Against non-reductive physicalism

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Published in *The Blackwell Companion to Substance Dualism*

1. Introduction

What sort of thing are you? One way to think about this question is in terms of your *fundamental nature*. What are the fundamental elements which make you *you*?

The answers on the market divide into two main options. First, there is the *physicalist* option: at the foundation of your nature are physical states of physical things—like particles or fields. On this view, all your thoughts and feelings are either identical with or grounded in physical states. Second, there is the *basic mentality* option: at the foundation of your nature is a conscious substance. On this view, your fundamental nature is witnessed most clearly and accurately from a first-person perspective. You are just what you seem to be when you focus inwardly upon yourself as the bearer of your conscious experiences.[1]

My purpose in this chapter is to develop an argument in support of the basic mentality thesis. I will focus on the nature of *thinking*. I'll argue that thoughts are fundamentally mental—i.e., not physical nor grounded in the physical. I will develop my argument over the course of two sections. In the first section, I'll construct a "counting" argument that poses a problem for the identity (mental = physical) thesis. Then, in the second section, I'll extend the "counting" argument in a way that exposes a problem for the dependence (mind *grounded in* physical) thesis. In the final section, I will defend the basic mentality thesis by considering the main arguments for standard physicalism (reductive or non-reductive). The upshot will be that the usual considerations in support of standard physicalism are fully compatible with the basic mentality thesis, whereas standard physicalism is incompatible with the counting principles in my argument. These results, if correct, add weight to the classical option that you are fundamentally a mental substance rather than a physical phenomenon.

2. A Problem with Identity

In this section, I shall pose a "counting problem" for the identity thesis that mental reality (thinking, feeling, or intending) is physical.

Before we get into the argument, let us get clearer on what it might mean to say that mental reality is *physical*. When I use the term "physical reality," I have in mind a complete characterization of every physical property (relational and non-relational) of everything that exists. The term "physical property" is a term of art, but as a first pass, I intend to mean *whatever it is* that physicalists mean when they use the term "physical property". Here is a fuller account: a physical property is any property that (i) can be sensed—in principle—from a "third-person" perspective, using any of the five sense, or (ii) is analyzable wholly in terms of such properties. On this definition, physical properties include, for example, shape, size, motion, quantity, vibration, force, and so on. I also include among physical properties any complex properties which are fully analyzable in terms of more basic physical properties and relations. This definition accounts for paradigm cases of physical properties. And, as far as I see, my definition successfully excludes paradigm non-physical properties.

My definition of "physical property" is intended to account for a central usage of the term in the context of the philosophy of mind. That isn't to say, however, that there aren't other legitimate usages of "physical property." John Searle (2004), for instance, uses the term to include macro-level mental features which he thinks are irreducible to third-person "physical" properties (not even to third-person *macro* physical properties). Thus, Searle's notion of "physical" includes mental properties which dualists have typically labelled "non-physical." To avoid talking past each other, I stipulate that my use of the term "physical" applies more narrowly to *third-person* physical properties (as explained above), whether macro or micro.[2]

Let us turn now to the question at hand: is our mental life physical? Elsewhere, I introduced a counting argument against reducing mental properties to physical properties (Rasmussen 2015). I will offer a new, expanded version of that argument here.

The basic strategy of a counting argument is to show that there is a greater quantity of members of the one category than of some other. To illustrate, consider the categories *integers* and *reals*. These categories both have infinitely many members. But as Cantor famously showed, there is a mathematical sense in which there are more reals than integers: the infinity of reals is greater than the infinity of integers (Halmos 1960). So, although it may already seem intuitively obvious that reals and integers form non-identical categories, we also have counting argument against identity.

Interestingly, we can develop a counting argument against the identity of *mental* and *physical* properties. The argument has two steps. The first step is to show that there are more mental properties than physical properties. This step allows us to infer that the class of mental properties is not the same as the class of physical properties. The second step makes use of a principle of uniformity, which says that mental properties, whether instantiated or not, are categorically alike. From uniformity, we infer the target conclusion: mental properties are categorically different from—and so irreducible to—physical properties.

We may outline the argument as follows:

A1. There are more mental properties than physical properties, where 'properties' ranges over all conceivable properties.

A1a. There are more *plurals* of physical properties than physical properties.

A1b. There is at least one mental property for each plural of physical properties.

A2. If there are more mental properties than physical properties, then some mental properties are non-physical.

A3. Therefore, some mental properties are non-physical.

A4. If some mental properties are non-physical, then all mental properties (or all of a certain class) are non-physical.

A5. Therefore, all mental properties (or all of a certain class) are non-physical.

Before we consider reasons in support of the premises, a few clarifications are in order. First, when I say there are more mental properties, I do not mean that there are more *actually instantiated* mental properties. So far I'm only concerned with the *nature* of mental properties themselves, not with their exemplification conditions. Consider by comparison that there are more real numbers than integers *whether or not* all reals are actually exemplified. In fact, we don't even need to assume that unexemplified numbers actually exist (such as in Plato's heaven) in order to run a counting argument with respect to numbers; their conceivability, or definability, is enough. Similarly, we don't need to assume that unexemplified mental properties exist in order to run a counting argument with respect to them; their conceivability, or definability, is enough for our purposes.

Second, when I talk of properties, I intend to be neutral with respect to debates over the existence of abstract objects. Identity theorists who think that mental properties are physical properties presumably have some way of understanding property talk, whether or not they happen to believe in abstract objects. Nominalists are welcome to plug in their favorite nominalist translation or paraphrase.

Let us now consider why one might accept the premises of my counting argument. Start with A1: why think there are more mental properties than physical properties? My reason is based upon a procedure for constructing complex mental properties out of more basic ones. To achieve more mental properties than physical properties, we use a building procedure for identifying conceivable mental properties in terms of physical properties. Here is an example: given any plurality of physical properties, let M be the property of *thinking that those properties are physical*.[3] The result is that there are at least as many mental properties as *plurals* of physical properties. Next, we observe that there are more plurals of physical properties than particular physical properties. This result follows from a "plural" version of Cantor's theorem according to which there are more

plurals than *particulars*.[4] Combining these results gives us A1: there are more mental properties than physical properties.

Let us examine the argument more closely. The key which unlocks the argument is a building procedure for constructing mental properties out of plurals of more basic properties. Specifically, for any arbitrary plurality of *physical* properties one might conceive, we can define a mental property in terms of that plurality—such as *thinking that that plurality is physical*. The motivation for this principle is that we see by reflection on our own thinking that thoughts can be *about* anything. For example, I can think about cheese, cornflakes, and bananas, while also pondering a political election. It is the nature of a thought to be about things—any things.

We need to be careful, however, to avoid a certain paradox that can arise from unrestricted building procedures. Take, for example, the following principle:

> Construction Principle (CP): for *any* properties, the xs, there is a mental property of thinking that the xs are physical.

Trouble arises because CP allows cases of *self-inclusion*, for in the case where the xs refer to *all* properties, the resulting mental property is included among the very things it is supposed to be about. Such "self-including" properties result in paradoxes. For example, a mental property which includes all *non-self-including* mental properties includes itself if and only if it doesn't—a contradiction. Fortunately, where self-inclusion is not in play, the resulting mental properties are unproblematic. Therefore, we may safely sidestep these paradoxes by narrowing our scope to cases which do not involve self-inclusion.

In order to steer clear of paradoxes, I shall give a general building principle which avoids self-inclusion and which entails the specific building principle in our counting argument. To start, let us call any property which has, or includes, the form *thinking that such and such* a 'thinking-that' property. Then we may work with the following paradox-free principle:

> Construction Principle 2 (CP_2): for any non-thinking-that properties, the xs, there is a mental property of thinking that the xs are properties.

This principle puts our focus on *conceivable* mental properties, since it avoids paradoxical cases of self-including mental properties.[5]

We may now complete the argument against the identity thesis as follows. Assume for the sake of argument that the identity theorist is correct: every mental property is a physical property. Then the class of physical properties divides into mental properties (P_M) and non-mental properties (P_N). Let M be the class of all mental properties. Then:

1. $M > P_N$ (from CP_2).

2. $P_M \leq P_N$.

3. Therefore: $M \neq P_M$.

Regarding premise 1, we infer from CP_2 that there are at least as many mental properties as plurals of non-mental properties. Recall next that plurals outnumber particulars (by the plurals version of Cantor's theorem). Therefore, there are more mental properties than non-mental properties. From the identity theorist's perspective, by contrast, there are *not* more mental properties than non-mental physical properties (premise 2). On their view, physical reality is far more abundant than mental reality, for mental reality is analyzable in terms of a *specific* arrangement or combination of more basic physical states—e.g., *being a firing C-fiber within a neural network*. (Even without premise 2, we can define more first-person thinking-that properties in terms of *classes* of third-person physical properties—and the same result follows.[1]) From these premises, it follows that the class of mental properties is not the same as the class of physical mental properties. In other words, not every mental property is physical.

I should emphasize that the counting argument doesn't presuppose a dualist perspective. The argument gets its life from our common ability to see that certain mental properties are distinct from each other. We see, for example, that *thinking a triangle is physical* is distinct from *thinking a square is physical*. Consider, by contrast, that when one compares first-person properties with third-person properties, there is the "opaque context" problem: the problem, basically, is that the appearance of distinction could be thought to arise from our seeing the same property from two fundamentally different perspectives, first-person and third-person. That worry doesn't bite the counting argument because we are comparing properties from the *same* first-person perspective. So, for example, when comparing *thinking a triangle is physical* with *thinking a square is physical*, we aren't behind an opaque door: we can see clearly that they are distinct.[2]

The final step in the argument takes us to a further conclusion: *no* mental property is a physical property. This step is not as intimidating as it might initially seem. It is firmly supported by a principle of *categorical uniformity*. Consider that the mental properties under consideration are categorically alike: they differ merely in terms of complexity of psychological content. By contrast, the divide between *physical* and *non-physical* properties involves much more than a mere difference with respect to complexity of psychological content.

To further illustrate the categorical difference between the physical and non-physical, imagine building a Lego tower. As you stack more and more Legos, your goal is to transform your Lego tower into something very special: you want to make its shape *non-physical*. Could you do it? I hope it is obvious that the answer is *obviously not*. If (say) *being a stack of n Lego blocks* is a physical property, then clearly so is *being a stack of n+1 Lego blocks*, for any n. The *physicality* of the Lego's spatial structure doesn't turn on the number or arrangement of its components,

[1] I defend this move in Rasmussen 2015.

[2] In fact, it seems we can even recognize a distinction between thoughts with *equivalent* contents: for example, one could think *that's a closed three-sided figure* without thinking *that's a closed three-angled figure*.

whether finite or infinite. More generally, the physicality of a physical property doesn't turn on its internal complexity.

Here, then, is a principle of uniformity:

> PU: The divide between any two mental properties is narrower than the divide between physicality and non-physicality.[6]

With PU in hand, it follows that no mental properties are physical.[7] For suppose there were a *physical* mental property M_P and a *non-physical* mental property M_N. Then the difference between M_N and M_P would be categorical. In other words, the divide between these two mental properties would *not* be narrower than the divide between physicality and non-physicality—contra PU. So if you accept PU, then you may infer that all mental properties alike are non-physical, if any are.

Note that I have not yet said anything about the *grounds* or *realizers* of mental properties. As far as the argument goes so far, it could be that all our mental properties are physically grounded. We'll look at the nature of the grounds of mental properties in the next section.

3. A Problem with Dependence

In this section, I'll extend the counting argument to reach an even bolder conclusion. I'll explain why I think that mental properties are not even *grounded by* (fixed or necessitated) by physical properties. Note here that this bolder claim is a denial of psychophysical supervenience, which is generally regarded as a "lowest common denominator" commitment of all forms of physicalism (reductive and non-reductive).

When I say that a mental property M is not grounded by a physical property, I mean minimally this: there is no physical property (possible or actual, micro or macro, local or global) that *entails* M, where entailment is a relation of metaphysical necessity. More precisely, for any given mental property M, there is no physical property P, such that necessarily if P is instantiated, then M is instantiated. For ease of presentation, let us say that a mental property *lacks a physical grounding* (possible or actual, micro or macro, local or global) if and only if no physical property grounds it. My thesis, then, is that mental properties lack a physical grounding. Or to be more positive about it: mental properties enjoy fundamentality.

I should clarify at the outset that I am not challenging the premise that the mental properties which you and I instantiate are importantly *connected to* physical properties of our brain. I propose, rather, that the connection between the mental and physical is *contingent*. As far as my arguments go, it could be that while the instantiation of a physical property can cause the instantiation of a certain mental property, the causal relationship itself depends upon certain contingent psycho-physical laws.

For ease of presentation, I will focus on mental properties akin to the ones we considered earlier. In particular, let $M_{PROPERTIES}$ be all mental properties of the following form: *thinking that x_1 or x_2 or x_3 … is my favorite*, where x1…xn are non-thinking that properties. I'll argue first that some mental properties in $M_{PROPERTIES}$ lack a physical grounding. Then I'll use a principle of uniformity to generalize the result for all mental properties, or at least for all properties in $M_{PROPERTIES}$.

Here is an outline of the argument:

B1. Independence: no member of $M_{PROPERTIES}$ entails any other member.

B2. If no member of $M_{PROPERTIES}$ entails any other member, then some mental properties lack a physical grounding.

B3. Therefore, some mental properties lack a physical grounding.

B4. If some mental properties lack a physical grounding, then all mental properties alike lack a physical grounding.

B5. Therefore, all mental properties alike lack a physical grounding.

Start with B1: no member of $M_{PROPERTIES}$ entails any other member. My reason for thinking that B1 is true is based upon my awareness of individual members of $M_{PROPERTIES}$ in my own mind. I begin by noticing that some members of $M_{PROPERTIES}$ are individually exemplifiable. Take, for example, this property: *thinking that being a square is my favorite*. Call it 'M_1'. I have the privilege of instantiating M_1 right now. Perhaps you do, too. I am thereby able to see that M_1 is *actually* exemplified, from which I infer that M_1 is *possibly* exemplified. I notice next that I can instantiate M_1 without thereby instantiating *other* properties in $M_{PROPERTIES}$. In general, I can think about one set of properties without thereby thinking about some *other* set. That's true even when the "other" set is a subset. For example, I can obviously think *that P or Q is my favorite* without thereby also thinking that *P is my favorite* (and vice versa). I infer, therefore, that each member of $M_{PROPERTIES}$ is individually exemplifiable: no member entails any other.

We may further display the above reasoning via analogy. Consider Legos. Suppose you see a small stack of three blue Legos. You infer from your sight of the three blue Legos that it is *possible* for there to be a stack of three blue Legos without there also being an adjacent stack of three *red* Legos. You thus see that red Legos and blue Legos are independent. But could there be a stack *four* blue Legos without a stack of *four* red Legos? Your ability to imagine the blue stack without a red stack is perhaps one reason to think so. There is another reason: you can see that a mere difference in number of Legos is manifestly *irrelevant* to the independence between blue and red Legos. Independence doesn't turn on Lego complexity. By the same reasoning, we can see that members of $M_{PROPERTIES}$ are independent no matter their complexity. Take any two members, M_1 and M_2. Both have the same form: *thinking that A or B or … is my favorite*. They differ merely in

terms of psychological content, but that difference is manifestly irrelevant to their mutual independence.

You might wonder whether there could be a relevant difference between *infinitely* complex and *finitely* complex mental properties. Maybe nothing can be infinitely complex. In that case, the infinitely complex members of $M_{PROPERTIES}$ are not exemplifiable, and hence not all members of $M_{PROPERTIES}$ are individually exemplifiable.

However, the case of infinite complexity doesn't threaten the heart of my argument. For even if nothing can be infinitely complex, Cantor's results show that infinite complexity is at least mathematically conceivable. Thus, we can still consider whether infinitely complex mental states *would* be independent of each other were they exemplifiable. Compare: even if no Lego structure could be infinitely complex, we can still consider whether an infinitely complex *blue* Lego structure would require the existence of a *red* Lego structure. I think we can see clearly enough that the independence of red and blue Lego structures doesn't turn on their degrees of complexity, regardless of whether there is a degree of complexity which cannot be exemplified. Similarly, I think we can see clearly enough that the independence of members of $M_{PROPERTIES}$ doesn't turn on their degrees of complexity, regardless of whether there is a degree of complexity which cannot be exemplified.

The next step is B2: if no member of $M_{PROPERTIES}$ entails any other, then some mental properties lack a physical grounding. My reason for accepting B2 is based upon the problem of *too few grounds*. Suppose every mental property has a physical ground. Then since there are more mental properties than physical grounds (per the counting argument), some mental properties must share the *same* physical grounds. In other words, there are too few physical grounds for each mental property to have its own physical ground. It follows that some mental properties must be physically grounded *together*, if they are physically grounded at all. This result is in sharp tension with Independence. For suppose M_1 and M_2 must be physically grounded together. Then they are physically *dependent*: any physical state which grounds the one *thereby* grounds the other. Technically, these mental properties could still be independent when *not* physically grounded. But that doesn't help the physicalist. The problem here is that *we* can entertain individual members of $M_{PROPERTIES}$ individually. When we reflect on our own thoughts in particular, we see that members of $M_{PROPERTIES}$ are independent: we can entertain one without the other. Therefore, since the mental properties are independent for minds like ours (i.e., we can think one without the other), there cannot be physical grounds for all of the thoughts that minds like ours can have; there are too few grounds.[8]

The final step is B4: if some mental properties lack a physical grounding, then all mental properties alike lack a physical grounding. My reason for B4 is based again upon categorical uniformity. The idea is that mere differences in complexity, whether finite or infinite, have nothing to do with *having a physical grounding*. It would be really weird (absurd) if, for example, all finite mental properties must have a physical grounding, while all infinite ones must lack a physical grounding.

Why would the physical nature of a property turn merely on its complexity? By comparison, suppose there were infinitely many red Legos stacked on top of each other. The structure of that stack clearly wouldn't be non-physical, or non-physically grounded, merely on account of its great complexity. Physicality is a matter of *category*, not *complexity*. If that is correct, then mental properties are uniform with respect to having, or lacking, a physical grounding, no matter how complex they might be.

Let us recap the argument. We observe that members of $M_{PROPERTIES}$ are independent of each other: you can think one member without thinking another. So, *if* our thinking requires a physical grounding, there must be a unique physical grounding (at least one) for each member of $M_{PROPERTIES}$—so that each one can be thought individually. But there are *not* as many physical properties as members of $M_{PROPERTIES}$ (per the counting argument). So, there cannot be a unique physical grounding for each member of $M_{PROPERTIES}$. Therefore, our thinking doesn't have a physical grounding. The final premise is based upon categorical uniformity: the members of $M_{PROPERTIES}$ are alike with respect to having, or lacking, a physical grounding. It follows that if some member of $M_{PROPERTIES}$ lacks a physical grounding, then all mental properties in $M_{PROPERTIES}$ lack a physical grounding.[9]

4. In Defense of Basic Mentality

The central thesis that emerges from the counting argument is the *basic mentality* thesis—that at least some of our mental properties are not identical to nor grounded in any physical properties. I will now consider how the basic mentality thesis bears on standard physicalist theories, reductive and non-reductive.

We may classify different versions of physicalism in terms of different kinds of reduction. Here are three kinds:

> Microphysical Reduction (R_M): every mental property of a human person is a micro physical property.
>
> Explanatory Reduction (R_E): every mental property of a human person is sufficiently explained (causally or ontologically) by micro physical properties.
>
> Ontological Reduction (R_O): every mental property of a human person is a physical property (global or local).

A variety of physicalist views are definable in terms of the rejection or acceptance of the above reductions. Nancey Murphy (2006), for example, rejects R_M and R_E, while she apparently accepts R_O. Her view, if I understand it, is that mental properties include *macro*-level properties ("contextualized brain properties," she calls them) which are physical (i.e., ultimately analyzable in terms of "scientific" third-person properties, such as systems or functions physical states) but

not determined by *micro*-level properties. Determination can go the other way—from the "top" down. By contrast, John Searle (2006) rejects R_O but accepts R_E.

The basic mentality thesis is incompatible with all three versions of reductive physicalism. According to basic mentality, no mental property is a physical property; hence, R_O and R_M are false. Furthermore, basic mentality says—contra R_E—that no mental property has a physical grounding.

Basic mentality is also incompatible with the usual forms of *non-reductive* physicalism. All non-reductive physicalisms have this in common: *physicalism*. Although "physicalism" is notoriously difficult to define, the standard physicalist views include the thesis that mental reality is identical with, or is grounded by, some physical reality (Soljar 2015). That thesis is incompatible with basic mentality, since basic mentality implies that some mental reality (mental properties) are neither identical with, nor grounded by, any type of physical reality.

So if the basic mentality is true, then standard physicalism (reductive or non-reductive) is false. We have seen one argument for basic mentality. Let us now consider arguments against it. We may classify the main arguments in terms of the following five problems for dualism:

> 1. The problem of psycho-physical correlation: how can dualism account for the findings of modern neuroscience, which has a track record of finding purely physical explanations for mental states?
>
> 2. The problem of complexity: why complicate our ontology beyond necessity by positing undetectable non-physical substances if we can explain everything in terms of a physicalist ontology?
>
> 3. The problem of causation: how can there be a causal connection between a purely physical state and a purely non-physical mental state?
>
> 4. The problem of pairing: in virtue of what is a non-physical mental substance paired with *its* physical body, rather than with some other body or no body at all?
>
> 5. The problem of causal closure: how can non-physical mental states contribute causally to the physical world if every physical effect already has a completely sufficient physical cause?

Each problem has been discussed extensively in the literature, and each deserves far more attention that I can give to it here. My aim will be modest, then: I will simply express succinctly why I do not personally find any of these problems to be particularly troublesome for basic mentality.

Start with the problem of psycho-physical correlation. Basic mentality rules out *necessary* psycho-physical laws. But it doesn't follow that there are no psycho-physical laws at all. Basic mentality is actually fully compatible with the existence of psycho-physical correlations.

Moreover, the *probability* of psycho-physical correlation would not necessarily be any lower on basic mentality than on standard physicalism. In fact, it seems to me that the opposite is so. Given basic mentality, mental reality can be explanatorily *prior to* physical reality. This mental priority fits well with a broadly theistic picture on which some original Mind intentionally organizes a world with psycho-physical correlations. On standard physicalism, by contrast, I have no such expectation of psycho-physical correlations. On the contrary, I find it less likely a priori that there would be an original Mind *given* standard physicalism than given basic mentality. Furthermore, without an original Mind (or minds), I find it vanishingly unlikely that physical reality would happen to unfold in the specific ways evidently required for there to be pyscho-physical beings to which psycho-physical laws might apply.

Different philosophers will of course differ in their assessment of these probabilities. The more important point is that neuroscience cannot in principle tell us how we should assess the relevant *conditional* or *prior* probabilities. That is to say, nothing in neuroscience can, by itself, tell us whether the findings of neuroscience are more likely on standard physicalism than on basic mentality, or whether basic mentality is unlikely a priori. As far as the empirical data goes, one could think psycho-physical correlations actually fit better with basic mentality.[10]

Consider next the problem of complexity. The idea here is that positing non-physical minds complicates our ontology beyond necessity. In reply, consider first that the problem of complexity doesn't target the basic mentality thesis *per se*, since basic mentality is strictly compatible with a single category ontology, like idealism. Second, and more importantly, the basic mentality thesis is about the nature of something we already know exists: our thoughts. Rather than posit some extra reality, basic mentality frees us from needing to posit non-mental grounds for the mental reality we know about. Finally, if basic mentality complicates one's ontology, then the counting argument itself is a good reason to think the complexity is necessary.

Consider, next, the problem of causation. My main response is that this problem is not narrowly a problem for psycho-physical causation. Causation is mysterious in *general*. So, for example, even physical-*physical* interaction is mysterious: how does an energy field, which has no mass or definitive shape, cause a particle to move? It's perplexing. But it doesn't follow that energy fields *can't* cause particles to move. They surely can and do. Similarly, although it may be mysterious how a non-physical mental state can cause a physical state, it doesn't follow that it can't.

I should add that basic mentality gives us special resources for causation: it allows for the option that mental states have causal powers which are not grounded in the powers of any physical states (local or global). This option, even if mysterious in certain ways, accounts well for our apparent ability to make choices via mental intentions which affect the physical world.

Turn to the problem of pairing: what makes *my* body *mine*? Here is one story I find plausible. I am a single substance with fundamentally mental and physical sides. My body is not itself a substance in its own right. Rather, my body is a *state* of me, and its existence and identity depend in part

upon how certain physical systems (heart, lungs, brain, etc.) are functioning. These physical systems are themselves defined teleological in terms of their role in contributing to my overall wellbeing. On this theory, a given particle is part of my body when it is caught up in one of these systems which constitute my bodily state. Thus, my body is paired with me by being a state of me. On this account, pairing isn't a problem.[11]

Finally, there is the problem of causal closure, according to which every physical effect has a physical cause. I wonder, though: why think every physical effect has a physical cause? The best arguments I've seen for causal closure are inductive generalizations from our track-record of finding physical causes of physical events. These generalizations seem to me to be hasty, however, when applied to human brains. A brain is precisely where I'd expect a non-physical mental substances to act if I *were* a non-physical mental substance. Moreover, the evidence we have from neuroscience about the neuroplasticity of the brain is what I'd expect if an agent with non-physical mental states *could* affect its brain states.[12]

My brief survey of the problems posed against dualism is by no means exhaustive or conclusive, but it does suggest that basic mentality can account for much of the data that is often thought to motivate standard physicalist theories.

5. Conclusion

We have seen that the usual evidence for physicalism is compatible with the basic mentality thesis. Consider, by contrast, the arguments on the market *against* physicalism. They include (among others): the replacement argument, the zombie argument, Leibniz's Mill argument, and now my counting argument. These arguments have premises whose justification is supposed to be based upon a non-empirical, rational sense, such as the sense that I possibly exist without my body, or the sense that no mere change in motion could by itself give rise to a thought, or the sense that *thinking about a triangle* is not identical to *thinking about a square*. Maybe this sense is unreliable or misguided in each case. My observation here is just that while the basic mentality thesis seems to fit just fine with the usual data offered in support of physicalism, there are reason-based considerations for basic mentality which don't fit well with the standard forms of physicalism (reductive or non-reductive). For that reason, my mind is pressured to the think that the basic mentality thesis is true, while standard physicalism is not.[13]

Works Cited

Bailey, Andrew. 2016. "Materialism Through and Through." Unpublished manuscript.

Bailey, Andrew, Joshua Rasmussen, and Luke Van Horn. 2011. "No Pairing Problem." *Philosophical Studies* 154: 349-360.

Beauregard, Mario, and Denyse O-Leary. 2008. *The Spiritual Brain: a Neuroscientist's Case of the Existence of the Soul*. Harper Collins Publishers.

Beauregard, Mario. 2007. "Mind does really matter: Evidence from neuroimaging studies of emotional self-regulation, psychotherapy and placebo effect," *Progress in Neurobiology* 81, 4: 218-236.

Halmos, Paul. 1960. *Naive set theory*. Princeton, NJ: D. Van Nostrand Company.

Murphy, Nancey. 2006. *Bodies and Souls, or Spirited Bodies?* Cambridge: Cambridge University Press.

Rasmussen, Joshua. 2015. "Building Thoughts from Dust: a Cantorian Puzzle." *Synthese* 192: 393-404.

Searle, John. 2004. *Mind: a Brief Introduction*. Oxford: Oxford University Press.

Shwartz, Jeff, and Sharon Begley. *The Mind and the Brain: Neuroplasticity and the Power of Mental Force*. Harper Collins Publishers.

Soljar, Daniel. 2015. "Physicalism." *Stanford Encyclopedia of Philosophy*. Accessed August 21st, 2016. http://plato.stanford.edu/entries/physicalism/.

[1] I have defined "physicalism" here in terms of your fundamental nature. I take this characterization to cover standard physicalist theories (reductive and non-reductive). But see Andrew Bailey's "Material Through and Through" for an account of "materialism" on which your fundamental layer need not be physical.

[2] My stipulation is in line with typical formulations of the identity theory. See, for example, Polger 2004.

[3] I use "plural" talk instead of "set" in case there is no set of all physical properties. (Some plurals fail to form a set. For example, as Cantor famously showed, the plural of all *sets* doesn't itself form a set.)

[4] To be technically precise, the theorem states that for any plurality, the *x*s, there is no mapping from individuals to the *x*s, such that (i) each member of the *x*s is mapped to at most one subplurality of the xs, and (ii) for every subplurality of the *x*s, there is a member of the *x*s that is mapped to it. I give a version of Cantor's diagonal argument for this theorem in Rasmussen (2015, 194). Note that the proof relies upon an axiom schema akin to the Axiom of Separation—basically, that for any formula ψ, if there are some things that satisfy ψ, then there are the things that satisfy ψ.

[5] For a more detailed investigation of parallel paradoxical arguments, see Rasmussen 2015, 238-40.

[6] For the sake of modesty, we could restrict our scope to the mental properties which are of the form *thinking that P is a property*. The result will still be that many mental properties, including ones you and I have, are not physical. For ease of presentation, I will leave the scope unrestricted.

[7] That isn't to say that no mental properties *could* be physical. My argument doesn't require the premise that physical properties are essentially physical. I thank Alexander Pruss for drawing my attention to this consideration.

[8] Someone might resist this conclusion by supposing that there is some necessary law which applies to physical beings but not non-physical beings. The idea here is that physical beings are required to think certain of the thoughts in question *together*. But this idea conflicts with our experience of our own thoughts. It is apparent, for example, that I can think some state P is my favorite without *thereby* thinking that some other state Q is my favorite. By categorical uniformity, I infer that independence holds for any such thoughts.

[9] Alexander Pruss pointed out to me that the conclusion of my argument is compatible with the hypothesis that each mental property is grounded in a *plurality* of physical properties. That's true. But my conclusion still rules out standard physicalism, since it rules out the standard physicalist theory that the complete physical profile—itself a global physical property—grounds any mental property. Moreover, we can give a counting argument against Pruss' proposal, since we can generate a superclass of mental properties in terms of *plurals* of $M_{PROPERTIES}$—take, for example, the properties of thinking *disjunctively* about plurals of $M_{PROPERTIES}$.

[10] I have been assuming for the sake of argument that every mental state of a human being is indeed correlated with a physical sate. Some neuroscientists have challenged that assumption by suggesting that some mental states may have *mental* correlates without any physical basis. See, for example, Beauregard and O-Leary 2008.

[11] For a fuller critique of the pairing problem, see Bailey, Rasmussen, & Van Horn (2011).

[12] See, for example, Schwartz & Begley (2003) and Beauregard (2007).

[13] I am grateful to Alexander Pruss and Andrew Bailey for valuable comments on earlier drafts.