.

Accordingly, unification is a feature not of individual explanations but of sets of explanations or theories: explanatory theories allow us to derive a large number of conclusions from a meager set of premises. Since unificationists assume that every explanation corresponds to a deductively valid argument, this amounts to the claim that explanatory theories allow us to derive a large number of conclusions from a meager set of premises; or in Kitcher's words, they "derive descriptions of many phenomena, using the same patterns of derivation again and again" (1989: 432). In what follows, I will rely on a broadly Kitcherian conception of unification: explanatory theories use a small number of argument patterns with few premises to derive a large number of conclusions. An argument pattern is, roughly, a sequence of schematic sentences with some restrictions on what counts as a substitution instance of each schematic sentence. I trust that this is intuitive enough for our present purposes; some technical details are relegated to this footnote.[150]

In what sense can the p-theorist claim that the admission of production increases the explanatory power of his theory? First, let's put to the side what the p-theorist and the reactionary can agree on. In principle, they can agree on the facts that involve neither production nor explanation (the set-membership facts, the mereological facts, the

[150] A Kitcherian argument pattern is an ordered triple of (i) a schematic argument (a sequence of schematic sentences in which some non-logical expressions have been replaced by dummy letters), (ii) a set of sets of filling instructions that tell us what the substitution instances of each dummy letter are, and (iii) a classification (a set of sentences describing the inferential characteristics of the schematic argument: which sentences are premises, which one is a conclusion, and what rules of inference should be used). Another notion that plays a central role in Kitcher's theory of unification is *stringency*: the more stringent a pattern is, the more it contributes to the unification of the theory in which it occurs. Roughly speaking, stringency is a matter of how hard it is for an argument pattern to be instantiated: the more demanding constraints are imposed upon the logical and non-logical vocabulary of an argument pattern, the more stringent it is. However, as Kitcher himself admits, his criteria of stringency yield clear results only in a relatively small number of special cases. Since the choice between revolutionary and reactionary theories is not among these, I will simplify things by not paying too much attention to the issue of stringency.

ontology of properties, etc.) and the first-order metaphysical explanation facts (about [Socrates exists] and [{Socrates} exists], the physical facts and the mental facts, etc.). Their disagreement revolves around what explains these latter facts about metaphysical explanation. According to the p-theorist, production facts play an important role in explaining them. For instance, a simple argument that can be used to derive ($Socrates_{met\text{-}expl}$) would look like this:

Set Production

S1) [Socrates exists] produces [{Socrates} exists]

S2) For any $\psi_1 \ldots \psi_n$ and φ, if $\psi_1 \ldots \psi_n$ produce φ then $\psi_1 \ldots \psi_n$ metaphysically explain φ

S3) So, [Socrates exists] metaphysically explains [{Socrates} exists]

According to the p-theorist, the first premise of every argument that corresponds to the explanation of a metaphysical explanation fact is a production fact. For instance, in the case of (Torture) it could be [[action A doesn't maximize] utility produces [action A is wrong]]; and in the case of (Mental), it could be [[S's C-fibers are firing] produces [S is in pain]]. The second premise is a general principle invariant across explanations that links production to metaphysical explanation.

Where the p-theorist sees production, the reactionary sees a plethora of facts about individuals instantiating various properties and relations. For example, the reactionary's explanation of ($Socrates_{met\text{-}expl}$) will look like this (predicate 'R*' below applies to some facts just in case they instantiate the pattern of modal and set-theoretic relations specified

in section 2.5; se also footnote 127):

Set Necessitation+Membership

S1*) R*([Socrates exists], [{Socrates} exists])

S2*) For any $\alpha_1 \ldots \alpha_n$, β, if R*([α_1 exists]…[α_n exists], [β exists]) then [α_1 exists]…[α_n exists] metaphysically explain [β exists]

S3) So, [Socrates exists] metaphysically explains [{Socrates} exists]

Now the p-theorist is in a position to give a reasonably clear unification-based argument for production. Take a look again at Set Production, and think of the arguments the p-theorist can use to derive the other metaphysical explanation facts. It seems that those arguments will all use S2 and a premise about production. For instance, the physical facts explain the mental facts because the former produce the latter, and whenever some facts produce another fact they also explain it; likewise for why the natural facts explain the moral facts. By contrast, it looks like the reactionary is saddled with a much more heterogeneous set of argument patterns. For one, she has to appeal to a variety of relations instead of just production: to stay with the example of our trope theorist from section 2.5, composition, class membership and necessitation for the physical-mental explanation facts, and composition and verification for the logical explanation facts. For another, she cannot make do with anything as simple as S2; she has to appeal to a variety of conditionals linking metaphysical explanation to facts involving various patterns of relations distributed over certain kinds of individuals. For these reasons, the p-theorist might conclude, the reactionary's theory is far less unified than his.

On the face of it, this argument has some force. But on a closer look, matters are not so simple. Let's distinguish between "clean" and "messy" comparisons of unification. A clean case is one in which we have two sets of candidate explanations such that (a) one set derives more explananda *or* derives its explananda from fewer explanantia *or* uses fewer argument patterns than the other set, and (b) the other set has none of these advantages over the first. These comparisons are clean because they yield an unambiguous winner: a theory that is superior to its rival in some regards and inferior in none. A typical example from the sciences is the subsumption of special laws under more general ones: instead of accepting several independent laws as basic, we can derive them as special cases of some more general law. Another case is when we derive the same explananda from a smaller set of explanantia by simply abandoning some or our old explanatory hypotheses. In each case, we decrease the number of accepted unexplained phenomena and the number of ways we explain them, but don't decrease (and perhaps increase) the number of accepted explained phenomena.[151]

By contrast, in messy cases one theory fares better than the other along some dimensions of unification but fares worse along others. These cases are often difficult to assess because we have no quantitative method of weighing the rival criteria against one another. What I want to point out is that the present case is a messy one. First, the p-theorist doesn't reject the facts that serve as the reactionary's explanation-making facts; he just rejects their *status* as explanation-making facts and so doesn't use them in deriving the agreed-on explanation facts.[152] Second, the p-theorist also doesn't derive these facts from

[151] See Kitcher 1981: §5, 1989: §4 for more examples.

[152] Of course, p-theorists don't need to believe in tropes more than anyone else; the point is just that being a p-theorist doesn't free one from the burden of figuring out the correct metaphysics of properties. A p-

facts about production. If all you can go on is the schematic sentence '$\chi_1 \ldots \chi_n$ produce ψ' and the premise that some facts are substitution instances of this schema, you cannot yet tell whether those facts involve composition, realization, or micro-basing (etc.) without knowing some more about the entities they are about.[153] This is important because it means that the p-theorist operates with a larger premise set: the extra production facts he posits don't explain anything that the reactionary (by her own lights) has left unexplained.[154]

The p-theorist might respond that his explanations at least fare better on one dimension of unification: he uses the same argument pattern to derive all the metaphysical explanation facts, as opposed to the reactionary's several patterns. Perhaps this is so, though the significance of this advantage also depends on how stringent the argument pattern in question is (see footnote 150).[155] But let's grant for the argument's sake that the p-theorist's explanations of the metaphysical explanation facts are more unified in this regard. It remains the case that in another regard, his explanations are inferior to the reactionary's: he appeals to a larger number of unexplained phenomena, a

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theorist who accepts some non-trope-y metaphysics of properties should be compared to a reactionary who does, too.

[153] Koslicki (2014: 330–331) makes a similar point, albeit in a different context.

[154] In accordance with the deductive tradition unificationism belongs to, I have framed the discussion in terms of what the p-theorist can *derive* from the production sentences. But, perhaps unsurprisingly, p-theorists often recast philosophical debates that originally revolved around derivability in terms of production (see, e.g., Schaffer 2008 on the reducibility of causation to history and the laws). Some of them might insist that what really matters is whether the reactionary's explanation-making facts are *produced* by the production facts. My answer should be predictable by now. By switching to production as the proper criterion of unification, the p-theorist proposes to change the rules of the game. If you want to *argue* for production, though, you can't change the rules before you earn the right to do so. And what we are looking for is exactly an independent reason for thinking that the rules of the game should be changed.

[155] My guess would be: not very. For example, S2 doesn't impose any restriction on the substitution instances of $\psi_1 \ldots \psi_n$ and φ (the conditional will be vacuously true for things that aren't facts). I by no means want to suggest that this is the last word on the issue, though.

whole realm of truths about production that can be neither derived from the reactionary's putative explanation-making facts nor used to derive them. I'm not sure how these criteria should be weighted against each other. All we can conclude so far is that even if considerations pertaining to unification don't clearly support the reactionary's case, they don't support the p-theorist's either. With respect to the core value of unification, production brings with itself costs as well as benefits.[156] For anyone whose original ambition was to give a unification-based argument for production, this should look like a thin result.

In fairness to the p-theorist, I should note that I worked with a fairly minimal, heuristic notion of unification that is shared by unificationists of all stripes. So I want to close this section on a somewhat concessive note, by inviting the p-theorist to say more about unification. If you think there is a persuasive unification-based argument for production, lay it out in detail. Provide a precise theory of unification, explain what exactly it is that production makes more unified, and say how it does so. Then, and only then, will we be in a position to even seriously evaluate appeals to unification in support of production.

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[156] With little effort, the foregoing dialectic could be adjusted to the connective view. The connective p-theorist could contend that each of his arguments has the following form:

S1') A because$_{prod}$ $B_1 \ldots B_n$

S2') For any χ and $\upsilon_1 \ldots \upsilon_n$, if χ because$_{prod}$ $\upsilon_1 \ldots \upsilon_n$ then χ because$_{met\text{-}expl}$ $\upsilon_1 \ldots \upsilon_n$

S3') So, A because$_{met\text{-}expl}$ $B_1 \ldots B_n$

Here, too, the reactionary will contend that while the p-theorist uses fewer argument patterns, he also has to accept extra 'because$_{prod}$'-sentences, which can be neither derived from nor used to derive those sentences that she (the reactionary) uses to derive the agreed-on 'because$_{met\text{-}expl}$'-sentences.

2.7. The threat of overgeneralization[157]

Production is often analogized with causation: it is supposed to be the causation-like but non-causal relation that we need for metaphysical explanation. But I have argued that we don't need production for metaphysical explanation. Doesn't this prove too much? Doesn't the foregoing reasoning somehow generalize to causation? And wouldn't that have some obviously unpalatable consequences? Schaffer (2016) has recently raised an analogous worry for other versions of grounding skepticism: those who think that production is unintelligible or disunified ought to think that causation, too, is unintelligible or disunified. For my view, the worry could be stated as follows: if production is not indispensable for metaphysical explanation, then similar considerations may show that we can also dispense with causation. In this section, I will argue for three claims. First, it is not even clear what the overgeneralization worry *is*; in any case it is less clear than one might think at first glance. Second, even on its most plausible reading the worry is misplaced: causation is *not* analogous to production in the relevant respects. Third, even if despite all this it could be shown that my arguments somehow generalize to causation, this wouldn't have the radical consequences that philosophers like Schaffer seem to attribute to it.

Let me start with the first point. As stated above, the overgeneralization worry is obscure: it is unclear *what* exactly the conclusion is that my main argument threatens to generalize to. One way to understand the worry takes as its starting point that production is to metaphysical explanation what causation is to causal explanation. According to this line, the concern is that if we don't need to posit production for metaphysical

[157] Thanks to Matti Eklund and Ghislain Guigon for helpful comments on and discussion of the issues in this section.

explanation, we also don't need to posit causation for causal explanation. However, this is a bad analogy. The very notion of a causal explanation presupposes causation; once we are willing to engage in talk of causal explanation, there can be no question of whether there is such a thing as causation. By contrast, accepting the notion of metaphysical explanation doesn't yet commit us to explanation-making facts with any particular "explanatory relation". Instead, it can be understood (for instance) as picking out a set of facts that feature "constitutive" connections or share their subject matter (see section 2.4). In the former case, we are at best licensed to conclude that there are *some* relations we need to explain the metaphysical explanation facts, but for all we know these could be the reactionary's familiar relations. And in the latter case, the analogy should be drawn between metaphysical and *scientific* (rather than causal) explanation: causation is to scientific explanation what production is to metaphysical explanation.

This leads me to the second point: this analogy can be quickly shown to break down. The unification argument introduces production as the relation "backing" all metaphysical explanations, i.e. as the relation that has to figure in all true metaphysical explanation makers. However, causation plays no such role in scientific explanation. Nobody who accepts genuinely non-causal explanations should think that all scientific explanation makers mention causation. Mathematical, teleological and special-by-general-law explanations are all non-causal, yet they don't require causation. Perhaps some of these are subsumable under the category of causal explanations. But it's very unlikely that *all* are, and in any case it would be bad news for the p-theorist if the unification argument turned on this local controversy in the philosophy of science.

The upshot so far is that there is no useful analogy for the p-theorist to exploit

between production and causation: the p-theorist claims production to be the relation that has to be mentioned by all metaphysical explanation makers, but we have no reason to believe there is any relation that has to be mentioned by all scientific explanation makers. Causation is not ubiquitous in scientific explanation, so its role isn't similar at all to the alleged role of production in metaphysical explanation.

In some respects, this is an ironical upshot. When arguing for production, p-theorists often start by pointing out that not all explanations are causal. I completely agree; indeed, as I said it is plausible that not even all *scientific* explanations are causal. The problem is that as soon as this much is granted, it becomes wholly unclear why we should posit a non-causal relation supposedly at work in all *metaphysical* explanations: science does just fine without such a notion, so it's a mystery why metaphysics would need one. In fact, since causation often figures in scientific explanation but is neither universally necessary nor always sufficient for it, it is more similar in this respect to the familiar relations that production was supposed to *replace*, for example supervenience, composition, realization and the like: they, too, may be neither necessary nor sufficient for metaphysical explanation, but often play an important role in it.

It could be argued that production might still be *a* relation figuring in some metaphysical explanations, just like causation is *a* relation that frequently occurs in scientific ones.[158] I am skeptical, but I have no intention to conclusively show otherwise in this chapter. Note, however, that this move would concede more or less everything to the reactionary. P-theorists usually argue that we need production because the familiar

[158] Bennett (forthcoming: Ch. 2) mentions production as *one* of the building relations that license 'in virtue of' claims. Correia (2014: 31) also speaks of production as "[o]ne special sort of noncausal explanatory relation". (Thanks to Elanor Taylor here.)

notions it was invoked to replace lack an explanatory element that production has. By contrast, the present proposal is that for all we know, production, but also composition, supervenience, necessitation and like may *all* have the required explanatory features. This might be good enough for those who are already committed to production, but it leaves the rest of us without any reason to add it to our toolkit.

My third point concerns the seriousness of the overgeneralization worry. So far I have argued that the worry is misplaced, but suppose for a moment that it does show its intended conclusion: if production can be dispensed with in metaphysical explanations, then so can causation in scientific explanations. I suppose that this conclusion is thought to be unacceptable because it would seem to lead to eliminativism about causation. However, that's a mistake. Causation is arguably a central piece of our conceptual scheme, and its supposed importance for scientific explanation is not our only reason for believing in it. For example, Cartwright (1983) argues that the notion of causation has an important *pragmatic* aspect: it is linked to manipulability and is useful for agents in distinguishing effective from ineffective strategies (cf. Hitchcock 2007). This marks a significant disanalogy with production. Production is a theoretical posit, which we have reason to believe in only if and to the extent that it plays some important theoretical role. This difference is significant because if our belief in causation doesn't solely depend on its supposed indispensability to scientific explanation, then the question whether my objections to the Unexplained Explanations Version generalize to causation loses its significance: you can think that neither causation nor production is important for explanation, but whereas this is good reason to be skeptical about production, it doesn't

necessarily motivate skepticism about causation.[159]

In this section, I have argued that the overgeneralization worry is ultimately misplaced: the role of causation in scientific explanation is very different from the role p-theorists assign to production in metaphysical explanation. In consequence, the dispensability of production does not in and by itself cast doubt on the utility of causation. And even if the overgeneralization worry were sound, it still wouldn't show that we ought to be eliminativists about causation, since whether we should believe in causation is not exclusively a matter of its usefulness in explanations. On the other hand, the case for production *does* entirely hang on its theoretical utility. And as I have argued above, explanatory considerations fail to show that production is particularly useful, let alone indispensable, for metaphysical explanation.

2.8. Concluding remarks

In concluding, I would like to make clear what I do and what I do not take myself to have established in this chapter. I didn't aim to give a complete theory of metaphysical explanation; I didn't try to say, in reductive terms, what metaphysical explanation *is*. This is not a shortcoming in comparison to revolutionary approaches, since revolutionaries aren't in the business of providing a full theory of metaphysical explanation either. Their typical goal is to defend a necessary condition of metaphysical explanation, a condition

[159] All this assumes that production is a theoretical notion. I stand by this claim, and by now it should be clear why. I don't deny that we have some preliminary understanding of the popular revolutionary examples, for example the Euthryphro dilemma. But this is simply because we have some preliminary understanding of the general notion of explanation and accordingly the word 'because'. Needless to say, this hardly shows that production, one of the highly specific notions that some revolutionaries have meant by 'grounding', is also a folk notion; it pretty clearly isn't. Risking that I repeat the obvious, I should emphasize again that by saying this I don't deny the *intelligibility* of production; I'm officially agnostic about that. My point is only that it is not a folk concept like causation.

that requires the addition of grounding to the metaphysician's toolkit. I tried to show that on most readings the main argument for this move is inconclusive, while on some other readings it doesn't show much of interest.

Throughout the chapter I have paid particular attention to a few popular problem cases: {Socrates} and Socrates, the natural and the moral, the physical and the mental, and "logical grounding". This comes with the obvious limitation that I have no perfectly general response to *all* possible problem cases. However, the choice of example was irrelevant to my answer to the Expressive Power Version, while my answer to the Unexplained Version is precisely that there *is no* fully general, one-size-fits-all schema that subsumes all the metaphysical explanation-making facts. Nor should we expect one: metaphysical explanation shows considerable variation, encompassing various phenomena that fall under it simply because they feature broadly "constitutive" relations, or relations conventionally considered metaphysical. The Restriction Approach provides us with the tools we need to reject any quick and sweeping "counterexample" to production-free explanation-making facts. The approach starts appearing more promising once we start asking what is metaphysical about metaphysical explanation; once we do, it becomes increasingly hard to see why any plausible way of understanding this notion would require production.

I close this chapter with a twofold conclusion. First, we often hear the slogan that grounding is an explanatory notion, whereas the familiar concepts of pre-grounding-era metaphysics aren't. But it's far from clear what this slogan means. There are at least two ways to understand it, yielding two very different theoretical roles for grounding. Revolutionaries are now starting to recognize the significance of this difference (see

especially Schaffer 2016), but a lot more work needs to be done to crystallize which notion of grounding is supposed to be explanatorily indispensible, and why. My more ambitious conclusion is that it's highly doubtful that any version of the Argument from Explanatoriness actually succeeds. If that is right, we lose our best reason for thinking that there is a notion of grounding that is plausibly meant by some advocates of the revolution and is in any way indispensible for metaphysical explanation.

Chapter 3

Revisionary ontology with no apologies

"I simply want to strongly emphasize that nihilists never just say,

'there are no toasters; revise your breakfast plans'" (Bennett 2009)

3.1. Revisionary ontologies and the Problem of Reasonableness

Revisionary ontologies are views that seem to disagree with common sense about which material objects exist – about the "ontological truth", as I will put it in what follows. For example, according to common sense trees, dogs and rocks exist, whereas "tree-dogs" (scattered objects made up from dogs and trees) don't. So any ontology that doesn't include trees, dogs and rocks, or in addition also includes tree-dogs, is revisionary. Most philosophers writing on the topic subscribe to some revisionary ontology or other. According to *abundant* ontologies there are vastly more objects than common sense countenances: for instance, according to Universalism *any objects whatsoever* compose something.[160] *Sparse* ontologies, on the other hand, posit far fewer objects than we usually think there are: for example, according to Nihilism there are no composite objects, while according to Organicism the only ones are biological organisms.[161] Of course, revisionary ontologists have arguments for these views, some of which we will review in due course. But even after having provided these arguments, they are burdened with a further task:

[160] See Lewis 1986, Sider 2001, and many other works to be mentioned in the footnotes of section 3.4.

[161] See Hossack 2000 and Dorr 2002, 2005 for Nihilism and van Inwagen 1990 for Organicism. To complicate things further, there are also "liberal eliminativists", as Korman (2016) calls them, who believe in vast many objects but maintain that none of them has the right modal profile to qualify as ordinary (Unger 1979, Heller 1990 and Van Cleve 2008). In what follows, I will simplify things by pretending that

they need to explain why otherwise reasonable people appear to hold beliefs about which material objects exist ("ontological beliefs") that are in such stark contrast with the ontological truth. Call this the *Problem of Reasonableness*.[162] In what follows I will refer to those whose beliefs are to be explained as "ordinary people", by which I simply mean those untainted by revisionary theorizing. This group includes philosophers unfamiliar with the arguments against common sense ontology, but excludes non-philosophers who have been exposed to them.

Some may protest that even if ordinary people don't believe in tree-dogs, they also don't *deny* that there are tree-dogs; they probably just never gave thought to the matter. Surprisingly, this is largely irrelevant to the problem at hand. A significant number of people *would* deny the existence of tree-dogs if they were asked to reflect on the matter, and it behooves the universalist to explain why reasonable people seem prone to forming such false beliefs, even if they didn't have them before.

Why care about the Problem of Reasonableness? First, the problem threatens to show that many of our ordinary belief-forming procedures are unreliable; and if the revisionist accepts this, her position might turn out to be self-defeating. For example, if the revisionist points out a problem with our beliefs about ordinary objects, she will need a story about why the same problem doesn't affect the premises she takes for granted in arguing against these beliefs (see sections 3.4–3.6).[163] Second, solving the problem might help rebut a deflationary line of argument for common sense ontology, developed in a

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liberal eliminativists believe in ordinary objects.

[162] See Hirsch 2002: 116; the label comes from Korman 2009.

[163] See van Inwagen 1990: 103 and Korman 2009, 2014, 2016: Ch. 7; cf. Kahane 2011.

series of papers by Eli Hirsch.[164] Hirsch argues that charity considerations require revisionary ontologists to interpret ordinary people's utterances without attributing egregious perceptual and a priori errors to them, and that the only way to comply with this requirement is by interpreting them as speaking the truth in their own idiolect. Armed with a solution to the Problem of Reasonableness, revisionists could respond that the errors they attribute are not egregious but quite understandable, and don't prevent ordinary ontological beliefs from being reasonable.[165]

The typical approach to the Problem of Reasonableness has been to argue that the mismatch between ordinary people's belief and the ontological truth is either merely apparent or at least less dramatic than it appears at first glance. These strategies are all *modest* in spirit: they maintain that the way in which ordinary people are wrong about the objects facts (if they are wrong about them at all) is different from the way in which they would be wrong to think that the Earth is flat or that witches exist. In this chapter, I will defend a radically different *uncompromising* strategy. In section 3.2, I will present the Problem of Reasonableness in more detail and briefly explain why the existing solutions to it are problematic. In section 3.3, I will offer a two-pronged solution to the Problem of Reasonableness. First, I will argue that it's unsurprising that ordinary people's ontological beliefs are false, since our tendencies to form such beliefs were shaped by selective pressures that were independent from the ontological truth. Next, I will argue that these beliefs are nonetheless in an important sense reasonable. I will do this by drawing a parallel between the Problem of Reasonableness and the New Evil Demon Problem in

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[164] See Hirsch 2002, 2004, 2005, 2008a, 2008b. Hirsch's position underwent many subtle changes over the years; here, I just present the gist of his reasoning.

[165] Cf. McGrath 2008

epistemology: whatever is the best treatment of the latter, the revisionary ontologist can apply it to the former. Then in section 3.4, I will consider a potential difficulty for my solution, recently raised by Korman (2014, 2016: Ch. 7): if the evolutionary story is correct, it can be used to construct an evolutionary debunking argument that undermines our perceptual ontological beliefs. And since both common sense ontology and most of the arguments for revisionary ontologies rely on such beliefs, the story indirectly undermines most revisionary views. In response, I will argue that revisionary ontologies are safe from debunking because they don't essentially rely on perceptual ontological beliefs. Due to space limitations, I cannot give a complete survey of all revisionary views. It will have to do to focus on two familiar positions: I will show that van Inwagen's master argument for Organicism survives debunking (section 3.5), and so do the two most widely discussed arguments for Universalism (section 3.6). I will conclude that my evolutionary account equips revisionary ontologists with an attractive, stable, and hitherto overlooked solution to the Problem of Reasonableness.

3.2. The problem and its standard solutions

The Problem of Reasonableness is often expressed in linguistic terms: when speaking of revisionary views that deny the existence of chairs or affirm the existence of tree-dogs, philosophers often focus on the fact that ordinary people seem to contradict these claims in their speech acts.[166] This, however, is not the most powerful formulation of the challenge. The problem isn't primarily about what ordinary people tend to *say* but about what they *believe*.[167] They seem to believe that there are chairs but no tree-dogs, and any

[166] See Lewis 1986: 213, Heller 1990: 12–14 and Sider 2001: 184–188, among others.

[167] See Markosian 1998: 228–229 and Korman 2015: 299.

philosophical theory that clashes with what otherwise reasonable people seem to believe should provide an explanation of how such a clash could occur. While all revisionists agree that they have this explanatory burden, they sometimes set the bar very low for what counts as discharging it. It doesn't suffice, for example, to show that the folk are not delusional[168] or that they would easily assent to revisionary views when subjected to philosophical bullying.[169] To solve the Problem of Reasonableness, the revisionist needs an account of why reasonable, intelligent people would appear to have a range of massively false ontological beliefs. In the next section I will say more about precisely what it takes to solve this problem; my present purpose is to show why we should be interested in a novel solution to it.

The existing solutions to the Problem of Reasonableness can be divided into two categories, *compatibilist* and *incompatibilist* ones.[170] Compatibilists claim that the tension between folk belief and revisionary ontology is merely apparent: though ordinary people say things apparently at odds with the targeted revisionary ontology, this is no evidence that they have any beliefs incompatible with it.[171] These views come in many flavors. The list below presents only the most influential strategies, which are not intended as either exhaustive or mutually exclusive; moreover, some of these options are not available to all revisionary ontologists. All I want to provide here is a feel for the lay of the land, not a complete overview of the literature.

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[168] Cf. Heller 1990: 148–9, Merricks 2001: 171

[169] Cf. Rosen and Dorr 2002: 157–8, Sider 2004: 680, and Eklund 2005: 559–61.

[170] The expression 'compatibilism' was first introduced into the debate by O'Leary-Hawthorne and Michael 1996 and then further popularized by Korman 2009.

[171] For this reason, van Inwagen (2014: 10) has recently rejected the label 'revisionary'. Note, however, that I characterized revisionism as the view that the ontological truth *appears to* clash with ordinary belief, which

1. Loose talk. When ordinary people utter sentences that seemingly contradict the ontological truth, they are speaking loosely; they don't accept the literal content of their assertions. Relatedly, perhaps certain expressions have a "strict, philosophical" and a "loose and popular" sense. Revisionary ontological theses appear to clash with common sense because we mistakenly interpret common sense utterances strictly and philosophically, even though they were only meant loosely.[172]

2. Quantifier domain restriction. When ordinary speakers utter sentences that seem to contradict the existence of extraordinary objects, they implicitly restrict their quantifiers to ordinary things and choose to ignore extraordinary things. So when an ordinary speaker utters 'There are no tree-dogs', she restricts her quantifiers to ordinary things, similarly to the way we restrict them to the contents of the fridge when we utter 'There is no beer'.[173]

3. Contextualism. Some existential sentences express different propositions depending on the context. In the mouth of ordinary speakers, for instance, the sentence 'There is a chair in the room' expresses the same (true) proposition that the sentence 'There are particles arranged chair-wise in the room' expresses

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van Inwagen clearly accepts.

[172] Chisholm 1976: Ch. 3, Heller 1990: 14, Thomasson 2007: 183–185. Advocates of the "loose talk" strategy don't always take a stand on whether the source of this looseness is semantic or pragmatic, so it's not always clear if their claim is about what ordinary utterances *mean* or what ordinary people want to *convey*. In the context of the present discussion this distinction is of limited interest, especially if we understand the Problem of Reasonableness as a problem with ordinary belief (rather than ordinary discourse). Similar remarks apply to other versions of compatibilism, which are best seen as precisifications of the "loose talk" strategy (Korman 2008a: 321).

[173] Lewis 1991: 80, Sider 2004: 680; cf. Lewis 1986: 213

in philosophical contexts; moreover, the sentence 'There is a chair in the room' expresses a false proposition in philosophical contexts, but that proposition isn't expressed by any sentence commonly uttered in ordinary contexts. When the folk utter sentences that apparently confer commitment to certain objects, these sentences can be systematically paraphrased into sentences that confer no such commitment.[174]

4. Invariantist reductionism. Existential sentences *don't* express different propositions in different contexts. However, they often don't wear their logical form on their sleeves. So even though the sentence 'there is a rock in R' is true, it expresses the same proposition as the sentence 'There are particles arranged rockwise'. 'Rock' is a singular expression only in the syntactic sense; semantically, it is a plural expression (compare 'assortment', 'collection', etc.) Accordingly, the syntactically many-one predicate 'are parts of' really expresses the many-many relation of being among.[175]

5. Fundamentalism. Ontological debates apparently about what exists should be understood as debates about what is fundamental, or about what the fundamental truthmakers of existential sentences are. There is no real clash between common sense and the ontological truth, since common sense has nothing to say about what is fundamental and the ontologist has nothing

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[174] See van Inwagen 1990: Chs. 10–11 and 2014. Horgan and Potrč (2008) also defend a view they call "contextual semantics". However, this view is importantly different from van Inwagen's. According to Horgan and Potrč, existential sentences express the same propositions in every context. But the *propositions themselves* have different truth values in different contexts, because the standards of truth change with the context: in the "ontology room", the standard of truth is direct correspondence with the facts, while in ordinary contexts, it is merely indirect correspondence.

[175] Liggins 2008, Contessa 2014.

revisionary to say about what exists.[176]

6. Ontologese. Ontological debates aren't or at least shouldn't be pursued in English or any other natural language; they should be carried out in a specialized, joint-carving language ("Ontologese") especially suited to ontology, in which certain core expressions receive new meanings. When revisionary ontologists utter the sentence 'there are no chairs' or 'there are tree-dogs', their use of 'there are' doesn't express the existential quantifier expressed by the English word 'exists'. It expresses the joint-carving quantifier of Ontologese. Since ordinary people speak English and not Ontologese, there is no clash between their beliefs and whatever the revisionist thinks is the correct ontology.[177]

The most important feature shared by all compatibilist strategies is that they claim that the folk's error is merely apparent. *Incompatibilist* strategies deny this. These views admit that the conflict between revisionary ontologies and folk belief is genuine but maintain that the folk's mistake is not quite as radical as it appears at first glance – either because their beliefs are close enough to the truth, or because they aren't deeply held. Here is a brief list of some well-known incompatibilist views, with the same caveats with which I prefixed the previous list:

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[176] R. Cameron 2008a, Schaffer 2009: 356–362

[177] See Sider 2004: 680–681, 2009: 411–421, 2011: Ch. 9, 2013, Dorr 2005: 248–250, and R. Cameron 2010b. The original purpose of the switch to Ontologese was to deal with worries to the effect that ontological debates are easily resolved by attending to the linguistic conventions about how 'exists' is used in English (Hirsch 2002, Thomasson 2007). However, it can also be put to use to explain away the clash

7. Appropriateness. Though ordinary people hold lots of false ontological beliefs, in an important but non-truth-entailing sense these beliefs are *correct* or *appropriate*: they systematically correspond to the ontological truth. For example, whenever ordinary people mistakenly believe that there is a chair, they believe something false but appropriate because there really are some particles arranged chairwise, and if there *were* composite objects, there would be a chair where there are particles arranged chairwise. For all practical purposes, these appropriate but false beliefs are "as good as true".[178]

8. Fictionalism. Ordinary utterances about material objects should be reinterpreted as prefixed with the operator, "According to the fiction that there are composite material objects…". Even if ordinary people's utterances are false when interpreted literally, it wouldn't take a dramatic belief revision for them to switch to this fictional discourse.[179]

9. Indifferentism. Ordinary people have many false ontological beliefs. However, they are not deeply committed to these beliefs; their primary interest lies in issues that aren't affected by the ontological truth. So even though ordinary people assert and believe ontological sentences whose literal content is false, they are indifferent to whether the literal content of these sentences is

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between ordinary belief and the ontological truth as merely apparent (Sider 2013: §3).

[178] Merricks 2001: Ch. 7

[179] Rosen and Dorr 2002: 168–171. Dorr and Rosen are *revolutionary* fictionalists: unlike *hermeneutic* fictionalists, they don't think that people already understand ordinary discourse about material objects fictionally but only that we *should* reinterpret ordinary discourse in that way. The hermeneutic/revolutionary distinction originally comes from Burgess 1983.

true.[180]

As this cursory overview should already make clear, the extant solutions to the Problem of Reasonableness form a heterogeneous bunch. What is common to them is that one way or other, they all attempt to solve the problem by playing down the tension between ordinary belief and the ontological truth: either the tension is illusory, or it is less radical than appears at first glance because there are no beliefs that are both massively false *and* deeply held by ordinary people. For this reason, I will collectively refer to these views as *modest* approaches to the Problem of Reasonableness.

Unfortunately, these views all face serious difficulties. Some of the problems affect only compatibilist or only incompatibilist views; some are problematic only for sparse or only for abundant ontologists; and some only beset specific proposals that cross-cut these distinctions. Either way, no modest view that I know of manages to escape all these problems. Below is a list of the most serious challenges that arise for modest approaches. As before, the list isn't intended to be exhaustive; all I want to give is a sense of just how many complications a viable modest view would need to pay attention to.

a) Expressive limitations. Adherents of contextualism, invariantist reductionism and appropriateness views usually hold that sentences quantifying over problematic objects can be systematically paraphrased into sentences that don't quantify over them (these views may differ on whether the paraphrase has to be truth-preserving). Some of these paraphrase strategies face serious

[180] Eklund 2005

expressive limitations. Suppose, with van Inwagen (1990), that sentences of the form 'there is an F' are to be paraphrased as 'there are *x*s arranged F-wise'. Then, as Uzquiano (2004) points out, we will have a problem with sentences that contain plural quantification over Fs. Perhaps they can be paraphrased into sentences that quantify over plural properties or sets, or into sentences containing "plurally plural" quantification (plural quantification over pluralities). But these ways out would all require the use of fairly controversial resources.[181]

b) Revenge problems. Sparse revisionary ontologies are often motivated by "problem avoidance" strategies: supposedly, we can avoid puzzles about certain kinds of material objects (the Problem of the Many, the puzzles of material constitution, etc.) by denying that they exist. However, most modest approaches to the Problem of Reasonableness maintain that ordinary people's beliefs about ordinary objects at least in some way correspond to the ontological truth. Sparse ontologists who accept this much will quickly run into "revenge problems": slightly different versions of those very puzzles that they wanted to solve by becoming sparse ontologists. McGrath (2005) and Nolan (2010) argue that these puzzles arise as problems about sets of individually appropriate, or loosely true, but jointly inconsistent propositions, while Eklund (2002: 250), Hudson (2003: 178–180) and Bennett (2009: 66–71) frame their revenge problems as puzzles

[181] These problems are unique to van Inwagen's paraphrase strategy and don't affect all possible interpretations of 'arranged F-wise'. Van Inwagen devotes some space to explaining the locution (1990: 104–108) but never gives a straightforward definition, from which we can glean that he accepts it as a primitive. By contrast, Merricks (2001: Ch. 1) explains F-wise arrangement in terms of counterpossible truths about the Fs: some *x*s are arranged F-wise just in case had there been any Fs, there would be an F where the *x*s are. While this proposal may escape Uzquiano's worry, it will have to face other difficulties. Some of these are general worries about how to give non-trivial truth-conditions for counterpossibles, while others are about how informative Merricks's explanation of F-wise arrangement is.

about vastly overlapping particles arranged F-wise.

c) Unsolved problems. Revenge problems primarily arise for sparse ontologists, but a closely related difficulty besets any revisionary view when combined with Fundamentalism or the Ontologese approach. Here the worry is not with revenge problems; rather, as Korman points out, when a seemingly revisionary view about what exists turns out to be a view about what is fundamental (2009: 248) or what falls under the joint-carving quantifier (2015), we are left without any solution to the original puzzles that were thought to motivate the view in question. Garden-variety revisionary views at least promise to resolve the puzzles; for example if there are no chairs then (barring revenge problems) there are no puzzles about chairs. But if all we say is that the most joint-carving quantifier doesn't range over chairs, or that there are chairs but they are not fundamental, then we did nothing to resolve puzzles arising out of the *existence* of chairs. And the same goes for other revisionary views: the arguments that were thought to motivate them don't motivate their Ontologese or Fundamentalist counterparts.

d) Empirical implausibility. Many views, especially in the compatibilist camp, make implausible empirical claims about what the folk believe.[182] For example, compatibilist sparse ontologists will say that the belief expressed by 'There is a rock' in ordinary contexts is simply that there are particles arranged rock-wise. In a similar fashion, adherents of the restricted quantification strategy will maintain that the belief ordinary people express when they utter 'There are no

[182] See Tye 1992, O'Leary-Hawthorne and Michael 1996, Merricks 2001: 163–170, Hirsch 2002: 109–111, and Korman 2008a, 2009

tree-dogs' is, roughly, that there is nothing that is both an ordinary object and a tree-dog. The problem with these views is that they rely on semantic and/or psychological hypotheses that lack empirical support. Even after being reminded of the potential traps of quantifier restriction, loose talk, or contextual variation, the original sentences don't thereby stop seeming true to ordinary people, and most of them will insist that they *really did mean* that chairs existed but tree-dogs didn't. Similar problems beset incompatibilist attempts to explain why the folk have the beliefs that they have. For example, they could be charged with confusing the true proposition that there are particles arranged rock-wise in R with the false one that there is a rock in R. However, when ordinary people reflect on the two propositions, it doesn't seem to them that they have been confusing the two; also, by becoming attentive to the difference, their old beliefs don't stop seeming true to them.[183]

e) Explanatory poverty. As I mentioned, a common problem with many modest strategies is that they focus on folk *talk*, rather than folk *belief*. This often has the result that these views are unequipped to provide the kind of substantive psychological explanation that would be needed to solve the Problem of Reasonableness. Merricks (2001), for instance, argues that ordinary assertions about inanimate objects can be systematically paraphrased into sentences about which objects *would* exist if there *were* medium-sized inanimate objects. By itself, however, this paraphrase strategy offers no explanation of the folk's beliefs: we aren't told *why* people have the false (albeit appropriate) beliefs that they have,

[183] See Korman 2009. For a thorough discussion of the empirical implausibility worry that is more sympathetic to compatibilist views, see Keller 2015.

> or why it is better to have false but appropriate beliefs than false and inappropriate ones. Other views, while more directly engaged with what the folk believe, likewise lack a substantive psychological explanation. For instance, even if we accept the hypothesis that ordinary people are not deeply committed to their ontological beliefs, it remains to explain *why* they held those beliefs in the first place, strongly or otherwise.

This is a wide range of highly diverse problems. While no existing solution to the Problem of Reasonableness suffers from all of them, it is fair to say that each suffers from at least some of them. This is not to say that each modest solution is equally problematic, nor am I suggesting that there is no response to the problems mentioned above. Nonetheless, these difficulties are serious enough to make it worth looking for alternatives. Perhaps if we choose to become revisionary ontologists, we should not try to be modest after all.

3.3. A two-pronged solution to the Problem of Reasonableness

A satisfactory solution to the Problem of Reasonableness should explain at least two things: (a) how ordinary people's ontological beliefs could have come apart so significantly from the ontological facts (the *causal component*), and (b) in what respect these beliefs are, in some sense, reasonable (the *evaluative component*). Below I will offer a solution that addresses both questions. But we should first get clear on what would count as an acceptable answer to them.

As to (a), the question is not why ordinary people believe in exactly the objects they do. It would be unrealistically ambitious to try to explain this, not least because with

respect to the existence of many objects, common sense has no clear verdict. Rather, it's the divergence of common sense ontology (whatever it is) from the ontological truth (whatever that is) that requires explanation.[184] However, even this weaker explanandum needs to be qualified. The revisionary ontologist doesn't have to show that we were likelier to end up with common sense ontological beliefs than with any alternative set of beliefs. All she has to show is that there is no particular reason to expect the factors shaping our beliefs to have led us to the true ontology. Note that an explanation of this sort doesn't have to give us new evidence that common sense ontology is false. Instead, it can *presuppose* that some other ontology true and attempt to show we shouldn't have expected to stumble upon it.

How about b)? Ideally, the evaluative component should tell us what makes ordinary ontological beliefs good in some sense while staying neutral on as many substantive issues in epistemology as possible. To this end, we need to find a positive epistemic status that philosophers of various convictions could agree characterizes these beliefs. This means that, in comparison to many earlier discussions, I accept a relatively demanding standard of what counts as a solution of the Problem of Reasonableness. It's not enough, in my view, to explain how reasonable *people* can have false ontological beliefs. Generally reasonable people can be totally irrational on certain issues, and in those cases a causal explanation is sufficient on its own. I contend that the situation isn't like that with ordinary people's ontological beliefs: we need to explain not just how, despite being wrong, the folk can be reasonable, but also why their *beliefs* are reasonable.

Below I will offer a two-pronged solution that meets these desiderata. I will primarily

[184] Multiple conversations with Andrew Higgins, Dan Korman, Mark Moyer, and Steve Petersen convinced me that I should pursue this more modest explanatory project.

focus on perceptual beliefs. This is not to deny that other sources, for example memory and testimony, also influence our beliefs about which material objects there are. Plausibly, however, the threat posed by the Problem of Reasonableness is significantly diminished once we have a story about perceptual ontological beliefs, so in what follows I will restrict my attention to these.

Before proceeding, I should also note that my account doesn't strictly speaking *rule out* other incompatibilist views. You can accept everything I say below and persist in thinking that ordinary people's ontological beliefs are appropriate or not very deeply held. My solution doesn't automatically show that these maneuvers are mistaken (though above I gave reasons for thinking that they are inadequate *as solutions to the Problem of Reasonableness*). What it shows is that they are unnecessary: once the causal and evaluative components are in place, the revisionary ontologist has discharged her explanatory burden and doesn't need to say anything more. So, you don't need to be convinced that the objections to other incompatibilist views are decisive to find my approach interesting.[185]

3.3.1. The causal component

Let's start with the causal component. Presumably, our ontological beliefs are at least indirectly influenced by various evolutionary and cultural factors. In what follows, I will solely focus on the evolutionary factors. This seems reasonable: since there is remarkably little cross-cultural disagreement over the ontological truth, we have some reason to suspect that our cultural heritage had relatively little influence on these beliefs (compare this to the much more significant cross-cultural disagreement over matters of morality or

[185] Thanks to Karen Bennett for helpful discussion here.

religion). I will outline an evolutionary account of why ordinary people don't accept any particular revisionary ontology. Given the revisionary ontologist's background assumption that some revisionary ontology is true, this amounts to an explanation of their error. While the story is admittedly sketchy, various strands of research in the empirical sciences strongly indicate that something like it is correct. But since I only have to explain why we don't tend to believe the true ontology, not why we tend to believe any particular ontology, a relatively sketchy story will do for my purposes. (I relegated references to the empirical literature to the footnotes.[186])

Evolution plausibly affected our ontological beliefs in at least two ways. First, it affected the main *capacity* we rely on when forming such beliefs: visual perception. Second, various selective mechanisms also affected our *tendencies* to form certain ontological beliefs.[187] It is the latter I will be mostly concerned with, but we should be clear about what falls under it. A tendency that could affect our belief-forming procedures isn't a belief yet. Evolution didn't directly favor any particular range of ontological beliefs, or for that matter any beliefs at all, since individual belief states are not heritable traits. Rather, some dispositions are useful to have when interacting with one's environment, and beings with these dispositions will be likelier to entertain certain beliefs. Sharon Street has in mind a similar process when she speaks of *evaluative tendencies*. Our early hominid ancestors were unlikely to have evaluative beliefs of the same conscious, reflective sort that we have, but they may have experienced some types of

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[186] See Osborne 2016 and Rose and Schaffer forthcoming for a more thorough discussion of the relevant empirical literature.

[187] See FitzPatrick 2015 for a similar distinction between the evolutionary explanation of capacities and contents. For reasons to become clear immediately, I think it's better to focus on tendencies to form beliefs, rather than the beliefs themselves. (Thanks to Lu Teng and Dan Korman for helpful discussion

behavior as "calling for" reciprocation or retribution. If they passed these evaluative tendencies on us, we are likely to have moral beliefs that more or less mesh with them (2006: 117–120).

In a similar fashion, even if our early ancestors didn't have conscious, reflective ontological beliefs, they had the tendency to treat regions of space with certain features as containing composite objects – *ontological tendencies*, as I shall refer to them in what follows. For example, when they encountered matter arranged enemy-wise, food-wise, shelter-wise, etc., they behaved as if there was an object where these pluralities were. These are *positive* ontological tendencies: tendencies to represent the environment as containing certain objects. Ontological tendencies are not conscious states, but it's plausible that conscious, reflective beings that inherited them are also more likely to form ontological beliefs in keeping with such tendencies; thus we tend to believe in enemies, food, shelter, and so on. These ontological beliefs are perceptual in some broad sense: either they are directly based on experiences as of composite objects, or are perhaps spontaneously formed in response to raw perceptual experiences as of qualities distributed over regions (see section 3.3).

It's pretty clear that the uncompromising sparse revisionist will rely heavily on our positive ontological tendencies when providing the causal component. One might then expect that the uncompromising revisionary universalists would likewise make use of negative ontological tendencies: tendencies to treat certain regions as if they *didn't* contain objects of a certain kind. But are there such things as negative ontological tendencies? This is a somewhat tricky question. There is an obvious difference between not believing

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here.)

that there are tree-dogs and believing that there are no tree-dogs. It's less clear what the difference is supposed to be between not having the tendency to treat a region as if it contained an object, and having the tendency to not treat a region as if it contained one. In any case, if you think there is a difference, let's focus on the (perhaps weaker) claim that that our ancestors lacked the ontological tendency to form beliefs about tree-dogs, trout-turkeys, and other unusual objects. The universalist needs to assume nothing stronger than that. For plausibly, under the right circumstances, the absence of a disposition to treat certain regions as containing an object is sufficient for forming the belief that the object in question doesn't exist. For example, if S lacks the tendency to treat regions containing disjoint pieces of matter arranged tree-wise and dog-wise as containing tree-dogs, and is asked to consciously reflect on whether she believes that there are tree-dogs, then S will plausibly form the belief (if she didn't already have it) that there are no tree-dogs. In a broad sense, beliefs like this are perceptual too. Perhaps S has perceptual experience as of various composite objects, and forms the belief that there are no tree-dogs because she doesn't find them represented in her perceptual experience. Alternatively, she might only have perceptual experiences as of raw qualities distributed over matter, and (upon being asked to reflect) forms the belief that there are no tree-dogs because she doesn't find herself disposed to spontaneously form the belief that there are. Either way, the sheer absence of abundant ontological tendencies seems sufficient for ordinary people to form the belief, at least sometimes and at least on reflection, that the universalist's strange objects don't exist. This is all the uncompromising abundant revisionist needs.

How can this sketchy story give us the desired causal component? Keep in mind that

we aren't looking for an explanation of ordinary people's ontological beliefs. All we need to explain is why they were not likely to end up with the true ontology of material objects, whatever that is. From the revisionist's point of view, this amounts to showing that for any particular revisionary ontology, we were not likely to have ended up believing *that* ontology. To this purpose we need not suppose anything stronger than that ordinary ontological tendencies weren't maladaptive, which is a reasonable assumption. Evolution selects for the ability to track and interact with qualified portions of matter. There are various possible sets of dispositions that allow for this ability; the tendency to accept common sense ontology is one of them. Other dispositions might have been just as adaptive as ours; what matters is that our ancestors were at no disadvantage for having ordinary ontological tendencies. For all practical purposes, tracking tigers is no worse than tracking tiger-rocks, pieces of matter arranged tigerwise, or conjoined pairs of tiger-halves.[188]

So, it wasn't evolutionary disadvantageous to have ordinary rather than revisionary ontological tendencies. But was it also beneficial? It is important to emphasize that the causal component of my story doesn't require this stronger claim. There might be any number of reasons why we carve up the world into objects the way we do. Perhaps it's less cognitively burdensome to track pluralities with certain features "as one" (or more accurately, as composing an object); and perhaps it's less cognitively burdensome if we don't track wildly scattered and heterogeneous objects, because matter arranged that way

[188] Cf. Singh and Hoffman 2013: 181–182. The influence of evolution on our ontological tendencies also depended on our ancestors' biological constraints: perhaps some possible ontological tendencies would have been even more adaptive than ours, but they were simply unavailable to our ancestors given their visual system. When I say that our ancestors' ontological tendencies were not maladaptive, I don't mean to rule out this possibility. Thanks to Philippe Lemoine here.

is rarely important for our survival.[189] Or perhaps there is some other explanation – the details don't really matter. Suffice it to say that even absent an explanation of why we have the particular ontological beliefs that we have, the mere fact that ordinary ontological tendencies weren't maladaptive means that there was no particular reason to expect that we would stumble upon any of the revisionary ontologies on the market, including the true one. To be sure, for all I said there was also no particular reason to expect that we would *not* stumble upon the true ontology; this is something we can stay neutral about.

This last qualification is important because it helps us avoid a potential confusion. The story I gave above might superficially resemble an evolutionary debunking argument. Generally, debunking arguments attempt to show that beliefs about a certain subject matter have a bad epistemic status due to their etiology.[190] It would be bad news if my story boiled down to an evolutionary debunking argument, since these arguments are notoriously controversial. Many philosophers resist some of their particular applications, and some doubt that anything with the structure of an evolutionary debunking argument can be dialectically successful.[191]

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[189] Lewis (1986: 211) and van Cleve (1986: 144–146) – both universalists – make similar remarks to the effect that an object is more likely to gain entry into our folk ontology if it's spatially continuous, easily distinguishable from its background, and its parts move in concert. Similar criteria of folk objecthood have been proposed in cognitive psychology (Spelke 1990) and cognitive science (Taraborelli 2002: 1). See especially Spelke's four principles of object recognition: the principles of cohesion, boundedness, rigidity, and no action at a distance (1990: 49). For a general survey of the "binding problem(s)" (one aspect of which is why we treat some pluralities as single units), see Roskies 1999.

[190] For debunking arguments in ethics, see Harman 1977: Ch. 1, Joyce 2006, Street 2006 and Clarke-Doane 2012; in mathematics, Benacerraf 1973, Field 1989: 25–30 and Clarke-Doane 2012; in logic, Schechter 2010; in modal epistemology, Sidelle 1989 and Rea 2002: Chs. 4, 8; and in material-object metaphysics, Korman 2014, 2016 and Benovsky 2015.

[191] Against debunking arguments in metaethics, see Copp 2008, Enoch 2010 and FitzPatrick 2015, and in the philosophy of mathematics, Clarke-Doane forthcoming. For domain-neutral objections to debunking

However, I have *not* put forward the causal component as a debunking argument. Speaking in the abstract, evolutionary debunking arguments make two substantive claims: (1) an empirical claim about the origin of our beliefs about a subject matter, and (2) an epistemological claim to the effect that if our beliefs have that origin, then this serves as evidence of some epistemic shortcoming (the beliefs in question are unjustified, unreliable, they don't constitute knowledge, etc.). Crucially, nowhere did I defend anything in the ballpark of (2) as it applies to perceptual ontological beliefs. I didn't say that the evolutionary influences that shaped our ontological beliefs gave us *any* reason for abandoning those beliefs. I put the evolutionary story to a much more modest use: *after* the revisionist gave her favorite arguments for her position (not debunking arguments, mind you, but arguments of the sort I will discuss in sections 3.5 and 3.6), she can address the residual Problem of Reasonableness by showing that there was no reason in the first place to expect evolution to select for the ontological tendencies that would have led us to the ontology that happens to be true.

But doesn't the stronger version of my story, which I neither endorsed nor ruled out, commit us to the relevant epistemological premise? If evolution doesn't merely *fail to select against* but also *selects for* ordinary ontological tendencies, then presumably, it selects on a basis that is independent from the ontological truth. For example, if it's cognitively less burdensome to posit composite objects wherever there is a qualified portion of matter with certain features, then this fact is independent from whether the composite objects in question are really there – the ontological truth "knows nothing" of how hard it is for us to accurately track it.

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arguments in general, see Williamson 2007: 220–241, White 2010, and Vavova 2014.

Now I admit that once we add the premise that our folk ontological tendencies were positively beneficial, and hence selected for, my story does start looking like a familiar style of debunking argument. However, we can accept this extra premise without granting that the resulting argument undermines our perceptual ontological beliefs. For example, White (2010) and Vavova (2014) argue that the mere fact that there is no reason to expect evolution to select for true beliefs about a subject matter doesn't by itself cast doubt on our beliefs about that subject matter; for that, we would need some positive reason to expect evolution to select for false beliefs, but to accept such a premise we would already have to make assumptions about the subject matter (which debunking arguments purport to show we cannot reasonably do).

The revisionary ontologist can adopt these strategies. That is, she is free to agree that even if our ancestors' ontological beliefs were adaptive (and not merely not maladaptive), this doesn't undermine our ordinary, pre-theoretical ontological beliefs. What undermine them are the revisionist's arguments, which are independent from the evolutionary story. Moreover, I will argue in sections 3.5-3.6 that while the revisionist isn't committed to this style of evolutionary debunking argument, she isn't committed against it either: she can keep most of her arguments for her revisionary view, without risking that the debunking argument undermines them. Before undertaking this task, however, I need to complete the uncompromising account by providing its evaluative component.

3.3.2. The evaluative component[192]

We are not done yet. It remains to provide the evaluative component: an explanation of why ordinary people's ontological beliefs are *reasonable*, despite being massively false by

[192] Thanks to Nico Silins for helpful discussion about this section.

the revisionist's lights. 'Reasonable' is an elusive word that rarely figures in the official vocabulary of epistemologists. But in the present context, I take it to pick out an internalist notion of epistemic evaluation – a kind of good epistemic status that supervenes on goings-on that fall within the subject's ken. Some details of the discussion to follow depend on various issues in epistemology that I cannot resolve in this chapter. Still, I hope to say enough to show that one way or other, the uncompromising revisionist can provide the evaluative component in a satisfactory way. Below I will exploit an analogy between ordinary people's situation according to revisionary ontologists and the much-discussed New Evil Demon Problem (NEDP).[193] The NEDP was originally raised as an objection to reliabilism, but it can be seen more generally as an argument for mentalism, the view that if two subjects are exact duplicates with respect to their non-factive mental states, they cannot differ with respect to the justificatory status of their beliefs (in short: justification supervenes on non-factive mental states).[194]

The classic NEDP scenario asks us to imagine a world whose inhabitants have the same beliefs and experiences as ourselves, but who are systematically deceived by an evil demon. Barring some potential complications stemming from externalism about mental content (see footnote 201), mentalists usually believe that the Demon World's inhabitants share our epistemic outlook: their beliefs have the same justificatory status as ours.

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[193] The problem was first raised in Cohen and Lehrer 1983 and Cohen 1984.

[194] For mentalism, see Wedgwood 2002 and Conee and Feldman 2004. Conee and Feldman usually focus on propositional justification and ask which propositions a subject would be justified in believing. My definition focuses instead on doxastic justification, since it specifies the conditions under which a subject's *beliefs* are justified. The definition is also silent on otherwise important details (for example, do past mental states count into the supervenience base or only present ones?), which don't matter for my present purposes. The mentalism/non-mentalism distinction largely coincides with the more well-known internalism/externalism distinction in epistemology, though perhaps not entirely (see Bergmann 2006: Ch. 3). Since later I will use the word 'externalism' for externalism about mental content, to avoid confusion I will divvy up the epistemological terrain along the mentalism/non-mentalism distinction.

Though some non-mentalists try to respect this desideratum[195], many pursue a different strategy: they distinguish between justification and some other positive epistemic status, and argue that although the beliefs of the Demon World's inhabitants aren't justified, they still have this other status. My strategy will be to argue that whatever we say about the Demon World's inhabitants, the revisionary ontologist can borrow that story and apply it to ordinary people in the actual world.

Let's start by distinguishing three possibilities in logical space:

(i) *Ordinary World*: Matter is arranged the way it appears to be, and common sense ontology is true and widely believed.

(ii) *Revisionary World*: Matter is arranged the way it appears to be, but common sense ontology is false (although widely believed).

(iii) *Demon World*: Matter is not arranged the way it appears to be; this world's inhabitants are under the demon's spell.[196]

I take it that ordinary people's beliefs are justified in the Ordinary World (of course, epistemologists will differ in their accounts of *why* they are). In the interest of saving space, I will mostly focus below on ordinary beliefs about which objects *do* exist. I will

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[195] For example, Goldman (1986) argues that justified beliefs result from processes that are reliable in normal worlds, and that the Demon World is abnormal.

[196] Thanks to Dan Korman for helping me see the logical space more clearly. Most philosophers working on the metaphysics of material objects believe that the conditions under which some objects compose a further object are constant across possible worlds (see, e.g., Markosian 1998: 216–217, Armstrong 1997: 12–13, Sider 2001: 202–203), though recently there have been a growing number of dissenters (Nolan 2005: 36, R. Cameron 2007, Miller 2009, Parsons 2013; for a helpful discussion of what is at stake in this debate, see J.R.G. Williams 2006). My sympathies lie with the contingentist camp, but nothing hangs on this, since I only need the three worlds to be *conceivable*, not metaphysically possible.

indicate in the footnotes how abundant ontologists should explain ordinary beliefs about which objects *don't* exist.

Suppose mentalism is true. Then whatever justifies ordinary people's ontological beliefs will also justify the beliefs of the Demon World's inhabitants. Several candidates are available to the mentalist (though not necessarily only to the mentalist). Perhaps ordinary ontological beliefs are immediately justified by perceptual experiences as of ordinary objects.[197] On this view, perceptual experience has rich content and already presents us with content about ordinary objects instantiating properties[198]. Or perhaps perceptual experience is coarse-grained and only presents us with raw sensible qualities (e.g. shape and color), but still immediately justifies our ontological beliefs by non-inferentially disposing us to form them.[199] Alternatively, the justification of ordinary ontological beliefs may be mediate. Perhaps, for instance, they are justified through inference (or some unconscious, inference-like procedure) from perceptual experiences, rich or coarse.[200] The details of these views don't matter much; they all allow the mentalist to maintain that the mere *falsity* of a belief is irrelevant to its justificatory status. Hence,

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[197] See Pryor 2000 for dogmatism and Huemer 2001 for phenomenal conservativism.

[198] By 'rich content', philosophers usually mean something stronger: they mean content as of objects belonging to certain *kinds* (Siegel 2010: Chs. 4–5, Masrour 2011). I don't want to enter a terminological dispute here. Suffice it to say that on some views we have perceptual experiences as of composite objects, while on others we don't.

[199] See McGrath forthcoming for this kind of view. For the coarse-grained view, see Bonjour 2003: 79. Silins (2013: 16 n4) argues that even if perceptual experience has *no* content (as according to Travis 2004), it could still immediately justify our beliefs.

[200] See Fumerton 1995, Bonjour 2003, and Wright 2004. Some sort of inferential story looks like the most plausible account of ordinary beliefs about which objects don't exist. One such story would go roughly as follows. Ordinary people have perceptual experiences as of ordinary objects, but they never perceive any non-occluded region of space as containing an extraordinary object. So (when the question arises), they infer that these regions don't contain extraordinary objects. Inferential beliefs of this sort are arguably justified by mentalist standards.

the inhabitants of the Demon World, and *a fortiori* the Revisionary World, have justified ontological beliefs.[201]

What if mentalism is false? Many (though not all) non-mentalist theories of justification imply that the Demon World's inhabitants have unjustified beliefs. For example, according to a simple version of reliabilism, a belief is justified only if it was produced by a process that is reliable in the environment in which the belief was formed.[202] Clearly, hallucination isn't reliable, so the inhabitants' beliefs are unjustified by this account. However, most non-mentalists agree that the Demon World's inhabitants are doing well along *some* dimension of epistemic evaluation.[203] The revisionary ontologist can coopt these strategies and argue that ordinary people are doing well in exactly the

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[201] There is a wrinkle: I described the Demon World as one whose inhabitants share our beliefs. Some have argued that externalism about mental content would rule this out, since the inhabitants lack causal contact with bits of reality they would need in order to acquire certain concepts necessary for forming these beliefs (Majors and Sawyer 2005; cf. McGinn 1977 and Burge 1979). Doesn't content externalism raise similar worries for uncompromising sparse revisionists? I don't think so, or at least, it raises no problem peculiar to the uncompromising approach. Content externalism leaves us with three options regarding the connection between ordinary object concepts and beliefs involving them. (1) Though the inhabitants of a sparse Revisionary World have no causal contact with ordinary objects, they have enough contact with the external world to share the object concepts of the Ordinary World's inhabitants (Merricks 2001: Ch. 1). If so, they can have (mostly false) beliefs about ordinary objects, as assumed throughout this chapter. (2) A sparse Revisionary World's inhabitants lack some object concepts; for example, since they have no causal contact with H_2O molecules, they don't have the concept *water* (cf. Korman 2006) and express no proposition when uttering 'water'-sentences. In this case, we can reframe the original story in terms of ordinary people's justified/rational/blameless (etc.) tendency to utter sentences using 'water' and other non-referring terms. (3) Causal contact with qualified portions of matter doesn't merely equip us with ordinary object concepts, but also makes our beliefs involving those concepts true. For example, according to Thomasson's (2007, 2015) analytic deflationism, sentences quantifying over chair-shaped lumps of matter, or particles arranged chair-wise, analytically entail sentences quantifying over chairs. Now, this view *is* incompatible with the uncompromising strategy, but only because it's incompatible with sparse ontologies as such. *All* sparse ontologists have to explain what is wrong with analytic deflationism. Since the problem isn't specific to my approach, I won't attempt to undertake this task here. (Thanks to Dan Korman for helpful discussion here.)

[202] Goldman 1979

[203] See also Alston 2005 for a pluralist view of epistemic desiderata (Alston altogether dispenses with the notion of justification).

same way in the Ordinary World.

One familiar non-mentalist strategy is to distinguish justification from an evaluative concept in the vicinity that *does* obey mentalistic standards. Many such candidates have been discussed in the literature: rationality[204], reasonableness[205], personal justification[206], etc. (some of these might come down to the same thing, but this is irrelevant for my present purposes). These notions were all introduced to capture an evaluative property whose possession is completely up to the subject. It seems clear that whichever of these properties we choose, if the Demon World's inhabitants have it then so do ordinary people in the Revisionary World. After all, they have the same mental states, and mentalism is true of the relevant dimension of epistemic evaluation (even if not of justification).

A second non-mentalist approach distinguishes justification from a weaker notion, which accurately characterizes the Demon World's inhabitants but (unlike the mentalistic concepts mentioned above) still makes reference to the environment. Sosa's (2003) notion of adroit justification fits this template: according to him, the beliefs of the Demon World's inhabitants are adroit-justified, meaning that they were acquired through the exercise of an intellectual virtue which nonetheless led astray due to the epistemically inhospitable environment. Again, we can say the same thing about the Revisionary World's inhabitants: they live in an inhospitable environment, either because qualified portions of matter cause them to have experiences as of ordinary objects, or because they dispose the inhabitants to form false beliefs about ordinary objects in some other way.

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[204] Goldman 1986, 2009

[205] Littlejohn 2009

[206] Bach 1985, Engel 1992

But if the environment weren't so hostile, for example if there were ordinary objects around them, their beliefs would be fully justified or, in Sosa's terminology, "apt-justified".

A third non-mentalist strategy distinguishes justification from an epistemic property that is purely *ameliorative*: beliefs with the property don't necessarily have anything going for them, but have less going against them than beliefs without it. Natural candidates for playing this role include subjective epistemic blamelessness[207] and epistemic excusability[208]. Perhaps the beliefs of the Demon World's inhabitants are unjustified, even irrational, yet they are excusable/blameless: the inhabitants violated their epistemic obligations, but the violation should be excused because it wasn't up to them to avoid it. Again, the revisionary ontologist is free to say the same thing about ordinary people: their ontological beliefs are unjustified, but their transgression should be excused because it wasn't within their reach to avoid it.

Without committing myself to any specific epistemological view, then, I propose the following general strategy for revisionary ontologists. Pick your favorite theory of epistemic justification, and see what it says about the NEDP; if necessary, also figure out what kind of positive or ameliorative epistemic status (other than justification) you would like to ascribe to the beliefs of the Demon World's inhabitants. Then apply these results to ordinary people in the Revisionary World. Finally, add that the Revisionary World is our world.

This way of proceeding also helps address some natural objections. For example, one might worry that it's too easy for a belief to be excusable. Beliefs formed as a result of

[207] Goldman 1988

brainwashing or on the basis of some widespread superstition also seem excusable, but surely ordinary ontological beliefs have more going for them than beliefs caused by brainwashing. My answer is simple: to the extent that objections of this kind have force, they should be seen as posing a problem not to the uncompromising strategy, but to the accompanying epistemological view. This is because the plausibility of an epistemological view's treatment of ordinary ontological beliefs stands or falls with the plausibility of that same view's treatment of the NEDP; if our metaphysically uninitiated fellows are doing better than the brainwashed, then so are the Demon World's inhabitants.[209] However, while being an uncompromising revisionist is optional, *everyone* has to say something about the NEDP. So even if an epistemological view has implausible consequences for the status of lay people's ontological beliefs, this is no extra cost over and above the same view's consequences for the NEDP. If the cost is worth paying there, it's also worth paying in the case of revisionary ontology; if it isn't, then we should abandon it anyway and combine the uncompromising strategy with a different epistemology.[210]

We are now ready to state the uncompromising solution to the Problem of Reasonableness. Ordinary ontological beliefs are explained by selective mechanisms that were independent from the ontological truth. Though in itself this doesn't obviously indicate that these beliefs are false, the revisionist's arguments (some of which we will

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[208] Williamson 2000: 257, 2009: 359–360, forthcoming

[209] See Audi 1993: 28, Bonjour 2002: 248, and Cohen and Comesaña forthcoming for the analogous worry about ameliorative treatments of the NEDP. See also Littlejohn forthcoming for a forceful response.

[210] Likewise for objections to the effect that there *is no* interesting epistemic concept that obeys mentalist standards, and that therefore the uncompromising revisionist cannot say anything good about the folk's ontological beliefs. Again, if this is true, it is also true of the beliefs of the Demon World's inhabitants. And so, if this is an implausible result, we should blame it on the epistemology that (in conjunction with the uncompromising approach) implies it, rather than the uncompromising approach itself.

review in sections 3.5–3.6) show that they are in fact false. Yet these beliefs are reasonable in the sense that on a wide range of views, they satisfy a mentalist criterion of favorable epistemic evaluation. This is how ordinary people ended up with large swathes of false, albeit reasonable, ontological beliefs. So much for the positive account; but we aren't done yet. In the following section I will consider an important challenge to this uncompromising solution.

3.4. The Backfiring Challenge

One might object that my two-pronged solution to the Problem of Reasonableness is unstable. The objection goes as follows. If ordinary people's ontological beliefs were shaped by evolution in the way I described above, then they cannot rationally maintain those beliefs once they learn of their evolutionary origin. On the face of it this gives the revisionist an edge, since her ontological beliefs are based on largely theoretical considerations. But, the objector could continue, the revisionary ontologist's ontological beliefs are not any less affected than ordinary people's. This is because the arguments revisionists standardly use to establish their views cannot avoid ultimately relying on perceptual ontological beliefs; even though these arguments mostly appeal to theoretical considerations, they always have a premise that takes the existence of *some* ordinary objects for granted. To be clear, this objection is not peculiar to my uncompromising position; the worry is not that *I* am somehow committed to a thesis that undermines the revisionist's arguments. We have seen that one can consistently accept my uncompromising solution and remain skeptical about evolutionary debunking arguments. The worry instead is that whatever my own view is, some such argument *is* sound and has a detrimental effect on the revisionist's project. Call this the Backfiring Challenge.

Korman endorses something like the Backfiring Challenge: he argues that there is a powerful debunking argument that undermines ordinary people's ontological beliefs and also extends to most revisionary ontologies (perhaps nihilists are unaffected, since their belief in simples isn't in any way based on perceptual experiences as of simples).[211] In phrasing the argument I mostly follow him, though I slightly changed his formulation:

Perceptual Debunking Argument

(D1) There is no (nondeviant) explanatory connection between ordinary people's perceptual ontological beliefs and the ontological truth[212]

(D2) If so, then once they learn of this, ordinary people cannot rationally maintain their perceptual ontological beliefs

(D3) So, once ordinary people learn that there is no nondeviant explanatory connection between their perceptual ontological beliefs and the ontological truth, they cannot rationally maintain these beliefs[213]

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[211] Korman doesn't believe that the argument is ultimately sound, but he argues that rebutting it requires some extreme measures: we would need to embrace anti-realism, theism, or a special faculty of apprehension. I won't discuss these options here, since if my argument in the next few sections is correct, at least the *revisionary ontologist* needs none of these extreme measures.

[212] Korman uses the expressions 'object belief' and 'object fact'. Unlike my 'ontological belief' and 'ontological truth', these only refer to beliefs and facts about which objects *do* exist. This difference is irrelevant to the present point, so I will stick with my terminology.

[213] Cf. Korman 2014: 3; 2016: Ch. 7. Debunking arguments against perceptual ontological beliefs were defended before Korman, but usually not in much detail. Before Korman's paper, the most elaborate debunking arguments targeting ontological beliefs were due to Merricks 2001: 73–76 and Rea 2002: Ch. 4. See also Heller 1990: 44 and Benovsky 2015: §2, and for a related discussion of whether we have perceptual evidence for the existence of ordinary objects, Sider 2013: §5–7. Sometimes the line between debunking arguments and the Argument from Arbitrariness for Universalism (see below) is not fully clear. I think that some of the authors Korman cites as having defended debunking arguments in fact make something closer to the Argument from Arbitrariness.

Korman's argument for D1 is similar to the causal component I gave in section 3.3.1: our perceptual ontological beliefs are best explained by evolutionary and cultural factors that are independent from the ontological truth. As I earlier mentioned, it's controversial whether in general we can get from a debunking argument's empirical claim to its epistemological claim, in the present case, from D1 to D2. Korman thinks we can, and for the argument's sake I will grant this in what follows. Then, he argues, the revisionist is in trouble. We can begin to see why by considering the following popular argument for Universalism:

Argument from Vagueness

(V1) Vague composition is impossible

(V2) If V1, then either every plurality of objects has a fusion or none do

(V3) Some pluralities of objects have a fusion

(V4) So, every plurality of objects has a fusion. So, Universalism is true.[214]

As we all know from the extensive literature on this argument, its most controversial premises are V1 and V2.[215] Indeed, proponents of the argument don't just take them for granted but usually argue for these premises in detail (see especially Sider 2001: 120–139). What they typically don't argue for is V3: standard presentations of the argument simply assume that Nihilism is false and that some pluralities of objects have a fusion. But,

[214] The argument was first proposed by Lewis (1986: 211–212) and then refined by Sider (2001: 120–139), who also put it to use in arguing for four-dimensionalism about persistence.

[215] See, for instance, Hudson 2000 and Donnelly 2009 against V1 and Merricks 2005, Nolan 2006 and D.

Korman argues, if the Perceptual Debunking Argument is sound then this premise cannot be simply taken for granted. For even though the support for most of the other premises is largely theoretical, presumably universalists accept V3 on the same grounds as ordinary people: perception, which the Perceptual Debunking Argument teaches us not to trust on such matters. To be clear, the point is not that perception is *in general* unreliable; no party to the debate questions the reliability perception so far as the distribution of sensible qualities over space-time is concerned. The problem is that V3 relies on high-level perceptual experiences as of ordinary objects, and it's beliefs based on these kinds of experiences that the argument implies we cannot trust. (There is a wrinkle Korman is well aware of: there are arguments against nihilism, and thus for V3, which don't seem to rely on perception. I will get back to this issue in sections 3.5-3.6.)

Similar considerations apply to other arguments for Universalism, for example the Argument from Arbitrariness (Korman's interests extend to similar arbitrariness arguments for plenitudinous views about persistence and modality; however, I will restrict my attention to this style of argument for universalism):

Argument from Arbitrariness

(A1) If there are any ordinary objects, they are scattered (most of what falls within the boundaries of a putative ordinary object is empty space)

(A2) There are some ordinary objects

(A3) If ordinary objects are scattered, there is no ontologically significant

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Smith 2006 against V2.

difference between ordinary objects and arbitrary sums

(A4) If there is no ontologically significant difference between ordinary objects and arbitrary sums, then if there are some ordinary objects, there are also arbitrary sums

(A5) So, there are arbitrary sums. So, Universalism is true.[216]

Here, too, while the most controversial premises are A3 and A4, in the present context the real culprit is A2. The Argument from Arbitrariness already assumes that A2 is true, and the universalist's main grounds for accepting this premise are perceptual. But if the Perceptual Debunking Argument is sound, we cannot accept A2 on the basis of perceptual experience.

Korman mainly focuses on abundant ontologies like Universalism, but in so far as they rely on debunked premises, similar problems arise for other revisionary views. One cannot simply start with the assumption that ordinary objects of this or that sort exist and proceed from there by arguing for some modification of folk ontology. If we take the Perceptual Debunking Argument seriously, it's precisely this assumption that we are no longer in a position to make. Thus, Korman concludes, the Perceptual Debunking Argument proves to be as problematic for most revisionary ontologist as for friends of common sense.

In the next section, I will address the Backfiring Challenge and will argue that even if the Perceptual Debunking Argument is sound, it doesn't threaten the standard arguments

[216] This is one of several possible versions; the argument has no canonical formulation. See van Cleve 1986: 144–146, Rea 1998, Hawley 2001: 6–7, Hudson 2001: 108–112, and Moyer 2006: 408. For applications to persistence, see Shoemaker 1988: 208–209 and Sider 2001: 156–157; and to modality, Yablo 1987: §3 and Bennett 2004b: §4.

for revisionary views. This is because, *pace* Korman, these arguments don't essentially rely on perceptual ontological beliefs. Due to space limitations, I cannot give a complete survey of all revisionary arguments. It will have to do to focus on some well-known arguments for two of the most widely discussed views: Organicism, the view that some *x*s compose an object iff their activity constitutes a life, and Universalism, the view that any non-overlapping *x*s in any arrangement compose an object. If I'm correct, then most revisionary ontologists are not threatened by the Backfiring Challenge and are free to adopt my uncompromising strategy.

3.5. Organicism undebunked

Organicism is Peter van Inwagen's answer to what has come to be known as the

> *The Special Composition Question (SCQ)*: For any *x*s, under what necessary and jointly sufficient conditions is it the case that there is a *y* that the *x*s compose? (1990: Ch. 2)[217]

Van Inwagen's preferred answer to this question is what has come to be known as

> *Organicism*: There is a *y* that the *x*s compose if and only if the activity of the *x*s constitutes a life (1990: 82)

Why believe Organicism? Van Inwagen's argument for the view is not completely

[217] See also Hestevold 1981 for a special instance of SCQ: for any *x* and *y*, under what necessary and jointly sufficient conditions is it the case that there is a *z* that *x* and *y* compose?

straightforward. He spends the bulk of *Material Beings* criticizing other answers to SCQ and addressing various objections to his own. The relatively brief positive argument he offers in Chapter 12 is an argument by elimination, and it goes as follows. First of all, we know that at least some composite objects exist. We know this because we know that we exist, and we are not immaterial. So the particles arranged human-wise in the region where I sit compose a material object, me (1990: 115–120). But *why* do they compose an object? Knowing that I exist helps me realize *that* they do, but there is no good reason for thinking that thought and consciousness are particularly important for composition (120–121). So the reason these *x*s compose an object has to be something else. A plausible candidate explanation is that they compose something because their activity constitutes a life. But life-constitution is not peculiar to particles arranged human-wise; so not only humans exist but lower-level organisms too (121–122). So life-constitution is at least *sufficient* for composition. But is it also necessary? Van Inwagen offers three reasons for thinking that it is. First, if we explain our own existence in terms of life-constitution then we are not forced to also admit the existence of inanimate objects, and general considerations about parsimony tell against their existence. Second, no rival answer to SCQ would generate exactly those objects whose existence we would intuitively accept (it would either generate fewer or more), so none of Organicism's rivals should be preferred on intuitive grounds. Third, inanimate objects generate certain metaphysical puzzles that don't arise for living beings. So we have some reason to reject the existence of inanimate objects and conclude that life-constitution is also necessary for composition. So, we have some reason for thinking that Organicism is true (1990: 123).

Now, as it stands, van Inwagen's argument isn't debunking-safe. But I think a small

tweak is enough to make it so. The argument needs such a tweak because as stated, it relies on a premise to the effect that none of Organicism's rivals should be preferred on intuitive grounds, but our intuitions about which objects exist are plausibly affected by the same evolutionary factors that also affected our perceptual ontological beliefs. So, once we assume that the Perceptual Debunking Argument is sound, these intuitions lose their evidential value. We can circumvent this worry in two steps. Let's begin with the first half of van Inwagen's argument, which tries to establish our own existence:

The Cogito Argument

(P1) I exist

(P2) If I exist, then either I'm material or I'm immaterial

(P3) I'm not immaterial

(P4) If I'm material, I'm either a composite object or a simple

(P5) I'm not a simple

(C1) So I'm a composite material object

I have no space to fully evaluate the Cogito Argument here. Fortunately we don't need to; it's enough to show that it doesn't have debunked premises. P1 relies on the intuition that no thought could exist without a thinker. While not entirely uncontroversial, this premise doesn't rely on perceptual experience as of ordinary objects; it looks more like the outcome of a priori reasoning. P2 and P4 also strike me as a priori (and arguably analytic) truths. P3 can be supported by whatever you think are the best arguments against substance dualism, idealism, and the view that 'I' is a syntactically singular but

semantically plural referring term. I don't mean to dogmatically assert that these arguments are conclusive; all I want to say is that they don't rely on perceptual experience as of ordinary objects (of course, the arguments against the first two probably rely on perceptual experiences as of qualified portions of matter).[218] P5 can be supported by the same intuitions that motivated the acceptance of P1. Plausibly, for any particular material simple, my conscious states could exist without *that* simple existing. However, there can be no thought without a thinker. So, the thinker that has my conscious states cannot be identical to any of these material simples. As with the previous premises, I'm not saying that these considerations in favor of P5 are incontrovertible. But it's important to see that they aren't in any way based on perceptual experiences as of material objects.

How can we get from the Cogito Argument's conclusion to Organicism? The next few steps go as follows:

(P6) If I'm a composite material object, then the particles that compose me do so either (a) because their activity gives rise to thinking or (b) because their activity constitutes a life or (c) for some other reason (e.g. *Contact*, *Fastening*, *Cohesion*, *Fusion, Universalism*)

(P7) (a) is false

(P8) The (c)-answers give rise to puzzles that (b) avoids

These premises, too, are safe from debunking. P7 relies on the Cogito Argument's

[218] Arguably, our best evidence against 'I' being a semantically plural referring term is introspective. Some find this introspective evidence inconclusive (e.g. Rosen and Dorr 2002: 159–160), and if they are right, this is a weakness of van Inwagen's argument. This doesn't matter, however; what matters is that nobody believes that 'I' has a single referent on perceptual grounds.

conclusion that I'm a composite object, and intuitions about what could explain that my parts compose something. The explanatory intuitions van Inwagen relies on here might be controversial, but they make no appeal to perceptual ontological beliefs. They at best rely on counterfactual intuitions about what *would* explain the existence of composite material objects if any existed. P6 may be controversial: why think that (a)-(b) and the views lumped under (c) are the only salient views about what explains the existence of composite objects? This is a reasonable question, but amending the list wouldn't make the premise any more susceptible to debunking. Van Inwagen's tacit assumption is that there *has to be* a principled answer to SCQ, and that there has to be something that accounts for the occurrence of composition. One may well take issue with this assumption (see Markosian 1998), but it's clearly based on general methodological considerations rather than perceptual experiences as of composite objects. P8 seems safe, too. Of course, many puzzles of material constitution arise for organisms just as forcefully as they arise for artifacts – just think of the Problem of the Many, which van Inwagen discusses at length in chapters 17–18. But it seems reasonable to think that *some* puzzles of material constitution only arise for artifacts.[219]

Now we have reached the critical point where the original argument has to be changed. Van Inwagen wants to rule out (c)-views in part because they lead to puzzles

[219] For instance, there appears to be no "Ship of Theseus"-style puzzle about living organisms. Suppose that an organism, Original, gradually loses all of its particles. At a later time, these particles are collected and put back together so as to compose an exact replica of Original, which we can call SameParts. I think it's plausible that SameParts isn't identical to Original, *even if we don't replace Original's detached parts but simply let Original die when it has lost a critical number of parts*. In any case, this assumption – whether you find it plausible or not – relies only on the conceptual intuition that it's part of the concept *organism* that the continuation of an organism's life functions is always necessary for its persistence. To be sure, other general problems that arise with inanimate objects may arise with organisms, too (Eklund 2002: 249–252). Still, even if this is a problem for van Inwagen, it's independent from the Perceptual Debunking Argument.

that Organicisms avoids, but also because they are no less at odds with our intuitions than Organicism is. This second source of motivation is clearly debunked, however, since it relies on intuitions whose reliability are undermined by the Perceptual Debunking Argument (assuming that it's sound, of course). But it's not hard to see that there is a quick fix to this problem. For we can still compare Organicism to its rivals on the basis of how well they cohere with those ontological beliefs that we have reason to hold on the basis of premises P1-P7, none of which, we have seen, relies on perceptual experiences as of composite objects. Call such ontological beliefs *saved*. Then the argument can be continued as follows:

P9) (c)-views aren't compatible with more of our saved objet beliefs than (b) is

P10) If (c)-views aren't compatible with more of our saved ontological beliefs than (b) is, but give rise to puzzles that (b) avoids, then these views are false

From P8-P10, we get that the (c)-views are false; and from this and P6-P7, that (b) – Organicism – is true. This concludes my reconstruction of van Inwagen's argument, which, we have seen, can be based entirely on premises that don't rely on perceptual experiences as of material objects, or intuitions affected by the problematic evolutionary factors. In fact, it seems to me that the Perceptual Debunking Argument even slightly *improves* the organicist's dialectical position. Van Inwagen's claim that Organicism is at least as intuitive as its rivals is not beyond dispute, and it has frequently been questioned

(see, e.g., Hudson 2001: 108). But the switch from the intuition-based formulations to P9 and P10 renders this issue irrelevant. If the Perceptual Debunking Argument shows that we cannot rationally maintain our perceptual ontological beliefs, but that on the basis of P1-P7 we can still keep our beliefs about organisms, then Organicism does a very good job respecting these latter beliefs.

This concludes my discussion of van Inwagen's argument. It goes without saying that the argument has several controversial premises. However, this is irrelevant to my present point. I'm not *endorsing* either van Inwagen's original argument or my slightly modified version of it; in fact, I think that some of the argument's premises are more likely to be false than true. I merely wish to point out that the organicist is within her rights to rely on my modified version even after being presented with Korman's Perceptual Debunking Argument. Nobody who finds Organicism plausible on the basis of the argument reconstructed in this section should stop finding it plausible because of the Perceptual Debunking Argument; if anything, Organicism emerges strengthened from the encounter. As it turns out, the organicist's situation is nothing special: in the next section, I will argue that the core arguments for Universalism also survive debunking.

3.6. Universalism undebunked

In this section, I will argue that similarly to organicists, universalists can keep their favorite arguments for their view even if the Perceptual Debunking Argument is sound. Recall: the worry is that most arguments for Universalism have premises that this argument shows we have no good reason to accept. For example, V3 in the Argument from Vagueness simply asserts that some pluralities compose something. So does A2 in the Argument from Arbitrariness. How can we assume, though, that there *are* any

composite objects if we cannot base this belief on perceptual experience as of composite objects? As I see it, there are at least two arguments the universalist can offer for the premise that some composite material objects exist. The first we already know: it's the Cogito Argument, the first segment of van Inwagen's argument for Organicism. This argument is as available to universalists as it is to organicists. We have already seen that it has no debunked premises, so the Universalist is free use it to argue for V3 and A2. The second is based on the possibility of gunk (Sider 1993), and goes as follows:

The Argument from the Possibility of Gunk[220]

(G1) It's possible that there is gunk

(G2) If it's possible that there is gunk, Nihilism is possibly false

(G3) If Nihilism is possibly false, then Nihilism is false

(G4) So, Nihilism is false; so, some objects have a fusion

According to Korman, the argument's main weakness is G3: the thought behind it, he thinks, is that if composition occurs in any possible world, then surely the actual world is one of them. "But where could this conviction be coming from," he asks, "if not from experiences that represent stuff arranged treewise as making up a single object?" (2014: 10).

Now, the standardly cited motivation for G3 doesn't appeal to perceptual experience. Rather, it relies on the intuition that as a "proposition of metaphysics",

[220] This is not the only gunk-based argument against nihilism; a related argument is that certain empirical considerations suggest that there is gunk, or that it is at least an open scientific hypothesis that there is gunk (Sider 2013: §9). I won't pursue this line of argument here, and I will leave it to the reader to decide whether the Perceptual Debunking Argument threatens it.

Nihilism is necessarily true, if true at all (Sider 1993; 2013: §10). Korman recognizes this, but contends that would-be universalists still need a reason for thinking that Nihilism is false even once they accepted that it's possibly false – after all, Nihilism is obviously false in a possible world that contains only one simple, yet the existence of such possible worlds gives us no reason to accept the consequent of G3 (2016: Ch. 7, 3.3). Suppose for the argument's sake that Korman is right and that we need to appeal to perceptual experience to establish G3's consequent.[221] This wouldn't show that the *argument* relies on perceptual experience. Suppose I ask you to accept G3 on the basis that you should accept its antecedent and its consequent, and I ask you to accept the consequent on the basis of your perceptual experience. In that case the Argument from the Possibility of Gunk shouldn't move you, but for reasons that have nothing to do with the trustworthiness of your perceptual experience. The problem arises at an earlier stage: I asked you to accept G3 partly on the basis of its consequent, but since the consequent is just the argument's conclusion, I thereby gave you a circular argument. So, even if Korman is right that G3 cannot be motivated by modal intuitions, he hasn't thereby shown that the argument relies on perceptual ontological beliefs.

Where does this leave us? What the Perceptual Debunking Argument shows is, at best, that the universalist cannot simply assume the premise that there are ordinary

[221] In fact, I think that Korman's objection relies on a widespread but flawed statement of the modal robustness intuition: that if an answer to SCQ is true in a possible world, it's true in all possible worlds. We can realize that this is an inadequate statement of the intuition by observing that for any candidate answer, there are infinitely many extensionally equivalent answers that nobody would think are necessarily true. Why think, then, that Nihilism is necessarily true (rather than extensionally equivalent to a thesis that is necessarily true)? The best answer I can think of is that Nihilism is a very simple and general thesis, and as such a good candidate for being a law of metaphysics. So, the intuition underlying G3 is that either it's a law that Nihilism is true or it's a law that it's false, and the laws of mereology are necessary (cf. J.R.G. Williams 2006: 495–497, R. Cameron 2007: 112–114).

objects and argue from there to the conclusion that there are also extraordinary ones. But we already knew this: Nihilism is a serious (if unpopular) view in material-object ontology, so it's quite clear that non-nihilist revisionary ontologists cannot assume its falsity without argument. Luckily, they don't have to: they can reject it on the basis of either the Cogito Argument or the Argument from the Possibility of Gunk, thereby making the Argument from Vagueness, as well as the version of the Argument from Arbitrariness presented in section 3.4, resistant to debunking.[222] Of course, this means that unless universalists accept the Cogito Argument or the Argument from Gunk, they are left without a defense of the premise that some pluralities of objects compose something. But I don't think this is a big deal. While some universalists would reject one of these arguments, I hardly know of any who would reject both.[223] If there are any, then

[222] This latter qualification is necessary because the Argument from Arbitrariness can be formulated in several ways, and some formulations presuppose the existence of objects not vindicated by either the Argument from the Possibility of Gunk or the Argument from Arbitrariness. For example, we still cannot argue for the existence of strange sums on the basis that there are *visibly scattered* ordinary objects, since the Argument from the Possibility of Gunk or the Argument from Arbitrariness give us no reason to believe in such objects. However, this version of the argument doesn't seem to me to have any significant advantage over the version I presented in the main text, according to which physics has shown *all* objects to be scattered. So even if the Perceptual Debunking Argument deprives the universalist of some versions of the arbitrariness argument, this doesn't seem to me to make the universalist's dialectical position significantly worse. I should note that Korman (2014: 9, 2016: Ch. 7, 3.3) is primarily interested in showing that the Perceptual Debunking Argument undermines arbitrariness arguments for the existence of objects with strange persistence conditions. I'm inclined to disagree with that, too, but pursuing the issue lies beyond the scope of this chapter.

[223] When he was a universalist Sider doubted that the Cogito Argument had much dialectical force (2001: 176–177), even though he accepted each of its premises. He did endorse the Argument from the Possibility of Gunk, however (1993, 2001: 179–180). Hudson rejects the possibility of gunk (2001: 84–90), but the metaphysics of persons plays a central role in his ontology. When discussing the Problem of the Many as it applies to persons, he regards the denial of our own existence as "something to be avoided at all costs" (18). Given his rejection of dualism and idealism, it seems that Hudson would be sympathetic to the Cogito Argument. Hawley (2001) doesn't discuss either argument but clearly assumes that persons are wholly material. Van Cleve (2008) is a liberal eliminativist who accepts only the existence of sums but not of ordinary objects with ordinary modal properties. This seems to imply (though van Cleve doesn't say so) that he also rejects the existence of people. However, in the same breath he endorses the possibility of gunk. The most "threatened" universalist that I know of is another liberal eliminativist, Mark Heller. Heller is

the Perceptual Debunking Argument (if sound) is bad news for them. Most universalists, however, can keep relying on their favorite arguments even if the Perceptual Debunking Argument is sound.[224]

This closes my (admittedly incomplete) discussion of the Backfiring Challenge. Throughout I have been assuming for the argument's sake that the Perceptual Debunking Argument was sound and argued that even in that case, revisionary ontologists could hold on to the arguments they usually use to establish their positions. This means that whether evolutionary considerations undermine ordinary people's ontological beliefs or not, they leave untouched the core arguments for revisionary views. Therefore, whatever the truth is about the merits of evolutionary debunking arguments, my two-pronged solution to the Problem of Reasonableness emerges as a powerful and as of yet overlooked alternative to the modest views.

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silent on the possibility of gunk but explicitly rejects the existence of persons (1990: 149–150). However, it is not perfectly clear the he denies our own existence. Perhaps we exist – and then the Cogito Argument can get going – even though we are not people. I think this position is conceptually incoherent, for reasons explained in Noonan 1998. But many people disagree with me; see, for example, Madden 2011.

[224] There is a third, less well-known argument for universalism, which may not escape debunking. It goes roughly as follows. Ordinary people have accurate beliefs about which objects there are; but it's an evolutionary/cultural accident that they believe in the objects that they do; so if we don't want to credit them with an extraordinary amount of luck, we should assume that any objects in any combination have a fusion (Hawthorne 2006: 109). Call this the *No-Luck Argument*. Korman thinks that the Perceptual Debunking Argument undermines the No-Luck Argument: by asserting that there's no explanatory connection between the ontological facts and ordinary people's ontological beliefs, the universalist loses her reason for assuming that these ontological beliefs are true. Perhaps Korman is right about this. However, I should note that nobody attracted to my uncompromising revisionism should buy the No-Luck argument anyways. This is because from an incompatibilist universalist perspective, it's simply false that ordinary people's ontological beliefs are largely accurate. (One might want to restrict the premise to ordinary people's beliefs about which objects *do* exist and exclude beliefs about which objects *don't*, but this seems to me like an artificially narrow explanandum to base the argument on.)

3.7. What now?

In this chapter, I offered an uncompromising solution to the Problem of Reasonableness. Our tendencies to form certain ontological beliefs are the outcomes of selective mechanisms that were independent from the ontological truth; yet these beliefs are reasonable in the sense that they fare well along a mentalist dimension of epistemic evaluation. I also argued that revisionists can endorse this view without taking a stance on the Perceptual Debunking Argument, since even if that argument were sound, it wouldn't undermine the revisionist's arguments.

It might be wondered whether there are other debunking arguments that threaten to undermine the reliability of our *non-perceptual* ontological beliefs. In sections 3.5 and 3.6 I admitted that while none of the arguments I considered relied on perceptual ontological beliefs, they did rely on introspection, modal intuition and various a priori principles. Shouldn't we worry that these sources of belief are also unreliable? These are important questions that I cannot hope to answer in this chapter. All I want to point out is that they bring nothing new to the table. The concerns with introspection, modal intuition and a priori reasoning are quite familiar, and in the foregoing sections I already mentioned several authors who shared them. My purpose in sections 3.5–3.6 was to show that the Perceptual Debunking Argument didn't worsen the uncompromising revisionist's dialectical position. It may well be that the uncompromising revisionist also has to answer tough questions about the source and reliability of the introspective, modal and a priori intuitions her arguments rely on. But then again these are questions that all revisionists need to answer, whatever their preferred solution is to the Problem of Reasonableness.

If the revisionist accepts my uncompromising solution, there is one more pressing

question she has to answer: what now? That is, if we accept that most ontological beliefs of ordinary people are massively and profoundly wrong, how should we go about *talking* about material objects in our everyday endeavors? Here, abundant ontologists have an easier task: they can assert sentences like 'Tree-dogs and trout-turkeys don't exist'; they should just add that when they seem to express agreement with ordinary people, they speak loosely (restrict their quantifiers, use the same sentences to express propositions that don't clash with their abundant ontologies, etc.) In section 3.2 I noted various problems with empirical hypotheses to the effect that ordinary people speak loosely when they seem to deny the existence of arbitrary fusions. But of course, these problems don't prevent the *revisionary ontologist* from deciding to speak in ways that would be accurately described by these hypotheses.

Sparse ontologists need to find some other strategy. To them, I recommend going fictionalist: they should assert the same sentences about ordinary objects that ordinary people would assert but mentally add the prefix "according to the fiction of common sense ontology".[225] In section 3.1, I said that the widespread acceptance of common sense was a by-product of useful ontological tendencies. These tendencies remain useful even after we have abandoned the beliefs they led us to. So the revisionist only has to change her beliefs, not her behavior: she can switch from outright belief in ordinary objects to the belief that, according to the fiction of common sense ontology, there are such and such objects. This is entirely compatible with the recognition that becoming an uncompromising revisionary ontologist involves a thoroughgoing revision of one's beliefs, and perhaps strictly speaking even one's breakfast plans.

[225] Cf. Merricks 2001: Ch. 7, Rosen and Dorr 2002

Conclusion

In the previous three chapters I defended the following claims:

> *1. Ontological dependence is an aggregative cluster concept: a weighted total of modal, mereological and set-theoretic relations (chapter 1)*

Ontological dependence is best understood as an aggregative cluster concept: a weighted total of asymmetric set membership, parthood, and necessitation, and possibly other relations that can be characterized in modal, mereological, and set-theoretic terms. Though ontological dependence can be fully understood in such terms, the concept isn't governed by a precise set of rules of aggregation; there isn't any finite and stateable set of conditions that are necessary and sufficient for ontological dependence to be instantiated. The absence of such rules governing the concept also explains why ontological dependence resists analysis in modal, mereological and set-theoretic terms.

Dependence minimalism – the view that ontological dependence is an aggregative cluster concept – can also be extended to the various species of ontological dependence commonly recognized in the literature. These can be understood as aggregative clusters in which one (otherwise negotiable) relation in the cluster is stipulated to hold. For example, rigid dependence is that relation that some *x* bears to some *y* just in case *x* ontologically depends on *y* and, necessarily, if *x* exists then *y* exists.

There are three reasons to accept Dependence Minimalism. First, the view accounts for our intuitions about various plausible cases of ontological dependence, but it also explains the source of disagreement in more controversial cases. Second, it provides a simple explanation of why modal, mereological and set-theoretic facts can serve as evidence for claims about what depends

ontologically on what. Third, Dependence Minimalism allows us to respect the traditional view that ontological dependence is asymmetric and irreflexive, but at the same time it's flexible enough to also leave room for revisionary views about the formal properties of dependence, and it can explain why traditional as well as revisionary views strike their advocates as plausible.

2. We don't need grounding to express any notion of metaphysical explanation worth expressing (chapter 2)

On one way of understanding 'grounding', grounding is just metaphysical explanation. According to the Expressive Power Version of the Argument from Explanatoriness, a primitive notion of grounding is indispensable for expressing the explanatory connection between certain types of explanans and explanandum.

I argued that this argument doesn't provide a strong motivation for grounding qua metaphysical explanation. We can distinguish two readings of the argument. On the first one, familiar notions (like necessitation, supervenience, or realization) cannot express the connection expressed by 'grounds' because they cannot express any explanatory connection at all (the General Expressive Power Version). The problem with this argument is that it at best shows the indispensability of a general notion of explanation, which the literature on scientific explanation recognized long ago. It doesn't motivate the introduction of a *sui generis* explanatory notion of grounding.

According to the second reading, grounding is indispensable not because we need it to express that the connection between two facts is explanatory, but because without it we cannot express that this explanatory connection is metaphysical in the right sense (the Special Expressive Power Version). I considered various notions of metaphysicality that can be expressed without a primitive notion of grounding. First, there is the via negativa: we can say that an explanation is metaphysical just in case it's non-causal and also doesn't belong to a finite list of non-causal but intuitively non-

metaphysical explanations (e.g. mathematical explanations, or scientific explanations purely from laws). Second, we can use 'metaphysical explanation' for any explanation that relies on constitutive relations, where 'constitutive' serves as shorthand for a finite disjunction of certain relations (for example composition, constitution, and micro-basing). Third, by 'metaphysical explanation' we can simply mean an explanation that belongs to the conventionally demarcated subject matter of metaphysics.

While none of these three understandings coincides precisely with the notion of metaphysical explanation that gained prominence in the grounding literature, this is not a problem. In order to resist the Expressive Power Version, we don't need to capture the grounding theorist's notion of metaphysical explanation; it's sufficient to show that we can express any notion of metaphysical explanation worth expressing without grounding-theoretic ideology.

3. We can make sense of metaphysical explanation without appealing to any underlying "explanatory" or "determinative" relation (chapter 2)

On another way of understanding 'grounding', grounding (or as I called it in chapter 2, "production") is the relation that uniformly "backs" or "underlies" metaphysical explanation. According to the Unexplained Explanations Version of the Argument from Explanatoriness, we need this notion of production because nothing other than production facts are suitable for explaining the metaphysical explanation facts.

However, I argued that this argument was unsound. Facts about relations other than production are usually ruled out as unexplanatory on the basis that these relations can be instantiated without there being a corresponding explanation fact. For example, the existence of {Socrates} necessitates the existence of Socrates without explaining it; and so the fact that the existence of

Socrates necessitates the existence of {Socrates} also cannot explain why the former explains the latter. In the background of this reasoning is a principle about how explanatory relations do their job:

> (*Generality Constraint*) For any relation, **Φ**, if [**Φ**(f_1…f_n, g)] explains [f_1…f_n metaphysically explain g], then for any x_1…x_n and any *y*, if **Φ**(x_1,…,x_n, *y*) then x_1…x_n metaphysically explain *y*.

I argued that the Generality Constraint was false: there are paradigmatic explanatory/determinative relations that don't by themselves guarantee explanation. For example, causation is plausibly an explanatory relation, yet causes don't always explain their effects.

I also considered a follow-up argument for the explanatory value of production: perhaps the metaphysical explanation facts are more unified if they are all backed by explanation-making facts that feature the same explanatory relation. I tried to show that this argument, too, was inconclusive: according to the most sophisticated theory of explanatory unification on the market (the one developed by Kitcher 1981, 1989), grounding (qua production) would make our theories more unified in some respects and less unified in others. And while I cannot decisively show that on the whole it makes them less unified, this is at least as likely as the hypothesis that it makes them more unified. So, there is no convincing unification-based argument for production.

> *4. The uncompromising view can explain the gap between revisionary ontologies and common sense. On the one hand, ordinary people's beliefs about material objects were affected by selective pressures that were independent from the ontological truth. On the other hand, these beliefs are reasonable in the sense that they score well along a mentalist dimension of epistemic evaluation (chapter 3)*

The uncompromising view consists of a causal and an evaluative component. Importantly, the causal component isn't intended to explain why ordinary people have the ontological beliefs that they have; it merely serves as an explanation of why their ontological beliefs diverge from the ontological truth.

In a nutshell, the explanation is that our tendencies to form beliefs about material objects evolved under pressures that only selected for accuracy about certain coarse-grained facts: our ancestors needed to track the movement of qualified portions of matter across spacetime. This tracking ability is insensitive to differences among rival ontologies that agree on the facts about how sensible qualities are distributed over matter. It is not surprising, then, if we didn't end up believing the one ontology that happens to be true.

The evaluative component draws on an analogy between ordinary people's epistemic situation in the actual world and the so-called New Evil Demon Problem. The basic idea is that ordinary people's beliefs have the same kind of positive epistemic status that the Demon World's inhabitants have. Depending on one's views about epistemic justification, this status might be justification, rationality, excusability, or what have you – but in any case, it's an epistemic status that supervenes on the subject's mental states.

5. The uncompromising view is stable: it doesn't undermine the revisionary ontologist's arguments for her own views (chapter 2)

Though the causal component of the uncompromising view superficially resembles an evolutionary debunking argument, it plays a very different dialectical role. Unlike debunking arguments, it doesn't infer from the etiology of a range of beliefs that those beliefs have some kind of epistemic shortcoming (that they are false, unjustified, or don't constitute knowledge). Rather, it presupposes

that the beliefs in question are false and tries to give an explanation of why we nonetheless tend to have them.

I also argued that even if a debunking argument against our perceptual beliefs about ordinary objects could be constructed, this wouldn't undermine the core arguments for revisionary ontologies. I examined three such arguments: the Argument from Vagueness and the Argument from Arbitrariness for Universalism, and a complex argument by elimination by Peter van Inwagen for Organicism. None of these arguments, I argued, relied on any premise that could only justified on the basis of perceptual experience as of ordinary objects. Thus the uncompromising view survives debunking.

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