

## *Grounding*

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Commissioned for *The Routledge Handbook of Metametaphysics*  
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### **Introduction**

*Metametaphysics* concerns foundational metaphysics. Questions of foundational metaphysics include: What is the subject matter of metaphysics? What are its aims? What is the methodology of metaphysics? Are metaphysical questions coherent? If so, are they substantive or trivial in nature? Some have claimed that the notion of *grounding* is useful in addressing such questions. In this chapter, we introduce some core debates about whether—and, if so, how—grounding should play a role in *metametaphysics*.<sup>1</sup>

It is undeniable that *in fact* grounding plays at least *some* role in how *metaphysics* is conducted, and has perhaps done so since the beginning.<sup>2</sup> Two roles stand out in particular. First, the notion of grounding is routinely used to state, at least in an intuitive way, what is at issue in various metaphysical disputes. Examples include debates over what (if anything) is the ground of mentality and what (if anything) is the ground of modality. Second, the notion is also routinely used to state, at least in an intuitive way, what various other notions of metaphysical interest amount to. Examples include what it is for a property to be intrinsic rather than extrinsic and what it is for an entity to be a substance rather than a mode.

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<sup>1</sup> For introductions to and surveys of recent literature on grounding, see Clark and Liggins (2012), Correia and Schnieder (2012), Trogdon (2013a), Bliss and Trogdon (2014) and Raven (2015) and (2019).

<sup>2</sup> Three figures who ostensibly theorized about and in terms of grounding are Aristotle, Spinoza, and Bolzano—for discussion, see Corkum (2016), Newlands (2018), and Schnieder (2014), respectively. For more on the role that grounding has played in the history of philosophy, see entries in Raven (forthcoming).

But what conclusion is to be drawn about *what if any* role grounding *should* play in *metametaphysics*, in answering foundational questions about the nature of metaphysics? Some claim that the notion should play an absolutely central role. For example, Jonathan Schaffer writes that “metaphysics as I understand it is about what grounds what” in part due to the alleged inadequacies of the ‘Quinean’ approach that dominated metaphysics throughout most of the 20<sup>th</sup> century, which focuses on what there is rather than “what is fundamental, and what derives from it” (2009, p. 379). For another example, Kit Fine writes that although questions about what grounds what “are not without interest to naïve metaphysics” (which concerns “the nature of things without regard to whether they are real”), nonetheless “they are *central* to realist metaphysics” (which concerns whether reality does in fact contain things with that nature). “Indeed,” Fine writes, “if considerations of ground were abolished, then very little of the subject would remain” (2012, p. 41, emphasis in original; cf. 2001, pp. 28–29).

Nonetheless, the issue of what role, if any, grounding should play in *metametaphysics* remains controversial. Some are skeptical about the very coherence of the notion of grounding or suspect that talk about what grounds what isn’t non-trivially truth-evaluable.<sup>3</sup> Some who find the notion coherent argue that its allegedly essential, central theoretical utility has been overblown.<sup>4</sup> And among even those who find the notion both coherent and useful, there is substantial disagreement regarding the nature of grounding itself, which will interact in certain ways about what use we ultimately put the notion to.<sup>5</sup> For the purposes of this chapter, we shall assume that there is at least something coherent to the notion, and that at least some grounding statements are true. As for the nature of grounding, we shall proceed as much as possible without taking on substantive commitments, although we shall also indicate when questions about the relationship between grounding and *metametaphysics* may turn on which commitments are ultimately taken up.

There is, however, one issue about the nature of grounding that we should address before proceeding. Consider the following representative grounding claim: the fact

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<sup>3</sup> See Daly (2012) and Hofweber (2016, Ch. 13).

<sup>4</sup> See Koslicki (2015), Wilson (2014), and Turner (2017).

<sup>5</sup> One disagreement concerns the formal features of grounding. For example, while many assume that it’s transitive, some argue that grounding (understood as a binary relation) isn’t—see Schaffer (2012).

that the bowl is brittle is grounded by the fact that the chemical bonds of its atoms are covalent. Some stipulate that by ‘grounding’ they mean a distinctive form of determination, where to determine is, roughly speaking, to *produce* or *bring about*. In this case to say that the brittleness of the bowl is grounded by the covalent bonds of the bowl’s constituent atoms is to say that the bonding of the atoms produces or brings about the brittleness of the bowl.<sup>6</sup>

Others stipulate that by ‘grounding’ they mean a distinctive form of explanation. In this case, to say that the brittleness of the bowl is grounded by the covalent bonds of the atoms is to say that the bowl is brittle *because* the bonding of the atoms is covalent.<sup>7</sup> Compare: many interpret causal claims (e.g. “The stone striking the glass caused the window to shatter,”) as targeting in the first instance causation understood as a distinctive form of determination rather than causal explanation; some, however, see ordinary causal claims as targeting in the first instance causal explanation.<sup>8</sup> Rather than plump for one view or the other—or cast the dispute aside as “largely verbal” (cf. Dasgupta 2017: fn. 8)—let us simply speak of the distinction between *determination<sub>G</sub>* and *explanation<sub>G</sub>* and use ‘grounding’ when potential differences between the two can be safely elided.

In what follows, we focus on three of the most interesting and widely discussed roles that have been assigned to grounding in metametaphysics. Specifically, we consider how grounding might be relevant to whether metaphysical questions are substantive (§1), how to choose between metaphysical theories (§2), and how to understand so-called “location problems” (§3).

## 1. Substantive questions

A widely held view—both nowadays, and during much of the 20<sup>th</sup> century—is that the subject matter of metaphysics chiefly concerns *existence*, and that its central task is to address questions like “Do numbers exist?”, “Do properties exist?”, “Do ordinary objects like tables and chairs exist?”, and so on. However, some have argued that so-called ‘existence questions’ such as these are *trivial*, in the sense that they have

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<sup>6</sup> See Audi (2012), Schaffer (2016), and Trogon (2013a).

<sup>7</sup> See Dasgupta (2017), Litland (2015), and Rosen (2010).

<sup>8</sup> For more on the later view, see Strevens (2008).

obvious answers. For example, Thomasson (this volume) argues that ontological disputes involving existence are typically resolvable in a straightforward manner by appealing to conceptual and empirical truths. Do tables exist? Of course! For it is a conceptual truth that if there are entities such as wood and screws arranged table-wise, then there is a table; and it is an empirical truth that there are, in fact, entities arranged table-wise. Similarly, Fine (2009), Hofweber (2005), and Schaffer (2009) consider arguments involving seemingly innocuous inferences that, if valid, would quickly trivialize classic existence questions. Do numbers exist? Well, yes: (i) Jupiter has four moons; so (ii) the number of moons of Jupiter is four; so (iii) there is a number which is the number of moons of Jupiter, namely four; so (iv) there are numbers, among them the number four. Seems pretty straightforward!

If the task of metaphysics is to answer existence questions, and if existence questions are trivial, then it would appear as though there is little of interest or value for metaphysics to do. So if you think that metaphysics *is* worth doing, how might you respond? One option, of course, is to argue that at least some existence questions of interest to metaphysics are substantive after all, despite what the arguments above suggest (Daly and Liggins 2014). But, supposing for the moment that these existence questions are indeed trivial, how else might you respond?

A response under active consideration in recent metametaphysics—sometimes associated with the broader, so-called ‘neo-Aristotelian’ approach to metaphysics re-emerging as of late—is that the subject matter of metaphysics chiefly concerns *grounding* rather than existence, and that its central task is instead to address questions like “What (if anything) grounds the existence of numbers?”, “What (if anything) grounds the existence of properties?”, “What (if anything) grounds the existence of ordinary objects?”, and so on (Schaffer 2009). On the face of it, these questions have substantive answers even if the corresponding existence questions do not.<sup>9</sup>

As a case study, take the classic metaphysical debate between *monists* and *atomists*. Do tables exist? Historically, at least, on this question the monist and the atomist typically *agree*: yes, they do. Rather, they disagree about what grounds the existence of tables. Now, *how* to state their disagreement in grounding-theoretic terms will depend to some extent on what views about the nature of grounding hold in the background.

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<sup>9</sup> See Marmodoro (this volume) for further discussion of neo-Aristotelian metaphysics.

But here is one grounding-theoretic disagreement (perhaps among many) that they might have.<sup>10</sup> Let a *concrete fact* be one that solely concerns the existence and/or features of concrete objects. And say that one fact is *ultimately* grounded in other facts only if none of the latter facts are themselves grounded in further facts.<sup>11</sup> Then which concrete facts ultimately ground the existence of tables? According to atomists, these are facts solely concerning the existence and/or features of their constituent mereological atoms (i.e. objects without proper parts). According to monists, instead these are facts solely concerning the existence and/or features of the entire cosmos (i.e. the fusion of all concrete objects).

Questions about what ultimately grounds what certainly seem substantive. At any rate, the literature on the grounding question above certainly *treats* it as substantive, as it has been thought to turn on highly non-trivial matters concerning the nature of composition, necessity and possibility, causation and lawhood, intrinsicity, the interpretation of quantum theory, and—of course—grounding.<sup>12</sup> This piece of evidence, however, is far from decisive, since even a cursory look at the literature on existence questions shows that these have been thought to turn on highly non-trivial matters too.<sup>13</sup>

Moving on, what about the substantivity of questions of *non-ultimate* grounding: i.e. questions about what grounds what such that the grounds themselves presumably have further grounds? Perhaps at least some of these grounding questions have trivial answers. Does the fact that there are entities arranged table-wise ground the fact that there is a table? You might think the answer is obviously ‘yes,’ as it’s a conceptual truth that facts to the effect that there are entities arranged table-wise ground facts to the effect that there are tables, and it’s an empirical truth that there are entities arranged table-wise. The claim that the former is a conceptual truth may

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<sup>10</sup> As an alternative to the disagreement described below, there might (also, or instead) be disagreements pertaining to the grounding relationships directly holding between certain types of objects themselves, rather than between certain facts about them (Schaffer 2010).

<sup>11</sup> See Bliss (this volume) for more on the relationship between ungroundedness and the closely related notion of fundamentality, as well as section 2 of the present entry.

<sup>12</sup> See Trogon (2017) for an overview of some of these considerations.

<sup>13</sup> For a small sample, see the debate between Dorr (2008) and Swoyer (2008) on the existence of properties.

be especially attractive if you're already on board with the idea that it's a conceptual truth that there are entities arranged tables-wise only if there are tables.

Putting aside the issue of whether there are such conceptual truths about grounding, the general idea that some grounding claims are trivial may be the most plausible if by 'grounding' we have in mind  $\text{explanation}_G$  rather than  $\text{determination}_G$ . On the one hand, since questions of what  $\text{determines}_G$  what ostensibly concern reality's metaphysical structure, it seems that such questions are substantive. On the other hand, some questions concerning what  $\text{explains}_G$  what may be fairly trivial given certain broader accounts of what explanation amounts to. Where  $\Delta$  is a collection of facts and  $[p]$  the fact that  $p$ , suppose that it's enough for  $\Delta$  to  $\text{explain}_G [p]$  that citing  $\Delta$  is a relevant, truthful answer to the question "What makes  $[p]$  obtain?" in a context in which causal answers have been set to one side (cf. Thompson 2019). Whether or not there are conceptual connections between entities being arranged table-wise and the existence of tables, if empirical investigation reveals that there are some pieces of wood screwed together table-wise here, we seem to have a relevant and truthful answer to the question "What makes it the case that there is table here?" in contexts in which we aren't looking for causes. This line of reasoning—grounding being a form of explanation combined with a lightweight conception of explanation renders certain grounding claims non-substantive—displays not only how conceiving of grounding as  $\text{explanation}_G$  versus  $\text{determination}_G$  is relevant to the relationship between grounding and metametaphysics, but also how we conceive of  $\text{explanation}_G$  in particular.<sup>14</sup>

An alternative take on the table example is this: it's an *essential* truth about tables rather than a conceptual truth that facts to the effect that there are entities arranged table-wise ground facts to the effect that there are tables. In this case, while it's *conceptually* possible for there to be pieces of wood screwed together table-wise but no tables—and thus conceptually possible for there to be pieces of wood screwed together table-wise that do not ground the existence of any tables—nonetheless this is *metaphysically* impossible. The thought is that *part of what it is to be* table—part of the *real* (as opposed to 'nominal') *definition* of being a table—is that if there are some things arranged table-wise, then this grounds the fact that there is a table. Such

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<sup>14</sup> For more on the related notion of metaphysical explanation, see Thompson (this volume).

essence claims are, it seems, substantive. This in turn suggests that our original grounding claim—the fact that there are entities arranged table-wise grounds the fact that there is a table—itself is substantive.<sup>15</sup>

What these considerations suggest is that if we're going to wheel in grounding to resolve the problem that the supposed triviality of existence claims poses for metaphysics, we need to get clear on the extent to which questions of non-ultimate grounding are substantive in nature. If it turns out that such questions normally are trivial, then appealing to grounding in this context isn't going to be as effective in showing that metaphysics is worth doing than it might have initially seemed.

## 2. Theoretical economy

Even if grounding claims like those discussed above are substantive, metaphysics does not consist *solely* in answering a hodgepodge of questions about the structure of reality. Another goal of metaphysics is to construct and rationally evaluate *theories* capable of answering such questions. Metaphysical theories, like scientific theories, can be judged in various ways: for instance, in terms of how comprehensive they are and the degree to which they unify what might seem to be disparate phenomena. Another potential application of grounding is to a third characteristic by which a theory can be judged: how *economical* it is.

Focus now on *ontological* economy. (Another type, *ideological* economy, will be discussed later.) According to Occam's Razor—henceforth *the Razor*—the ontological economy of a theory is measured in terms of the entities it posits, or as it is sometimes put, by its *ontological commitments*. Roughly speaking, the more existence-involving a theory is—the more entities it posits—the less ontologically economical it is. (Here and in what follows we put aside the distinction between *quantitative* and *qualitative* economy, which respectively concern whether we count how many individual entities a theory posits as opposed to how many *kinds* of entities it posits (cf. Lewis 1973: 87).

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<sup>15</sup> See Fine (1994) for a canonical discussion of essence in the operative sense and Jessica Leech (this volume) for further discussion. For further discussion of the grounding-essence interface, see Audi (2012), Correia and Skiles (forthcoming), Dasgupta (2014), Rosen (2010), Trogon (2013b), and Zylstra (forthcoming).

Although initially plausible, a number of philosophers reject the Razor because they claim that it leaves out a crucial notion, that of *fundamentality* (Bennett 2017: Ch. 8, Cameron 2010, Schaffer 2015, Sider 2013). Space prevents a full account of the many ways in which this idea has been implemented, not all of which make explicit (or any) appeal to grounding per se. But since this is an entry on grounding, here is a simple approach that makes use of the notion. Let us identify the fundamentality of a *fact* with the notion of *ungroundedness*: a fact is fundamental just when it both obtains and is not grounded in further facts. And let us say that an *entity* (e.g. an object or a property) is fundamental just when some fundamental fact concerns that entity, and derivative otherwise. Finally, let us suppose that properties and relations exist, and understand what it is for a fact to ‘concern an entity’ broadly enough so that, e.g., if it is a fundamental fact that Gothenburg is a city, then both the object Gothenburg and the property *being a city* count as fundamental entities.<sup>16</sup>

With entity fundamentality so understood, we can capture the idea that the Razor wrongly leaves out fundamentality thus: the ontological economy of a theory is measured not by the entities it posits per se, but instead by the *fundamental* entities it posits. Roughly speaking, the more fundamentality-involving a theory is—the more fundamental entities it posits—the less ontologically economical it is. On this view, one may draw a distinction between the ontological commitments of a theory and the *costs* of those commitments. While you have to pay for fundamental entities, derivative entities are on the house. To contrast this principle with the Razor, call it *the Laser* (Schaffer 2015).

Why prefer the Laser to the Razor? Adapting an example from Schaffer (2015), compare two toy scientific theories. The first theory posits 100 types of fundamental particle, while the second posits 10 types of fundamental strings, which in varying combinations make up the 100 types of particle described by the first theory. Suppose that these theories are tied with respect to all theoretical virtues, save for perhaps ontological economy. (Although for sake of simplicity, let us suppose that the fundamental facts posited by both theories contain exactly the same properties.) Now, if there is a good reason to choose between the two theories, the choice must

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<sup>16</sup> What if there are no fundamental facts—does this imply that there are no fundamental entities? For a more sophisticated grounding-based account of fundamentality meant to deal with such concerns, see Raven (2016).

turn on how they compare to one another with respect to ontological economy. In this case, the Razor says that the *first* theory is preferable to the second because the former posits fewer entities (100) than the latter (110). Yet the Laser seems to predict what seems clearly correct, namely that the *second* theory is preferable to the first. It predicts this because the former posits fewer fundamental entities (10) than the latter (100).

Of course, those who wield the Razor might claim that the situation above is not described correctly. Once the content of these theories is spelled out in more detail (they might claim), surely the two theories will differ with respect to theoretical virtues that do not directly involve ontological economy, such as their relative depth, unification, or elegance. (Indeed, in his discussion of this example, Schaffer himself describes the theories as differing along these lines.) And this (they might claim) is why the second theory is preferable to the first. Supposing that the second theory is, say, more elegant than the first, this is why the former is preferable to the latter, not because the former posits fewer fundamental entities than the latter (cf. Baron & Tallant 2018).

In response, proponents of the Laser might concede that the second theory is, say, more elegant than the first, but insist that this is because the former posits fewer fundamental entities than the latter. While the theories do indeed differ with respect to various theoretical virtues, it's nevertheless the Laser that ultimately explains why the second theory is preferable to the first. Another option is to argue that there are methodological principles that underpin the Laser specifying how ontological economy interacts with other desirable features of theories, and these principles also suggest that the second theory is preferable to the first.<sup>17</sup>

Moving on, let us suppose for the remainder of the discussion that one ought to wield the Laser rather than the Razor when evaluating theories. What are some potential consequences for metaphysics? Here is one. *Mereological nihilists* reject the existence of complex concrete objects: they claim that all concrete objects are simple and fundamental. Given our account of fundamentality above, the atomists discussed in the previous section will agree with mereological nihilists that all

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<sup>17</sup> See Schaffer (2015) for discussion related to this last point. For further objections to the Laser, see Baron & Tallant (2018) and Fiddaman & Rodriguez-Pereyra (2018).

fundamental objects are simple.<sup>18</sup> Yet atomists claim that there are complex objects as well, each of which decomposes into simple objects. Suppose that mereological nihilists and atomists agree on which entities are simple, and so agree on which objects are fundamental. Then the mereological nihilist claims that these are all the objects, while the atomist claims that there are many more: all the derivative, complex ones. In this case, some would suggest that economy considerations point in favor of mereological nihilism: as Williams puts this point, “[t]hose who love desert landscapes should applaud the elimination of mereological composition from the fundamental furniture of the world (along with much else)” (2006: 494). But if the Laser rather than Razor is true, this is not right—the two theories are *on a par* with respect to ontological economy. If so, then one would need to appeal to other considerations in choosing between them.

So far we have focused on one species of parsimony, ontological economy. But we should note that there is another species, *ideological* economy. The ideological economy of a theory is measured not by the notions it invokes per se, but instead by the *primitive*—‘undefined’, ‘unanalyzed’—notions it invokes. Roughly speaking, the more primitive notions a theory invokes, the less ideologically economical it is. In some cases, ontological and ideological economy go hand-in-hand: two theories that differ only in whether they include ghosts in their fundamental ontology will likely differ in whether they include notions like being made of ectoplasm in their fundamental ideology as well. But ontological economy is no guarantee for ideological economy. (Consider two eternalist theories that agree about what fundamental entities there are across all time, yet disagree on whether ‘A-theoretic’ notions like that of being past can be analyzed in terms of ‘B-theoretic’ notions like that of being earlier than, where both theories take the latter notions as primitive.) Nor is ideological economy a guarantee for ontological economy. (Consider two theories that take the notion of parthood as primitive, yet disagree on whether some fundamental entities are parts of others.)

As with the Laser, while you have to pay for primitive notions, defined ones are on the house.<sup>19</sup> And as with ontological economy, ideological economy seems relevant

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<sup>18</sup> Or at least, all *concrete* ones. For sake of simplicity, let us ignore putative fundamental non-concrete entities, but see Trogdon and Cowling (forthcoming) for discussion.

<sup>19</sup> See Cowling (this volume) for related discussion.

to rational theory choice both in metaphysics and elsewhere. And here again as well, there are potential applications of grounding—two in particular.

First, if important notions in metaphysics can be defined in terms of grounding, then grounding will be relevant to the ideological economy of metaphysical theories. In addition to the notion of fundamentality discussed above, grounding-based definitions have been given of the notions of social construction (e.g. Epstein 2015, Griffith 2018), intrinsicity (e.g. Witmer et al 2005, Rosen 2010), truthmaking (Rodriguez-Pereyra 2005, Correia 2014), identity criteria of various sorts (McDaniel 2015, Fine 2016), and many others.

Second, many have thought that what it is for a notion to be, or fail to be, analyzable in terms of other notions—and thus, how to understand what ideological economy amounts to—must be given in ground-theoretic terms. On the one hand, it does not seem sufficient for a notion to be definable that every fact about it be grounded. As a case in point, some have suggested that, even though grounding is a primitive notion, facts about it must be systematically grounded for there to be any derivative entities at all; otherwise, given the account of fundamentality above, if it were a fundamental fact that the table's being beige grounds its being brown, then the table, *being beige*, and *being brown* would all be fundamental entities (cf. Bennett 2011 and deRosset 2013). On the other hand, a number of accounts entail that it is necessary for one notion to be definable in terms of other notions that the facts about one be grounded in facts about the others, along with certain other conditions being met (cf. Skiles 2014, Rosen 2015, Correia 2017, Horvath 2018).

### **3. Location problems**

Let's return to the disagreement between atomists and monists concerning tables. Putting aside grounding for the moment, we can think of them as offering different proposals about how tables 'fit into' the world. The problem that atomists and monists are addressing here is similar to what Jackson (1998: 2-4) calls a *location problem*. These problems concern how familiar, manifest facts (e.g. the existence of tables) 'fit into' a world that is assumed to be ultimately physical in nature. On the face of it, location problems do not concern what exists, but rather how facts that seem to have importantly different 'subject matters' relate to one another.

Location problems have played a prominent role in metaphysics for at least the past fifty years. Consider, for example, contemporary metaphysics of mind. One location problem in this context that has received an enormous amount of attention is this: provided that the actual world is ultimately physical (and no fundamental physical fact is a mental fact), how do manifest mental facts (e.g. Gomer is having a greenish experience) fit into the world? As Kim describes the problem:

Through the 1970s and 1980s and down to this day, the mind-body problem—*our* mind-body problem—has been that of finding a place for the mind in a world that is fundamentally physical. The shared project of the majority of those who have worked on the mind-body problem over the past few decades has been to find a way of accommodating the mental within a principled physicalist scheme, while at the same time preserving it as something distinctive—that is, without losing what we value, or find special, in our nature as creatures with minds (1998, 2).

Note how the problem is not framed in terms of existence questions about minds—mental realism is taken for granted. The issue instead is how the subject matter of psychology relates to the subject matter of fundamental physics.

In thinking about location problems, a question immediately arises. What is the sense of ‘fitting into’ or ‘having a place for’ at issue here? When philosophers first started to address location problems as such, they tended to formulate matters in purely *modal* terms. One way in which things were cast goes like this: to establish how a manifest fact ‘fits into’ a world that it is ultimately physical in nature is to find some physical fact (preferably a fundamental physical fact) that modally entails it, where the modality in question is metaphysical in nature.

It was recognized by Kim and others, however, fairly early on that purely modal accounts of ‘fitting into’ are too weak. To see why, return to the mind-body problem. Roughly speaking, the physicalist (about the mental) claims that (i) there are possible worlds that are ultimately physical yet have a place for the mental, and (ii) the actual world is such world. The dualist, by contrast, denies (i), and thus denies (ii) as well. Thus the dualist claims, while the physicalist denies, that the truth of mental realism requires that the world not be ultimately physical. Nonetheless, the dualist might still claim that at least some mental facts are modally entailed by fundamental physical

facts. (A coherent view, for example, is that the fundamental physical facts modally entail that there are Cartesian souls.) So the modal entailment take on ‘fitting into’ has the consequence that dualism is compatible with (ii) from above, which is clearly the wrong result.

An attractive alternative proposal is this: for the mental to fit into the physical world is for fundamental physical facts to ground, and not just modally entail, the mental facts. Physicalists can either be *reductive* or *non-reductive*. For *reductive* physicalists, mental facts may be said to ‘fit into’ the actual world by dint of being identical to certain non-fundamental physical facts, which in turn are grounded in—and not merely modally entailed by—certain fundamental physical facts. *Non-reductive* physicalists deny that mental facts are identical to these non-fundamental physical facts; nonetheless, they may claim that mental facts are grounded in them all the same, and thus grounded in whatever fundamental physical facts these non-fundamental physical facts are grounded in. More generally speaking, we can understand physicalism as the thesis that (i) there are possible worlds in which the mental facts are ultimately grounded by fundamental physical facts, and (ii) the actual world is such a world. And we can understand dualists as denying (i) and thus (ii) as well.

Let *modal dualism* be dualism plus the claim that there are systematic modal connections between the mental and the fundamental physical. Some suggest that a key difference between modal dualists and physicalists is this: while the latter are committed to the idea that all such modal connections have physicalist-friendly explanations, the former deny that all such connections have these sorts of explanations (Horgan 1993). The grounding-theoretic characterization of physicalism set out above is useful in this context, as it suggests how the relevant explanations might proceed for physicalists. The thought is that physicalists might reasonably claim that the grounding connections between the mental and the fundamental physical themselves explain the relevant modal connections. If grounding is  $\text{explain}_G$ , the idea is that (i) fundamental physical facts  $\text{explain}_G$  the mental facts; and (ii) these facts about what  $\text{explains}_G$  what themselves  $\text{explain}_G$  why the mental and fundamental physical are modally yoked in the way that they are. If grounding is instead  $\text{determine}_G$ , the idea is that (i) fundamental physical facts  $\text{determine}_G$  the mental facts; (ii) these facts about what  $\text{determines}_G$  what themselves  $\text{determine}_G$

why the mental and fundamental physical are modally yoked in the way that they are; and (iii) the determination<sub>G</sub> facts at issue in (ii) back or underwrite an explanation of why the mental and fundamental physical are modally yoked in the way that they are.

Are the proposed explanations, however, physicalist-friendly? Roughly speaking, an explanation is physicalist-friendly when the material that goes into its explanans doesn't undermine physicalism. For example, while causal/nomic explanations of mental content are typically considered to be physicalist-friendly, competing explanations cast in terms of fundamental phenomenal properties aren't. The explanans that interests us here consists of the grounding connections between the mental and the fundamental physical—does this explanans include material that undermines physicalism? You might think that the answer is 'yes,' claiming that these grounding connections themselves fall within the physicalist's explanatory ambit, yet they apparently lack physicalist-friendly explanations.

There are at least two things to say in response. First, Bennett (2011) and deRosset (2013) develop and defend a theory of iterated grounding relative to which grounding facts between the mental and fundamentally physical clearly have physicalist-friendly explanations. The basic idea is this: provided that thus-and-so fundamental physical facts, the Ps, ground mental fact M, the Ps also ground [the Ps ground M], [the Ps ground [the Ps grounds M]], and so on. In this case, the fundamental physical facts themselves explain the relevant grounding connections. And an explanans that consists entirely of fundamental physical facts obviously doesn't contain material that undermines physicalism.

Second, it may be improper to view physicalists as being committed to telling a story about what grounds facts to the effect that fundamental physical facts ground mental facts in the first place. This is so if the facts about what grounds what fall outside the explanatory order altogether (cf. Dasgupta 2014). But let's suppose for the sake of argument that these facts do have explanations. Still, there might not be a problem for the physicalist here. Of course, 'physicalism' and 'dualism' are terms of art, and there is at least some degree of freedom in how we choose to use them. One reasonable constraint, however, is that we use them in a way that is at least in the ballpark of what self-described physicalists and dualists have in mind. Returning to the mind-body problem understood as a location problem, physicalists as we have seen are interested in finding a place for the *manifestly mental* facts in the physical

world, such as that Gomer is having a greenish experience. Perhaps the physicalist, then, ought not to be concerned with finding a place for *other* sorts of facts in the world, such as facts about what grounds what. This is so even though the relevant grounding facts *involve* manifestly mental facts, and even if there is an attenuated sense of ‘mental’ whereby such grounding facts count as being mental themselves.<sup>20</sup>

Here is a final thought on the matter. There are at least two senses of ‘explanation’ in terms of which we might describe the explanatory burden of physicalism with respect to grounding. First, there is the idea that physicalists need to *metaphysically explain* the fact that these fundamental physical facts ground those mental facts by citing what grounds this very fact about grounding. (Perhaps there are other ways for the physicalist to metaphysically explain a fact about grounding; but let us set this complication aside.) Second, there is the idea that physicalists must provide *well-justified reason to believe* that these fundamental physical facts ground those mental facts. These projects are quite different. Physicalists, of course, must do the latter—they need to provide at least some evidence for buying into their network of grounding claims. No surprise here—this is just to say that physicalists should have good arguments for their position! So the point is that if you don’t properly distinguish between providing an epistemic reason and providing a metaphysical ground, it may seem that part of the physicalist’s job is to provide grounds for certain facts about what grounds what.<sup>21</sup>

#### 4. Conclusion

In this chapter we considered three points of contact between grounding and foundational metaphysics—how grounding might be relevant to whether metaphysical questions are substantive, how to choose between metaphysical theories, and how to understand so-called “location problems.”

We draw things to a close by returning to a matter raised in the last section, the issue of providing reasons for thinking that this grounds that. Just how we should think

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<sup>20</sup> Crucial here is that by “physicalism” we mean physicalism about the (manifest) mental. Contrast this view with physicalism *tout court*, according to which any grounded fact is ultimately grounded by fundamental physical facts. Advocates of this thesis are in the business of showing what grounds facts about what grounds what (Dasgupta 2014).

<sup>21</sup> See Trogdon (2015) for more on understanding location problems in terms of grounding.

about the epistemology of grounding is an interesting matter—this itself is a further question of foundational metaphysics. What are plausible diagnostics for grounding, principles that specify the conditions under which claims about what grounds what are plausible? Much of the literature on grounding so far has focused on clarifying the notion. These discussions, however, provide little guidance for formulating grounding diagnostics—it seems clear, for example, that nothing in these discussions could be operationalized into a discovery procedure that doesn't crucially depend on our already having knowledge about what grounds what.

The epistemology of grounding is perhaps an underexplored area of research. While we don't have the space to explore these issues in any detail here, here is one thought. Some implausible grounding claims seem implausible because we have no sense of *how* the grounding is supposed to work. This is the case, for example, with respect to the claim Gomer having a greenish experience grounds the fact that Socrates is a philosopher. This claim is implausible because there is no reasonable story to tell about how the connection is supposed to run between the Gomer fact and the Socrates fact. A comparison to causal mechanisms may be helpful here. Suppose you make a claim about what causes a neurochemical event such as the release of neurotransmitters. Since biochemistry is a subject matter in which causal relations have underlying causal mechanisms, if it's unclear what sort of underlying causal mechanism might be operative in this case, this counts against your causal claim.

So it seems that one way to justify a grounding claim (or at least show that it's not obviously implausible) is to tell a plausible story about how the connection runs between the relevant facts. How do you do that? Well, one option is to lean heavily on the comparison with causal claims and underlying causal mechanisms. To specify how the connection runs between the ground and grounded is to specify what we might call a “metaphysical mechanism” linking these facts together, either directly or via their constituents (Trogdon 2018). And another option is to develop substantive principles specifying relations of counterfactual dependence between the relevant facts (Schaffer 2016).<sup>22</sup>

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<sup>22</sup> We wish to thank Ricki Bliss, two anonymous referees, and the members of the Metaphysical Explanation research group (lead by Anna-Sofia Maurin and funded by

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Riksbankens Jubileumsfond) for their helpful comments. Thanks to the Department of Philosophy, Linguistics, and Theory of Science at the University of Gothenburg and the Swiss National Science Foundation (grant 10012\_150289) for research funding. Finally, thanks to Café Publik in Gothenburg for putting up with us as we worked out the ideas in this chapter.

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