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Grounding-Based Formulations of Physicalism

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Abstract I problematize Grounding-based formulations of physicalism. More specifically, I argue, first, that motivations for adopting a Grounding-based formulation of physicalism are unsound; second, that a Grounding-based formulation lacks illuminating content, and that attempts to imbue Grounding with content by taking it to be a (non-monotonic, hyperintensional) strict partial order are unuseful (since 'over and above' relations such as strong emergence may also be non-monotonic hyperintensional strict partial orders) and problematic (in ruling out reductive versions of physicalism, and relatedly, in undermining the ostensive definition of primitive Grounding as operative in any context where idioms of dependence are at issue); third, that conceptions of Grounding as constitutively connected to metaphysical explanation conflate metaphysics and epistemology, are ultimately either circular or self-undermining, and controversially assume that physical dependence is incompatible with explanatory gaps; fourth, that in order to appropriately distinguish physicalism from strong emergentism (physicalism's primary rival), a Grounding-based formulation must introduce one and likely two primitives in addition to Grounding; and fifth, that understanding physical dependence in terms of Grounding gives rise to 'spandrel' questions, including, e.g., "What Grounds Grounding?", which arise only due to the overly abstract nature of Grounding.

Keywords Physicalism · Grounding · Metaphysical dependence

1 Introduction

Physicalism is a comprehensive thesis about natural reality, according to which lower-level physical goings-on, either individually or in various complex combinations, serve as a foundational basis for all broadly scientific goings-on, including, e.g., those entities (objects, systems) or features (properties, states) treated by other branches of physics, chemistry, biology, ecology, and the social sciences. The schematic version of this thesis is as follows:

Physicalism (schematic): All broadly scientific goings-on are nothing over and above lower-level physical goings-on.

Filling in the schema requires filling in what it is for some goings-on to be physical, and what it is for some goings-on to be nothing over and above some others.[1] In this paper I will consider whether nothing-over-and-aboveness—metaphysical dependence of the sort preserving (in particular) physical acceptability—should be understood, as Schaffer (2009), Rosen (2010), and Dasgupta (2014) suggest, in terms of a primitive notion or relation of 'Grounding'. I will provide five reasons for thinking that the answer is 'no'. Some of the discussion summarizes and extends certain criticisms I have previously leveled against Grounding in Wilson (2014) and (forthcoming b), with a special eye to assessing recent responses to these criticisms, due to Cameron (2016), Ney (forthcoming), Berker (in progress), and Raven (in progress); some of the

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[1] Note that, perhaps misleadingly, the 'nothing over and above' locution is standardly used as compatible with dependent goings-on being distinct from lower-level goings-on—i.e., as compatible with non-reductive as well as reductive (identity-based) versions of physicalism.

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discussion develops new concerns inspired by or distinctive to the case of physicalism.
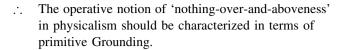
I argue, first, that motivations for adopting a Grounding-based formulation of physicalism, old and new, are unsound; (Sect. 2); second, that a Grounding-based formulation lacks illuminating content, and that attempts to imbue Grounding with content by taking it to be a (non-monotonic, hyperintensional) strict partial order are unuseful (since 'over and above' relations such as strong emergence may also be non-monotonic hyperintensional strict partial orders) and problematic (in ruling out reductive versions of physicalism, and relatedly, in undermining the ostensive definition of primitive Grounding as operative in any context where idioms of dependence are at issue) (Sect. 3); third, that conceptions of Grounding as constitutively connected to metaphysical explanation conflate metaphysics and epistemology, are ultimately either circular or self-undermining, and controversially assume that physical dependence is incompatible with explanatory gaps (Sect. 4); fourth, that in order to appropriately distinguish physicalism from strong emergentism, physicalism's primary rival, a Grounding-based formulation must introduce one and likely two primitives in addition to Grounding (Sect. 5); and fifth, that understanding physical dependence in terms of Grounding gives rise to 'spandrel' questions, including, e.g., "What Grounds Grounding?", which arise only due to the overly abstract nature of Grounding (Sect. 6).[2]

2 Unsound Motivations

2.1 Grounding as a Requisite Alternative to Other Accounts of Dependence

Schaffer (2009, 364), Rosen (2010, 111–112), and Dasgupta (2014, 557) each motivate a Grounding-based formulation of physicalism by appeal to the following form of argument:

1. Physicalism is the thesis, schematically speaking, that all broadly scientific goings-on are nothing over and above lower-level physical goings-on.
2. The operative notion of 'nothing-over-and-aboveness' cannot be successfully characterized in semantic/ representational, epistemic, or purely modal (i.e., supervenience-based) terms.
3. No other non-primitive approach to characterizing 'nothing-over-and-aboveness' is available.

∴	The operative notion of 'nothing-over-and-aboveness' in physicalism should be characterized in terms of primitive Grounding.

This argument is unsound, since premise (3) is false. Over the past several decades, philosophers working on physicalism have identified and explored numerous non-primitive accounts of metaphysical dependence—call these 'small-g' grounding relations, to distinguish them from the 'big-G' primitive—explicitly assumed to go beyond merely modal, representational, or epistemic notions. These accounts fill in the schematic reference to 'nothing-over-and-aboveness' (or other rough-and-ready idioms of dependence) with specific familiar metaphysical relations, including type and token identity, functional realization, the determinable–determinate relation, the composition relation, the part-whole relation, the proper-subset-of-powers relation, and so on, which serve, against the backdrop of the specified lower-level physical base, to characterize diverse forms of metaphysical dependence in an explanatory and illuminating way.[3] Given all these highly articulated, metaphysically substantive suggestions for how to fill in the operative understanding of metaphysical dependence at issue in physicalism—'physical dependence', for short—there is not even a prima facie route from the failure of representational/epistemic/modal conceptions of such dependence to a primitivist Grounding-based understanding of this notion.

Rendering the original motivating argument sound requires that its proponents engage these alternative non-primitivist accounts, and argue that for some reason these accounts are not up to the task of capturing the requisite form of physicalist dependence; alternatively, proponents might argue that notwithstanding the availability of these other non-primitive conceptions, Grounding serves some useful purpose.[4] In any case, it is not enough to breezily announce:

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[2] See Melnyk (2016) and Blaesi (in progress) for consonant but different critical discussions of Grounding-based formulations of physicalism, according to which Grounding fails to ensure nothing-over-and-aboveness (Melnyk) and fails to close explanatory gaps (Blaesi).

[3] More specifically: among the specific metaphysical relations offered as characterizing (one or other variety of) physical dependence are type identity (Place 1956; Armstrong 1968/1993), type identity coupled with functional role reference-fixing (Lewis 1966; Armstrong 1968/1993), type identity involving a disjunction of lower-level types (Antony and Levine 1997), species-specific type identity (Kim 1992), type distinctness with token identity (Macdonald and Macdonald 1995; Ehring 1996; Robb 1997), functional realization (Putnam 1967; Shoemaker 1975; Melnyk 2003), the classical mereological part-whole relation (Shoemaker 2000/2001, Clapp 2001), mechanistic or causal varieties of composition (Searle 1992; Craver 2001; Gillett 2002), the constitution relation (Baker 1993), the determinable/determinate relation (MacDonald and MacDonald 1986; Yablo 1992; Wilson 2009), and the proper subset relation understood as holding between powers of higher- and lower-level goings-on (Wilson 1999; Clarke 1999; Shoemaker 2000/2001, Clapp 2001).

[4] An anonymous referee suggested a third strategy, according to which, notwithstanding that Grounding is not needed to fill any

[T]here is no prospect of a reductive account or definition of the grounding idiom: We do not know how to say in more basic terms *what it is* for one fact to obtain in virtue of another. So if we take the notion on board, we will be accepting it as primitive […] I begin with the working hypothesis that there is a single salient form of metaphysical dependence to which the idioms we have been invoking all refer […]. (Rosen 2010, 113–114)

2.2 Grounding as Required to Fix the Direction of Priority

Can a case be made that the appearances of numerous non-primitive forms of physicalist dependence are not genuine, such that primitive Grounding is, after all, "the notion the physicalist needs" in order to formulate their thesis? The best case here is one according to which the holding of some or all of these specific relations is typically not enough to fix the direction of priority.[5] Hence it is observed, for example, that if X is a proper part of Y, nothing immediately follows about whether X is prior to Y (as might be the case on an atomist view, on which atoms are fundamental) or Y is rather prior to X (as might be the case on a monist view, on which the whole is fundamental). Generalizing, the argument is as follows:

1. Physicalism is the thesis, schematically speaking, that all broadly scientific goings-on are nothing over and above lower-level physical goings-on.
2. The operative notion of 'nothing-over-and-aboveness' cannot be successfully characterized in any non-primitive terms, since non-primitive relations or notions of dependence do not fix the direction of priority on their own.
3. There is no way, besides an appeal to primitive Grounding, for the direction of priority to be fixed.
∴ The operative notion of 'nothing-over-and-aboveness' in physicalism should be characterized in terms of Grounding.

It might be, on this approach, that the usual small-g relations have a role to play in formulating physicalism; but in any case Grounding will be crucially required.

Footnote 4 continued

specific role relevant to investigating metaphysical dependence, nonetheless it is the only notion or relation capable of playing all the relevant roles. I won't treat this nice suggestion here, since as I've argued elsewhere (Wilson 2014), Grounding is not able to play many of the roles that the small-g relations are able to play, by way of providing sufficiently articulate illumination into metaphysical dependence.

[5] Kit Fine, Alex Jackson, and Benj Hellie initially pressed this concern against my view.

This argument is also unsound, for premise (3) is false. To be sure, the specific forms of physicalist dependence typically do not fix the direction of priority on their own. But what more is needed in order for this direction to be fixed is not Grounding, but rather a specification of what is considered fundamental.[6]

More precisely, on the account of priority-fixing that I present and develop in Wilson (2014) and (forthcoming b), there are two cases where the direction of priority associated with the holding of a given small-g relation might be at issue: first, cases where the relation connects fundamental to non-fundamental goings-on; second, cases where the relata are each non-fundamental. Neither, I argue, requires appeal to Grounding.

For the first sort of case, I argue that, as is standard in contexts where metaphysical dependence is at issue, what more is needed is specification of what is presumed, as a speculative, antagonistic, or working hypothesis, to be fundamental.[7] As above, given that the whole is fundamental, then proper parts of the whole are non-fundamental; given that atoms are fundamental, fusions of the atoms are non-fundamental. Similarly for cases of physicalist dependence. For example, given that the fundamental goings-on are maximally determinate (as physicalists sometimes assume), then determinables of these goings-on are non-fundamental; and so on. So in order for the small-g relations to fix the direction of priority between fundamental and non-fundamental goings-on, no appeal to Grounding is required.

Importantly, on this account, the metaphysical characterization of what it is to be fundamental, or (to speak in extensional terms) of what goings-on are fundamental (at a world; henceforth this qualification is assumed), is not to be understood in terms of what is not metaphysically dependent on anything else, for two reasons. (This is important since if what is fundamental is that which is not dependent, and if small-g relations typically fix the direction of priority only given what is fundamental, then Grounding might be needed after all, to characterize the fundamental goings-on as those which are un-Grounded.) First, what is fundamental is metaphysically basic (both intensionally and extensionally), if anything is: to be fundamental, as I see it, is effectively to be metaphysically axiomatic. As such, it is metaphysically inapropos to characterize the fundamental in terms adverting to (an absence of) dependence, or in any other terms. I follow Fine (2001) in rejecting any such 'relational'

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[6] Or relatively fundamental, if the world is gunky. The possibility of gunky worlds poses no barrier to characterizing physicalism; see Montero (2006) and Wilson (forthcoming b) for discussion.

[7] See, e.g., the description of 'discriminatory' metaphysical investigations in Jackson (1998), as starting with a specification of the presumed fundamental base, and then attempting to 'locate' the rest of the relevant goings-on in this base.

characterization, rather characterizing the fundamental in primitive positive terms. Second, a characterization of the fundamental as that which is not dependent rules out various live accounts of what fundamental goings-on there might be, including self-dependent Gods, mutually dependent monads, and—a point to which we will later return—partially-dependent strongly emergent features.

What about the second sort of case, involving priority relations between goings-on each or all of which are non-fundamental—say, between hands and bodies? A specification of the fundamental goings-on ('fundamenta', for short) won't, in itself, always fix the directions of priority between the non-fundamental goings-on ('non-fundamenta'): for example, physicalists will agree that both hands and bodies are non-fundamental, but might disagree about whether (tokens or types of) hands are prior to (tokens or types of) bodies, or vice versa. How, then, are priority relations between non-fundamenta, presumably also involving small-g relations, determined?

My treatment here again encodes methodology which is standardly operative in investigations into metaphysical dependence. To start, investigating into dependence relations between non-fundamenta requires that one be in possession of fairly specific accounts of the non-fundamenta in terms of the presumed fundamenta—else one wouldn't be in position to characterize the former goings-on as non-fundamental. As above, such accounts of the non-fundamenta in terms of the fundamenta appeal to the holding of various small-g relations between the fundamenta (for the physicalist: the lower-level physical goings-on) and the non-fundamenta at issue. These accounts of the non-fundamenta, in turn (more specifically, their meta-physical correlates), provide a basis, along with further suppositions or associated facts about the non-fundamenta and their relations, for priority relations (assuming there are such) between non-fundamenta.

For example, physicalists taking hands and bodies to be functionally defined entities might maintain that a body with hands is prior to its hands, since the body's function could be implemented without its hands, but not vice versa; and physicalists taking hands and bodies to be mereological fusions might maintain that a body with hands is posterior to its hands, since the body fusion compositionally depends on the hand fusions (or such physicalists might maintain that neither body nor hands is prior to the other: the hand-fusions are smaller than and contained in the body-fusion, but so what?). Of course, as per the diverse varieties of physicalism, there is considerable room for debate about which further suppositions and associated priority relations are (or are not) in place, even holding fixed the operative accounts of non-fundamenta; but in any case, in order to fix the directions of priority between non-fundamenta, no appeal to Grounding is required.

Several objections have been raised against my account of how priority gets fixed. I start with Cameron's (2016) argument that an appeal to Grounding is required in order to distinguish a world ('Normal') containing two objects, A and B, and where A is scarlet and red, B is crimson and red, A's being red metaphysically depends on A's being scarlet, and B's being red metaphysically depends on B's being crimson, from another world ('Deviant') containing two objects, A and B, and where A is scarlet and red, B is crimson and red, A's being red metaphysically depends on B's being crimson, and B's being red metaphysically depends on A's being scarlet:

> Wilson's resources are inadequate to tell these worlds apart. […] The problem is that merely having the notion of relative fundamentality lets us compare phenomena with respect to what layer of reality they belong, but it doesn't let us map specific portions of one layer of reality with another. […] there is nothing to tie A's redness to the scarlet-ness as opposed to the crimson-ness that is had in the world, and likewise with B's redness. All we can say is that the shared determinable property has each of the specific shade properties that is instantiated in this world as its determinates, and that those two determinates are more fundamental than the shared determinable. […] We need something that will tie specific less fundamental phenomena to specific more fundamental phenomena. Relative fundamentality and small-g grounding relations like the determinable/determinate relation will not do. We need big-G Grounding, to tell us that this more fundamental feature—the scarlet-ness of A, say—is responsible for this less fundamental feature—the redness of A. (392)

Consideration of whether Grounding is needed to accommodate the supposed dependence of determinables on determinates is relevant to whether Grounding is needed for formulating physicalism, since the determinable–determinate relation has been not-infrequently offered as making sense of mental–physical realization (see MacDonald and MacDonald 1986; Yablo 1992; Wilson 2009).

Cameron's argument misses the mark, however, for two reasons. First, Cameron wrongly supposes that in order to accommodate priority relations between non-fundamenta, I would appeal to a primitive notion of 'relative fundamentality'; but as above, and as is clear in my previous discussions, such a notion is no part of my account of how priority between non-fundamenta gets fixed (which account Cameron doesn't discuss, notwithstanding its evident relevance).[8] Second, Cameron's case assumes that the holding

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[8] Indeed, Grounding is often characterized as a primitive relation or notion of relative fundamentality; hence Cameron's argument presupposes that I endorse Grounding or a close cousin thereof, which I don't.

of the determinable–determinate relation doesn't entail anything about which objects have the determinables and determinates at issue (and moreover that the primitive notion of relative fundamentality at issue, which again is no part of my view, can only distinguish type-level 'layers of reality'), such that Grounding would be moreover needed in order to fix the token-level dependence facts. But on the contrary, metaphysically substantive accounts of the determinable–determinate relation entail that when a determinate is instanced in an object, the determinables of that determinate are also instanced in that object (see Wilson forthcoming a). For example, on my preferred account of determinables and determinates, as set out in Wilson (1999, 2009, 2011b), the holding of this relation entails that the token powers of the determinable instance are a proper subset of the token powers of the determinate instance—which would rule out Deviant as involving the determinable–determinate relation. So Cameron's case fails to show that primitive Grounding is needed in order to fix a given direction of priority.

Other objections to my account of priority-fixing target its appeal to a primitive notion of fundamentality. Schaffer (forthcoming) objects that my account requires that there be a fundamental level, which there might not be; in response I have argued that my account does not require this. In brief (see Wilson forthcoming b for details), I argue, first, that if the supposedly infinitely descending levels converge on a limit level, then the (non-existent) limit can serve as a fundamental level; second, that if the archeology of levels below a certain level L makes no difference to all higher-level goings-on, then L can play the same role as a fundamental level in fixing priority between goings-on at or above L; and third, that in the absence of convergence or a level below which archeology doesn't matter, then (modulo small-g relations whose holding alone fixes the direction of priority) there will be no directions of priority, and this is as it should be, as per the 'all God had to do' metaphor (God would in such cases have to bring into existence *all* the goings-on).[9]

Two other concerns target my claim that what it is to be fundamental should not be metaphysically characterized as that which is not dependent. The first is that my first motivation for this claim (see above) incorrectly depends on assuming that the notion of the fundamental cannot have an analysis. Hence Raven (in progress) says:

> [Wilson claims] that there is something wrong-headed in attempting to give any account of fundamentality. Wilson [2014: 560] expresses this when she writes, "like axioms in a theory—the

fundamental should not be metaphysically defined in any other terms, whether these be positive or negative". But this is dubious. Even if certain concepts are primitive in that they have no non-circular analysis, it does not follow that being primitive is primitive. Maybe it can be analyzed roughly as: x is primitive iff there is no non-circular analysis of x. If so, the triviality that a primitive concept is primitive does not entail that being primitive is primitive. Analogously, the triviality that a fundamental entity is fundamental does not entail that fundamentality is fundamental.

A similar concern is raised by Berker (in progress), whose discussion also focuses on my claim that "the fundamental should not be metaphysically defined in any other terms […] The fundamental is, well, *fundamental*" (Wilson 2014, 560):

> [Wilson's] reply conflates a metaphysical characterization of those things which are fundamental with a metaphysical characterization of the fact that those things are fundamental: even if [X is fundamental] holds in virtue of [Nothing grounds X], it does not follow that X itself holds in virtue of something. To think otherwise is to make a metaphysical level confusion (to borrow a term from epistemology).

I see both of these concerns as getting at the same objection—namely, that even if fundamental goings-on are "trivially fundamental" (Raven) and so needn't "hold in virtue of something" (Berker), this is compatible with fundamentality itself (Raven), or of facts about which goings-on are fundamental (Berker), being properly metaphysically characterized in terms of the non-dependent, and more specifically, the un-Grounded.

My first response to the Berker–Raven objection is to deny that I am guilty of any sort of "a metaphysical level confusion", though I grant that the expression 'the fundamental' in my claim "the fundamental should not be metaphysically defined in any other terms" is ambiguous, in a way that invited interpretive confusion about my argument. Let me be more clear. What I need for purposes of implementing my account of priority-fixing is that Grounding isn't needed to *metaphysically determine* (as the un-Grounded) which goings-on are fundamental. My concern about metaphysically characterizing the fundamental as the un-Grounded is *not* that it would render fundamental goings-on non-fundamental (*pace* Raven) or such as to hold in virtue of something (*pace* Berker). On the contrary: part of my argument against characterizing the fundamental as the un-Grounded is that fundamental goings-on *themselves* may 'hold in virtue of something'—e.g., may metaphysically depend on each other, and so be relationally metaphysically characterized. My concern is rather that it doesn't make sense to take what is fundamental at a

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[9] Indeed, Schaffer (2010) supposes that priority relations require a fundamental base.

world (by which I mean: the overall extension of what is fundamental at a world) to be *metaphysically determined* by non-basic facts or goings-on concerning the overall extension of what is not dependent at that world. If anything is appropriately seen as *not* determined by *other* facts or goings-on at a world, it is, I claim, the overall extension of what is fundamental. This is the conception, to my mind, that is suggested by the 'all God had to do' heuristic, with God playing the role of the primitive positive basic determiner (see Wilson 2014, 560).

My second response consists in recalling the dialectical situation. Defending my characterization of the fundamental as suited to enter into a non-Grounding-based account of priority-fixing requires only that I am not forced to accept a characterization of the fundamental as the un-Grounded. I have offered various reasons for rejecting the latter characterization, but independent of these reasons, since a primitive positive ('all God had to do') characterization of the fundamental is clearly a natural live option, further work would need to be done to problematize this characterization, and/or the associated account of priority-fixing.

2.3 Grounding as Required to Characterize Non-skeptical Anti-realism

Ney (forthcoming) argues that a motivation for primitive Grounding—not instead of, but in addition to, the usual small-g grounding relations—may be extracted from Fine (2001). According to this alternative motivation, Grounding is useful for characterizing a non-skeptical variety of anti-realism about mental and other phenomena relevant to the physicalism debates, according to which claims about seemingly higher-level phenomena are taken to be true, since Grounded in claims that are 'real', notwithstanding that the higher-level claims are themselves 'unreal', in failing to representationally track "the intrinsic structure of fundamental reality". Such a position, she argues, enables one to split the difference between reductive and non-reductive physicalists: as per the reductionist, only the physical goings-on *really* exist, but as per the non-reductionist, claims about special-scientific phenomena are accepted as true, since Grounded in the physical. The motivating argument for a Grounding-based formulation of physicalism would then be along lines of the following:

1. Physicalism is the thesis, schematically speaking, that all broadly scientific goings-on are nothing over and above lower-level physical goings-on.
2. Among the versions of physicalism that we should aim to accommodate is a non-skeptical anti-realist position, according to which only the physical goings-on are real, but claims about higher-level phenomena are true.
3. Only Grounding, understood as a primitive notion or relation of metaphysical dependence, can provide a basis for characterizing non-skeptical anti-realism.

∴. At least for purposes of characterizing non-skeptical anti-realism, the operative notion of 'nothing-over-and-aboveness' in the physicalist thesis should be characterized in terms of Grounding.

Grounding is here offered as a primitive addition to the numerous non-primitivist accounts of physicalist dependence already on the scene, in service of formulating a specific version of physicalism. This restricted motivation for a Grounding-based formulation of physicalism is also unsound. Seeing this requires disambiguating and discussing various candidate forms of 'anti-realism'; as I will now argue, none of these jointly support premises 2 and 3.

To start, consider reductive physicalism (as per, e.g., Armstrong, Kim, and others), according to which seemingly higher-level goings-on are identical with (typically complex combinations of) lower-level physical goings-on. Fine and Ney confusingly characterize reductionists as 'anti-realists'—confusingly, since goings-on that are identical to real goings-on are also real, on the usual understanding of 'real' as meaning 'existent'. In any case, reductive physicalists do not need Grounding in order to maintain that claims adverting to seemingly higher-level goings-on are true. Indeed, a constraint on good reductive theories is that the reductions accommodate, at least for the most part, the usual truth values of claims involving the targets of reduction. In cases of simple term-by-term reductions (as in the toy case, 'pain = c-fiber firing'), gaining ordinary truth may be as simple as substituting *salva veritate*. But importantly, and notwithstanding the toy cases, the reductionist is not limited to what Quine (1951) calls the "impossible term-by-term empiricism of Locke and Hume" (137); on the contrary, the reductions at issue may span states of affairs, bodies of theory and practice, and so on, extending far beyond the seeming content of a given claim whose ordinary truth is at issue. In cases of such complex reductions, the reductionist will likely maintain that what the claim expresses is somewhat different from what one might suppose it to express by reading off the superficial logical form. Even so, there is no in-principle difficulty with reductive physicalist accommodation of the truth of claims involving mental states or any other seemingly higher-level goings-on, without appeal to Grounding. Hence a reading of 'non-skeptical antirealism' as referring to reductive physicalism provides no support for premise 3.

Next, consider eliminativist physicalism (as per, e.g., Churchland 1981; Churchland 1986). This view is genuinely anti-realist, in taking certain seemingly higher-level goings-on to fail to be real in the usual sense of not existing, even as

non-fundamental. Do such anti-realists need Grounding in order to maintain that claims seemingly about higher-level goings-on are true? No, for eliminativists standardly and explicitly suppose that such claims are either false or meaningless (see Lycan and Pappas 1972 for discussion). The standard eliminativist's view is error-theoretic and revisionary—in Fine and Ney's terms, 'skeptical'—by design. Hence this view provides no support for premise 2.

What about a non-standard variety of eliminativist physicalism, which combines eliminativism about mental states, in particular, with non-skepticism about claims seeming to involve these higher-level goings-on? Here there are two responses.

First, one may deny that such a view needs to be accommodated. After all, if there are really no lower-level physical goings-on that might be seen as encoding or accommodating, however revisionarily, the purported existence of mental states, what motivation is there for the physicalist to take claims seemingly about mental states to be true? Ney's reason, following Fine, is that claims made in other disciplines—mathematics, science—are or should be immune from metaphysical critique. According to this 'hands-off' view, metaphysics should not meddle in other disciplines, even granting (contra Hofweber 2009) that there is a role for metaphysics as aiming to identify the deeper structure of reality. But the hands-off view is an unuseful fiction (see Wilson 2011, 2016). The posits and presuppositions of metaphysics frequently inform science, math and logic, as the historically close and continuing relationship between metaphysics and these other disciplines bears out; and results from all these disciplines inform ordinary language. Since the motivation for non-skeptical eliminativism hinges on metaphysics' being effectively epiphenomenal *vis-á-vis* other disciplines, which it isn't, there is no need to accommodate such a position, for purposes of formulating physicalism or otherwise. As such, we are still lacking any support for premise 2.

Second, even if one endorses the hands-off view, Ney's motivating argument for Grounding is unsound. To see this, first note that presumably not all higher-level claims are on a par so far as preservation of ordinary truth-value is concerned: the non-standard eliminativist will need to distinguish true claims such as 'mental states exist' from false claims such as 'phlogiston exists' or 'witches exist'. What is supposed to distinguish these cases, for the non-standard eliminativist? Applying Ney's characterization of non-skeptical anti-realism, the difference here is supposed to lie in the former but not the latter goings-on (or associated facts or states of affairs) being Grounded in physical goings-on. In turn, Fine (2001) tells us, the diagnostic for determining the presence of Grounding connections is to look for what in the world makes the claims true: "the relationship of ground is a form of explanation; in

providing the ground for a given proposition, one is explaining, in the most metaphysically satisfying manner, what it is that makes it true" (22).

In the present case, where the lower-level physical goings-on are presumed to be fundamental, whether mental states should be preserved as true or rather face the fate of so-called 'phlogiston' or 'witches' will depend on whether lower-level physical goings-on exist that are capable of making the claims about mental states true, in a way that is 'metaphysically satisfying'. But supposing such goings-on exist, then these will be fodder for the reductionist's mill. Again, reductionists are not restricted to term-by-term reductions; they can help themselves to whatever features, states of affairs, spatiotemporally wide-ranging and potentially context-dependent facts, theories, or practices, etc., they take to be constitutive of the reductive target.[10] So if a posit of Grounding requires that there be a worldly basis for the truth of claims about mental states, then this basis can enter (at least for all the proponent of Grounding has established) into the reductionist's identifications. On closer examination, then, non-skeptical eliminativism is not *really* an eliminativist position; rather, it's just reductionism—which as above, can render seemingly higher-level claims true without any need for Grounding. In that case, however, premise 3 remains unsupported.

Finally, consider nonfactualist physicalist views—say, expressivism about (e.g., normative) mental states, where the associated attitudes and practices are intended to be nothing over and above lower-level physical goings-on. Here again, standard nonfactualist views are error-theoretic and revisionary—that is, 'skeptical'. Bracketing that a non-standard nonfactualism about mental states is unmotivated (since relying on the false presupposition that metaphysical results don't bear on ordinary claims, theory, and practice), does characterizing such a view require appeal to Grounding, as needed to make sense of how the nonfactualist can maintain that 'Killing babies for fun is wrong' fails to express a proposition and so isn't truth-evaluable in one sense of 'true', while also maintaining that (as per the hands-off view) in some other sense of 'true', 'Killing babies for fun is wrong' is true, since Grounded in some lower-level physical facts? No. For rather than multiplying notions of truth and introducing primitive Grounding as somehow providing a basis for the 'ordinary truth' of moral claims, the nonfactualist can sensibly and parsimoniously maintain that, notwithstanding that moral claims do not express propositions and so are not truth-evaluable, there are propositions in the near vicinity that are truth-evaluable—e.g., the proposition that 'People in my community

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[10] For example, a reductionist about numbers can say that numbers are theoretically regimented representations of outcomes of tallying activities.

have con-attitudes towards killing babies'. It remains, then, that we are lacking any support for premise 2.

The upshot is that Ney's alternative motivation for a restricted Grounding-based formulation of (a version of) physicalism is, like the previous motivations, unsound: each of the views that might count as a form of physicalist 'anti-realism' are either skeptical (standard eliminativism, standard expressivism), hence provide no support for premise 2, or else can accommodate the truth of ordinary claims without appeal to Grounding (reductionism, non-standard eliminativism, non-standard expressivism), contra premise 3.
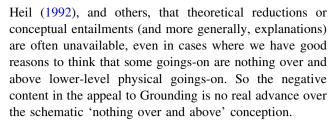
3 The Absence of Illuminating Content

A Grounding-based formulation of physicalism is as follows:

> *Physicalism* (Grounding): All broadly scientific goings-on are Grounded in lower-level physical goings-on.

On the face of it, this formulation isn't informative; one might even think that, insofar as general talk of being 'grounded in' was in the past often used as a terminological variant of being 'nothing over and above', the formulation doesn't so much fill in the operative notion of physicalist dependence as it restates what requires filling-in.

Proponents might respond that some light is shed here, since *Physicalism* (Grounding) tells you what physicalist dependence is not—it is not supervenience, not conceptual entailment, not any kind of 'over and above' relation (e.g. causation, or strong emergence), etc.; and it moreover tells you what physicalist dependence is: it's primitive, either as a relation between any worldly goings-on, as Schaffer maintains, or as an operator on or relation between facts or propositions, as Rosen and Dasgupta maintain.

These are thin reeds, however. First, in re what physicalist dependence on a Grounding-based conception is not: we've known for decades, as per Schiffer (1987), Kim (1984), Horgan (1993), Wilson (2005), McLaughlin and Bennett (2014), and many others, that purely modal notions aren't up to the task of characterizing physicalist dependence; as Van Gulick (2001) observed, "Although supervenience enjoyed a brief period of intense interest as a possible way of making sense of ontological physicalism, it has now generally fallen out of favour. Even Jaegwon Kim, who played the largest role in bringing the notion to the centre of discussion […] has acknowledged […] that supervenience is too weak a relation to validate physicalism" (8).[11] And it's even older news, as per Boyd (1980),

Heil (1992), and others, that theoretical reductions or conceptual entailments (and more generally, explanations) are often unavailable, even in cases where we have good reasons to think that some goings-on are nothing over and above lower-level physical goings-on. So the negative content in the appeal to Grounding is no real advance over the schematic 'nothing over and above' conception.

Second, in re what physicalist dependence on a Grounding-based conception is—namely, primitive: to start, to say that some phenomenon is primitive doesn't in itself count for much, by way of illuminating the phenomenon. Often, primitive posits are an admission that no account of the phenomenon is available in more familiar, potentially informative terms. That's not always the case: on a dispositional essentialist account, for example, modality is primitive, but is nonetheless situated in metaphysically and scientifically rich and familiar territory. Not so for Grounding, which as originally introduced is primarily characterized (and moreover, enthymematically) by what it isn't.

In response to concerns that the characterization of Grounding as primitive doesn't offer any illuminating (non-brute) content, proponents sometimes say more; and here the initial and still-common move is to maintain that Grounding, whether understood as holding between any worldly items or rather just between, e.g., facts or propositions, has the formal features of a strict partial order: asymmetry, irreflexivity, transitivity (see, e.g., Schaffer 2009; Rosen 2010, and others). It is sometimes also specified that Grounding is non-monotonic and hyperintensional (see, e.g., Schaffer forthcoming; Raven forthcoming). These features are, however, both too strong and too weak for purposes of bestowing illuminating content on the operative notion of 'nothing over and aboveness' as it enters into the schematic physicalist thesis.

The specified features of strict partial orders are too strong, whether Grounding is understood as holding between worldly items or facts, since for each of these features, there are relations commonly offered as physical dependence relations not having all those features. For example, set membership is not transitive, but impure sets (as scientific properties might be taken to be) metaphysically depend on their members (see Wilson 2014), and Schaffer (2012) now rejects transitivity partly on the basis of cases involving linked applications of (facts about dependency involving) the part-whole and determinable–determinate relations.[12] Moreover, identity is neither

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Footnote 11 continued

supplement this notion (in Chalmers's case, with conceptual entailment) in order to address at least some salient counterexamples.

[12] See also Jenkins (2011), Bliss (2011), Thompson (2016), Barnes (forthcoming), Rodriguez-Pereyra (forthcoming), and others.

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[11] Even those seeming to endorse supervenience as sufficient unto characterizing physicalist dependence (e.g., Chalmers 1996) typically

asymmetric nor irreflexive; hence if Grounding is a partial order, a Grounding-based formulation of physicalism would be at best a formulation of *non-reductive* physicalism, notwithstanding that the most natural reading of the reference to 'nothing over and aboveness' in the schematic formulation of physicalism is as involving identity, as on reductive versions of this thesis.[13]

As regards this last point, proponents of a Grounding-based formulation of physicalism have two potential lines of response. First, they might respond by maintaining that reductive versions of physicalism *should* be ruled out of court, following Schaffer's "permissivism about existence" (2009, 359) according to which "contemporary existence debates are trivial, in that the entities in question obviously do exist. (What is not trivial is whether they are fundamental)" (357). Second, proponents might respond by disjunctively tweaking their Grounding-based formulation of physicalism:

> *Physicalism* (Grounding): All broadly scientific goings-on are either Grounded in or identical with lower-level physical goings-on.

These responses are each unsatisfactory, however. Schaffer's permissivism is motivated by broad endorsement of the 'hands-off' view of the business of metaphysics; again, this view is an unuseful fiction, and in any case neither reductive nor non-reductive physicalists will accept a formulation of physicalism that trivially resolves their dispute in the non-reductionist's favor. And the disjunctivist response misses the deeper force of the objection at issue. Recall Rosen's (2010, 113–114) remarks:

> […] if we take the notion on board, we will be accepting it as primitive […] I begin with the working hypothesis that there is a single salient form of metaphysical dependence to which the idioms we have been invoking all refer […].

Grounding, *qua* primitive posit, is here ostensively identified as that which is at issue across any and all contexts where idioms of dependence such as 'nothing over and above' are at issue. Correspondingly, what the tweaked Grounding-based formulation of physicalism requires is that primitive Grounding be ostensively identified as that which is at issue across any and all *non-reductive* contexts where idioms of dependence are at issue. But there is at present little if any agreement among physicalists about which contexts are reductive and which aren't. In that case, there is *no stable ostensive base* for primitive Grounding, and it becomes even less clear what exactly Grounding is supposed to be.

Yet more importantly, the stipulated formal features are too weak, in failing to distinguish physical dependence from various 'over and above' relations, including causation and strong emergence, which all parties to the physicalism debate agree are incompatible with physical dependence, and which relations enter into the formulations of the views (i.e., strong emergentism of British Emergentist and other varieties) that constitute physicalism's best naturalistic rivals (see Wilson 2015 for discussion and a wide-ranging literature survey). What, beyond brute stipulation, is supposed to distinguish physical dependence, understood as per Grounding, from these 'over and above' relations? Schaffer (2009) suggests that Grounding differs from causation in that Grounding chains must be well-founded, whereas causal chains needn't be; but one might reasonably maintain that causation requires minimal elements (such that supposed causal loops are really spirals), or that metaphysical dependence does not require minimal elements (on grounds that, as discussed above, there can be priority relations even in a world lacking a fundamental level). More importantly, there is not even a prima facie case to be made that strongly emergent and physically dependent goings-on differ in respect of whether or not minimal elements are required for the relation to hold; indeed, discussions of physicalism and emergentism are often explicitly neutral on this issue (and rightfully so; see Montero 2006), and when they are not, physicalists and strong emergentists agree about the status of the physical goings-on as suitably 'minimal'. Nor is the difference between physical dependence and paradigm 'over and above' relations such as causation and strong emergence accommodated by taking Grounding to be non-monotonic and hyperintensional, since nothing prevents either causation or strong emergence from conforming to these features—as the various counterexamples to supervenience-based formulations of physicalism (which counterexamples, recall, are among the supposed motivations for positing Grounding) illustrate (see, e.g., Horgan 1993; Wilson 2005).

The upshot is that since the stipulated formal features of Grounding do not rule out anti-physicalist 'over and above' relations, the addition of these features adds no content capable of illuminating the contrast between physicalism and its primary (strong emergentist) rivals. That contrast—and indeed, the more basic contrast between goings-on that are and are not 'over and above' lower-level physical goings-on—remains unilluminatingly brute.

Allow me to expand on this point. I hereby introduce 'Schmounding', a primitive non-monotonic hyperintensional strictly ordered relation of 'over and aboveness' operative in all contexts where the idioms of emergence are at issue. How do mental goings-on stand to lower-level physical goings-on? The physicalist says: they're

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[13] As Van Gulick (2001) remarks, "The basic idea of reduction is conveyed by the 'nothing more than …' slogan" (2).

Grounded. The strong emergentist says: they're Sch-mounded. We've divided through by primitive non-monotonic hyperintensional strict partial orderability to arrive back at the schematic 'nothing/something over and above' formulations. This is not an advance.

4 The Conflation of Metaphysical Dependence and Metaphysical Explanation

Proponents of Grounding typically take this posit to be intimately tied, one way or another, to metaphysical explanation. So-called 'unionists' (following the terminology of Raven forthcoming) take Grounding to *be* a relation of metaphysical explanation. As Fine (2001) says, "We take ground to be an explanatory relation: if the truth that P is grounded in other truths, then they account for its truth; P's being the case holds in virtue of the other truths' being the case" (15); indeed, Fine takes Grounding to be 'the ultimate form of explanation'. Similarly for some proponents of Grounding-based formulations of physicalism. As Dasgupta (2014) says:

> What is ground? As I use the term, it is a purely explanatory notion: to say that some facts ground another is just to say that the former explain the latter, in a particular sense of "explain." […] When I say that some facts ground another, I mean that the former fully explain the latter. […] So the idea that physicalism should be understood as a grounding thesis is the idea that physicalism is ultimately an explanatory thesis. (558)

Such a conception of Grounding might be thought to be advantageous in providing independent and counterexample-proof motivation for taking it to be a non-monotonic strict partial order. Hence Raven (forthcoming) characterizes Grounding as a "a distinctive kind of metaphysical explanation", and sees it as naturally inheriting these features from the features of explanations in general.

An initial difficulty with the unionist conception is that the supposed formal features of Grounding are still subject to counterexample. At least in contexts where natural reality is at issue, as in the physicalism debates, good explanations are commonly supposed not to include irrelevant information (see, e.g., Batterman 1998; Woodward 1997; Strevens 2004). As such, good piecewise explanations may not be transitive: there being certain complex quantum goings-on may explain there being a certain molecular array; and there being a certain molecular array may explain the bridge's being stable; but there being certain quantum goings-on may not explain the bridge's

being stable, since the latter higher-level fact or state of affairs floats free of quantum-theoretic details.[14]

More importantly, a unionist conception of Grounding conflates metaphysical dependence and metaphysical explanation, in ways that render it unsuited for purposes of formulating physicalism. As per the original proponents, the supposed point of formulating physicalism in terms of Grounding is that Grounding, unlike representational, epistemic, or modal conceptions, is up to the task of characterizing 'nothing-over-and-aboveness' in properly metaphysical fashion. As Fine (2001) put it when discussing naturalism (a close relative of physicalism), "we need to restore ourselves to a state of metaphysical innocence in which (e.g.,) reduction is seen to concern the subject matter itself and not the means by which it might be represented or cognized" (10). But I concur with Kim (1973) in thinking that "the idea of explaining something is inseparable from the idea of making it intelligible; to seek an explanation of something is to seek to understand it" (54), and with Thompson (in progress) in thinking that explanation is "always an epistemic phenomenon". Hence it is that existing accounts of explanation as involving why-questions, arguments, inferences, the perception of unifying patterns, understanding, and/or expectation, are representationally, epistemically, and cognitively loaded. The obvious point is that if a properly metaphysical notion of dependence is the target, it is not to the point to characterize such dependence in overtly epistemological, psychological terms.

Is there room for a purely ontic notion of explanation? Perhaps, but the most natural and systematic such account won't help unionists about Grounding. First, consider causal explanations:

> [I]magine that you are sitting at a desk and someone asks why the desk is there. One way to answer the question would be to offer a causal explanation: for example, that someone carried the desk into the room a few days earlier. (Dasgupta 2014, 558)

Here, as is standard, a causal explanation is one expressing the holding of a causal relation, where the explanandum is the effect. One might systematically and plausibly suggest that a metaphysical explanation is one expressing the holding of a metaphysical dependence relation, where the explanandum is the dependent entity. But such metaphysical explanations presuppose rather than constitute an independent conception of metaphysical dependence, rendering an ontic unionist account either circular or uninformative: on such a view, what it is for X to metaphysically depend on Y is for X to be ontically metaphysically explained by Y, which in turn is for X to metaphysically depend on Y.

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[14] See Post (1987, 227–228) for further arguments to the effect that inter-level explanation is not transitive.

Now, unlike unionists, 'separatists' take Grounding to *back*, rather than to be, metaphysical explanation. Hence Schaffer (2012) says:

> One should distinguish the worldly relation of grounding from the metaphysical explanations between facts that it backs, just as one should distinguish the worldly relation of causation from the causal explanations between facts that it backs. (124)

Audi (2012) similarly maintains:

> [G]rounding is not a form of explanation, even though it is intimately connected with explanation […] [a]n explanation […] is something you can literally know; a grounding relation is something you can merely know about. (119–120)

While taking Grounding to back rather than be a relation of metaphysical explanation does better by way of conforming to the initial stated motivations for this posit, and isn't subject to immediate circularity, the 'backing' connection to explanation also undercuts the motivation for primitive Grounding. For just as causal explanations cite specific causal relations (e.g., 'carrying') rather than a generic primitive notion of cause, so too do metaphysical explanations cite specific 'small-g' dependence relations (e.g., token or type identity, functional realization, the determinable–determinate relation) rather than a generic primitive notion of dependence (see Wilson 2014). Nor is there any clear room here for maintaining that Grounding (at least) backs coarse-grained explanations, for as we saw in the previous section, even the basic contrast between nothing/something over-and-above relations is, on a Grounding-based account, a matter of brute stipulation. Here it is worth recalling Lewis's (1983, 40) remarks to the effect that we cannot stipulate the features of natural relations any more than we can ensure that someone has mighty biceps simply by calling them 'Armstrong'.

One last gambit remains: might attention to metaphysical explanation motivate Grounding as needed to guide our investigations into what depends on what? Sider suggests this in his first Locke lecture (Oxford University, 2016), saying

> I think that Wilson is right about something important here. In metaphysical investigations […] we don't stop with saying [e.g.] that the mind is grounded. […] But I don't think she's right to conclude that ground is useless. […] Neutral claims of this sort have an important epistemic role to play […] Naturalists […] begin by exploring one sort of way to ground consciousness in the physical, but if that doesn't work, they try another way. Why do they stick to this path? It's because they take themselves to have very good evidence that everything is grounded—in one way or

another—in the natural. […] A more specific doctrine couldn't play the same epistemic role.

I respond that even if a generic concept of dependence guides investigations, representation and reality are distinct; more is required to show that a generic concept has a metaphysical correlate. There are, after all, and going back to Berkeley (at least), well-known deflationary strategies for resisting taking generic terms/concepts at face value. Rather than consider all these, I'll point to some analogous cases: from chemists searching for the constitution of water it doesn't follow that there is a generic property of water; from detectives searching for who shot Kennedy, it doesn't follow that there is a generic person, 'The Kennedy-Killer'; from Bonnard spending months searching for the perfect shade of red to complete a painting, it doesn't follow that irreducible determinables exist.

Two other concerns attach to the standard conceptions of Grounding, whether unionist or separatist, as constitutively connected to explanation. First, whether metaphysical dependence relations always admit of explanation (even if only in-principle) is controversial. This is especially true in the physicalism debates, where the bearing of explanatory gaps between lower-level physical goings-on and normative and intentional mental goings-on, in particular, continues to be a live question—with a common view being that physical dependence is compatible with in-principle explanatory gaps (see, e.g., Boyd 1980; Perry 2001; Wilson 2002). Any Grounding-based formulation of physicalism constitutively tying Grounding to explanation cannot, it seems, accommodate these views. Second, a constitutive requirement on explanation undermines one of the main stated motivations for Grounding—namely, that Grounding is needed following failures of epistemic (including, e.g., conceptual entailment) approaches to metaphysical dependence; for such approaches were rejected primarily because they incorrectly took metaphysical dependence to be incompatible with explanatory gaps.

5 The Failure to Appropriately Contrast with Strong Emergentism

According to strong emergentism, some scientific goings-on are to some extent dependent on—do not float entirely metaphysically free of—lower-level physical goings-on, notwithstanding that they are 'over and above' the latter goings-on, in being fundamentally novel.[15] Strong emergentism is physicalism's traditional and best

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[15] Here the contrast is with non-fundamental novelty, reflecting merely aggregative relational or other combinatorial novelty, of the sort that physicalists can happily accept. The schematic understanding of strong emergence as combining fundamentality and dependence is historically longstanding, originating (at least) with the British
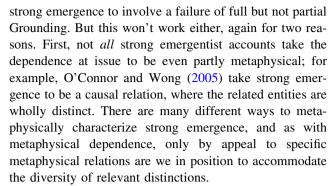
naturalistically acceptable rival. As above, insofar as Grounding is typically characterized as a primitive notion or relation having the features of a (non-monotonic, hyperintensional) strict partial order, and insofar as, like causation, nothing prevents strong emergence from also being a (non-monotonic, hyperintensional) strict partial order,[16] that Grounding is a 'nothing over and above' rather than an 'over and above' relation is just a matter of brute stipulation. That's not illuminating; but as I'll now argue, the problem for the proponent of a Grounding-based formulation of physicalism is even worse so far as accommodating this crucial contrast is concerned.

To start, notwithstanding that strongly emergent phenomena are standardly and traditionally supposed to be fundamental, and notwithstanding that proponents of Grounding commonly characterize the fundamental as the un-Grounded (wrongly, I have argued; but put that aside), strongly emergent phenomena cannot be characterized as involving a failure of Grounding, for two reasons. First, the failure of some goings-on to be metaphysically dependent on some others is compatible either with the former's being fundamental (as on a strong emergentist view) or with the former's not existing (as on an eliminativist or other anti-realist view). Before one can settle on a metaphysical interpretation, one must identify the reasons for the supposed failure of dependence; but Grounding, *qua* thinly described primitive, is silent on these reasons. Second, if metaphysical dependence is a matter of Grounding, then a failure of Grounding would appear to correspond to a failure of metaphysical dependence. But as previously, strongly emergent phenomena are, though over and above physical states, nonetheless to some extent dependent on physical states. And nothing prevents this dependence from being of the metaphysical (as opposed to, e.g., causal) variety, though to be sure strongly emergent goings-on can't be *entirely* metaphysically dependent on lower-level physical goings-on, on pain of being, contra the intended contrast, nothing over and above the physical base phenomena.

One might think that, in that case, the proponent of a Grounding-based formulation of physicalism can accommodate the contrast with strong emergence by taking

strong emergence to involve a failure of full but not partial Grounding. But this won't work either, again for two reasons. First, not *all* strong emergentist accounts take the dependence at issue to be even partly metaphysical; for example, O'Connor and Wong (2005) take strong emergence to be a causal relation, where the related entities are wholly distinct. There are many different ways to metaphysically characterize strong emergence, and as with metaphysical dependence, only by appeal to specific metaphysical relations are we in position to accommodate the diversity of relevant distinctions.

Second, in any case, it is unclear how to add partial Grounding to the mix in a way that does not take this to be a second primitive, thus introducing more ontologically costly and unilluminating stipulation. To see this, first note that there's no hope of taking partial Grounding to be primitive, and then defining full Grounding in terms of it. Here it is illustrative to compare partial and full Grounding with proper and improper parthood. In the latter case, one can define the notion of part using only one primitive and identity: P is a part of Q just in case P is a proper part of Q or P is identical with Q. But this strategy won't work for Grounding, since proponents of Grounding maintain that fully Grounded goings-on are not identical with Grounding goings-on (and in any case full metaphysical dependence is compatible with non-identity).

More promising, perhaps, is the orthodox view (endorsed by, e.g., Correia 2005; Schaffer 2009; Rosen 2010; Fine 2012; Raven forthcoming) taking full Grounding to be primitive, and then defining partial Grounding in terms of it, as per the following theses:

> *Supplementation*: If X partially grounds Z, then there is some Y such that X and Y together fully ground Z.
> *Dichotomy*: If there is an X that partially grounds Z, there is a Q that fully grounds Z.

This approach also fails, however, for it imports a kind of conjunctive or 'weak supplementation' structure into partial dependence, which rules out of court various intuitive accounts of partial dependence. As Fine (2012, 53) acknowledges:

> [There is] a natural partial notion of ground for which a partial ground need not always be part of a full ground. One might wish to say, for example, that the truth that A is a partial ground for knowledge that A, even though there is nothing one might add to A to obtain a strict full ground for knowledge that A (as in the view of Williamson 2000). (53)

Other cases where the assumption of weak supplementation does not hold in cases of partial dependence include ones where open interiors are unsupplementable proper parts of closed regions (Whitehead 1929), the soul is an

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Footnote 15 continued

Emergentists, including Mill (1843/1973) and Broad (1925); more generally, it is (modulo recent failed attempts to characterize emergence as involving merely nomological supervenience) the starting point of investigations into such emergence, with the focus being on how to make sense of this combination of features, in terms of fundamental powers, properties, interactions, or laws (see, e.g., McLaughlin 1992; O'Connor and Wong 2005; Wilson 2002; Barnes 2012).

[16] As Yablo (1992) puts it, "To caricature emergentism just slightly, [this involves] a kind of "supercausation" which improves on the original in that supercauses act immediately and metaphysically guarantee their supereffects" (256–257).

unsupplementable proper part of a person (Brentano 1874), and Socrates is an unsupplementable proper part of Socrates-*qua*-philosopher (Fine 1992); see Dixon (2016) for yet more cases. Importantly for present purposes, the form of partial metaphysical dependence on lower-level physical goings-on that a strong emergentist might endorse appears not to conform to, and in any case need not conform to, weak supplementation. It is unclear what independent *Y* might be added to lower-level physical goings-on *X* to provide a full dependence base for an emergent feature *Z*; moreover, the whole point of the strong emergentist view, as reflected in the talk of *emergence* as opposed to conjunction or joint causation or any other combinatorial notion, is to characterize a feature that takes in and transcends its lower-level physical base. As such, strongly emergent phenomena are plausibly more akin to the non-supplementable phenomena identified by Whitehead, Brentano, and Fine than to phenomena which are in some sense conjunctively dependent on multiple goings-on.

It follows that in order to accommodate cases of partial dependence—including cases of strong emergence, on a natural interpretation—which are not appropriately or necessarily understood in weak supplemental terms, a second, ontologically costly 'partial Grounding' primitive will be needed. But how are the primitive posits of partial and full Grounding related? The connection here is unexplained, and will likely require a third primitive posit.

6 'Spandrel' Questions

Since the introduction of Grounding, considerable attention has focused on the question 'What Grounds Grounding?' This is the primary focus of Dasgupta's (2014) article, for example, where he aims to address the following concern (attributed to Sider 2011) for a Grounding-based formulation of physicalism:

> In rough outline the objection is this. Suppose for reductio that the physicalist formulates her view in terms of ground. Then her view is that purely physical facts about (say) particle positions or field values are sufficient to ground all else. So, consider the fact that I, SD, am conscious. The physicalist says that this has a purely physical ground—for example, in the fact that my brain is in a certain physical state P. Suppose that she is right. Then consider the resulting grounding fact:
>
> (C) The fact that SD's brain is in physical state *P* grounds the fact that SD is conscious.
>
> Now, (C) is not a purely physical fact, since it is not just about particle positions or field values or the like.

Rather, it is in part a fact about consciousness—that is, about what grounds my being conscious. So the physicalist just characterized must say that (C) is also grounded in purely physical facts. And the problem (I will argue) is that this is implausible. If it is grounded in anything, it is grounded in facts about consciousness: it is because of something about consciousness that my being in state P grounds my being conscious. So if physicalism is formulated in terms of ground, it follows that it (physicalism) is false. (560)

In response to variations on the theme of this concern, Bennett (2011) and deRosset (2013) suggest that the Grounds Ground Grounding; Dasgupta ultimately suggests (notwithstanding the initial suggestion that the Grounded Grounds Grounding) that Grounding is un-Grounded; and Schaffer is developing a means of addressing the concern on which Grounding claims involve tacit derivations appealing to "principles of metaphysics".

I don't want to enter overmuch into the details of this already-large literature. Rather, I want to suggest that this problematic concerns what I call a "spandrel" question—a question generated entirely by the overly abstract nature of Grounding.

To start, one can of course say 'the mental is Grounded in the physical', with the intention of expressing that, as per the schematic physicalist thesis, the mental is nothing over and above lower-level physical goings-on. But insofar as the metaphysical dependence here rests in a primitive posit (and moreover one whose purported formal features are or may be shared by classic 'over and above' relations), the immediate follow-up will be: What makes it the case that this primitive notion or relation—holding between or otherwise attaching (e.g., qua 'operator'), to facts or any worldly items, no matter—is in place? What Grounds the fact that the mental is primitively Grounded in the physical? That this is the natural response to Grounding claims indicates that such claims not only do not close the intended metaphysical gap, but rather introduce new ones, effectively shifting the original question about whether and how metaphysical dependence is in place to a sort of 'meta-level'. Moreover, there is an obvious regress lurking here, for any answer to the meta-level question will lead to a new (meta-meta-level) question—e.g., what Grounds the fact that the Grounds Ground Grounding? And so on.

So far as I can tell, there is no way to treat the regress that does not undermine the usefulness of Grounding. One might accept the regress, maintaining that Grounding is (always) Grounded, somehow or other; but in that case, as Bliss and Trogdon (2014) present the concern, "does this not preclude our providing an explanation of how grounding got into the picture in the first place? (Compare: if any candidate explanation of why there are any

contingent entities at all appeals to further contingent entities, this shows that there is no ultimate explanation of why there are such entities, or so the idea goes)". Alternatively, one might aim to stop the regress, maintaining that Grounding is un-Grounded; but since Grounding, *qua* thinly described primitive, doesn't encode any principled basis for its not needing to be Grounded, the regress is stopped only in ad hoc fashion (and similarly for hybrid treatments drawing on the previous strategies).

That the question 'What Grounds Grounding?' is a spandrel question generated by Grounding's overly abstract 'nature' is supported by the fact that no comparable question arises when the operative understanding of physical dependence is instantiated with one or other small-g relation. This is obviously the case for identity—again, the relation most often appealed to as instantiating 'nothing over and above' in the schematic physicalist thesis. If someone tells you that mental states are identical to physical states, there's no temptation to ask, 'But *in virtue of what* are they identical? What *makes it the case* that they are identical? What *metaphysically explains* why they are identical?'

The same is true of other of the small-g relations that have been offered as characterizing physical dependence. If someone tells you that mental states are determinables of physical determinates, there's no temptation to ask, 'But *in virtue of what* do they stand in the determinable–determinate relation? And so on. In the twenty-four years since Yablo (developing the analogy proposed in Macdonald and Macdonald 1995) suggested that the physical acceptability, multiple realizability, and distinctive efficacy of mental states is accommodated by taking mental states to be determinables of physical states, there have been many critical discussions of this view (as in, e.g., Ehring 1996; Worley 1997; Walter 2006); but not one has raised these sorts of meta-level dependence questions. Rather, all these discussions take for granted—as is intuitively plausible, given our antecedent familiarity with this relation—that *if* mental states were determinables of (presumed more fundamental) physical states, that would indeed suffice for physical dependence.

To be sure, there are further questions that might be asked about the holding of a given small-g relation (understood as holding, as in the case of physicalism, against the backdrop of some presumed fundamental or more fundamental base). One might ask certain epistemological questions—for example, questions about what would justify the belief that mental states are identical to or are determinables of physical states. And one might ask certain metaphysical questions—for example, questions about whether identity is absolute or is rather relative to sortals, or about how the determinable/determinate relation differs from the genus-species relation. But these are questions about how we can know that a given relation is in place, or about what metaphysical account is to be given of the relation itself; these are not meta-level questions about what the holding of a given dependence relation itself depends on. Indeed, whatever the specific metaphysical accounts of these relations, it is a constraint on these accounts that they preserve and explicate how these relations serve as small-g grounding relations, when taken to hold against the backdrop of some presumed fundamental base.

One might wonder if I am being sufficiently charitable to those who are vexed by the question, 'What Grounds Grounding?'. Let's return to Dasgupta's case of a Grounding fact:

(C) The fact that SD's brain is in physical state *P* grounds the fact that SD is conscious.

Supposing that physicalism is understood as the thesis that all broadly scientific facts are nothing over and above physical facts, and given that, as Dasgupta seems to agree, (C) is not a physical fact, since "it is not just about particle positions or field values or the like", isn't there a clear worry here that any adequate formulation of physicalism must address—namely, how to make sense of non-fundamental facts as being 'nothing over and above' lower-level physical facts, given that the latter are only 'about' lower-level physical goings-on? Similarly for Sider's way of putting the problem: how can fundamental truths provide a basis for non-fundamental truths, given that, as per his often-referenced 'Purity Principle', "a fundamental truth is a truth involving only fundamental terms" (Sider 2011, 116)?

My answer is that no, we don't have a deep worry for physicalism here. To start, what we have is rather a conflation of facts, understood as representational entities, and facts, understood as worldly states of affairs. To be sure, fundamental physical facts understood as representational entities—effectively, true statements in an ideal fundamental physical theory—will not, if physicalism is correct, involve reference to non-fundamental terms such as 'consciousness'. But so what? Physicalism is an ontological or metaphysical thesis about the world, not a thesis about representations of the world. As such, the physical facts that are taken to serve as the basis of all other broadly scientific phenomena have to be understood as properly worldly items—complex states of affairs, constituted, in the typical case, by unimaginably complex aggregative interactions between lower-level physical goings-on (as well as any broadly logical combinations thereof). When reference to fundamental physical facts in the physicalist thesis is properly metaphysically interpreted, there is no reason whatsoever to suppose that fundamental physical facts cannot be 'about' or in the relevant metaphysical

sense 'refer to' or otherwise encode the existence of conscious mental states. Indeed, they had better do so—how else could it be that (to evoke the usual heuristic) all God had to do to bring about all the broadly scientific goings-on was to bring about the lower-level physical goings-on? Metaphysically speaking, the non-fundamental is contained in the fundamental, and as such, there is no in-principle problem whatsoever in taking non-fundamental facts or other goings-on (including truths) to metaphysically depend on fundamental facts/goings-on/truths. To the extent that the vexing question is, as in Dasgupta's presentation, motivated by something like the Purity Principle, which inappropriately conflates representational and metaphysical 'reference' to non-fundamenta, there's no worry here.

That said, to observe another infelicity in Dasgupta's presentation, nothing in a properly metaphysical understanding of the physical facts in the physicalist's thesis requires that every fact *be* a physical fact. That would be the case if reductive physicalism were true, but on non-reductive versions of physicalism, some facts (more generally, some worldly goings-on) are not identical with any lower-level physical facts (goings-on), notwithstanding that they are nothing over and above lower-level physical facts (goings-on). Hence (C) might not, after all, be a lower-level physical fact—not because no such facts are about consciousness (again: if physicalism is true, clearly some such facts *are* about consciousness, in some metaphysically relevant sense)—but because conscious states, as types and/or tokens, are not identical with any type or token lower-level physical states (as non-reductive physicalists assume).

Clearing up this infelicity is potentially helpful to proponents of Grounding and its application to physicalism, for it suggests one final way to maintain that the 'What Grounds Grounding?' question is tracking something substantive—namely, that the same question attaches to conceptions of metaphysical dependence involving the holding of non-reductive small-g relations. Suppose, for example, that it is a fact that conscious states are determinables of determinate physical states. Since on this view, conscious states aren't (let us suppose) type or token identical to lower-level physical states, this fact isn't physical. In that case, doesn't the physicalist need to provide an account of how this fact is 'nothing over and above' lower-level physical facts, and won't that lead to the sort of dilemma above, whereby either physicalism is false (if no such account is available), leads to regress, or must be stopped in ad hoc fashion?

Here again I answer 'no'; for *pace* the claims of certain proponents of Grounding or related notions (such as Sider's 'structure'), the physicalist doesn't claim that *every* fact is 'nothing over and above' lower-level physical facts.

Rather, as above, the intended domain of application is standardly restricted to broadly scientific facts or other goings-on, with mathematical and metaphysical aspects of reality being, with few exceptions (as in, e.g., Field's 1980 attempted reduction of natural numbers), explicitly put aside (see Wilson 2005 for discussion). As such, and since facts about the holding of the small-g relations are metaphysical facts, they are strictly outside the purview of physicalism. Their operation, like the operation of mathematical, logical, boolean, and mereological relations, is a resource to be utilized in physicalist theorizing, not a datum needing to be explained by appeal to lower-level physical facts or other goings-on. There is no succor for proponents of a Grounding-based formulation of physicalism in these observations, however. For Grounding, unlike the familiar mathematical, logical, metaphysical, and mereological relations to which physicalists and others standardly and reasonably appeal, is not just too abstract to do useful work in physicalist theorizing about dependence, it is also, *qua* thinly-described primitive, not clearly appropriately excluded from the domain of physicalist treatment. And hence it is that even allowing that physicalists are generally within their rights to restrict the purview of their thesis in ways that allow them to use rather than treat the small-g relations, Grounding gets no such pass.

Besides 'What Grounds Grounding?', there are other spandrel questions associated with the Grounding literature, including the question, 'Is Grounding metaphysically necessary?' and the question, 'Must Grounding relations hold in every possible world?' Here again, the literature weaves to and fro, but in my view no stability is to be expected here, for reasons similar to those that undercut any attempts to identify a single set of formal properties common to all relations of metaphysical dependence. For some small-g relations are plausibly necessary, whereas others are plausibly contingent. For example, one might reasonably maintain that identity-based dependence relations are metaphysically necessary (as per Kripkean usual), but that dependence relations based on functionalist realization are not: mental states could be nothing over and above physical states in the actual world, given that physical states play the causal functional roles characteristic of mental states, but over and above physical states in some other worlds, where due to different laws the physical states (albeit still fundamental) do not play that characteristic role.

Such variations in modal profiles, like variations in formal features, are par for the course for the diverse variety of metaphysical dependence relations. It is only when one ignores this diversity and its associated variations, and rather attempts to characterize physicalist or other forms of metaphysical dependence in terms of an

overly abstract primitive, that questions such as 'Is Grounding a strict partial order?', 'What Grounds Grounding?', and 'Is Grounding metaphysically necessary?' arise. As such, it is perhaps unsurprising that much of the literature on these spandrel questions (especially the first and third) consists in appealing to one or more specific small-g relations as counterexamples to any proposed answer that might be given. In investigations into the metametaphysics of metaphysical dependence, as with first-order investigations into such dependence, we can do no better than carefully attend—as physicalists and their rivals have been doing for decades—to the specific metaphysical relations, which together with a working fundamental or relatively fundamental base are capable of providing substantive, illuminating, and appropriately fine-grained answers to questions about the structure of reality.

7 Concluding Remarks

I have argued for the previous results:

- Grounding-based formulations of physicalism were born in unsound sin.
- Attempts to backwards-engineer some motivation for understanding physicalist dependence in terms of primitive Grounding either instead of or in addition to the diverse non-primitive metaphysical relations standardly on offer in physicalist discussions are so far unsuccessful.
- Most crucially, as standard metaphysical methodology shows and as standard formulations of physicalism encode and illustrate, these small-g grounding relations successfully and articulately characterize dependence when applied against the usual backdrop assumption of a presumed fundamental or relatively fundamental base, with no need for Grounding.
- Putting aside lack of antecedent motivation, the absence of content associated with Grounding renders it incapable in itself of shedding any non-brute light on the notion of 'nothing over and above' it is introduced as explicating, and attempts to beef up this content by taking Grounding to be a (non-monotonic, hyperintensional) strict partial order are no assistance, since 'over and above' relations like causation and strong emergence may be (non-monotonic, hyperintensional) strict partial orders. It follows from this result that on a Grounding-based formulation, the basic contrast between nothing/something over-and-aboveness is a matter of brute stipulation.
- Taking Grounding to have the features of (in particular) a strict partial order moreover rules out various live

accounts of physicalist dependence. Perhaps most importantly, it rules out reductive physicalist accounts, introducing a dilemma whereby proponents of Grounding must either deny the viability of reductive accounts (typically, by endorsing a problematic 'hands-off' view of metaphysics, according to which existence questions are trivial) or aim to disjunctively accommodate such accounts, at the expense of undermining the ostensive definition of their primitive posit.

- Characterizations of Grounding as constitutively connected to metaphysical explanation are, among other problems, implausible (given the aforementioned failure for Grounding-based accounts to explain even the basic contrast between nothing/something over-and-aboveness), either circular or self-undermining, and controversially presuppose that physicalist dependence is compatible with explanatory gaps.
- The contrast with strong emergentism cannot be accommodated as involving just a failure of Grounding, both because such failures do not distinguish between emergence and eliminativism, and because some conceptions of such emergentism involve partial metaphysical dependence. Nor can strong emergence be appropriately accommodated as involving a failure of full but not partial Grounding, both because not all conceptions of strong emergence involve even partial metaphysical dependence, and because defining partial dependence in terms of full dependence in ways that do not inappropriately suppose that partial dependence obeys weak supplementation requires the introduction of one and perhaps two more primitives.
- A Grounding-based formulation of physicalism introduces spandrel questions and associated literatures which arise only due to Grounding's overly abstract (lack of) nature, and which either (like 'What Grounds Grounding?', and the associated regress of Grounding) admit of no principled answer, or which (like 'Is Grounding metaphysically necessary?' and 'Is Grounding a strict partial order?') are such that progress consists mainly in raising small-g counterexamples to whatever generic answer might be given.

Attention to Grounding-based formulations of physicalism is a case study in how overly abstract posits are worse than useless for purposes of metaphysical theorizing. Luckily, there are a host of better ways to formulate physicalism; and here I direct the interested reader to the large existing literature on this topic.

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