

“The Physical as the Nomalous”

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Abstract

I argue physicalism should be characterized as the thesis that all behavior is law-governed. This characterization captures crucial *desiderata* for a formulation of physicalism, including its broad import and worldview defining features. It also has more local virtues, such as avoiding Hempel’s dilemma. A particularly important implication, I argue, is that this thesis makes the question of the mind’s physicality turn on what the mind can *do*- rather than what experience is (qualitatively or subjectively) like.

1. Introduction

Determining whether mentality is physical requires knowing what it is to be physical. Yet there is little consensus on what physicality amounts to, or what, exactly, the doctrine of physicalism involves. Perhaps a surprising number of philosophers are skeptical that a satisfactory resolution is forthcoming: many argue the concept *physical* has no stable or specifiable content, and/or that physicalism is not a substantive truth-evaluable doctrine.¹ Naturally the skeptical view is not unanimous: others contend, more optimistically, that there is a substantive and plausibly true doctrine that deserves the name ‘physicalism’- though perhaps unsurprisingly, advocates disagree about what exactly that doctrine is.² Rather than weigh in on this internecine battle, my goal in this paper is to offer, and defend, a novel conception of physicality and physicalism- one which I will argue is immune to the problems that have led others to despair of a positive conception. The basic idea is this: physicalism is the thesis that all behavior is law-governed. So on this account physicalism is true if everything behaves lawfully, and false if any behavior is (truly, genuinely) *anomalous*; hence

¹ Though accounts differ, the core worry is there is no robust unifying feature (or set of features) shared by the posits of physics, or anything else called ‘physical’ (see e.g. Crane and Mellor 1990, Van Fraassen 1996, Chomsky 2000, Montero and Papineau 2005, Ney 2008, and Tiehen 2016).

² Candidates include understanding physicalism in terms of grounding (Dasgupta 2014), realization (Melnik 2003), supervenience (Wilson 2005), *a priori* entailment (Jackson 1998), and composition (Pereboom 2011), among others. For overviews, see Dowell (2006), Stoljar (2015), and Elpidorou (forthcoming).

‘the physical as the nomalous’.³ I will show that this characterization captures crucial *desiderata* for a formulation of physicalism, including its broad import and worldview-defining features. It also has more local virtues, such as avoiding Hempel’s dilemma. A particularly important implication, I argue, is that this account makes the question of the mind’s physicality turn on what the mind can *do*- rather than what experience is (qualitatively or subjectively) like, or whether such experience exists at all.

The structure of this paper is simple. In §2 I will present, in broad strokes, the motivating reasons for thinking of the physical as the nomalous. In §3 I reply to objections.

2. Motivating the physical as the nomalous

Physicalists often cast mind/body dualists as their arch rival. Historically speaking, however, an equally if not more important opponent is the theist. It should be no mystery why theism is incompatible with physicalism: traditionally, God is believed omnipotent and so able (and free) to break or suspend laws of nature. (More pithily, the traditional view is that God is not subject to the laws of nature, the laws of nature are subject to God.) It follows that on the traditional view God is able to intervene in the physical world and perform miracles, which are paradigmatically *anomalous* events. Obviously the physicalist rejects this picture: if God can break laws of physics physicalism is surely false. And from here it is not unreasonable to suppose it is *because* God can break the laws that physicalism

³ Davidson (1970) famously contrasts what he calls the “anomalism” of the mental with the nomological character of events. (He also contrasts ‘anomaly’ as a “failure to fall under a law” with autonomy; p. 208). In so doing Davidson clearly suggests an etymological contrast between ‘nomos’ (‘law’) and ‘a-nomos’ (‘without law’), and it is from this I have derived the back-formation ‘nomalous’ to mean ‘law-governed’. Unfortunately, it must be admitted that Davidson got the etymology wrong: ‘anomaly’ actually derives from ‘an-’ meaning ‘not’ and ‘homalos’ meaning ‘even’ or ‘same’ (akin to ‘homo’). Still, because the contemporary sense of ‘anomaly’ as not law-governed is well-established, I take the etymology to be no barrier to the conceptual relationship invoked by the contrast between ‘nomalous’ and ‘a-nomalous’.

would be false. If so, then plausibly the world being law-governed is at least partly constitutive of what physicalism demands.

An immediate objection is that physicalism is false if God exists at all, regardless of law-breaking ability. Perhaps. But this cannot be taken for granted without explanation. To see this, note that it cannot be assumed that mentality's existence is incompatible with physicalism either. (After all, one need not be an eliminativist about mental states to be a physicalist.) So if mentality is indeed incompatible with physicalism this must be explained. Whatever its merits, Descartes had a clear explanation: because body is extended but mind is not, the mind is not physical (material). (The same reasoning likely applies to God as well.) But obviously this isn't the end of the story: if being extended were constitutive of being physical there would be no formulation-of-physicalism debate. Instead, it is now generally thought that being extended is neither necessary nor sufficient for being physical (Montero 1999). Nonetheless, even if the Cartesian criterion is inadequate the requirement for an explanatory principle regarding what counts as physical or nonphysical remains. Thus, those who (still) claim mentality is incompatible with physicalism must explain why that is. And the same goes for God, or souls, or emergent properties, or anything alleged to be non-physical. This suggests (quite uncontroversially) that an adequate formulation of physicalism should include the resources to *explain* why entities thought nonphysical are (or would be) nonphysical (if they existed)- just as Descartes' thesis that materialism is the claim that everything is extended would explain the (putative) non-physicality of mind. And indeed, the proposal I defend has this virtue: formulating the physical as the nomalous provides a clear and simple explanation of why an omnipotent God is incompatible with physicalism.

Consider a second motivating illustration. As just argued, mental states are not *eo ipso* nonphysical but are instead nonphysical only if they have a certain nature. And if being

unextended isn't the criterion, what is? Accounting for the physical as the law-governed yields an intuitive proposal: it depends on what the mind can *do*. I'll defend this proposal in various ways throughout the paper, though for now consider libertarian free will. In particular, note that some claim libertarian free will is in effect divine intervention writ small. Famously, Chisholm (1964) likens libertarian free will to a power "which some would attribute only to God; each of us, when we act, is a prime mover unmoved" (p. 134). On this account an unmoved mover acts without being acted upon- it is a cause without being caused. It is the source or initiator of its actions, in that neither the antecedent conditions nor the laws of nature suffice for bringing about the choice it makes. Of course this is no accident: Chisholm's posit of "agent-causation" is explicitly conceived as something exempt from the law-governed sequence of "event-causation" (*ibid.*, p. 132, *passim*). So instead of being law-governed, the idea goes, a libertarian free agent has the power to have acted otherwise even if acting otherwise would have violated the natural laws governing the sequence of events. Because libertarian free will so construed is not only not constrained by laws of nature, but is viewed as something quite inimical to them, libertarian free will, if real, would be anomalous—if not a miracle—each time it occurred. Intuitively, then, libertarian free will as Chisholm construes is incompatible with physicalism- a datum the physical as the nomalous clearly explains.⁴

⁴ It's noteworthy that Timpe and Jacobs (2016) report a "near consensus" that libertarian free will is "certainly incompatible" with naturalism (p. 319). Though naturalism is (or may be) distinct from physicalism, that many would take libertarian free will to be incompatible with a scientific outlook should not be surprising in light of the above. That said, one might deny libertarian free will need be incompatible with physicalism. For instance, Ekstrom (2016) claims her event-causal (rather than Chisholm-style agent-causal) model of libertarian free will is compatible with being law-governed (p. 13), and does not require a commitment to anti-physicalism more generally (p.c.). This does not speak against my claim here, though, which only requires the question of lawfulness be the fulcrum about which the question of free will's physicality should pivot. Which side of the divide free will ultimately falls on, therefore, need not be adjudicated here.

With that in mind consider what it would be to naturalize free will. Broadly speaking, the compatibilist sees free will as compatible with being law-governed, and so in effect denies the existence of agency—the power of the mind to act or make choices—is inimical to the natural order of things. More strongly, compatibilists see agency as part of the law-governed natural order. So it should be no surprise that compatibilists incline towards physicalism (e.g. Daniel Dennett and David Lewis), whereas free will libertarians, who are often theists, reject it.⁵ More strongly, this dialectic suggests that whether the mind's decision-making capacity is (thought of as) law-governed tracks or co-varies with whether the mind's capacity for free will is (thought of as) physical. The physical as the nomalous (henceforth 'PN') also nicely explains this cluster of views.

That said, free will has not typically been the crux of the debate over physicality and physicalism. So it must be emphasized that PN is also motivated by more traditional concerns. For example, undoubtedly the general physicalist outlook includes everything being scientifically explicable. Because of the intimate tie between (subsumption under) law and explanation, PN captures this traditional concern: for everything to be scientifically explicable just is for everything to be explicable as governed by or falling under the laws scientists posit. Moreover, if subsumption under law is necessary for explanation it's also clear why anomalies or miracles, as something not law-governed, would be quite literally scientifically inexplicable- and so a threat to physicalism if existent.

Another criterion for an adequate formulation of physicalism is it should make sense of the traditional idea that physicalism is a monistic view; according to the physicalist everything exhibits a deep or underlying unity of kind. PN is especially well-equipped to capture the monistic intuition for the reason that subsuming apparently disparate

⁵ In addition to Chisholm I have in mind philosophers such as Merricks, O'Connor, Plantinga, and Rea. For more on theism and free will see the articles collected in Timpe and Speak (2016).

phenomenon under the same laws is perhaps the paradigm case of scientific unification. A famous example is the transition from the Aristotelian-cum-medieval view of the terrestrial (or sublunary) and celestial realms as categorially distinct (i.e., as consisting of different kinds of entities with different kind-specific “natural motions”), to the Newtonian view, which unifies the apparently disparate realms by showing the behaviors of each to be governed by the same laws and involving the same forces. The more general idea is that showing apparently distinct phenomena to be governed by common laws unifies or renders them deeply similar. Construing physicalism in terms of laws is therefore a natural concomitant of the thought that laws unify what falls under them.

By contrast, other formulations of physicalism may have more difficulty explaining monism. For example, according to supervenience formulations entities not posited by physics are physical if they supervene on what physics does posit. But it is not obvious what exactly supervenience has to do with category-membership, or why x supervening on y should render x and y similar or otherwise akin. Moreover there may be a worry about counterexamples: necessary truths about *abstracta* may supervene on concrete truths discerned by physics, say, but presumably this wouldn't show abstracta to be concrete, nor is there any independent sense in which the abstract or concrete would be unified by supervenience. That said, I do not mean to suggest this is a decisive consideration, nor that no supervenience-based unity account is forthcoming; perhaps the defender of a supervenience formulation can flesh out the connection. My claim here is simply that PN has a *prima facie* advantage- one sufficient to motivate the account.

Yet another idea that PN nicely captures is the common thought that physicalism involves the causal closure of the physical (e.g. Tiehen 2015; Montero 2003). To say the physical is causally closed just is to say that nothing from the outside intervenes. Taking the

concrete universe as a closed system renders it amenable to being understood as a law-governed system, where the behavior or dynamics of the entities in the closed system can be understood entirely in terms of the laws governing that system. By contrast, the idea of something intervening from outside the system, such as a Cartesian mind or a supernatural entity, upsets the idea of closure precisely because something not subsumed under law has an effect on the system- altering it from what it would have been if purely law-governed. The violation of causal closure (via intervention) is tantamount to a violation of law as well as opposed to physicalism. PN nicely explains this fact.

While replying to objections in the next section other features and motivations for PN will emerge. First, though, one more major virtue of PN is worth highlighting: its ability to avoid a problem that has led many to despair of giving a substantive or positive or characterization of the physical at all (as mentioned at the outset). The problem arises in light of the fact that standards for what counts as physical (material) change with the discoveries of physics. The story, in brief, goes like this.

Long ago ancient materialists said all that exists is atoms in the void. A millennium and a half later Early Modern philosophers added that these insensibly small material atoms possessed certain (primary) qualities such as impenetrability, extension, and inertia. Materialism thereby became the view that everything is a material atom or consists of them, and that all properties are in some way traceable to the primary qualities of material atoms. The problem, though, beginning as early as Newton but exacerbated by later discoveries, was that some posits of physics—including Newtonian gravity—are not material by the aforementioned standard. So materialists face a choice. Either materialism is false because a nonmaterial force of gravity exists, or else expand the notion of materiality (or physicality) to accommodate the posits of physics. Unsurprisingly many take the latter route. The result is

physicalism becomes something of a cipher; what it is to be physical is to be specified or filled in by some (most likely future) version of physics.⁶

Yet this very flexibility is problematic. For if every time a possible counterexample to a standard of materiality (physicality) arises the materialist (physicalist) changes her view, then materialism (physicalism) is unfalsifiable and no longer a substantive truth-evaluable doctrine. Instead, the argument goes, the ever-changing notion of physicality suggests physicalism should be construed as an attitude or stance- in particular, a stance of deference to physics in matters ontological (Ney 2008, van Fraassen 1996). Others take a different lesson: though physicalism is a substantive metaphysical doctrine, in light of the changing standards there can be no positive characterization of the physical. Instead, thinking of the physical as the non-mental (the so-called *via negativa*) is enough for the physicalist's philosophical purposes (e.g. Montero and Papineau 2005, Tiehen 2016). Still, the concession is considerable.

PN not merely avoids the problem but offers a positive and substantive characterization. First, note that irrespective of whether gravity is *material*, gravity is a law-governed phenomenon *par excellence*. So rather than risk being a materialist outlier, PN allows gravity to serve as a *paradigm* physical entity precisely because of its role in (what Newton took to be) the fundamental laws of nature; gravity, like any measurable magnitude, stands in precise nomological relations to other magnitudes and so exemplifies how the physicalist historically takes the world to be- as a well-behaved law-governed system. Nor is gravity the only example. For instance, that neutrinos can pass through solid matter might suggest they resemble ghosts more than traditional or paradigm material objects, the result being that one cannot identify a property such as an impenetrability that could serve as physicality-defining

⁶ Though see Melnyk (1997) for the rare defense of physicalism-in-terms-of-present-physics.

(Montero 1999). Yet however dissimilar to traditional material objects gravity or neutrinos may be, their behavior is still lawful and so presents no threat to PN's construal of physicalism- as entities posited by theoretical physics should not.

So, to briefly summarize. Whereas some views effectively punt on the question of what robust feature(s) physical entities have in common, others either struggle to explain how the full range of entities posited by theoretical physics resemble paradigm physical objects or their properties, or else abandon the attempt at a positive characterization. By appealing to law-governed behavior, however, PN offers a substantive and positive explanation for what physical entities have in common despite their variegated natures. This confers a significant advantage on PN.

3. Objections

Having motivated PN I now turn to objections.

3.1. Neutrality and commitments

An initial objection is that PN is not metaphysically neutral. Those with deflationary or anti-realist views about laws, for example, may think of themselves as physicalists despite being unable to accept a physicalism formulated in terms of laws. So it would seem that physicalism (as a broad tent) should be formulated without invoking something that would force the hand of those who hold other or even opposed metaphysical views.

If this is a convincing objection it would seem unwarranted if uniquely applied here. Physicalism is routinely characterized in terms of properties, such as when it is claimed that according to physicalism all properties are determined by or supervene on the fundamental physical properties. This despite the debate over the existence of properties being one of the

oldest debates in the entire history of metaphysics. That a nominalist or anti-realist about properties may accuse traditional definitions of physicalism as begging some metaphysical question against them has gotten no traction, as far as I can tell, so it's hard to see why neutrality should rule out laws (cf. Stoljar 2010, p. 39, who also dismisses the nominalist objection to formulating physicalism via properties).

Even so, it is important to note that PN does not require a commitment to any particular conception of laws- for instance, as Armstrong (1983) conceives them rather than as Lewis (1994) does, or as Maudlin (2007) conceives them rather than as Loewer (2012) does. Instead, I simply take it as a datum that the natural sciences include laws in their theories and models, and it is these that PN treats as paradigmatic. As is generally the case, though, specifying paradigms leaves open how exactly the paradigms should be (philosophically) understood. And if a metaphysician wishes to interpret laws in a relatively deflationary way, or recast law-talk into her preferred idiom (whilst acknowledging that scientific practitioners routinely talk of laws), just as a nominalist may recast property-talk into her preferred idiom (whilst acknowledging that scientific practitioners routinely talk of properties), that is perfectly compatible with PN.

With that said, though, one might still think PN does need a criterion or theory of lawhood (or being law-governed), rather than simply pointing to paradigms. The reason is one might worry PN so construed is vulnerable to a version of Hempel's Dilemma: does PN invoke current or future laws? Assuming laws posited in the future will differ from those currently posited suggests physicalism formulated via contemporary laws is false, whereas without knowing what future laws will be, one can't know what exactly the future-based version entails.⁷ But the objection is off the mark. For it is not the (changing) content of laws

⁷ Thanks to an anonymous referee for this objection.

that matters but the (unchanging) form or structure of laws, in particular their mathematical expressibility. For example, dating back to at least Galileo, throughout every change in ontology or content (i.e., *what* the law concerns), the structure of laws of physics as consisting in mathematically expressible relations between quantities remains constant. The reason should be clear: expressing laws mathematically allows for the deduction or prediction of quantitative values or magnitudes (outputs) on the basis of other quantitative values or magnitudes (inputs). From here a minimal notion of being law governed (whether in physics or elsewhere) is that an event is law governed if its quantitative properties or magnitudes can be predicted or derived on the basis of the relations to other relevant quantities, as captured by mathematical law-statements. Such an account also captures the intuitive and earlier-discussed contrast between law-governed behavior and an act of libertarian free will, which in this context can be thought of as an event (or action) that is possibly other than what a quantitative law would predict given the relevant inputs (e.g. the antecedent conditions as mathematically expressed). Because the mathematical nature of laws is a historically constant structural feature that survives changes in content, lawhood as invoked by PN can be appealed to without knowing what exactly future laws will be.

3.2. Special science laws

A second worry concerns how PN handles special science laws, such as laws of chemistry or neuroscience. In particular, for many years it was considered an important philosophical question whether such laws should count as physical laws, and/or whether special science laws are reducible to physical laws. It would seem, however, that PN risks making special science laws physical by stipulation rather than argument.⁸

⁸ I thank an anonymous referee for raising this objection.

The objection likely conflates what are sometimes called the ‘narrow’ and ‘wide’ senses of ‘physical’, however. According to the former ‘physical’ is roughly equivalent to ‘pertaining to physics’, whereas the latter sense is broader or more generic, appearing in phrases such as ‘physical object’, ‘physical science’, and, presumably, ‘everything is physical’. And in this latter sense it is typically taken as uncontroversial that special sciences are physical. In order to set up the “knowledge argument”, for example, Jackson describes Mary the neuroscientist as knowing all the physical facts “in a wide sense of ‘physical’ which includes everything in completed physics, chemistry, and neurophysiology” (1986, p. 291). Rather than begging any important questions regarding the physicality of chemistry and neurophysiology, say, it would appear Jackson simply invokes standard usage. Other conceptions of physicalism, such as the *via negativa* and the object-based conception, also help themselves to the idea that special science entities are physical, rather than treating it as a controversial position requiring considerable defense.⁹ So PN would not appear to beg any important questions by taking entities governed by special science laws to be physical.

That said, it should be noted that PN is neutral on reducibility as well as the more general question of how exactly special science laws are related to laws of physics. Though undoubtedly important and interesting, these are not questions on which PN need take a stand. For how the laws of physics and the special sciences relate to each other is distinct from the question of whether something is governed by a law at all- and so, according to PN, distinct from the question of whether that something is physical.

⁹ Stoljar (2010) argues ‘physical’ should be understood via paradigm physical objects such as rocks, trees, and planets; that these are macroscopic objects in the domain of special sciences seems no barrier to taking them as paradigmatically physical (and so, arguably, physical by stipulation). Similarly, the *via negativa* assumes chemical or biological phenomena are physical simply because they are not (fundamentally) mental- regardless of whether they are reducible to physics. Thanks to an anonymous referee for the *Journal of Consciousness Studies* for discussion.

Moreover, this neutrality may even set PN apart.¹⁰ A standard thought is that physicalism holds that nothing exists over and above the physical. This is taken to yield two separate tasks: define or explain what is meant by ‘the physical’, and define or explain what is meant by ‘nothing over and above’. Typical attempts at the latter invoke metaphysical dependence relations such as supervenience, grounding, or reducibility; ‘nothing is over and above the physical’ is generally taken to mean that everything supervenes on, is grounded in, or is reducible to the physical. Yet by answering the former (physicality) question in terms of laws—to be physical is to be law-governed—one may avoid having to commit to any ‘inter-level’ metaphysical dependence relations such as those listed. For according to PN the crucial question is not how levels are related but whether any given entity, at any given level, is law-governed. The upshot is that PN avoids the complication of two separate definitional questions- even assuming it remains an interesting further issue what metaphysical dependence relations, if any, obtain between laws or individuals at different levels.¹¹

3.3. Indeterminism

Another worry for PN concerns indeterminism: in particular, one might think some quantum events are intrinsically indeterministic and therefore not law-governed, the result of which is PN would erroneously have physicalism refuted by quantum phenomena.

Quantum indeterminism still falls under laws, albeit stochastic rather than deterministic laws. But stochastic laws are still laws, and quantum laws are considered well-confirmed regarding—rather than falsified by—indeterminism. This shouldn’t be mysterious, for the indeterminism is itself patterned or regular; for example, the very idea of

¹⁰ My thanks to an anonymous referee for *Journal of Consciousness Studies* for this suggestion as well.

¹¹ This may also relieve the physicalist of a problematic commitment to a fundamental level (Montero 2006), or a particular direction of ontological priority (Schaffer 2010), though I won’t press this here.

a radioactive atom's half-life invokes the regularity or predictability, at the statistical level, of what may be individually indeterministic. So it is fair to say quantum events are law-governed, and so differ greatly from anomalies or miracles (more on which below). Moreover, insofar as philosophers of physics develop accounts of laws in concert with accounts of the objective probabilities of quantum events (such as Maudlin and Loewer do, as mentioned earlier), there seems little reason to assume quantum phenomena are not law-governed.¹²

3.4. Falsifiability and “science stoppers”

Another worry related to (if not partly constitutive of) Hempel's dilemma that has been raised for the ideal physical-theory based version of physicalism runs like this: if physics is ideal just in case it accounts for *everything*, then physicalism could not be falsified. For even if it turned out physics needed to posit fundamental minds, or ghosts, or anything else intuitively nonphysical, then those posits would end up counting as physical after all, in which case nothing could count as nonphysical. By dint of failing to specify falsification conditions, physicalism would be rendered trivially true. The worry here is that a similar objection might apply to PN. For physicalism formulated via laws to be falsified, something has to count as an anomaly. But one might not think something could be genuinely anomalous. For no matter how weird or anomalous some event might appear, the claim

¹² If indeterminism is still worrying is the worry exclusive to PN? Note that some argue quantum indeterminacy presents a problem for the supervenience, determination, and grounding conceptions of physicalism (e.g. Ladyman and Ross 2007, ch. 3; Ney 2008, p. 7). So either quantum indeterminacy is a widespread threat to standard conceptions of physicalism, in which case PN suffers from no unique problem, or else the standard conceptions can account for quantum indeterminacy after all, in which case, presumably, PN could too- especially given that physicists treat quantum phenomena as governed by the laws they posit.

goes, that event could (eventually) be understood or subsumed under some law or other—even if what was hitherto believed to be a law had to be radically revised to do so.

Van Fraassen (1996) argues along these lines. Because any event would (eventually) be subsumed under a law, van Fraassen claims, there can be no “science stoppers”, and hence no falsifiability conditions for materialism construed as a doctrine rather than an attitude or stance. To illustrate, van Fraassen asks the reader to “Suppose.. the first instance of every natural kind just springs into being.. always on top of some mountain. Then all conservations laws I mentioned are violated, many times, so physics has to be carefully but radically revised so as to allow for these phenomena” (p. 158). Even so, van Fraassen claims this is no science stopper because one can still (scientifically) study the phenomenon: what happens, he asks, to the air particles in the vicinity of the newly-sprung entity? Surely such behavior would be tractable, and a systematic account would be developed- suggesting, more generally, that there can be no such thing as a true anomaly.

Several responses are available, however. First, note that van Fraassen’s example appeals to a regularity; he suggests the *first* instance of *every* natural kind springs into being, *always* on top of some mountain. So this is actually a poor candidate for anomalous behavior. Of course one may change the example—some instances, sometimes on top of a mountain, etc.—but then the example loses much of its force. For as we move down a spectrum from regularity (always/ever) towards irregularity or randomness, that one is dealing with something law-governed or scientifically explicable rather than something genuinely anomalous is simply less plausible. To see this note that anomalous behavior can be (hypothetically) illustrated via the instrumental inability to manipulate some object in any reliable way. Imagine an object confined to a laboratory that does completely different things each time it is accelerated, or exposed to light, or sound, or supercold temperatures, no

matter the otherwise indiscernibly of the scenarios. If there's really no explanation, no pattern, or no regularity to how it behaves, the behavior is truly anomalous.

In case one is still skeptical, consider what I'll call 'the argument from popular fictions'. Here's the conclusion baldly stated: in a cartoon world physicalism is false. (And in the world of Harry Potter, physicalism is false.) Why? Because cartoons (and magic fantasy worlds) involve genuinely lawless behavior. Consider an old standby of Looney Tunes cartoons. An antagonist (such as Wile E. Coyote) opens a box and takes out what looks like a flat black oval a few feet in diameter. The oval is then thrown against the side of a mountain, where it sticks and is now, apparently, a hole. Immediately thereafter a train comes barreling through the hole, now apparently a tunnel, and runs over the antagonist (who is nonetheless in perfect health seconds later, off to his next caper). Now, perhaps van Fraassen might deny this sequence is a science stopper. Perhaps his curiosity is piqued; where was that train a few minutes before, he might ask? Where did the passengers buy their tickets? How could they breathe inside the mountain before it became a tunnel (or was it a tunnel all along)? Alas, such questions are simply unanswerable if the world really were as cartoons depicted them- because a cartoon world is an anomalous world. There are no explanations, and there are no laws of physics or nature in a cartoon world- where physicalism is therefore false.

So even if something violates what is currently taken as a law, it does not follow that a true anomaly is (logically) impossible. Instead, the very possibility of anomalies provide falsifiability conditions for PN (as do miracles and an omnipotent God, as argued earlier). Consequently, PN holds an advantage over future-physics based formulations of physicalism which risk being trivialized by a lack of falsifiability conditions.

3.5. Nonphysical laws and debates over physicalism

Perhaps the most serious objection to PN is it seems to imply there can be no non-physical laws. But, the objection goes, there can be. For example, pre-scientific medieval thinkers may have had a notion of laws as decrees in the mind of God, but surely if that worldview were true physicalism would be false.

Rejecting PN because medievals posited nonphysical laws falters on what is essentially an equivocation. Though it is likely true the concept of scientific laws has an ancestor in the pre-scientific conception, the medieval view of laws of nature as something like the decrees of God was ultimately a *normative* conception; it allowed for actual violations which were then deemed “unnatural” (just as for Aristotle things do sometimes behave against their natural motions or tendencies). But of course laws of physics do not allow violations which are then called “unphysical”: a physical law is not a normative standard which allows violations (and then judges them for it), but, rather, violations are (nomologically) impossible in the first place. Although physicalism would not be true if the universe were governed by normative standards, PN does not imply it would be.

A more serious version of this objection appeals to particular debates over materialism and physicalism. For example, 18th and 19th century vitalists and emergentists held that living systems involve distinct emergent or vital forces and laws, which, when combined with physical influences, produce (novel) effects. Yet emergentists did not seem to think that living systems involved breaches of law (on the model of miracles)- but for all that rejected materialism. In light of this, one might object, to adopt PN is to dissolve the apparent dispute by stipulation. Similarly, in the 20th and 21st centuries many versions of dualism admit psychophysical laws, i.e., lawful relations between the mental and physiological. But then PN would appear to collapse the distinction between physicalism and

these law-recognizing versions of dualism. Assuming an adequate formulation of physicalism must respect the differences between these rival views, PN should be rejected instead.

Firstly, although the objections appear similar, vitalism and emergentism should be handled differently than contemporary dualism. One reason is that vitalism and emergentism were opposed to (traditional) materialism, not (contemporary) physicalism. Though often treated interchangeably, they are not coextensive. As already discussed, the posit of a force of gravity arguably falsifies 17th century materialism but is no threat to physicalism more broadly construed. So not every historical debate over materialism can be assumed to be a debate over physicalism. And in this light we can see that the debate over vitalism and emergentism was, in effect, a debate over whether living things are made of the same stuff as nonliving things, or whether biological or chemical processes involve only the same kind of stuff (or forces) as do the processes tracked by physics. And though there being vital or emergent forces or stuffs plausibly threatens materialism if such forces or stuffs are of a different type than (normal) matter, differences in type need not threaten physicalism. For example, the contemporary question of physicalism does not turn on whether dark matter turns out to be fundamentally similar to (regular) matter, nor would physicalism be falsified by a possible difference in kind between matter and anti-matter, say. More generally physicalism simply does not require unity of stuff in the narrow sense in which materialism traditionally considered it. This is not to abandon monism, however; the made-of-the-same-kind-of-stuff relation need not be treated as identical to the belongs-to-the-same-category-as relation, for example. So while it may be true that once one abandons the materialist idea of sameness of stuff the sense in which physicalism is monistic may still need to be cashed out in some way, this is hardly to say no such account is forthcoming. In fact, I argued earlier that subsumption under law provides a good model of unification: when apparently

disparate phenomena are subsumed under the same law they are rendered similar in the requisite deep sense even if they consist of different stuff.¹³

I turn now to the contemporary version of the objection, regarding what I'll call "nomological dualisms". These are views according to which there are psychophysical laws, and/or all behavior is law-governed (just as the physicalist sees it), yet even so dualism is true and physicalism is false- perhaps because the psychophysical laws are merely contingent, or for any physical cause there is a distinct but overdetermining mental cause, or because there are epiphenomenal mental states or properties in addition to causally potent physical states or properties, etc.. And as indicated above, from here the objection is that an adequate formulation of physicalism ought to respect the distinction between nomological dualism(s) and physicalism, whereas PN collapses them. Put another way, because PN seems to imply the physicalism vs. nomological dualism debate is misguided or ill-founded, PN should be rejected as a characterization of the physical.

Working backwards, there is a relevant precedent for arguing that a debate regarding physicalism could be misguided. As discussed, according to Hempel's dilemma physicalism cannot be formulated via the posits of physics. But then debating whether physics can account for something would not be tantamount to a debate over physicalism- contrary, perhaps, to the assumptions of the disputants. Similarly, for those who argue physicalism is not a truth-evaluative doctrine but rather a stance or attitude (e.g. Ney and Van Fraassen), any debate over the truth or falsity of physicalism is misguided (just as a debate over the truth of a moral proposition would be misguided according to a moral expressivist or non-

¹³ A supporting argument here notes that scientists such as Helmholtz rejected vitalism on the grounds that vital forces would violate the law of conservation of energy. This may be tantamount to seeing vital forces as anomalous. Construing vitalism this way dovetails with the conjunction of PN and the intuitive view that vitalism was an anti-physicalist position. My thanks to an anonymous referee for the *Journal of Consciousness Studies* for this helpful suggestion.

cognitivist). Of course, whether Hempel's dilemma is successful or physicalism is a stance is debatable. Even so, the coherence of these challenges is enough to show that one cannot insist that a debate over physicalism is well-founded or on point simply because it exists. So while it may be an implication of PN that debates which grant the law-governed nature of behavior but disagree over physicalism are (retroactively) ill-founded, I simply accept this as an interesting feature (if not a virtue) of the view.

Regarding this case in particular more can be said. First, consider again theism, libertarian free will, or interventionist substance dualism. These are naturally construed as anti-physicalist because, as argued earlier, the believer in and denier of law-violations disagree about what can happen in the future. This debate over physicalism is therefore (at least partly) a debate about what the future will be like.¹⁴ This stands in stark contrast to nomological dualisms- in particular naturalistic, epiphenomenalist, or overdeterminationist versions. For, unlike the defender of libertarian free will, these dualists agree with the physicalist on the course of events. For instance, the naturalistic dualist claims that because of the (putative) contingency of the mental/physical connection mental properties are not physical, but nonetheless admits that in *this* world the connection is (physically or) nomologically necessary (Chalmers 1996). Or consider the epiphenomenalist or overdeterminationist dualist, who argue that mentality either has no causal impact or a redundant one. Such dualists do not disagree with the physicalist about what *happens*, insofar as there is no measurable or observable event that wouldn't occur just as it does even without the existence of mentality (this, I take it, is a straightforward implication of mentality being causally impotent or redundant). Such dualists, therefore, effectively concede that the

¹⁴ The point does not depend on the physical model being deterministic; in principle a libertarian free agent could also do other than what the indeterministic (but un-free) event would have been.

evolution or dynamics of the universe proceed exactly *as if physicalism were true*- undoubtedly a significant concession given the historical aims and projects of the anti-physicalist.

Does this concede too much? Of course one might say ‘no’, that no concession is too big, and as long as there is some conceivable distinction between what the physicalist and dualist claim, an adequate formulation of physicalism must rule out these dualisms from counting as physicalist. Another response, though—the one I favor—is to say that some concessions are too big, and that some views which call themselves dualists, whilst disagreeing with physicalism under some conceptions of physicalism, are better seen as *de facto* versions of physicalism by another name.

One reason appeals to what I’ll call the *symmetry of the formulation problem*: just as it is thought to threaten a formulation of physicalism if it cannot distinguish itself from dualism, so too should a formulations of dualism be threatened if it cannot adequately distinguish itself from physicalism. So rather than assume any view called ‘dualist’ therefore opposes physicalism, there is an onus to establish the opposition as warranted.

Consider the version of dualism which posits overdetermining mental causes. Intuitively this may seem anti-physicalist. But why? Note that Merricks (2001) argues that if ordinary *material* objects exist they too would yield overdetermination. Suppose, Merricks argues, that n simples arranged baseballwise could shatter a window, and that the whole baseball composed of those n simples would be the $n+1^{\text{st}}$ object (due to the nonidentity of wholes and parts). But then if the whole baseball could also cause the window to shatter the shattering would be overdetermined (by the parts and the whole). So on the grounds that overdetermination does not exist, Merricks denies composite material objects exist. But suppose one pivots the other way and says overdetermination and composite material objects do exist. Would this refute physicalism? I can’t see why it would. But then

widespread overdetermination is not *ipso facto* opposed to physicalism, nor sufficient for falsifying it. Moreover, if the overdetermining causes are lawfully related then PN explains why such overdetermination *is* physicalistically acceptable. Because overdetermination is not inimical to physicalism, one need not assume mental overdetermination would be either.¹⁵

Consider another line of argument. It's often thought that if physicists were to (eventually) posit mental properties at the fundamental level, then physicalism defined by future-physics could only be trivially true insofar as it couldn't be distinguished from dualism (Wilson 2006). So any such formulation must be rejected (or amended, as Wilson does, with her 'no fundamental mentality' proviso.) What is generally overlooked and is worth considering here, though, is why exactly a *physicist*, as opposed to a *philosopher* (such as Strawson 2006), might posit mentality at the fundamental level. After all, given that robots might exhibit complex or intelligent behavior without consciousness, and given that one can coherently doubt that humans other than oneself have mental properties—perhaps they're zombies—it's hard to see what exactly would pressure a physicist to posit mental properties in electrons or quarks.¹⁶ (Put another way: if there's a "problem of other minds" for people surely it's worse for subatomic particles.) Moreover, even if a physicist did posit micro-mentality, something more than the label 'mental' would be needed to think physicalism is false. For as argued, that mentality is *opposed* to physicality cannot be assumed. Instead, there must be something about the mental phenomenon that makes it mental to the *exclusion* of being physical. And here we see PN has another advantage. If electrons behaved

¹⁵ Nor need overdetermination violate causal closure, in either the material or mental case: as long as the overdetermining causes are within the universe (as opposed to stemming from a Cartesian-esque outside intervention), an overdetermined universe could still be causally closed.

¹⁶ Strawson (2006) denies consciousness can emerge from non-consciousness, and so posits "micro-psychism" to account for macro-level consciousness. Yet Strawson is clearly motivated by concerns not shared by the practicing physicist, nor are his posits constrained by the physicist's evidential standards. That said, Strawson treats micropsychism as a physicalism, so the point appears moot.

anomalously, or acted as if they had agent-causal libertarian free will, then it's plausible to think a physicist might feel pressure to posit mental properties and think physicalism false as a result. But this turns on *behavior*, or, perhaps, *action*, not simply whether the predicate 'is mental' applies to a system governed by laws of physics. So PN, perhaps unlike other views, can explain why a certain kind of mentality at the fundamental level would be incompatible with physicalism (no *ad hoc* 'no fundamental mentality' proviso necessary, contra Wilson).

The general argument here can be buttressed by a thesis defended by Howell (2013). For Howell, the lesson of Mary-type cases, the possibility of zombies, or the general inability to know or deduce consciousness on the basis of neurology or physics is not that physicalism is false. Instead the lesson is that one should distinguish the subjective/objective distinction from the anti-physicalism/physicalism distinction. More specifically, although Howell claims one should give up on everything being objectively knowable, he also claims one should not give up on physicalism. (Instead he endorses what he calls "subjective physicalism".) This line of argument is congenial to PN: even if one can't understand or know mental states objectively or from a third-person perspective, mentality can be still physical- as long as it's law-governed. By contrast, characterizing physicalism in terms of objectivity or via what can be learned from physics textbooks only sets physicalism up to be refuted by the very existence of subjectivity or first-person knowledge. But as Howell shows, this is unnecessary. Adapted here, the idea is that according to PN subjectivity is physical if it's law-governed- even if it takes experience to know what something is like.

This argument can be put another way. Note that some opponents of physicalism seem to think physicalism can be true only if subjectivity, consciousness, or 'what-it's-likeness' does not exist. For instance, Chalmers (1996) thinks physicalism is false because it's logically possible that a being functionally isomorphic to me might lack my (or any)

conscious states- even though in *this* world any isomorphs would have my conscious states as a matter of natural or nomological necessity. But if so then physicalism can be true only in “zombie” worlds in which consciousness does not exist. Similarly, Jackson (1986) thinks Mary’s learning something new falsifies physicalism because he thinks physicalism is the view that all facts can be learned (or deduced) from objective or third-person accounts, and that what Mary learns is irreducibly first-personal. So for Jackson too, physicalism is true only if subjective or first-person knowledge does not (or, perhaps, could not) exist. But why adopt a version of physicalism that is threatened by the very existence or possibility of subjectivity or first-person knowledge (and a version proposed by its opponents at that)? While for Descartes the reason is that matter is essentially extended whereas mind is not, once one drops the Cartesian criterion of (im)materiality it seems one could just as well drop the criterion of physicality that renders physicalism false if consciousness exists. After all, one shouldn’t have to be an eliminativist to be a physicalist; it should instead be an open possibility that physicalism could be true even if consciousness or first-person knowledge exists. And PN accomplishes this: if consciousness exists but is not law-governed then physicalism is false, but if it exists and is law-governed then physicalism is true.¹⁷

¹⁷ Perhaps it should be emphasized that according to PN, nomological dualisms do not count as physicalist simply because they grant lawlike correlations, however modally weak, between subjective and objective states (such as being in pain and the firing of C-fibers). Instead, what renders e.g. Chalmers’ view physicalistic, in my view, is the concession that mentality makes no real difference in the world, insofar as a zombie world can be behaviorally indiscernible from a consciousness-containing world. More generally, PN concerns dynamic or causal laws governing the diachronic sequence of events (laws one might call ‘horizontal’), rather than non-causal or non-dynamic “laws” describing synchronic correlations between levels such as the neurological and mental (laws one might call ‘vertical’). In light of this distinction—the terminology for which was suggested by an anonymous referee for the *Journal of Consciousness Studies*—consider a case prompted by the same referee. Akin to Kim’s suggestion of “probabilistic supervenience”, suppose 73% of the time C-fibers fire one is in pain, but 27% of the time one is not. Though one might think this incompatible with physicalism, one might also think PN would treat the correlation as a law, albeit indeterministic, thereby (erroneously) rendering the situation physicalistically acceptable. But as indicated above, it is not simply there being a lawlike correlation between subjective and objective states that renders mentality physical; it’s that those subjective states don’t make a dynamical or causal difference in the

Consider one last argument. It is not unusual for those discussing physicalism to note its importance (e.g. Elpidorou forthcoming, p. 1). But to whom is physicalism important, and why? The final suggestion here is that physicalism should be formulated so that its truth or falsity is or remains important *outside* the philosophy room. The argument is this. Thinkers throughout history—not just philosophers but scientists, theologians, and thoughtful laypeople—have argued about the truth of materialism (physicalism). But why? What's at stake? It seems plausible the question has resonated not only because one wishes to understand what the world is like (in general), but specifically because people often think it matters whether there is a soul or mind that could exist apart from a body, and whether one freely chooses the actions that might be rewarded or punished in an afterlife. So the traditional question of the mind's physicality has often regarded what if anything a mind can do or be without a (physical) body, and whether physicality would undermine the mind's (apparent) ability to deliberate and make free choices for which one is morally responsible.

Now, in this light consider a view which concedes the nomalous character of behavior, and/or thinks of the mind as merely epiphenomenal, overdetermining, or being unable to do anything other than what an unconscious brain could do (as in a zombie world). Yet nonetheless suppose this view considers itself dualist and physicalism to be false because the correlations between brain states and mental states are merely contingent. Bluntly stated, it's fair to ask why the truth of this version of dualism would speak to the concerns of the *non*-philosopher. That is, even if *a* version of physicalism might be falsified by the possibility of non-conscious functional isomorphs or inverted spectra, say, such

sequence of events (as libertarian free will or divine intervention would). So the correlation being probabilistic rather than invariant would not change that. That said, it would certainly be an interesting question what, if anything, could explain why the subjective state only sometimes occurs, especially at a macro level where quantum indeterminacy is likely not the culprit. As I argue below, however, questions regarding the strength or frequency of subjective/objective correlations can be interesting or subject to debate without making the difference for physicalism.

possibilities do not seem particularly comforting to the believer in a nonphysical soul, eternal salvation or damnation, or libertarian free will; perennial worries about the mind being physical do not seem assuaged by being told that in other possible worlds one has consciousness-lacking doppelgangers, or that it's metaphysically possible that what someone sees as green someone else sees as red- despite it making no difference to anyone's behavior.¹⁸

That said, I'm not denying it's an interesting question whether inverted spectra or zombies are possible, or whether certain mental states are contingently or necessarily related to certain brain states. What I am claiming is that these can be interesting questions without being the questions on which the truth or falsity of physicalism turns. While one line of argument might be that many phenomena can be only contingently related without falsifying physicalism (such as the relation between certain brain states and other brain states), the argument that appeals to importance invokes the idea that physicalism should be formulated so as to make the question of its truth or falsity speak to the perennial questions of those concerned with physicalism outside the philosophy room. In brief, then, this final argument is that the differences nomological dualists posit to justify their distinction from physicalism are not important enough outside the philosophy room to be the fulcrum around which an adequate characterization of physicalism pivots. By making the debate over physicalism a debate about what a mind can *do*, however, PN keeps the question of physicalism aligned with the perennial questions with which the preponderance of thinkers have been concerned.

¹⁸ It is worth noting an irony. The traditional concern is the possibility of a mind without a body. The contemporary concern is the possibility of a body without a mind (a zombie). While it is obvious why folks outside the philosophy room would be perennially concerned with the latter, it is less obvious what is at stake regarding the former.

4. Conclusion

I have argued for a formulation of physicalism—the physical as the nomalious—that has many virtues. Among these are PN’s ability to explain and account for several intuitive and philosophically important connections and contrasts, such as the contrast between inexplicable miracles and law-governed and explicable behavior, as well as the connections between laws, unification, and explanation. In these cases the crux of the issue concerns, fundamentally, how one thinks the world *works*, i.e., whether or not it’s law-governed, and what can or can’t happen in the future. I’ve also argued that PN avoids Hempel’s dilemma, and provides a positive characterization of the physical. A formulation of physicalism in terms of the law-governed character of behavior is, therefore, a promising one.

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