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What physicalism could be

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Abstract

The physicalist credo is that the world is physical. But some phenomena, such as minds, morals, and mathematics, appear to be nonphysical. While an uncompromising physicalism would reject these, a conciliatory physicalism need not if it can account for them in terms of an underlying physical basis. Any such account must refer to the nonphysical. But will not this unavoidable reference to the nonphysical conflict with the physicalist credo? This essay aims to clarify this problem and introduce a novel solution that relies on a distinction between "circumstantial" facts that are based in the circumstances and "acircumstantial" facts that are not. This is used in two ways. First, physicalism is restricted to circumstantial facts: Only they must have a physical basis that does not refer to the nonphysical. Second, facts accounting for the nonphysical are not restricted to the circumstantial: They may refer to the nonphysical if they are acircumstantial. Facts about how the physical accounts for the nonphysical therefore do not conflict with the physicalist's credo. This provides a credible answer to what physicalism could be.

1 | OVERVIEW

"The world is physical"—Let us call this the physicalist credo.

It is hardly obvious whether the physicalist credo is true. At first glance, some phenomena may be counterexamples: minds, morals, and mathematics appear to be nonphysical. An

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uncompromising physicalist would reject them. But a more conciliatory physicalist—the one I will focus on—allows for whatever nonphysical phenomena there may be by accounting for them in terms of an underlying physical basis. They, however, face a further problem. Because accounting for something unavoidably involves *referring* to it, our physicalist's account must refer to the nonphysical. And so their conciliatoriness seems to conflict with their credo.

This essay aims to clarify this problem and introduce a novel solution. The solution relies on a distinction between "circumstantial" facts that are based in the circumstances and "acircumstantial" facts that are not. The distinction is used in two ways. First, physicalism is restricted to circumstantial facts: Only they must have a physical basis that does not refer to the nonphysical. Second, facts accounting for the nonphysical are not restricted to the circumstantial: They may refer to the nonphysical if they are acircumstantial. Facts about how the physical accounts for the nonphysical therefore do not conflict with the physicalist's credo. Because my aim is to explore this solution, I will not attempt a comprehensive defense of it against its two main rivals. But the solution may be plausibly seen as combining elements from each of them, thereby providing a rapprochement of their complementary insights. And that is an indirect argument for it. The essay concludes with some brief reflections on how this exploration affects what physicalism could be.

2 | THE PHYSICALIST CREDO

The physicalist credo is that the world is physical. While the credo is suggestive, it also immediately raises questions of clarification. What is the intended scope of "the world"? Is it that all "*things*" (as opposed to "*nonthings*") in it must be physical? What is it to be physical? Is physicalism a doctrine or thesis or, instead, an attitude or stance (as Ney, 2008b; Van Fraassen, 2002 have suggested)?

Various answers to these questions, and to questions like them, have been considered in the literature. Unfortunately, every known combination of them is controversial (Ney, 2008a; Stoljar, 2017). These are controversies over the very formulation of physicalism.

Some suppose that there must be a single, coherent physicalist ideology targeted by these combinations and that to formulate *it* properly is to hit the bullseye. I, however, will not make this supposition. There are, I think, a variety of doctrines, theses, attitudes, and stances that cluster around the physicalist credo (some closer than others). But I will not assume that this clustering requires there to be a unique bullseye to hit.

This affects our discussion in a few ways. First, it is a mistake to view formulations of physicalism as in a zero-sum competition. The propriety of one formulation need not be justified by downgrading others. Second, it is misguided (and hubristic) to expect any one formulation to capture all that one might sensibly hope to capture from the physicalist credo. What matters is whether a given formulation captures an important aspect of the physicalist credo.

My focus is therefore not on what physicalism must be but rather on what physicalism could be. Specifically, I will focus on an aspect of the physicalist credo that derives from the core idea that the world is "nothing over and above" the physical.

The literature already contains a bewildering variety of attempts to elaborate on this core idea. As Wilson puts it (Wilson, 2016a, p. 496):

> 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

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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.

Each way of filling in the schematic reference would yield a specific formulation of the physicalist credo. And, as I said, these formulations need not be competitors competing to best capture all aspects of the physicalist credo. It is worthwhile to explore a formulation that captures some important aspect, even if it does not capture them all.

In that spirit, I propose filling in the schematic reference with the notion of *ground*.[1] This produces our formulation of physicalism:

Physicalism	All facts are, or are grounded in, physical facts.

This formulation has several notable features. These features harmonize in a way that will make it evident that our formulation captures an important aspect of the physicalist credo. And the features will also be relevant to the discussion later. So, it will be worthwhile to highlight them now.

The first feature is that our formulation concerns *the facts*. This contrasts with formulations in terms of sentences, propositions, theories, or other representational entities. The physicalist credo is intended to be about the world itself, not just our means of representing it. Our formulation fits this intent by focusing on the facts without requiring a detour through their representations.

Facts, however, are often taken to be problematic. This is especially so for more "loaded" conceptions of facts. A recent and familiar example comes from Armstrong (1997, 2004). A fact or "state of affairs" is, according to Armstrong, a structured entity consisting in the instantiation of a universal in particulars or in lower order universals. There are other loaded conceptions too. Whatever their merits, I do not have *them* in mind. By "fact," I just mean a *state* of reality. Perhaps a Heraclitean who says that reality is always in flux might reject such states. But no one else should. Facts, as I understand them, are just neutral placeholders reified for their role in facilitating convenient ways of talking about reality.

This neutral notion of a fact does not prejudge just *what* a state of reality is. The facilitating role for facts will later require us to speak of their *structure* and their *constituents*. But this is *not* to suppose that a fact must have the structure or the constituents of the statements used to express it. Indeed, it is *not* to suppose any specific view as to what the structure or the constituents of a fact must be.

Nor does this notion of a fact prejudge just *which* facts there are. Some may be specific, like the fact that Fido barks. Some may be general, like the fact that all dogs bark. Some may be abstract, like the fact that $0 = 0$. And some may be complex, like the disjunctive fact that it is hot or cold. But the facilitating role for facts does not require specifying at the outset just which facts there are or what their natures are. Indeed, this role would seem to be multiply realizable: Various competing views about the facts may, all things being equal, cohere with *this* role for them. This suggests that we may postpone exploring just *which* facts there are for future investigation.

[1]Similar formulations of physicalism are discussed by Dasgupta (2014), Schaffer (2017), and Rabin (2022). Bryant (2020) is a general survey of ground and physicalism.

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A key benefit of our neutral conception of the facts is that it agreeably extends to theses formulated in terms of it. In particular, by formulating physicalism in terms of the facts, neutrally construed, physicalism itself inherits their neutrality.

This inherited neutrality is a significant boon to our formulation of physicalism. It allows us to speak of the physical facts, whatever they may be, without prejudging whether they must involve physical *things* or *properties* or whatever. Of course, the formulation of physicalism will be schematic pending specification of just which physical facts there are and just what the nature of a physical fact is. This specificity is desirable and should eventually be delivered. But that does not entail its necessity for just any given purpose.

Our immediate purpose, in particular, does not require this specificity. We have a rough working grasp of what the physical is. On the one hand, there are certain paradigms of the physical: trees, trucks, human bodies, and coffee shops. On the other hand, there are certain paradigms of the nonphysical: abstracta, deities, and spirits. In between, there are hard cases: fields, forces, wavefunctions, and other arcana conjured up by current or future physics that do not neatly conform to older standards of the physical.[2] But our immediate purposes do not require demarcating these boundaries. Instead, our purposes only require a formulation of physicalism that is neutral over just which physical facts there are and just what the nature of a physical fact is. This is precisely the neutrality inherited from our formulation in terms of our neutral conception of the facts.

The second feature is that our formulation concerns *ground*. I understand ground to be a kind of hyperintensional determinative explanation, often expressed by "in virtue of" or "because." Thus, a statement of ground states that the *grounded* statement holds *because* or *in virtue of* the *grounds* grounding it. Although this notion of ground has become familiar, various controversies about it remain. Little of what I say will crucially depend on how they are resolved. So, I will set them aside.[3] But later it will be useful to have some notation for ground statements. We will write "$A_1, A_2,... < C$" to say that $A_1, A_2,...$ together fully ground C. Statements of ground are usually taken to be *factive*: a statement of ground is true only if the grounds ($A_1, A_2,...$) and grounded (C) statements are all true. But we will later also consider a *nonfactive* notion of ground that does not require this.

We may take a *ground fact* to be a fact expressed by a statement of ground. The statements connected by "ground" may also be taken to express facts. It may then seem that ground facts must be *relational*: relating a grounded fact and the facts grounding it by a relation of ground. But I do not wish to assume this view. My preference for taking "ground" to be a sentential connective is to help stay neutral on the nature of ground facts. I concede that speaking both of facts and of statements introduces a risk of sliding between features of what is expressed with features of the expression. But the risk should be minimal, given our neutral conception of facts.

The notion of ground is somewhat controversial. Some have raised skeptical doubts against it (Daly, 2012; Hofweber, 2009; Koslicki, 2015, 2020; Wilson, 2014, 2016b). These skeptical doubts warrant further discussion. But this is not the place for it. The literature already contains rejoinders to them (deRosset, 2020; Raven, 2012, 2017; Rosen, 2010). Even if these rejoinders do not give the last word, they do at least provisionally justify our appeal to ground.

The third feature is that our formulation helps characterize *the physicalist agenda*. Physicalism's chief ambition (or, perhaps, conceit) is to be a *complete* picture of reality. Completeness is

[2]A lesson often drawn from Hempel's infamous dilemma is that future physics may not be recognizably physicalist by our current standards (1969).

[3]See the essays in Raven (2020d) for more on these controversies and other topics.

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ambitious because much of reality does not appear to be physical. Mathematics, minds, and morals, for instance, do not. So, the problem arises of how to reconcile the apparent existence of nonphysical phenomena with the physicalist picture of reality.

Even if physicalism requires denying that nonphysical phenomena ultimately exist, many are unwilling to dismiss the appearance that they do exist. Only the most uncompromisingly eliminative or nihilistic physicalists blithely dare to do so. More conciliatory physicalists have tried to do some justice to the appearance of nonphysical phenomena, even if this is ultimately rejected as illusory. This is meant to help deliver on physicalism's ambition to be a *complete* picture of reality by showing how the appearance of nonphysical phenomena may be included within it.

But how, exactly, is physicalism's ambition to be achieved? Appealing to ground helps to answer this question. It does so by facilitating a strategy for reconciling the appearance of nonphysical phenomena within an ultimately physical world. The strategy is to allow for nonphysical facts but only if they are ultimately *grounded* in physical facts. The success of the strategy then turns on specifying the physical facts grounding the nonphysical facts. That is the physicalist agenda. It is hard to imagine a one-size-fits-all recipe specifying how to do this in general for minds, morals, mathematics, and the like. Instead, pursuing the physicalist agenda must engage with the specific details of particular nonphysical facts and their physical grounds. And one can foresee various problems arising once these details are engaged. But the physicalist agenda remains the same: to account for any nonphysical facts by citing the physical facts that ground them.

The three features of our formulation harmonize to reveal how it captures an important aspect of the physicalist credo. Physicalism aims to provide a complete picture of reality. But the picture will remain incomplete pending adequate accounts of any nonphysical facts in terms of physical facts. Formulating physicalism in terms of ground sets the agenda: show how physical facts ground the nonphysical facts.

3 | THE POSSIBILITY OF PHYSICALISM

There would be little point in pursuing physicalism's agenda were there no possibility of success. But there is another problem that threatens its possibility (Dasgupta, 2014; Sider, 2011). This section focuses on this problem: *the problem of possibility*.

Any attempt to ground a nonphysical fact in physical facts must involve stating facts that *connect* the physical to the nonphysical. Where N is a nonphysical fact and P is a physical fact, let us write "P < N" to say that P grounds N.[4] Then, P < N is just such a *connecting fact* linking the nonphysical fact to its physical ground.

Physicalism is true only if these connecting facts do not conflict with the physicalist credo. But are these connecting facts physical or nonphysical facts?

It is unclear how the connecting facts could be physical. This is because they must involve the nonphysical. Just how to *state* this involvement depends on how facts are conceived. We may state it directly if facts have constituents. For then the connecting fact P < N contains the nonphysical fact N. And so the connecting fact involves the nonphysical by *containing* a nonphysical fact. But we must state the involvement indirectly if facts do *not* have constituents. One way to

[4]A more general illustration allows a plurality of physical facts P_1,P_2,... to ground a nonphysical fact N. But although this generality is more realistic, its complexity does not offset the force and clarity of our simpler illustration.

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do this is to say that the connecting fact P < N involves the nonphysical because the *statement* "P < N" has a constituent *statement* "N" that refers to the nonphysical. Our neutral conception of the facts underdetermines any choice between these options. But the upshot is the same: that the connecting facts must involve the nonphysical however that involvement is best stated.

If the connecting facts must involve the nonphysical, then it seems that they must also *be* nonphysical. This threatens to put them into conflict with the physicalist credo. Can this threat be avoided?

One answer is to allow nonphysical facts to be *ultimately* physical. On the one hand, connecting facts are nonphysical because they involve the nonphysical. On the other hand, connecting facts need not thereby be *ultimately* nonphysical, so long as they are grounded in physical facts.

The problem, however, just reappears. For it seems *these* new grounding facts cannot be physical because they involve the nonphysical. If, instead, they are nonphysical, then *they* threaten to conflict with the physicalist credo. And regarding them as *ultimately* physical facts just repeats the problem. The regress would halt were the iterations to terminate in *nonphysical* grounding facts. But that, again, seems to conflict with the physicalist credo.

These considerations suggest a disturbing threat to physicalism. The agenda was to allow for the nonphysical by uncovering their physical grounds. But the facts stating these connections of ground are not exempt. Because *they* involve the nonphysical, the search is on to uncover *their* physical grounds. But this search continues without end. And so we seem at a loss as to *how* the agenda could be achieved even in principle. Delving into physicalism's own agenda reveals a threat to its possibility.

It may, of course, turn out that physicalism *is* impossible. If so, this should be discovered only *after* serious pursuit of its agenda ends in failure. But that was *not* at all the route of discovery that we saw. We saw that our formulation of physicalism already faces a problem *prior* to any attempt to discover what physical facts might ground the nonphysical facts. The problem is not just that physicalism is false or incoherent. It is rather that its own formulation stands in the way of seeing how it could be true. Whether physicalism is true or false, we should have to look beyond its formulation to find out.[5]

4 | A NEW SOLUTION

I will introduce a new strategy for solving the problem of possibility. It is in two parts. The first is a proposal for refining physicalism (§3.1). The second is a proposal about the connecting facts (§3.2).

4.1 | Refining physicalism

The strategy's first part is to refine physicalism as a view about the *circumstances*. I have in mind a distinction between facts, or truths, that are based in the circumstances and those facts, or truths,

[5]The problem generalizes. Suppose we say that some nonfundamental facts are ultimately facts of a more fundamental sort. There will then be connecting facts about how the first facts are grounded in the second facts. These connecting facts are about the first facts and so cannot belong to the second sort. But then the connecting facts are just as nonfundamental as the first sort. And so our attempt to take all facts ultimately to be of the second sort would seem to fail *in principle*.

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that are not. This distinction was first discussed by Fine (2005). I have developed it further and call it the *basal distinction* (Raven, 2020b, 2020c, 2023). Before elaborating on it, let us first sketch the refinement. It is that there are no ultimately nonphysical *circumstantial* truths. Whatever *acircumstantial* truths there may be, they are irrelevant to physicalism.

This refinement immediately faces challenging questions about its motivation, its adequacy, its intelligibility, and its originality.

First, even if physicalism did not *explicitly* state its concern for the circumstances, wasn't it *implicit* all along that the circumstances must be physical? If so, the refinement may seem *unmotivated*.

Second, whether the concern for the circumstances is implicit or explicit, the physicalist credo was intended to be ambitious: to provide a view about the world *in its entirety*. Does restricting physicalism to *just* the circumstances betray its core ambition? If so, the refinement may seem *inadequate*.

Third, does making sense of all this require making sense of the contrasting notion of *failing* to concern the circumstances? Is there really any sensible question of whether physicalism—or any view, for that matter—might *not* concern the circumstances? If not, the refinement may seem *unintelligible*.

Fourth, the basal distinction may seem to duplicate other distinctions. For instance, maybe it duplicates the distinction between atemporal and temporal truths, or maybe between analytic and synthetic truths. Does the basal distinction collapse into some other distinction? If so, the refinement may seem *unoriginal*.

I claim that these challenges may ultimately be met. A full argument for this, however, depends upon the merits of the basal distinction itself. Its merits have been defended by Fine (2005) and myself (Raven, 2020b, 2020c, 2023). I will not rehearse the defense here in full. Instead, I will just focus on the parts most relevant to the present context. So, at least for now, my claim must be regarded as a conjecture. The aim here is not to establish it conclusively but rather to explore it and its application to the problem of possibility.

Consider first the intelligibility of the basal distinction. It is hard to say in general how to *demonstrate* the intelligibility of a distinction. Maybe it requires specifying consistent but nontrivial necessary and sufficient conditions, or a real definition, or some such. But I take it that few uncontroversial notions have ever been *demonstrated* to be intelligible by that high standard. Regardless, the lack of such a demonstration poses no serious obstacle to the *defeasible presumption* of intelligibility. In the absence of a demonstration, there is perhaps no better way to justify the presumption than to indicate what the notion is supposed to be and to illustrate it by example.

In that vein, we may indicate what the basal distinction is by extrapolating it from an analogous distinction. There is a familiar distinction between *temporal* facts that depend on the time and *atemporal* facts that do not. A *sempiternal* fact is a temporal fact that depends on *all* times. An example of a sempiternal fact may be:

LEM	Axl sings or it is not the case that Axl sings.

This fact obtains at *all* times. Even so, the time matters. Whether LEM obtains depends on whether, at a given time, Axl sings at that time or whether he does not. Of course, at each time it is either one or the other (but not both). But that only reaffirms that it is Axl's singing, or not, *at each time* that makes LEM a fact *at all times*. That's what makes LEM a temporal fact and, in particular, a sempiternal fact. By contrast, an *eternal* fact is an atemporal fact that holds regardless of the time. An example of an eternal fact may be:

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SI	Axl is self-identical.

Like LEM, this fact may also be regarded to obtain at all times. Still, there is a sense in which time does not matter. Whether SI obtains does *not* depend on whether Axl is self-identical at any time. Time does not enter into it. Axl is self-identical *regardless* of the time. That's what makes SI an atemporal fact and, in particular, an eternal fact.

We may extrapolate the basal distinction from the temporal distinction. Just as temporal (and sempiternal) facts depend on the time, so too *circumstantial* facts depend on the circumstances. For example, the fact LEM is based in the circumstances of his singing or not.[6] And just as atemporal (and eternal) facts hold regardless of the time, so too *acircumstantial* facts hold regardless of the circumstances. For example, the fact of SI holds regardless of the circumstances. The basal distinction may be extrapolated from the temporal distinction by widening its focus on times to circumstances.

This extrapolation would make the basal distinction vacuous were the circumstances broadened without end. For example, if there were the circumstance of Axl's self-identity, then even SI would be circumstantial for depending on it. Now, we may concede that there is a broad notion of the circumstances that includes Axl's self-identity. But this does not prevent us *also* from recognizing a narrower notion that excludes Axl's self-identity. Our focus is on this narrower notion.

It is not altogether easy to specify in general just what this narrower notion of the circumstances is. There are, however, several potential beacons to guide us toward it.

One beacon is that the circumstances include places and times. And so it may seem, then, that the circumstances may be characterized in terms of whatever is in space or time (or spacetime).

This beacon, however, is unsatisfactory. One reason is that the characterization may be inadequate for our present purposes. After all, it is common (albeit somewhat controversial) to characterize the physical as whatever is in space or time (or spacetime). If so, the circumstantial and the physical must coincide. But then the proposed refinement would be vacuous. Another, and more important, reason is that the characterization may be incorrect. This is because there seem to be at least two ways in which the circumstantial and the physical may diverge.

One potential divergence is that there may be nonphysical circumstantial facts. To illustrate, consider a paradigm case of a nonphysical item: a Cartesian soul. In *Meditation III*, Descartes allowed these souls to be "in time." In particular, a soul may change over time. It may doubt whether it has a body at one moment and reject such doubts later. Just what a soul thinks therefore turns on the circumstance of the time. And that makes facts about what a soul thinks circumstantial facts. Such facts, however, are nonphysical because they are about nonphysical souls. So, there may be nonphysical circumstantial facts.[7]

Another potential divergence is that there may be physical acircumstantial facts. To illustrate, consider the fact that photons are gauge bosons. This is a physical fact because it concerns the physical sort of thing (gauge boson) that photons are. But it may also seem to be an acircumstantial fact. Granted, various circumstances led physicists to *discover* that photons are gauge bosons. But neither time nor place nor any other circumstances seem relevant to photons *being* gauge bosons. If so, then there may be physical acircumstantial facts.

[6]There may also be a sense in which LEM is atemporal and acircumstantial. See Raven (2020b) for an attempt to reconcile this sense with the sense in which LEM is temporal and circumstantial.

[7]This Cartesian example may suggest that a circumstantial fact must be temporal. But that is debatable. Perhaps there can be a world with space but no time. Perhaps such a world may contain different items in different places. If so, then it will be a matter of the *spatial* (but not *temporal*) circumstances what is located where.

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Another beacon is that the circumstances go beyond pure "form" or "structure" (Fine, 2005). It is hard to say just what such form or structure is. So, the viability of the suggestion awaits further clarification. Still, the idea may be familiar enough to point toward what the circumstances, narrowly construed, are supposed to be. After all, we are familiar with separating "formal" properties and relations (such as self-identity, set-membership, and the like) from "material" properties and relations (such as singing, being a father, and the like). LEM is often taken as a paradigm example of a fact that obtains in virtue of its form. But really, one might say, it is the form and the content together. LEM's form is *truth-functional*. Its truth is ultimately a function of the truth value of "Axl sings." Its truth value depends on circumstances concerning Axl. So, it is a paradigm example of a truth that is *not* true in virtue of its form alone. Whether "Axl sings" is true or not depends on the circumstances. And so LEM inherits this dependence on the circumstances, despite this resulting in LEM being true in them all.[8] By contrast, SI does not in any such way depend on the circumstances of how things are with Axl. Again, we do not here have an analysis of narrower circumstances in terms of form or structure, but rather a rough indication of how the latter may constrain the former.

This is not the last word on the basal distinction's intelligibility. But it does justify a provisional presumption of its intelligibility. A fuller justification is given in Raven (2023). There I also argued against assimilating the basal distinction to others. The challenges to the refinement's intelligibility and originality are, at least provisionally, met.

What's more, the preceding considerations also help address the challenges to the motivation and adequacy of the proposed refinement. The challenge to its adequacy was to reconcile the physicalist credo's ambition to provide a *worldview* with the refinement's restriction to *just* the circumstances. What could motivate a refinement of the physicalist credo that appears to betray its core ambition? A natural answer begins by distinguishing what *goes on in* the world from what *structures* it.[9] Facts of definition, logic, mathematics, and other formal or structural facts may be needed to articulate what goes on in the world. But perhaps these facts may play that role even if they are not themselves among what goes on. If so, then physicalism may concern just the worldly goings-on. In the present context, that amounts to the restriction of physicalism to the circumstantial. The proposed refinement just makes the restriction explicit. The challenges to the refinement's motivation and adequacy are thereby met.

We arrive, finally, at the refined formulation of physicalism:

Circumstantial Physicalism	No circumstantial fact is ultimately nonphysical.

The rationale for the refinement has several sources. One source is the interpretation of the physicalist credo as about *what goes on in the world*. That justifies the restriction to circumstantial facts. Another source is the interpretation of the physicalist credo as about what *ultimately* goes on in the world. That justifies why physicalism is only in conflict with *ultimately* nonphysical facts.

The refinement's restriction to circumstantial facts may seem to make it too weak. To illustrate, consider a "platonist" conception of numbers on which they are nonphysical, eternal, and

[8]These considerations are content-specific. To illustrate, consider 'Axl is self-identical or it is not the case that Axl is self-identical'. This truth-functional compound will *not* inherit any circumstantiality from its content 'Axl is self-identical' because that content is already acircumstantial.

[9]See Sider (2011) for a somewhat similar appeal to a notion of structure.

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completely transcendent of the circumstances. Suppose that numbers exist. Then this fact is both acircumstantial and nonphysical. Whatever acircumstantial facts there may be, they are all beyond the scope of our refinement. And so the fact that numbers exist will be *compatible* with our refinement. But by what right is our refinement a refinement of *physicalism* if it is compatible with such acircumstantial nonphysical facts?[10]

One response concedes the point. The weakness of our initial refinement may be avoided by replacing it with a stricter refinement:

Strict Physicalism	No fact is ultimately nonphysical.

But the concession is premature. The mere availability of the strict refinement does not by itself reveal any defect in the initial weaker refinement. It is worth repeating that we were *not* expecting any one refinement of physicalism to capture *all* that one might sensibly hope to capture from the physicalist credo.

And it may be argued that the weak refinement captures *enough*. The guiding idea behind it is a prohibition of any ultimately nonphysical *worldly* goings-on. This prohibition concerns only what goes on in the world, and so the circumstantial. It is *silent* on the acircumstantial. So, by itself, the prohibition is compatible with there being "unworldly" or "epiphenomenal" nonphysical facts that do not encroach upon any worldly goings-on. This allows for an atypical physicalist who is indifferent about such facts precisely because they would be unworldly if there were any. A more typical physicalist, however, might argue that there are none precisely because they would be unworldly if there were any. My point is that arguments like this rely on auxiliary considerations (such as a premise to the effect that nothing epiphenomenal exists) that are not latent in the guiding idea. Again, its focus is just on one important aspect of the physicalist credo: a prohibition of any *worldly* ultimately nonphysical goings-on. That just is **Circumstantial Physicalism**.

What's more, its weakness provides a dialectical boon. Because **Strict Physicalism** is not restricted to the circumstantial, it must engage with the question of whether there are acircumstantial nonphysical facts. By contrast, and as mentioned before, **Circumstantial Physicalism** may ignore this question as irrelevant to their worldview. This does not make **Circumstantial Physicalism** irrelevant to **Strict Physicalism**. The former is a consequence of the latter. But assessing the prospects of **Circumstantial Physicalism** may, at least for now, proceed free from distracting questions about the acircumstantial.

What is perhaps most distinctive of **Circumstantial Physicalism** is the guidance it offers on how to solve the problem of possibility. Any fact that is both circumstantial and ultimately nonphysical will conflict with physicalism. To avoid this conflict, any alleged such fact must be shown either to be acircumstantial or not ultimately nonphysical.[11] Pursuing the matter requires exploring the nature and basal status of the connecting facts.

[10]Similar considerations move Dasgupta (2014, p. §8) to replace his *Weak Physicalism* (or what I will later call **Substantive Physicalism**) with his *Moderate Physicalism*. Schneider (2017) has argued that physicalism is threatened by the mathematical nature of current physics. The journal issue containing Schneider's article contains many responses, some of which consider restricting physicalism to avoid the threat.

[11]We may replace 'not ultimately nonphysical' with 'ultimately physical' if it is assumed that they do not diverge. But the assumption faces some controversies. While they are not relevant here, I prefer to avoid making the assumption anyway.

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4.2 | Connecting facts

This brings us to the second part of the strategy. Our question is: Are connecting facts acircumstantial or not ultimately nonphysical?

Perhaps the most direct strategy for answering this question argues that connecting facts are acircumstantial. This would make them irrelevant to our formulation of physicalism. The problem of possibility would then be resolved.

But it is doubtful that connecting facts *are* acircumstantial. To illustrate, suppose it is a fact that Saul is in pain, and that this fact is grounded in the fact that his c-fibers are firing. It is a circumstantial matter whether Saul is in pain and whether his c-fibers are firing. The circumstantiality of *those* facts may seem to make it a circumstantial fact that the latter fact grounds the former fact. After all, whether that ground fact obtains will turn on the circumstances of Saul's being in pain and his having firing c-fibers. The general point is that some ground facts, and some connecting facts in particular, may be circumstantial. If so, we cannot rely on any strategy that would reconcile them with physicalism by taking them *all* to be acircumstantial. We must directly confront whether circumstantial connecting facts can be ultimately nonphysical.

A second strategy seeks to show that they are ultimately nonphysical by appeal to their grounds. The rough idea is that for a given connecting fact P < N, the nonphysical fact N will eventually "disappear" from its grounds. The idea can be made precise by using a notion of *eliminability*[12]:

Eliminable	For any fact F and any item c: c is *eliminably* in F $=_{\text{def}}$ F contains c and for some full ground G_1,... of F, c is neither a constituent of any of G_1,... nor any of their partial grounds.
Ineliminable	For any fact F and any item c: c is *ineliminably* in F $=_{\text{def}}$ F contains c but not eliminably.

Given that N is a constituent of P < N, we may ask whether N is eliminably or ineliminably in P < N. If eliminably, then N has a "last occurrence" in a chain of grounds descending from P < N after which it "disappears." So, N should *not* count toward the connecting fact being nonphysical. But if ineliminably, then N never "disappears" and so must count toward the connecting fact being nonphysical. The strategy, then, is to argue that N is eliminably in P < N.

While this strategy is worth exploring, it faces a significant hurdle. The definition implies that N is eliminably in P < N only if P < N does have a full ground. If the ground fact P < N is ungrounded, then N must be *ineliminably* in P < N. And then the strategy fails. It is controversial, however, whether ground facts, like P < N, are ungrounded. The strategy's prospects must await the resolution of this controversy.

There is, however, a third strategy that is neutral over whether connecting facts are either acircumstantial or grounded. The guiding idea, roughly put, is that whether a connecting fact is physical or nonphysical is determined by whether its components are physical or nonphysical. This may be further refined by a sustained analogy with hylomorphic compounds. We may regard a ground fact as a compound of "form" and "matter."[13] This is not intended as an analysis of

[12]This characterization is adapted from Raven (2016, 2017, 2023).

[13]The intended sense of 'matter' here is not the notion of matter familiar from the physical sciences. It is, rather, matter in the sense contrasted with form. This contrast is sometimes expressed using the terms 'form' and 'content'. But I stick to 'form' and 'matter' to better channel the Aristotelian spirit behind the contrast.

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the ground fact. Indeed, the analogy is dispensable. Even so, it provides a useful heuristic for considering whether or not a ground fact is ultimately nonphysical. The form and the matter are the only potential "sources" for nonphysicality to infect the ground fact that is their compound. If neither the form nor the matter is ultimately nonphysical, then the compound itself will not be either. Establishing whether this is so turns on complex issues. Appreciating them requires developing the analogy in more detail.

To begin, there is a distinction between *factive* and *nonfactive* ground statements. Roughly put, the factive notion concerns what *actually* grounds what, whereas the nonfactive notion concerns what *potentially* grounds what. A factive ground statement "$A_1, A_2,... < C$" expresses an actual connection of ground, and so requires the truth of all of $A_1, A_2,..., C$. By contrast, a nonfactive ground statement "$A_1, A_2,... \lessdot C$" expresses a potential connection of ground that would hold were $A_1, A_2,..., C$ true, but does not require any of these to be true.[14] As before, we take a *ground fact* to be a fact expressed by a statement of ground. But, now, such a ground fact will be either factive or nonfactive, depending on whether ground is factive or nonfactive.

Suppose we now think of a factive ground fact like a hylomorphic compound that "factors" into "form" and "matter."[15] The form is the *nonfactive* ground connection between the connected facts. The matter is the *actual* fact of whether or not the connected facts do obtain. To illustrate, consider the factive ground fact $A_1, A_2,... < C$. The form is the *potential* connection of ground captured by the nonfactive ground fact $A_1, A_2,... \lessdot C$. The matter is the *actual* fact of whether or not the facts $A_1, A_2,..., C$ do obtain.[16]

Factoring allows us to isolate the form and the matter. Suppose we are considering a factive ground fact $P < N$ connecting a nonphysical fact N to its physical ground P. We may separately consider the physicalist credentials of the "form" ($P \lessdot N$) and of the "matter" (P, N).

On the matter side, the physicalist credentials are evidently secure. Fact P is physical. We may suppose that P's grounds, if any, are physical. So, P is *ultimately* physical. Fact N is nonphysical. But N is grounded in P. While N is nonphysical, it is not *ultimately* nonphysical. So, neither P nor N are ultimately nonphysical.

This argument against N being ultimately nonphysical assumes that P grounds N. This may seem circular in the present context of assessing the basal status of that very ground fact. But the argument only assumes the *fact* that P grounds N, and *not* anything about its *basal status*. Because only the basal status of that ground fact is at issue, there is no vicious circularity.

On the formal side, the physicalist credentials are *not* so evidently secure. Our problem began by focusing on connecting facts, like $P < N$. It may seem as if we have just swapped factive connecting facts for nonfactive connecting facts, like $P \lessdot N$. But if our problem arose for the former, then why not for the latter? Why is not $P \lessdot N$ nonphysical?

My attempt to answer proceeds in three stages. The first stage argues that all nonfactive ground facts are acircumstantial. The second stage is to argue that this implies that connecting facts, such as $P \lessdot N$, are not circumstantially nonphysical. The third stage introduces a distinction that complicates the preceding two stages enough to make them inconclusive although not implausible.

The first stage is to argue for the acircumstantiality of all nonfactive ground facts. It may help to approach the issue indirectly. Sometimes the basal status of a fact is purely a matter of

[14]This counterfactual characterization of nonfactive ground is not intended as a definition. See Fine (2012, pp. 48–50) for difficulties for attempting to define it.

[15]This factoring may be implicit in the principle (F-N) from Fine (2012, p. 49).

[16]Aristotle, of course, associated matter with potentiality and form with actuality. So, in this respect, my use of hylomorphic notions is opposite of his.

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constituency. To illustrate, it may be held that a conjunction's basal status is determined solely by its constituent conjuncts. So, for example, it may be that if a conjunction contains a circumstantial conjunct, then the conjunction itself is circumstantial for containing it.

But basal status is not just a matter of constituency. This may be illustrated by facts about propositional attitudes. Consider two of Rene's beliefs: The first that souls exist, and the second that $0=0$. *What* he believes have different basal statues: that souls exist is circumstantial, whereas that $0=0$ is acircumstantial. But both *beliefs* are circumstantial. It is a circumstantial matter whether Rene has these beliefs, or any beliefs at all. Suppose that "Rene believes that" is an operator that forms a complex statement when prefixed to another. Then the complex statements "Rene believes that souls exist" and "Rene believes that $0=0$" will both express circumstantial facts despite their complements differing basally. Two belief reports may thus have the same basal status despite the beliefs reported differing in basal status. This shows that the basal status of belief reports is *not* purely a matter of constituency.

The basal status of nonfactive ground facts, like that of belief reports, also is *not* purely a matter of constituency. In general, the basal status of A_1, A_2,... $\lessdot$ C does *not* depend on whether A_1, A_2,... or C, or both, are circumstantial or acircumstantial. Even if A_1, A_2,..., C were all circumstantial, the circumstances of their obtaining (if they obtain) is irrelevant to the potential for A_1, A_2,... to ground C. And so nonfactive ground facts seem uniformly to be acircumstantial.

This brings us to the second stage. If nonfactive ground facts do not concern the circumstances, then they do not concern any *nonphysical* circumstances. To see why, first consider an analogy. Recall Rene and his belief that souls exist. His *having* that belief does not require the truth of *what* he believes. Souls do not exist (we may suppose). So, Rene has a false belief. That he has that belief may be regarded as "supernatural," but only in the misleading sense that it is *about* the supernatural. That he has the belief is not a supernatural fact. It is mundane. The general point is that we cannot validly export any supernaturalness from *what* is believed to the *fact* of belief.

Analogously, we cannot validly export any nonphysicality from *what* nonfactive ground connects to the *fact* of nonfactive ground. If there is a sense in which a nonfactive ground fact is "nonphysical," it is only in the misleading sense that it is *about* the nonphysical. Were *any* nonphysical fact relevant to the *potential* for P to ground N, then N would be it. But whether N obtains is irrelevant to the fact that P $\lessdot$ N. So, it seems that no *nonphysical* fact must obtain for P $\lessdot$ N to obtain. The nonphysicality of N therefore does not imply the nonphysicality of P $\lessdot$ N. It may then seem that P $\lessdot$ N is *not* circumstantially nonphysical after all.

The issue, however, is not fully settled. This is because there is yet another distinction among basal statuses that further complicates the issue. We therefore arrive at the third and final stage which introduces this distinction and, tentatively, charts its impact upon the first two stages.

There is a *proximal* sense and a *distal* sense in which we may ask about a fact's basal status (Raven, 2020b, 2020c, 2023). In the *proximal* sense, the question is whether a fact *taken on its own* is circumstantial or acircumstantial. What, if anything, accounts for the fact is irrelevant. But in the *distal* sense, the question is whether a fact *once accounted for* is circumstantial or acircumstantial. To illustrate the difference, consider the fact that 2 is prime. This fact, *taken on its own*, does not depend on the time, location, possible world, or any other circumstances. So, in the proximal sense, the fact is acircumstantial. But this does not determine the basal status of the fact when considering what *accounts* for it. For consider how the distal basal status of the fact may vary as what accounts for it varies. First, we may suppose a constructivist

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view on which arithmetical facts hold in virtue of the activities of mathematicians. If so, then *what accounts for* the fact that 2 is prime would be a circumstantial matter. So, in the distal sense, the fact would be circumstantial. Or, second, we may instead suppose a platonist view on which arithmetical facts hold in virtue of mathematical forms. If so, then *what accounts* for the fact that 2 is prime would be an acircumstantial matter. So, in the distal sense, the fact would be acircumstantial. Both examples illustrate how a fact may have different proximal and distal basal statuses. And that confirms the general distinction between proximal and distal basal statuses.

The first two stages above would seem to show, at most, that P ≺ N is *proximally* acircumstantial and so not *proximally* circumstantially nonphysical. But this, by itself, does not determine the *distal* basal status of P ≺ N. What is its *distal* basal status?

Properly engaging this question raises complexities well beyond the scope of this paper. Nevertheless, we may briefly survey the three main options. A key choice point between them is whether nonfactive ground facts are ungrounded or grounded.

The first option is that nonfactive ground facts are ungrounded. Nothing grounds them. If so, their distal basal status must be the same as their proximal basal status. So, in particular, because P ≺ N is proximally acircumstantial, it will also be distally acircumstantial. But then P ≺ N will not be circumstantially nonphysical in either the proximal or the distal sense. And so it will *not* be ultimately nonphysical.

The remaining options both take nonfactive ground facts to be grounded, but in either one of two different ways. The second option is that nonfactive ground are "zero-grounded." They are grounded in nothing: the null ground.[17] If so, their distal basal status will be determined by that of the null ground. And, presumably, its basal status is acircumstantial. So, in particular, P ≺ N will be distally acircumstantial. As before, P ≺ N will not be circumstantially nonphysical in either the proximal or the distal sense. So, again, it will *not* be ultimately nonphysical.

The third option is that nonfactive ground facts have non-null grounds. Their basal statuses determine the distal basal status of the nonfactive ground fact they ground. If these grounds are *both* circumstantial *and* ultimately nonphysical, then the fact they ground will be distally nonphysical. In particular, P ≺ N will be distally nonphysical if its grounds are both circumstantial and ultimately nonphysical. Its distal nonphysicality would seem enough to conflict with physicalism. So, does P ≺ N have any grounds that are *both* circumstantial *and* ultimately nonphysical?

While the question is beyond the scope of this paper, we may still consider how the physicalist may approach it. Among the most familiar examples of circumstantial, ultimately nonphysical facts are facts about Cartesian souls. No physicalist would accept these. Their view obliges them to deny that P ≺ N has any such grounds. If they still maintain that P ≺ N has grounds, then they must show them to be acircumstantial or not ultimately nonphysical. The latter task may seem unpromising, at least for now. There is no consensus about what grounds facts of ground, whether factive or nonfactive. And so there is no consensus about there being *physical* grounds for facts of ground, whether factive or nonfactive. But the former task may seem more promising. We assumed that P ≺ N is acircumstantial. Add the principle that no acircumstantial fact has any circumstantial grounds. It then follows that P ≺ N has only acircumstantial grounds if it has grounds. But is the principle true? A full evaluation must engage with subtle distinctions between various kinds of distal basal statuses (Raven, 2023: §5). But there is a path forward for the physicalist.

[17]Fine (2012) introduced zero-grounded and Litland (2015, 2017) has explored some of its applications.

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Our considerations were intricate, and so a summary is in order. The goal was to respond to the problem of possibility. The problem arises from the need to explain how a fact P < N connecting the nonphysical to the physical could conform to the physicalist credo. The idea was that any circumstantial nonphysicality in the connecting fact could be traced to a source. To isolate the source, we factored the connecting fact into its form (P ⋖ N) and its matter (P, N). This revealed two ways the nonphysical could infect a connecting fact: by its matter (which only requires that P and N obtain) or its form (which only requires the *potential* for P to ground N). The physicalist *already* allows for nonphysical facts (such as N) that, ultimately, are grounded in physical facts (such as P). So, the matter does not conflict with the physicalist credo. The remaining question was whether the *potential* for P to ground N poses a conflict. That turns on the basal status of these nonfactive ground facts (such as P ⋖ N). We saw that these facts are proximally acircumstantial. So, whether they conflict with the physicalist credo turns on their distal basal status. Determining that requires exploring their grounds. We saw that they were distally acircumstantial on some, but not all, views of what their grounds might be. The form does not conflict with the physicalist credo, as long as the nonfactive ground fact has no ultimately nonphysical circumstantial grounds. Determining whether it does is thus the main task left on the agenda for solving the problem of possibility.

This task involves complex issues about ground beyond the scope of this paper. So, I will avoid premature pronouncements about the present strategy's prospects. But I offer a preliminary observation. The present strategy pleasingly combines elements from two rival strategies. Both focus on the *connecting facts* stating the physical grounds of nonphysical facts.

The first strategy says that connecting facts are physical after all. This follows from a general view about what grounds facts about ground. The general view is that whenever some facts A_1, A_2,... ground another fact C, then the connecting fact that A_1, A_2,... grounds C is itself grounded in the grounding facts A_1, A_2,... (Bennett, 2017; deRosset, 2013; Raven, 2009). In particular, when some physical fact P grounds a nonphysical fact N, then the connecting fact that P grounds N (P < N) is itself grounded in the grounding fact P (P < (P < N)). Although the connecting fact involves a nonphysical fact, it is ultimately a physical fact because the facts grounding it are physical.

The second strategy says that connecting facts are not physical but exempts them from counting against physicalism. Consider Dasgupta's (Dasgupta, 2014) version of this strategy.[18] It relies on a distinction between *autonomous* and *substance* facts.[19] A fact is *autonomous* just in case it is not "apt" for ground: The question does not arise as to what, if anything, grounds it. A fact is *substantive* just in case it is not autonomous. The idea is that physicalism only concerns the grounds of nonphysical facts apt for ground. For such a fact, it must be possible to "break out" of the nonphysical to ground it. This leads Dasgupta (2014, p. 581) to suggest a refinement of physicalism[20]:

Substantive Physicalism	All substantive nonphysical facts are grounded in facts that are either physical or autonomous.

In particular, Dasgupta argues that the connecting facts of how the nonphysical is grounded in the physical are autonomous. Their autonomy exempts them from counting against physicalism, despite their containing nonphysical facts.

[18]Rabin (2022) proposes a modified version of this strategy. My remarks about the strategy apply equally to both versions.

[19]Dasgupta's distinction may, at first glance, seem to duplicate the basal distinction. But see Raven (2023, p. §3) for reasons why it does not.

[20]Dasgupta considers a further refinement mentioned above (fn. 10).

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While both strategies have their appeal, neither is altogether satisfactory. The first strategy has an air of obscurity. It is already difficult to see how a physical fact might ground a nonphysical fact. The difficulty is only amplified if that physical fact must also ground the connecting fact that it grounds the nonphysical fact. And the second strategy is also obscure. There are serious doubts about whether its key notion of autonomy is coherent (Glazier, 2017; Raven, 2020a). Whether these or other problems scuttle these strategies calls for an extended discussion.

My immediate point, however, is that the present strategy may be seen as a rapprochement, or synthesis, of the others. It does justice to the first strategy by taking the matter of a connecting fact to be ultimately physical. And it does justice to the second strategy by taking the form of a connecting fact to be irrelevant to physicalism. The present strategy thus captures their complementary insights. I conjecture that, pending successful completion of the outstanding agenda item above, the present strategy may be a significant improvement over its rivals. And that is an indirect argument for it.

5 | REFLECTIONS

Sometimes the physicalist credo is presented as if it were a clear doctrine or stance that is assumed to be, or already has been, established. But our exploration of the physicalist credo has revealed a cluster of nuanced positions. This exploration also guided us on how to formulate a credible physicalist doctrine that resists the problem of possibility. This formulation critically relies on the basal distinction between circumstantial and acircumstantial truths. And so another result of our explorations is an illustration of the fruitfulness of the basal distinction. None of our considerations directly establish or refute physicalism. Much must be done before we were in a serious position to evaluate its prospects. But, if our explorations are on track, we have clarified what the evaluation must involve and what physicalism could be.[21]

CONFLICT OF INTEREST STATEMENT

None.

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