

Governing the Nonphysical World

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Abstract: If we were to learn that we live in a nonphysicalist universe, we would expect to be surrounded by some of the spooky usual suspects, such as ghosts, abstracta, fundamental qualia, or primitive normative facts. I suggest that—given parallels between the physicalism debate and the debate about laws of nature—we can abandon this expectation. We can acknowledge nonphysicalist universes containing none of the phenomena above. Inspired by the distinction between governing and non-governing accounts of laws of nature, I show how recognizing a distinction between governing and non-governing accounts of physicalism can help us make sense of such possibilities.

0. Introduction

I introduce a parallel between the discussion of laws of nature and the discussion of physicalism: just as there are governing and non-governing characterizations of laws, there are governing and non-governing characterizations of physicalism. Non-governing characterizations maintain that physicalism holds in virtue of the pattern of certain identity or dependence relations obtaining between the nonphysical and the physical. In contrast, according to governing characterizations, physicalism behaves as a governing law *dictating* the dependence of the nonphysical on the physical. Under a governing characterization, physicalism does not hold in virtue of patterns of identity or dependence relationships.

It may be surprising to draw such a parallel between laws of nature and physicalism. On the one hand, laws of nature typically tell us about the evolution of the universe from earlier times to later times. On the other hand, physicalism doesn't tell us about how events unfold in time *per se* because physicalism isn't especially interested in the relationship between stages of the universe across time. Physicalism is interested in the relationship between the physical and nonphysical at any given point in time. I establish that there are important structural similarities between statements of physicalism and statements of laws that allow us to distinguish governing and non-governing characterizations of physicalism in the same way we distinguish governing and non-governing characterizations of laws.

Recognizing the distinction between governing and non-governing characterizations of physicalism is valuable because it reveals novel metaphysical possibilities. We typically conceive of nonphysicalist universes as containing fundamental nonphysical phenomena. Nonphysicalist universes supposedly feature abstracta, qualia, or normative facts that stubbornly resist naturalistic reduction. Surprisingly, under a governing characterization of

physicalism, we can recognize cases of nonphysicalist universes that do not contain any such fundamental nonphysical phenomena. We can even recognize nonphysicalist universes that contain only physical phenomena.

The structure of this paper is as follows: I distinguish between governing and non-governing characterizations of physicalism in section I. In section II, I introduce the examples that divide the governing and non-governing conceptions of physicalism. These examples reveal novel nonphysicalist possibilities in which we have no fundamental nonphysical phenomena. In section III, I discuss challenges that the non-governing physicalist faces in trying to accommodate the cases in section II. Finally, in section IV, I formulate a specific version of governing characterization of physicalism. In the remainder of the paper, I focus on physicalism concerning the mental, but I expect that the discussion will extend to discussions of normativity and social objects as well.

I. Governing and Non-Governing Mindsets

One natural thought is that nonphysical facts depend on or reduce to physical facts in a physicalist world. This idea has many incarnations in the literature on physicalism, including in realization physicalism, identity physicalism, and grounding physicalism.¹ There are radical and important differences between these three characterizations of physicalism, and I do not want to defend any one over the rest. Nevertheless, to demonstrate the difference between governance and non-governance, it will be helpful to have a specific characterization of physicalism in mind. I will thus focus on grounding physicalism going forward, but I will relate the discussion to identity and realization physicalism at various points. Supervenience-based formulations are not a topic of discussion in this paper because we cannot distinguish governing and nongoverning formulations of supervenience physicalism in the same way as I suggest we can for grounding, realization, and identity physicalism.

Grounding characterizations state that physicalism obtains when nonphysical facts are fully grounded in physical facts. There are many ways to develop a conception and logic of ground, but for our purposes, ground is a transitive, asymmetric, and (hence) irreflexive relation holding between facts or pluralities of facts. Here is one formulation:

¹ For a recent articulation of identity physicalism, see Elgin (2020). For realization physicalism, see Melnyk (2003), Wilson (1999), (2011), and Shoemaker (2007). See Bryant (2020) for an overview of different varieties of grounding physicalism as well as Rosen (2010), Goff (2017), Schaffer (2017), Kroedel & Schulz (2016), and O’Conaill (2018), among others. This is just a small sampling.

Grounding Physicalism: All mental facts are fully grounded in physical facts.²

It is notoriously difficult to define ‘mental’ and ‘physical’, but I deploy the following rough characterizations: Mental facts are those positing the existence or instantiation of a mental property, relation, event, state, or object. Examples of mental facts include ‘An immaterial soul haunts the bell tower’, and ‘Bob is in pain’.

We should note that this is a more restrictive conception of a mental fact than related ones in the literature. Dasgupta states that a fact is physical just in case it only concerns physical matters.³ A fact like ‘Briana is in pain or she isn’t’ will presumably count as a nonphysical fact on Dasgupta’s conception because it concerns something nonphysical (Briana’s pain). On my conception, ‘Briana is in pain’ is a mental fact, but ‘Briana is in pain or she isn’t’ is not a mental fact because it does not commit to a mental property’s being instantiated. I believe that employing a restricted conception of a mental fact is preferable in this context because it allows us to focus on the ‘positive’ cases that have historically preoccupied philosophers of mind. When philosophers of mind have worried about whether the mental depends in the right way on the physical, they were usually thinking about the instantiation, existence, or obtaining of mental properties, objects, and states. They were not as concerned with facts that merely concern the mental. For instance, it is difficult for everyone (physicalists and non-physicalists alike) to explain in virtue of what a negative fact like ‘Disembodied souls do not exist’ obtains. But ‘Disembodied souls do not exist’ is perfectly compatible with physicalism. So, if ‘Disembodied souls do not exist’ is a mental fact, the physicalist should explain how it holds in virtue of the physical. Yet, investigating in virtue of what negative facts obtain leads us into controversial debates that are not easily resolvable. By excluding such negative facts from counting as mental facts, we sidestep those debates and focus on quintessential cases of the mental. Nevertheless, we’ll revisit my conception of a mental fact in section III.

Physical facts posit the existence or instantiation of only physical properties, states, events, and objects.⁴ While problematic to spell out precisely, I take physical properties, states, events, and objects to be ones found in our ideal

² See Bryant (2020) for an overview of grounding physicalism. Dasgupta (2014) and Goff (2017) offer versions of grounding physicalism that allow nonphysical facts to be grounded in autonomous in addition to physical facts. I discuss autonomous facts in section IV.

³ Dasgupta (2014, 561).

⁴ For discussion of the difficulty in characterizing the ‘physical’. See Ney (2008). Melnyk (1997), Montero (1999), Dowell (2006), Wilson (2006), and Stoljar (2009), Hempel (1966), and Crook (2001).

scientific theories, including physical, chemical, and neurophysical theories.⁵ I focus just on the case of mental facts, but we can extend my discussion to other types of potentially nonphysical facts, such as normative facts, social facts, or facts about abstracta.⁶

We can also extend the discussion to identity and realization characterizations of physicalism by deploying a more general characterization of physicalism as follows: Mental facts are fully grounded in, realized by, or identical with physical facts just in case mental facts are *settled by* physical facts.

Settlement Physicalism: All mental facts are settled by physical facts.

Settlement physicalism reveals an important feature shared by grounding, identity, and realization characterizations: they are all universal generalizations recognizing patterns of dependence or identity relations among individual mental and physical facts.

The formulation of settlement physicalism is unnatural. Realization and identity physicalism are typically formulated in terms of properties and states rather than facts.⁷ But formulating settlement physicalism in terms of facts is valuable because it allows us to determine how the non-governing/governing distinction impacts a variety of characterizations of physicalism.

I now introduce the distinction between governing and non-governing characterizations of physicalism:

Non-Governing Physicalism: Physicalism obtains at a world just in case the universal generalization ‘all mental facts are settled by physical facts’ is true.

Governing Physicalism: For physicalism to obtain at world, it is necessary but not sufficient that the universal generalization ‘all mental facts are settled by physical facts’ is true.

⁵ We could also adopt an alternative conception of the physical, such as Markosian’s (2000) suggestion that physical objects (and properties as well) are ones with spatial or spatiotemporal locations.

⁶ Note that, on my conception, the ‘mental’ and ‘physical’ categorizations are not exhaustive. For instance, the fact ‘disembodied ghosts do not exist’ does not posit the existence of either mental or physical entities.

⁷ For realization and identity physicalism to count as versions of settlement physicalism, we must introduce a notion of ‘fact realization’ as follows: A mental fact P is realized by a physical fact Q when the mental properties exhibited in P are physically realized by the physical properties in fact Q. And we must introduce the corresponding notion of ‘fact identity’: when Identity Physicalism obtains, every fact involving a mental state is identical with a fact involving a physical state.

Settlement and grounding physicalism automatically count as versions of non-governing physicalism because they obtain just in case all mental facts are settled by physical facts.

Governing physicalism is a negative and partial characterization of physicalism in that it doesn't tell us in virtue of what physicalism holds; it only tells us that the universal generalization is *not enough* to secure physicalism. In section V, I will develop a positive characterization of governance to accept alongside Governing Physicalism, but for now I will continue to examine the differences between governing and non-governing mindsets.

The definition of non-governing physicalism echoes the characterizations of non-governing laws of nature. Non-governing theorists about laws claim that laws of nature supervene on, are grounded in, or depend on the humean mosaic—the patterns of local property instantiations and spatiotemporal relations instantiated among spacetime points in the universe. Governing theorists, often labeled 'non-humeans', argue that laws must be something 'over and above' generalizations capturing patterns.⁸ For instance, John Carroll (1994) and Tim Maudlin (2007) consider laws to be primitive entities; accordingly, they believe laws are not reducible to or grounded in other entities. D.M. Armstrong (1983) popularized the theory that laws are brute necessitation relations holding between universals. Uniting these views under the umbrella of non-humeanism is the idea that the laws can govern, direct, or guide the progression of events but do not depend on the humean mosaic.⁹

Governing theorists about laws of nature can accept the possibility of worlds with the same humean mosaic but different laws.¹⁰ Non-governing theorists about laws deny the possibility of such worlds because they take the laws of nature holding at a world to fully depend or supervene on the humean mosaic. Carroll (1990) popularized examples of possible worlds with the same humean mosaic and different laws. I will use similar examples to support a governing conception of physicalism. I will propose that there are possible worlds containing the same "stuff" (as in all the same physical and mental objects, states, properties, and relations); yet, the worlds differ with respect to whether physicalism obtains at them. Just as Carroll's examples motivate the governing conception of laws, these examples (I allege) motivate the governing conception of physicalism.

⁸ For discussion of Humean (non-governing) theories, see (as a small sample) Lewis (1973), (1999), Beebe [2000], Loewer (2020), Miller (2014), Demarest (2017), Bhogal (2020), Dorst (2019), (2018), Jaag and Loew (2018), and Wilhelm (2022). For discussion of Non-Humean (governing) theories, see Armstrong (1983), Carroll (1994), Maudlin (2007), Hildebrand (2020), and Schaffer (2016).

⁹ Two other Anti-Humean accounts belong to Marc Lange [2009] and Alexander Bird [2005], [2007]. Lange considers laws to be dependent on certain primitive counterfactuals, and Bird offers a dispositionalist account of laws.

¹⁰ Not all non-humeans will accept that laws can differ while the mosaic remains the same. Many dispositionalists about laws count as non-humeans but take the laws of nature to be metaphysically necessary.

The primary aim of this paper is not to persuade one to adopt a governing mindset about physicalism. Philosophers are divided about governing and non-governing conceptions of laws, and I would expect them to be divided about governing and non-governing conceptions of physicalism as well. Rather, I wish to highlight a novel axis of dispute between two different approaches to metaphysical possibility in the context of physicalism. Once we acknowledge the parallel between discussions of physicalism and discussions of laws of nature, we will have new options for formulating physicalism. The new formulations differ from extant ones in their logical structure, explanatory bases, and governing potential.

I. The Spooky Worlds

I now introduce two examples—inspired by Carroll’s (1990) examples supporting a governing conception of laws of nature—that demonstrate the difference between governing and non-governing characterizations of physicalism.

We have two possible worlds, w_{1*} and w_{2*} , in which the mental facts are fully grounded in physical facts. Both worlds contain conscious beings (humans, octopuses, owls, etc.) with mental properties, and facts involving the mental are fully grounded in physical facts. There is also a spatiotemporal region in each world, call it ‘Aquazone’, that is devoid of mental and neural entities altogether. Aquazone is also devoid of H_2O molecules. In w_{1*} , Aquazone is special. Were H_2O molecules to enter Aquazone, then fundamental mental entities—call them ‘ghosts’—would come into existence.

Aquazone in w_{1*} is a potentially ghostly realm in the sense that, were H_2O molecules to enter it, then fundamental mental entities would subsequently exist.¹¹ There are different ways the fundamental mental entities may come into existence: perhaps the ghosts *metaphysically emerge* from the H_2O molecules in the Aquazone yet still count as fundamental (see Barnes [2012]).¹² Or perhaps the H_2O molecules merely cause the ghosts to come into existence. Either way, if H_2O molecules had entered Aquazone, then grounding physicalism would have failed to hold; there would be ungrounded mental facts. But, as it happens, no H_2O molecules enter Aquazone in w_{1*} . All the mental facts in w_{1*} remain grounded in physical facts—or so I will suggest below.

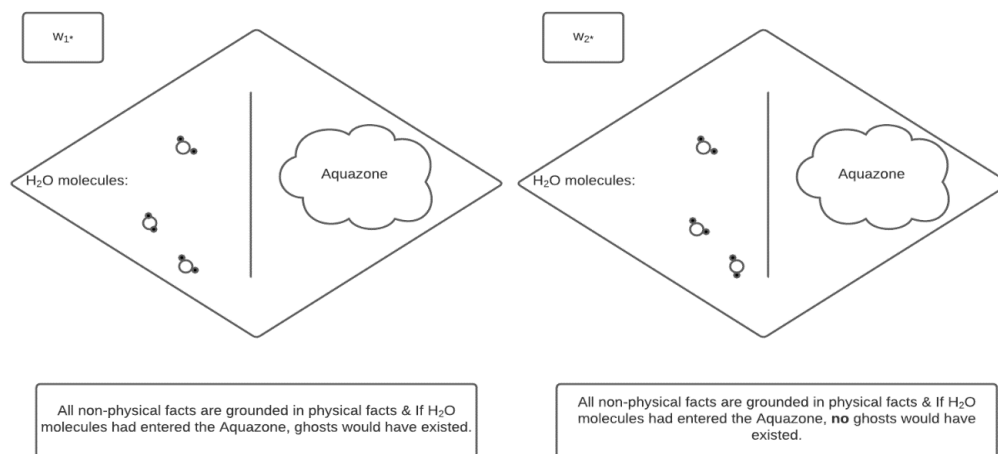
Now, let’s compare w_{1*} with w_{2*} . w_{2*} is a world more like a quintessential physicalist world. While w_{2*} technically contains an Aquazone—a spatiotemporal region lacking mental entities, neural entities, and H_2O

¹¹ The entities are fundamental in the sense that they appear in fundamental facts.

¹² For discussion of emergentism, see (as a sample) Barnes [2012] as well as Baysan and Wilson (2017), Wilson (2021), and Taylor (forthcoming).

molecules—there is nothing special about this spatiotemporal region in w_2^* . Were H_2O molecules to enter Aquazone in w_2^* , no fundamental mental entities would come into existence. There would just be water in Aquazone. As in w_1^* , the mental facts are fully grounded in physical facts in w_2^* . Grounding physicalism obtains in w_2^* as well. Worlds w_1^* and w_2^* are depicted in figure 1.

Figure 1:

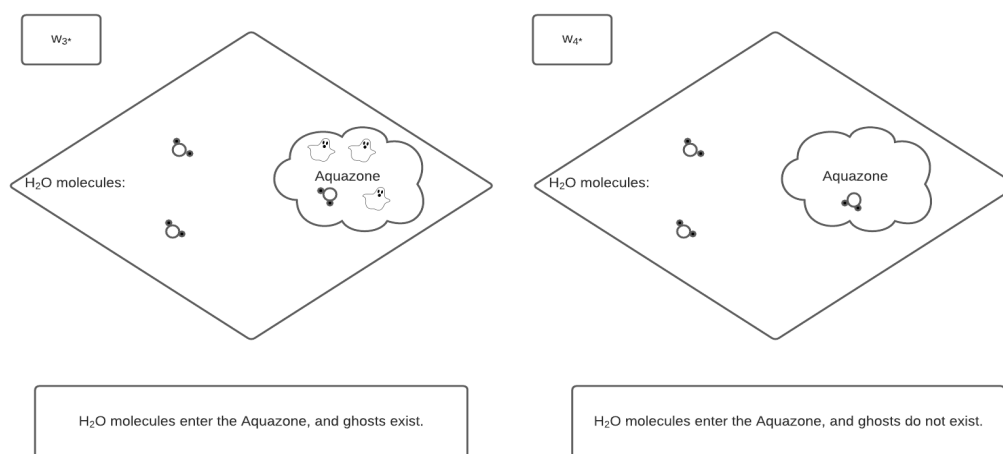


The mental facts are fully grounded in the physical facts in both w_1^* and w_2^* . Nevertheless, w_1^* is not a physicalist world because it is only a matter of luck that all the mental facts are fully grounded in physical facts in w_1^* . If an H_2O molecule had drifted into Aquazone, then ghosts would have existed. This situation differs dramatically from that of w_2^* wherein the mental facts are grounded in the physical facts, and this is a stable feature. Had H_2O molecules entered w_2^* 's Aquazone, the mental facts would *still* be grounded in the physical facts.

A parallel pair of worlds (figure 2) illustrates the difference between w_1^* and w_2^* . Suppose the reason why the H_2O molecules never enter the Aquazones of w_1^* and w_2^* is that there are eternal deflector shields bouncing the H_2O molecules away from Aquazone (the deflector shields are pictured as vertical lines in figure 1). If physicalism is contingent, then there is some spooky possible world that's like w_1^* but with no deflector shields. In that nonphysicalist world, call it w_3^* , H_2O molecules successfully drift into the Aquazone and ghosts come into existence. Now let's ask, from the perspective of w_3^* , what would have happened if a deflector shield had impeded H_2O molecules from entering Aquazone? We would have the ghostless world of w_1^* . But presumably the mere fact that w_1^* contains a deflector shield would not render w_1^* physicalist. It is a cosmic fluke that the deflector shield was present, ensuring that w_1^* is ghostless. And since the lucky presence (or absence) of a deflector shield shouldn't make a difference whether w_1^* and w_3^* are physicalist or not, w_1^* is physicalist iff w_3^* is.

Likewise, we can imagine a physicalist world that is similar to w_2^* , call it w_4^* , where H_2O molecules enter Aquazone and nothing spooky happens. Worlds w_3^* and w_4^* are depicted in figure 4. From the perspective of w_4^* , we could ask what would happen if there was a deflector shield present. If w_4^* is physicalist, then so must be the world with the deflector shield (w_2^*). If we take the worlds without deflector shields to differ with respect to whether physicalism holds in them, we should take worlds with deflector shields (w_1^* and w_2^*) to differ with respect to whether physicalism obtains in them as well: w_1^* is nonphysicalist while w_2^* is physicalist.

Figure 2:



II. Counterfactuals and laws as a guide to nonphysicalism.

In virtue of what is a world like w_1^* nonphysicalist? I suggest that w_1^* is nonphysicalist because it supports what I call ‘ghostly counterfactuals’. If the physical events had been different in that the trajectories of various molecules and particles had been modestly altered, ghosts would have existed.

A **Ghostly Counterfactual** is a counterfactual whose antecedent describes only a physically possible distribution of physical matter and whose consequent affirms the existence of ghosts.¹³

¹³ This example is similar to cases that challenge supervenience-based physicalism, where Supervenience Physicalism roughly maintains that if worlds are physical duplicates, then they are duplicates simpliciter. Kim (1993) recognized that this formulation of supervenience-based physicalism only tells us that physicalism obtains when *exact* duplicates agree on their mental facts. But what about worlds that involve slight changes in their physical facts (say an additional ammonium molecule)? Shouldn’t our account of physicalism accommodate such worlds as well? There are also challenges to Supervenience Physicalism involving the possibility of worlds where all the physical facts

Ghostly counterfactuals are problematic for non-governing versions of physicalism. As I've suggested, there are reasons to think that w_{1*} is not a physicalist world, and yet all the mental facts in w_{1*} are settled by (in particular, grounded by) physical facts. Non-governing physicalism cannot capture why w_{1*} is not a truly physicalist world because all the mental facts are grounded by physical facts at w_{1*} . But, even if all facts are grounded by physical facts, that is not sufficient for a world to be physicalist according to governing physicalism, the latter is compatible with w_{1*} not being a physicalist world.

At this point, you should inquire about the ghostly counterfactual itself. Isn't the ghostly counterfactual a mental fact? If so, the ghostly counterfactual may render w_{1*} nonphysicalist if the ghostly counterfactual is not grounded in physical facts. Even though the ghostly counterfactual concerns mental entities (ghosts), it is not a mental fact according to the characterization of mental facts from section I. Ghostly counterfactuals do not posit the existence of ghosts. They only say that in certain situations ghosts would exist. So, at present, this response is unavailable to the grounding physicalist. In the next section, we will revisit my characterization of a mental fact to determine whether adopting a new characterization of mental facts can aid non-governing physicalism.

There is another related example that highlights the difference between governing and non-governing conceptions of physicalism. Although we did not describe w_{1*} and w_{2*} as having the same humean mosaic, there are cases where we can so stipulate. Suppose we have another possible world, w_{5*} , where again all mental facts are grounded in physical facts. Like w_{1*} , w_{5*} also has a special spatiotemporal region called 'Cactuszone'. Cactuszone is a spatiotemporal region containing a garden with various types of cacti. The following psychophysical law obtains at w_{5*} :

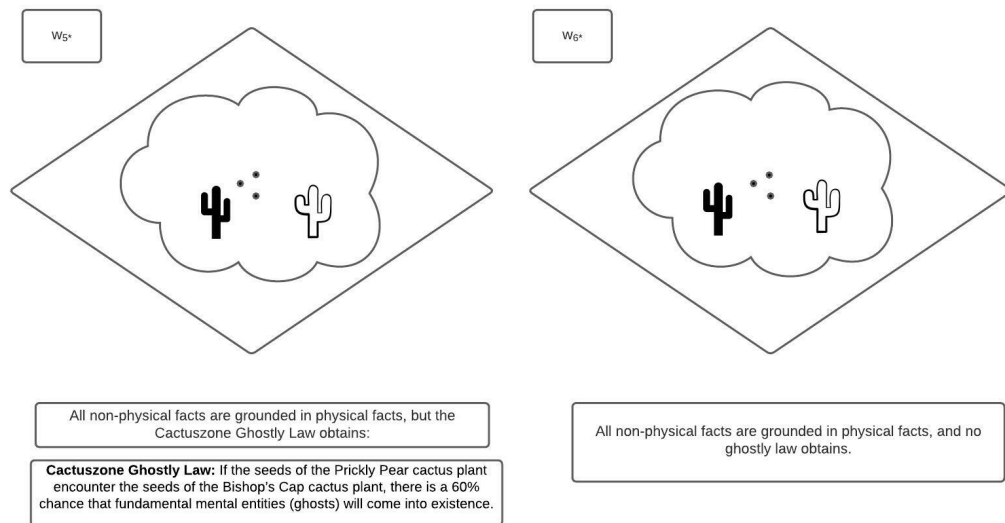
Cactuszone Ghostly Law: If the seeds of the Prickly Pear cactus encounter the seeds of the Bishop's Cap cactus, there is a 60% chance that fundamental mental entities (ghosts) will come into existence.

of this world obtain but there are additional 'blockers' that prevent mental facts from obtaining. See Hawthorne (2002) and Leuenberger (2008). These discussions of Supervenience Physicalism are similar to my discussion here in that they invoke worlds in which there are minor physical changes; nevertheless, the characterization of physicalism in question struggles to accommodate our physicalist or nonphysicalist intuitions about the worlds. The import of those cases differs from the import of mine: they mean to show that certain characterizations of physicalism cannot capture our intuitions that the worlds with slight changes can still be physicalist. The import here is that we can have multiple worlds that are completely alike with respect to their physical and mental facts yet differ with respect to whether physicalism is true at them. Adam Pautz also informs me that similar cases can be found in his dissertation. Please see Pautz (2004).

This is a hypothetical, far-fetched psychophysical law that highlights the non-humean elements of the example. As with the ghostly counterfactuals of the previous example, there is an issue whether the Ghostly Cactuszone Law itself should count as a mental fact, but let's set that aside until the next section.

The Cactuszone Ghostly Law governs w_{5*} , and the seeds of the Prickly Pear and Bishop's Cap come into contact at w_{6*} . Somewhat improbably, no ghosts come into existence. There was a 40% chance that ghosts wouldn't come into existence, and ghosts in fact did not come into existence. Thus, all the mental facts at w_{5*} remain grounded in the physical facts at w_{5*} . Contrast w_{5*} with w_{6*} , where the humean mosaic and the pattern of grounding relations are the same as in w_{5*} . The only difference is that the Cactuszone Ghostly Law does not obtain in w_{6*} —nor does any psychophysical law like the Cactuszone Ghostly Law. From the perspective of w_{6*} , no interactions among plant seeds could lead to the existence of ghosts. See figure 3.

Figure 3:



From a governing perspective, there is a clear contrast between w_{5*} and w_{6*} . w_{6*} is a physicalist world while w_{5*} is not. If your intuitions are not clear in the case of w_{5*} , we can generate variants of the Ghostly Law that feature even greater probabilities of ghosts coming into existence: suppose there's a 90%, 95%, or 99.999999% chance that ghosts come into existence when the seeds are in contact. Surely, even though ghosts did not come into existence at w_{5*} , the fact that there was a 99.999999% chance that they would indicates that w_{5*} is not a physicalist universe. Nevertheless, the mental facts are grounded in the physical facts at both worlds. We should conclude that possible worlds in which ghostly laws obtain are nonphysicalist universes. As with ghostly counterfactuals, we can provide a more general definition of a ghostly law:

A **Ghostly Law** is a psychophysical law that affirms the non-zero probability of the existence of ghosts.

The Cactuszone case differs from the Aquazone case insofar as the Cactuszone case, with its governing psychophysical law, makes it explicit that the mosaic and the pattern of grounding relations alone cannot determine whether the world is physicalist. We must assess which psychophysical laws obtain in the worlds to determine whether or not the worlds are physicalist.

We can extend this discussion to settlement physicalism by replacing the pattern of grounding relations with identity or realization relations above. The upshot is that, according to a governing mindset, w_{1*} and w_{5*} are nonphysicalist universes where all mental facts are settled by physical facts, and settlement physicalism cannot deliver the correct verdicts about which universes are physicalist.

III. Responses to the Aquazone and Cactuszone Cases

The Aquazone and Cactuszone cases challenge settlement physicalism because they present worlds where all mental facts are settled by (grounded by) physical facts; yet, the worlds are not physicalist. Different responses to the cases arise depending on our modal commitments and on our understanding of physicalism. I briefly explore three responses to the cases. The first two responses articulate ways to uphold settlement physicalism—and thus, the non-governing conception of physicalism—in light of the cases. I highlight costs of adopting these responses before articulating a third response, which calls for a governing conception of physicalism. But my aim is exploratory: I am uncertain that the third response is all things considered preferable to the other two. I aim to open the door to further discussion.

A. Response 1: All the worlds in question are physicalist.

One response on behalf of the settlement physicalist is to insist that every world in contention is physicalist because none contain ungrounded or unsettled mental facts. w_{1*} and w_{5*} do not contain any mental fundamentalia. If both w_{1*} and w_{5*} should count as physicalist, we have not violated settlement physicalism. However, reflecting on why we care about physicalism will reveal that this response is unpersuasive.

One reason to care about physicalism arises from our desire to understand our own natures and the nature of our surroundings. In pursuit of this end, we need to know which investigative tools will help us discover these natures. If we are not purely physical entities, and mental facts are fundamentally nonphysical, this indicates that scientific investigations—given that they are directed at the physical—will not deliver knowledge of our ultimate natures and how we fit into our surroundings. If physicalism obtains, then scientific

tools and methods should (at least in principle) be reliable guides to understanding the grounds of nonphysical facts.

We can now see why w_{1*} and w_{5*} are nonphysicalist. While there are no ghosts or fundamental mental entities in w_{1*} or w_{5*} , there easily could have been. Consequently, our scientific tools and methods are unreliable guides to the grounds of mental facts in those worlds. In a physicalist world, one could (at least in principle) develop reliable scientific tools that tell us about the grounds of mental facts and nature of mental entities. Thus, we should take w_{1*} and w_{5*} to be nonphysicalist.

B. Response 2: The Aquazone and Cactuszone Worlds do not violate Settlement Physicalism

A second response agrees that the worlds are metaphysically possible, agrees that w_{1*} and w_{5*} are nonphysicalist, but denies that w_{1*} and w_{5*} challenge settlement physicalism. This response is viable but laborious. Perhaps settlement physicalism should treat w_{1*} and w_{5*} as nonphysicalist because ghostly laws or counterfactuals obtain in them. To clarify, here are the target facts in w_{1*} and w_{5*} :

Aquazone Ghostly Counterfactual (obtains at w_{1*}): If H_2O molecules had entered Aquazone, then ghosts would have come into existence.

Cactuszone Ghostly Law (obtains at w_{5*}): There is a 60% chance that ghosts will come into existence if the seeds of the Prickly Pear and Bishop's Cap cacti come into contact.

This is exactly what any physicalist should say: a world where ghostly laws or counterfactuals obtain is a nonphysicalist world. But *how* can the settlement physicalist say this? While the ghostly laws and counterfactuals are facts concerning mental entities (ghosts), they do not posit the existence of ghosts. So, they do not count as mental facts under our characterization of mental facts from section I.

The settlement physicalism has a response. They can treat ghostly laws and counterfactuals as mental facts by endorsing the alternative conception of a mental fact discussed above: A fact is mental iff the fact concerns mental properties, states, or objects. On this alternative characterization, ghostly laws and counterfactuals are mental facts because they concern disembodied ghosts.

But it is not just the obtaining of ghostly laws and counterfactuals that can render a universe nonphysicalist according to settlement physicalism. Focusing on grounding physicalism: if ghostly counterfactuals and laws are grounded in physical facts, then their presence is compatible with grounding physicalism.

In other words, the grounding physicalist can only treat w_{1*} and w_{5*} as nonphysicalist if ghostly laws or counterfactuals are not grounded in physical facts. That's not inherently problematic. Perhaps the settlement physicalist will claim that ghostly laws and counterfactuals are metaphysically fundamental in w_{1*} and w_{5*} . Thus, both worlds are nonphysicalist because they contain fundamental mental facts.

But a complication arises. Under this new characterization of a mental fact, we will have many more mental facts than we previously did. It will be difficult to find physical grounds for many of those mental facts even though those mental facts will be intuitively compatible with physicalism.

Take the following facts:

(A) Negative Ghosts: Ghosts do not exist.

(B) The Ghost Driver: If ghosts were to drive cars, then ghosts would be required to get Class C drivers' licenses.

(C) Mental Essence: The essence of pain is a physical state.

Facts (A)-(C) are physicalist-friendly in that they can obtain in physicalist worlds. Nevertheless, on our new conception of mental facts, they are mental facts because they concern mental entities. Given that the above facts can obtain in physicalist worlds, facts (A)-(C) cannot—by the lights of settlement physicalism—be fundamental in physicalist worlds.

The proponent of grounding physicalism has a big task ahead: they must show how ghostly laws and counterfactuals are incompatible with physicalism while facts (A)-(C) are compatible with physicalism. To demonstrate that difference, they must explain how facts (A)-(C) are grounded in a different way than ghostly counterfactuals and laws are grounded.

Those working on grounding physicalism are aware of the problem of determining in virtue of what basis facts such as (A)-(C) hold, and they have replies. For instance, to accommodate how Mental Essence obtains in a physicalist world, Dasgupta introduces a new status of fact. In addition to fundamental (ungrounded) and grounded facts, Dasgupta believes there is a class of facts unsuitable for being grounded in the first place. He calls facts that are suitable for being grounded, 'substantive' and facts unsuitable to being grounded, 'autonomous'.¹⁴ Dasgupta believes that Mental Essence belongs to the realm of autonomous facts. He proposes a corresponding statement of physicalism:

¹⁴ See Raven (2021) for another way of addressing the status of essence facts. See Glazier (2016) and Raven (2020) for objections to autonomous facts.

Weak Physicalism: All substantive non-physical facts are grounded in physical or autonomous facts.

A world where Mental Essence obtains can be physicalist if Mental Essence is autonomous. But once we've introduced the notion of an autonomous fact, what's to stop facts like ghostly laws and ghostly counterfactuals from being autonomous as well? Even Dasgupta acknowledges the possibility that laws of metaphysics could count as autonomous—in which case the Cactuszone Ghostly Law may very well count as autonomous and world w_{5*} may count as weakly physicalist (contrary to our intuition that w_{5*} is nonphysicalist).¹⁵

¹⁵ The proponent of autonomous facts has more to say here. Dasgupta (2014) also formulates *Moderate Physicalism*. Moderate Physicalism will more straightforwardly count w_{1*} and w_{5*} as nonphysicalist.

Moderate Physicalism: (i) Weak Physicalism is true, and (ii) all autonomous facts help underwrite the kind of grounding explanations required by Weak Physicalism.

By 'help underwrite', Dasgupta means there is a metaphysically possible world in which the autonomous facts help 'ground an explanation of consciousness in physical terms'. Dasgupta adds, '[A]n explanation of consciousness in physical terms might proceed in stages, first explaining it in biological terms and then in chemical terms and finally in physical terms. A fact that helps ground any of these intermediary stages would "help underwrite" a physicalist explanation, as I use the phrase'. So, any autonomous fact that explains how physical, biological, or chemical facts ground consciousness facts—or explains how biological or chemical facts are grounded in physical facts—counts as satisfying clause (ii) above.

Moderate Physicalism avoids treating w_{1*} and w_6 as physicalist because there may be autonomous facts (such as the Aquazone Ghostly Law or Cactuszone Ghostly Counterfactual) that do not 'underwrite' the grounding explanations required by physicalism. But Moderate Physicalism is too strong. In certain physicalist scenarios, some autonomous facts will not underwrite the grounding explanations required by Grounding Physicalism. Raven (2021) recently discusses the essences of social objects. Here are two of his examples involving the essences of social objects:

The United States Congress is essentially bicameral.

The Korean D.M.Z. is essentially unfortified.

Presumably, these autonomous facts can obtain in an intuitively physicalist world—one in which all nonphysical facts are grounded in the physical or autonomous. But it's not clear that either fact will help underwrite the grounding connections between physical and nonphysical facts. These facts are not like 'Facts involving conscious states are essentially grounded in facts involving physical states'. They contain no information linking the physical and nonphysical realms. Given that a world can be intuitively physicalist even if such facts obtain, we should reject Moderate Physicalism.

The proponent of settlement physicalism must ensure that whichever tools they deploy to establish that (A)-(C) are compatible with physicalism don't also allow that ghostly counterfactuals and laws are compatible with physicalism. The objective is to find a principled basis on which to count mental facts like ghostly counterfactuals and laws to be metaphysically fundamental yet deny that mental facts like (A)-(C) are fundamental. While this endeavor is worthy of pursuit, I think a more straightforward way to accommodate the Aquazone and Cactuszone examples is to retain our conception of mental facts from section I and adopt a governing conception of physicalism. Another advantage of adopting a governing conception of physicalism is that it will allow us to avoid positing a new status of fact (such as autonomous facts). In the next section, I develop a version of governing conception of physicalism and show how it generates the right results for the examples above.

IV. Response 3: Physicalism as a Governing Thesis

We have examined cases in which all mental facts in a universe are settled in physical facts, but we still consider the universe to be nonphysicalist. These cases pose a *prima facie* challenge to settlement physicalism.

Let's quickly examine one tempting but in my mind non-ideal way to modify Settlement Physicalism. Perhaps, for a world *w* to count as physicalist, not only must all mental facts be settled by physical facts in *w* but in all the worlds in *w*'s "inner sphere" as well.¹⁶ World *w*'s "inner sphere" is the set of the closest possible worlds to *w*. On this amended characterization of Settlement Physicalism, the Aquazone world and the Cactuszone world should no longer count as physicalist because they both of their inner spheres contain worlds in which not all mental facts are settled by physical facts.

My concern is that we may just get "lucky" that a world's inner sphere contains no ghosts (or fundamental mental entities). Perhaps the existence of ghosts is incompatible, let's say, with the laws of nature that hold at *w*, but—were the laws tweaked slightly—ghosts would come into existence. In that case, *w*'s inner sphere is presumably clear of ghosts (depending on how we understand what constitutes the inner sphere), but it's still not clear that *w* is physicalist. I think there is a more straightforward way to modify Settlement Physicalism to rule out Aquazone and Cactuszone worlds from counting as physicalist.

I now offer a way to develop a governing mindset about physicalism that accommodates the Aquazone and Cactuszone examples. Let's return to discussing grounding physicalism. While the Aquazone and Cactuszone examples present challenges to settlement physicalism, and grounding

¹⁶ See Lewis (1994) for discussion of "inner spheres." Thank you to Adam Pautz for pointing out the relevance to my project.

physicalism specifically, I have not questioned the viability of ground or the grounding relation. Some objections to grounding physicalism question whether ground has the appropriate structural features for characterizing physicalism.¹⁷ I do not take a stand on those objections here. Instead, I assume that the grounding physicalist's characterization of physicalism may be on the right track, but certain governing elements are missing. Likewise, we can construct governing conceptions of identity and realization physicalism without questioning the applicability of the identity and realization relations.

Grounding physicalism is imbued with characteristically non-governing features. First, like non-governing laws of nature, grounding physicalism takes the form of a universal generalization. Second, grounding physicalism is supposed to obtain wholly in virtue of patterns of individual grounding facts (perhaps along with a totality fact) similar to how non-governing laws of nature are supposed to obtain in virtue of the Humean mosaic (together with a totality fact). As a reminder, grounding physicalism is a universal generalization that is true in both w_{1*} and w_{2*} as well as in both w_{5*} and w_{6*} . But only w_{2*} and w_{6*} are physicalist universes. To avoid problematic examples, we can reject that the statement of physicalism is just a universal generalization summarizing patterns of grounding relationships in a world. We must also know which counterfactuals are supported at a world to determine whether the world is physicalist.

We can accommodate the problematic cases by reconsidering both the logical form of the statement of physicalism and the explanatory basis of physicalism. There are many ways to develop the idea, but I will explore just one implementation here. The primitivist about laws of nature denies that laws take the form of universal generalizations.¹⁸ Instead, there is an irreducible law operator (LAW) that ranges over the universal generalization in a primitivist law of nature. For example, where the non-governing theorist would take a deterministic law of nature to have the following form:

$$(\forall x)(Fx \supset Gx)$$

stating the regularity that all Fs are Gs, the primitivist would formulate the same law of nature as follows:

$$\text{LAW}(\forall x)(Fx \supset Gx)$$

While a universal generalization appears under the scope of the law operator for the primitivist, the primitive law of nature is neither fully nor partially grounded in the universal generalization. The primitivist about laws of nature typically denies that there is anything in virtue of which the fundamental laws of nature hold.

¹⁷ See Wilson (2016), Jenkins (2011), and Sassarini (2021) for criticism along these lines.

¹⁸ See Carroll (1994) and Maudlin (2007) for primitivism about laws of nature.

We can modify grounding physicalism in a primitivist fashion as well. Instead of taking the statement of physicalism to have the form of a universal generalization, we characterize physicalism as follows:

Nomic Grounding Physicalism: LAW_p (all mental facts are grounded in physical facts).

We can straightforwardly extend this to a more general formulation of nomic settlement physicalism.

Nomic Settlement Physicalism: LAW_p (all mental facts are settled by physical facts).

I've now added a primitive law operator. The subscript, ' p ', indicates that it is not a *law of nature* operator. Instead, this operator indicates that we have a primitive metaphysical law connecting the physical and psychological realms. That is, the statement of physicalism should itself be seen as a primitive metaphysical, psychophysical law.

Nomic grounding physicalism—like primitivist non-humean laws of nature—will support certain counterfactuals and not others. On Maudlin's primitivist account of laws of nature, to determine whether certain (physics-relevant) counterfactuals are true, we follow a three-step process or 'recipe'. Here is how Maudlin assesses the truth of the counterfactual 'Had the uranium been replaced with titanium in the atom bomb, it would not have exploded when dropped in 1945':

Here is the recipe. Step 1: choose a Cauchy surface that cuts through the actual world and that intersects the bomb about the time it was released from the plane. All physical magnitudes take some value on this surface. Step 2: construct a Cauchy surface just like the one in Step 1 save that the physical magnitudes are changed in this way: uranium is replaced with titanium in the bomb. Step 3: allow the laws to operate on this Cauchy surface with the new boundary values generating a new model. In that model, the bomb does not explode. Ergo (if we have got the laws right, etc.) the counterfactual is true. (22-23)

In other words, we first take a Cauchy surface—roughly the GTR equivalent of a time slice of the universe—of the actual world. Then we change the physical features in the way specified by the antecedent of our counterfactual, and finally, we allow the laws to 'operate' on this modified surface to determine whether the consequent is true in the resulting model. By 'allow the laws to operate', Maudlin means we now follow the (spatio)temporal evolution of events that must transpire in accordance with deterministic laws.

We can follow a similar recipe, with modifications, when analyzing whether various psychophysical counterfactuals are true. We can follow Maudlin in steps 1 and 2, finding the relevant Cauchy surface and modifying the properties as stipulated in the antecedent of the counterfactual. Importantly, the parameters of this Cauchy surface will not yet be ‘metaphysically complete’. While we have modified the properties in the way specified by the antecedent of the counterfactual, we will need to use the psychophysical laws to determine what other properties the Cauchy surface has. To see this, let’s imagine a counterfactual that posits a new conscious entity—say, an additional person—residing in Los Angeles. Taking nomic grounding physicalism to be true, consider the following counterfactual:

If there had been an additional conscious person in Los Angeles at sunrise on June 18, 2023, then facts involving that person’s conscious states would be grounded by physical facts.

First, we take an actual-world Cauchy surface that intersects the Los Angeles sunrise on June 18, 2023. Then we modify it by inserting additional mental properties being instantiated in Los Angeles. Having done so, we consult the psychophysical laws to determine what other features the Cauchy surface has. In this case, nomic grounding physicalism requires that—because there are additional mental facts in this new Cauchy surface—there must be physical facts that ground those mental facts. Presumably, the new Cauchy surface must differ from the original in that it will involve both new mental features and new physical features, as well as new mental and new physical facts obtaining at it. nomic grounding physicalism thereby declares the above counterfactual to be true.

We will *also* allow the metaphysical laws to operate on the new Cauchy surface in the same way that Maudlin’s primitivist laws are intended to do. Doing so requires us to deploy both the metaphysical laws and the laws of nature to assess the truth of the counterfactual in question. That is, when assessing counterfactuals that involve spatiotemporal passage, we follow the spatiotemporal evolution of events from the new Cauchy surface in accordance with the psychophysical laws and laws of nature. Take the counterfactual:

If there had been an additional conscious person in Los Angeles at sunrise on June 18, 2023, then facts involving their conscious states would still be grounded by physical facts at the LA sunset on June 18, 2023.

Here, we perform steps 1-3 in the same way we do with the previous counterfactual, but we also ‘allow the laws’ to follow the spatiotemporal evolution of the universe. In doing so, we’ll see that (according to the laws of nature) the physical entities existing at sunrise still exist at sunset. Moreover, according to the psychophysical laws, the conscious states are *still* grounded in physical facts at sunset. Just as Maudlin’s original recipe does not provide a

complete account of counterfactuals, neither does this variant. But at least we have a sketch of how to assess counterfactuals when we treat physicalism as a nomic thesis.

Nomic grounding physicalism can now distinguish between w_{1*} and w_{2*} and between w_{5*} and w_{6*} . In w_{2*} (the intuitively physicalist world), nomic grounding physicalism obtains, and the following statement is true at w_{2*} : LAW_p (all mental facts are grounded by physical facts). Hence, the Aquazone Ghostly Counterfactual is false at w_{2*} . As a nomic thesis, nomic grounding physicalism supports *physicalist* as opposed to ghostly counterfactuals, just as LAW_1 supports spin up rather than spin down counterfactuals. And while the universal generalization ‘All mental facts are grounded in physical facts’ obtains at w_{1*} , nomic grounding physicalism does not obtain at w_{1*} . Perhaps another psychophysical law obtains at w_{1*} , call it the ‘Aquazone Ghostly Law’, stating that ghosts will exist if any H_2O molecules enter the Aquazone. The Aquazone Ghostly Law would support ghostly counterfactuals. Because nomic grounding physicalism supports physicalist counterfactuals, the Aquazone Ghostly Law is incompatible with nomic grounding physicalism. We can now distinguish w_{1*} and w_{2*} by appealing to their nomic bases. Nomic grounding physicalism can distinguish w_{5*} and w_{6*} in a parallel way. Because the Cactuszone Ghostly Law obtains at w_{5*} and is incompatible with nomic grounding physicalism (the ghostly law and nomic grounding physicalism support incompatible counterfactuals), nomic grounding physicalism is false at w_{5*} . Thus, w_{5*} is a nonphysicalist world.

A primary aim of this paper was to distinguish two mindsets towards physicalism, the governing and non-governing mindsets. We have seen how acknowledging this distinction allows us to recognize examples of intuitively nonphysical worlds containing no mental fundamentalia. One way to develop a governing mindset about physicalism—the nomic account of physicalism—is to take the statement of physicalism itself to be a type of governing law. If physicalism holds *as a law* in a universe, then that universe will not support ghostly laws or ghostly counterfactuals.

Treating the statement of physicalism to have the form of a law raises a flurry of important questions. If nomic grounding physicalism is a law of metaphysics, then what kind of modal strength does it have? And are we *forced* to take nomic grounding physicalism to be a primitive or fundamental fact in worlds where it obtains? Alternatively, perhaps nomic grounding physicalism could obtain in virtue of facts about essences or dispositions. I don’t have answers to these questions, but I hope that distinguishing a parallel between governing conceptions of laws and governing conceptions of physicalism encourages future exploration.

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