
GROUNDING CAUSAL CLOSURE

BY

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Abstract: What does it mean to say that mind-body dualism is causally problematic in a way that other mind-body theories, such as the psychophysical type identity theory, are not? After considering and rejecting various proposals, I advance my own, which focuses on what grounds the causal closure of the physical realm. A metametaphysical implication of my proposal is that philosophers working without the notion of grounding in their toolkit are metaphysically impoverished. They cannot do justice to the thought, encountered in every introductory class in the philosophy of mind, that dualism has a special problem accounting for mental causation.

Mind-body dualism is widely regarded as a *causally problematic* view. Clarifying just what this means will be the central task of the article, but we can say in advance that it is supposed to distinguish dualism from various other mind-body theories. Take the psychophysical type identity theory for instance.¹ The identity theory may have its problems, but they are not causal problems. As even critics generally concede, the identity theory is our clearest example of a causally unproblematic mind-body view. Here, then, is the question I will attempt to answer in this article: what does it mean for dualism to be causally problematic in a way the identity theory is not?

The answer to this question is less obvious than it initially may seem. After considering and rejecting various proposals, I put forward my own, which invokes the notion of *grounding*.² A metametaphysical implication of my proposal is that philosophers working without the notion of grounding in their toolkit are metaphysically impoverished. They cannot do justice to the thought, encountered in every introductory class in the philosophy of mind, that dualism has a special problem accounting for mental causation. This is perhaps the best way to defend the notion of grounding, by showing that it is needed to do essential philosophical work.

An agenda lurks in the background. Although I am a physicalist, I ultimately deny that dualism genuinely is causally problematic in any interesting sense. I have grown frustrated with standard accounts of what dualism's causal problem is supposed to consist in: I accept almost everything such accounts have to say, but deny that what they say adds up to a distinctively causal problem. In the present work I will not be pushing this agenda too hard however. My aim here is just to establish what the burdens are of maintaining that dualism is causally problematic in a way the identity theory is not. Whether such burdens can be met will be left as an open question.

1. *Causal closure*

Whatever exactly dualism's causal problem is supposed to be, we can assume it has something to do with the *causal closure of the physical realm*. Following Jaegwon Kim, the causal closure thesis can be formulated as follows.

(Closure): If a physical event has a cause at time t , it has a physical cause at t .³

For the purposes of our discussion, we will take the thesis to concern coarse-grained Davidsonian events. This allows us to make room for the view that mental events are identical with physical events even though mental properties are distinct from physical properties – in other words, a view that is token physicalist but not type physicalist.⁴ However, this choice is made for expository reasons; it should not affect my argument if we operated instead with any of the leading alternative conceptions of events.⁵

Again, then, dualism's alleged causal problem presumably has something to do with (Closure). Just what is it about (Closure) that poses the problem, though? After all, the (Closure) thesis possesses many different properties. For instance, it has the property of being mentioned in this article. Obviously, this is not what makes dualism causally problematic. So then, what does?

2. *Truth*

The apparently obvious answer is *truth*. If (Closure) is true, there seems to be no room for nonphysical events to (non-redundantly) cause physical effects in the way we think mental events do. No room for pains to cause crying, for beliefs to cause speaking, and so on. *That's* dualism's causal problem, you might think. You might then add that what makes the identity theory

causally unproblematic in comparison is that the mental properties and events it posits just are physical properties and events, and so their causal efficacy is unthreatened by (Closure)'s truth.

However, this proposal is inadequate. To begin making my case, I observe that true causal closure theses are *abundant*. You get one whenever you have a nonexistent, whenever you have a true negative existential proposition. There are no unicorns. This entails that the domain of non-unicorns is causally closed.

(Unicorn-Closure*): If a non-unicorn event has a cause at time t , it has a non-unicorn cause at t .⁶

I do not own a harmonica. This entails,

(Harmonica-Closure*): If a not-my-harmonica event has a cause at time t , it has a not-my-harmonica cause at t .⁷

More generally, *every* false hypothesis can be construed as positing non-existents, and so the (true) negation of any false hypothesis entails the truth of some corresponding causal closure thesis. You believe my favorite color is yellow. That is to say, you believe there exists something that is both yellow and my favorite color. But no such thing exists; my favorite color is green. Therefore, the domain of things that are not both yellow and my favorite color is causally closed.

For expository purposes it will be helpful to modify these causal closure theses slightly, changing their antecedents so that they quantify over physical events. Instead of working with (Unicorn-Closure*) from just above, we will work with,

(Unicorn-Closure): If a *physical* event has a cause at time t , it has a non-unicorn cause at t .

This un-asterisked thesis is also true, and its truth is also entailed by the nonexistence of unicorns. Along similar lines, instead of (Harmonica-Closure*) we will work with,

(Harmonica-Closure): If a *physical* event has a cause at time t , it has a not-my-harmonica cause at t .

There is perhaps a terminological question of whether these un-asterisked versions are best called 'causal closure theses,' since what they say is that events in one domain (the physical domain) always have causes in some potentially distinct domain (the non-unicorn domain, the not-my-harmonica domain). Nothing turns on how we settle this terminological question. I will call these un-asterisked versions causal closure theses, but feel free to call them something else if you wish.

Using this as setup, now consider the psychophysical type identity theory. The identity theory entails that there exist mental properties identical with physical properties. But if the identity theory is false, such properties do not exist – no property is both mental and physical. By extension, no event possesses any mental property that is identical with some physical property. Consider then the following causal closure thesis:

(ID-Closure): If a physical event has a cause at time t , it has a cause at t that is not an event possessing any mental property identical with some physical property.

Everything we said above regarding dualism and (Closure) we can now repeat, *mutatis mutandis*, regarding the identity theory and (ID-Closure). To wit: If (ID-Closure) is true, there is no room for mental events as they are conceived by identity theorists – that is, as events possessing mental properties identical with physical properties – to (non-redundantly) cause physical effects in the way we think mental events do. No room for pains to cause crying, for beliefs to cause speaking, and so on. We can further mirror the above discussion by adding that just as the identity theory is causally unthreatened by (Closure)'s truth, dualism is causally unthreatened by (ID-Closure)'s truth. There is thus symmetry: each mind-body theory is apparently causally threatened by one causal closure thesis but not by the other.

Furthermore, there is a powerful argument for (ID-Closure)'s truth, an argument guaranteed to convince most contemporary philosophers: multiple realizability. If mental properties are multiply realized by physical properties – if, say, pain is realized by firing C-fibers in humans and by inflating D-tubes in Martians – then they are not identical with physical properties.⁸ In that case, no cause of any physical event is an event possessing some mental property identical with a physical property, and so (ID-Closure) is true. In short, since the negation of the identity theory entails (ID-Closure), any argument establishing that negation will at the same time establish the truth of (ID-Closure).

Still, even supposing that (ID-Closure)'s truth can be established this way – grant the point provisionally if you remain a committed identity theorist – surely this does not show that the identity theory is after all a causally problematic view, that it is causally problematic in just the way dualism is so widely thought to be. As I said at the outset, the identity theory is our paradigmatic example of a causally unproblematic mind-body theory, as even its critics concede (including those who embrace the multiple realizability objection). What we have is thus a *reductio* of the present proposal. Dualism's alleged causal problem cannot consist merely in (Closure)'s truth, for (ID-Closure) is just as true and yet by all accounts the identity theory is a causally unproblematic mind-body view.

Stated in more general terms, the point is that we don't regard *every* false hypothesis as being causally problematic in the way dualism is supposed to

be. If you suspect I own a harmonica, you are in error, but it isn't a distinctively causal error. The flaw with the present proposal is that it ends up vastly over-generating causal problems, it ends up counting every false hypothesis as causally problematic, since again the (true) negation of any false hypothesis entails some true causal closure thesis analogous to (Unicorn-Closure), (Harmonica-Closure), and (ID-Closure).

Now, I do concede that the truth of (Closure) is plausibly a necessary condition for dualism's being causally problematic. What I deny is that it is sufficient. Anticipating my own proposal, I say it matters not just *whether* a given causal closure is true, but *why* it's true, what grounds its truth. The reason the identity theory counts as causally unproblematic even though (ID-Closure) is true is that it's true for the wrong reason – its truth has the wrong ground. If in contrast dualism genuinely is causally problematic, this must be because (Closure)'s truth has a different sort of ground. Before saying more about this, though, more groundwork is needed (so to speak).

3. *Epistemological digression*

In the sections ahead we will return again and again to the (admittedly unconventional) multiple realizability argument used last section. It is easy to get confused about the dialectical intentions behind the argument. To ward off such confusion, I want to talk epistemology for a moment. Consider a formulation of the *causal argument for (token) physicalism* due to David Papineau.

(P1): (Closure): If a physical event has a cause at time t , it has a physical cause at t .

(P2): All mental events have physical effects.

(P3): The physical effects of mental causes are not all causally overdetermined.

(C): Mental events are identical with physical events.⁹

The argument's conclusion is the thesis of token physicalism. Reminder: given the Davidsonian conception of events we are assuming, this conclusion is compatible with the view that mental properties are distinct from physical properties, which you might accept on the basis of multiple realizability considerations.¹⁰

But now, notice that we can generate an analogous *causal argument against the identity theory* simply by swapping (ID-Closure) in place of (Closure).

(P1*): (ID-Closure): If a physical event has a cause at time t , it has a cause at t that is not an event possessing any mental property identical with some physical property.

(P2): All mental events have physical effects.

(P3): The physical effects of mental causes are not all causally overdetermined.

(C*): Mental events do not possess mental properties identical with any physical properties.

Here, (C*) is to be regarded as equivalent to the negation of the identity theory. The two causal arguments have the same logical form; I assume both are valid. Premises (P2) and (P3) are exactly the same in both arguments; I assume both premises are true. The soundness of the arguments thus comes down to the truth of their respective causal closure premises. Here is a powerful argument for (P1*)'s truth: multiple realizability. I conclude that the causal argument against the identity theory is sound – just as I hold that the causal argument for physicalism is sound. What this illustrates is that sound causal arguments are *abundant*, just as true causal closure theses are (and for the same reason). There is a sound causal argument to be made against any false hypothesis whatsoever.¹¹

But there is more to life than soundness – more, even if you happen to be an argument. A further virtue we seek in arguments is that they be able to expand our knowledge. Subjects should be able to acquire knowledge of a conclusion on the *epistemic basis of reasoning* through an argument. This requires that there be justification for believing each of the argument's premises, and that such justification does not essentially depend on prior justification for the conclusion itself.

The causal argument against the identity theory plausibly lacks this further virtue. Suppose our only justification for believing (ID-Closure) is that provided last section: multiple realizability considerations establish the negation of the identity theory, and this entails (ID-Closure). In that case, it will be impossible to acquire initial knowledge that the identity theory is false by reasoning through the causal argument against it. For, in order to know its first premise, you would *already* need to know its conclusion.

It's not a matter of begging the question. After all, the familiar multiple realizability objection to the identity theory is not question-begging, and we don't transform it into something question-begging by drawing the further deductive inference of (ID-Closure). Rather, it's a matter of the causal argument against the identity theory misrepresenting our *epistemic structure*. It gets the justificatory priority between premise and conclusion wrong.¹²

None of this cuts against the argument I advanced last section. For there, I used multiple realizability to establish (ID-Closure) not in the context of advancing a casual argument whose conclusion is the negation of the identity theory, but rather in the context of advancing an argument whose conclusion is that dualism's causal problem does not consist merely in (Closure)'s truth. My argument therefore did not misrepresent our epistemic structure at all. You really can come to know that this proposal is inadequate by appreciating, given multiple realizability, that (ID-Closure) is just as true as (Closure) is. The upshot is that you cannot use the epistemological conclusions we are reaching in this section to go back and defend last section's proposal from my objection to it there.

What you might do instead is draw on these epistemological conclusions to put forward a *new* proposal. Suppose that, in contrast with (ID-Closure), there is justification for believing (Closure) that is independent of any prior justification for rejecting dualism itself. In that case, the causal argument for physicalism potentially could be one's epistemic basis for knowing the negation of dualism, while the causal argument against the identity theory could not similarly be one's basis for knowing the negation of the identity theory. The new proposal says that this is what dualism's causal problem consists in, this alleged epistemic difference between (Closure) and (ID-Closure).¹³

Now, there is room to doubt that we really do possess such independent justification for believing (Closure). (My own view is that we do not. I say that we are justified to believe (Closure), but our justification depends entirely on prior justification to believe physicalism itself, which entails (Closure).) But set aside such doubt here. The real problem with the present proposal is that it gives an epistemological answer to what is at bottom a metaphysical question. Perhaps the best way to make the case for this verdict is to sketch what I regard as the natural way to view things.

I assume that if dualism genuinely is causally problematic, this must be because of some non-epistemic feature of the world, some feature that holds independently of what we justifiedly believe. The aim of this article is to discern just what this feature is, but in broad outline I suggest it must have something to do with the nature of causation, or at least with the causation of physical effects. Now, in learning about this non-epistemic feature of the world, perhaps we do acquire justification for believing (Closure) that is independent of any prior justification for rejecting dualism. But in that case, the natural thing to say is that what makes dualism causally problematic is that causation has the nature it does, or at least that the causation of physical effects has the nature it does, and that although our justified beliefs accurately *reflect* dualism's causal problem, they do not *constitute* it. At any rate, let me stipulate that this is how I use terms like 'dualism's causal problem' in this article, for the metaphysical problem itself rather than our epistemic

grasp of it. Mental causation is in the first instance a topic in the metaphysics of mind, not the epistemology of mind.

Here is a related line of thought. I claim that if there really is such an epistemic difference between (Closure) and (ID-Closure), this epistemic difference almost inevitably will be partly *explained* by some further, non-epistemic, metaphysical difference between the two theses. As we move on to consider new proposals below, I will say something about how such explanations might go. For now, the important point is that if we are right to expect some such explanation, we have reason to look for some more basic metaphysical difference between (Closure) and (ID-Closure) rather than stopping our analysis with the supposed epistemic difference in question, even granting that the epistemic difference is real.

I therefore reject the present proposal that what makes dualism causally problematic is that we bear a certain epistemic relation to (Closure), an epistemic relation that we fail to bear to (ID-Closure). Still, while I regard the present epistemic proposal as misguided, I want to acknowledge a kind of structural analogy between it and my own proposal below. Where the present proposal concerns *epistemic* structure and *justificatory* priority, my proposal below will concern *metaphysical* structure and *metaphysical* priority. Where the present proposal focuses on the epistemological question of why we *should believe* (Closure) is true, my proposal focuses on the metaphysical question of why (Closure) *is* true. The epistemological question is interesting and important, and has received quite a bit of philosophical attention. In my view, it is less fundamental than the metaphysical question, which is our focus here.

4. *Necessity*

To set up the next proposal, reconsider (Harmonica-Closure). It is true, but its truth is thoroughly contingent. You could have given me a harmonica for my birthday. If you had, it would have (non-redundantly) caused all sorts of physical effects, falsifying (Harmonica-Closure). In contrast, causal critics of dualism typically take (Closure)'s truth to be modally robust. They think of it as a nomological or metaphysical necessity (if there is a difference). Here, then, is the new proposal: what makes dualism causally problematic is that (Closure) is *necessary* (either nomologically or metaphysically); violations of it are *impossible*.

Before tearing it down, I want to acknowledge that this proposal is at least a step in the right direction. A proposition's nomological/metaphysical necessity holds independently of what we justifiedly believe about it, and so we cannot accuse this proposal of conflating epistemology and metaphysics, the flaw with last section's proposal. At the same time, (Closure)'s necessity

might potentially help explain the epistemic situation described last section. Suppose you thought that the laws of nature are inductively confirmable, while contingently true generalizations are not. In that case, if (Closure) is a law perhaps we can use induction to know its truth prior to knowing the truth of physicalism, while since (Harmonica-Closure) is contingent we cannot similarly use induction to know its truth prior to knowing that I fail to own a harmonica. I won't develop this line of thought any further, since again our focus here is metaphysics.¹⁴

Still, the present proposal is inadequate. (Closure)'s necessity distinguishes it from (Harmonica-Closure), but not from various other necessarily true causal closure theses. Assume with Saul Kripke that unicorns are metaphysically impossible.¹⁵ This entails the metaphysical necessity of (Unicorn-Closure); violations of (Unicorn-Closure) are impossible. Still, regardless of the modal robustness of (Unicorn-Closure), the hypothesis that unicorns exist is not genuinely causally problematic.

Similarly, reconsider the multiple realizability objection to the identity theory. It is generally understood to show that mental and physical properties are distinct in all possible worlds. There may be worlds where mental properties are uniquely physically realized, but even there they are distinct from physical properties, for even there they possess the modal property of being such that they could have been differently physically realized, a modal property that physical properties lack. There is thus a powerful argument for (ID-Closure)'s necessity: multiple realizability. Spelling this out, the familiar multiple realizability objection to the identity theory establishes that the negation of the identity theory is necessary, which entails the necessity of (ID-Closure). It is thus impossible for mental events, as they are conceived by identity theorists, to violate (ID-Closure), impossible for them to (non-redundantly) cause physical effects.

But to repeat, the identity theory is our paradigmatic example of a causally unproblematic mind-body view. We thus have a *reductio* of the present modal proposal. Dualism's alleged causal problem cannot consist in (Closure)'s necessity, for (ID-Closure) is also necessary, and yet the identity theory is causally unproblematic. In §2 we observed that not every false hypothesis is causally problematic. Here, we add that not every *necessarily* false hypothesis is causally problematic. The present proposal entails otherwise, since the necessarily true negation of any necessarily false hypothesis entails the necessary truth of some corresponding causal closure thesis, analogous to (Unicorn-Closure) or (ID-Closure). Therefore, the present proposal must be rejected.

In recent years, metaphysicians working in various domains have come to appreciate that modal notions are too coarse for their purposes. This is one of the driving forces leading philosophers to develop the notion of grounding, to be discussed below. I say that what matters is not so much *whether* a causal closure thesis is necessary, but *why* it is – what *grounds* its necessity. I will say more about this shortly.

5. *Entailment by physics*

Before we turn to grounding though, there is one more proposal to consider and reject. Causal critics of dualism often insist that (Closure) follows from our leading scientific theories, and more specifically from physics.¹⁶ Physics tells us that as we trace back the causal chain leading up to a physical event, we never have to leave the physical realm and cite (non-redundant) nonphysical causes. Hence, the proposal: what makes dualism causally problematic is that (Closure) is entailed by physics. This entailment by physics is taken to give (Closure) a special metaphysical and/or epistemological weight.

Again, the proposal is inadequate. Physics, I claim, equally entails the truth of (ID-Closure). Here is an argument for this claim: physicalism + multiple realizability. Spelling this out, the doctrine of physicalism requires that the physical truths entail all truths.¹⁷ A fortiori, physicalism requires that the physical truths entail all true causal closure principles, like (Harmonica-Closure) and (Unicorn-Closure). The multiple realizability objection to the identity theory entails that (ID-Closure) is a truth. Therefore, physicalism and the multiple realizability objection jointly entail that the physical truths entail (ID-Closure). In this sense, then, physics itself tells us that as we trace back the causal chain leading up to any physical event, we never have to cite as a (non-redundant) cause the sort of mental event that identity theorists posit, the exemplification of some mental property identical with a physical property. The physical truths entail this.

Again, this is a *reductio* of the present proposal. Dualism's alleged causal problem cannot consist in (Closure)'s being entailed by physics, for (ID-Closure) is just as much entailed by physics, and yet by all accounts the identity theory is causally unproblematic. Now, perhaps there is some better way to develop the thought that physics (or science more generally) tells us that dualism is causally problematic. If so, I suggest it must be connected to what science tells us about grounding relations.¹⁸ Finally, then, we turn to grounding.

6. *Grounding*

My proposal is that dualism is genuinely causally problematic – problematic in a way the identity theory is not – just in case (Closure)'s truth has the right sort of ground (or, at least, does not have the wrong sort of ground). What counts as the right sort of ground will emerge in this and the next section's discussion. First though, I want to say something about the grounding relation itself.

I understand grounding as the non-causal explanatory relation that holds between that which is (at least comparatively) metaphysically fundamental and that which is derivative, when the derivative obtains *in virtue of* the

fundamental obtaining. I take grounding to be a metaphysically primitive relation, and so will not try to offer an analysis of it in more basic terms. What I can do is specify some of its formal features, describe the philosophical work it is meant to do, and provide putative examples. Hopefully, this is enough for the uninitiated to get a handle.

Start with some of the formal features. I assume that the grounding relation obtains between true propositions: certain truths ground other truths.¹⁹ Perhaps it also obtains between other entities: perhaps facts (conceived as something other than true propositions) ground other facts, or perhaps objects ground other objects, or perhaps facts ground truths. We will remain neutral on this.²⁰ I take the grounding relation to be irreflexive: no truth can ground itself, although perhaps there are ungrounded, primitive truths.²¹ I take it to be asymmetric: truths cannot ground each other. I take it to be transitive: there can be chains of grounding.²² Especially crucial to our discussion, I take grounding to be hyperintensional: necessarily equivalent truths can have different grounds.²³

Next, consider the philosophical work grounding is meant to do. Metaphysicians employing the notion of grounding take the world to be a *metaphysically structured* place. Some truths are comparatively metaphysically superficial. These superficial truths depend upon and are determined by metaphysically deeper truths. It was once common for philosophers to try to capture something like this idea of dependence and determination in modal terms like *supervenience*: some limited collection of truths is set, and then all other truths supervene. But modal notions have proven inadequate to the task. If, for instance, it turns out that both (Closure) and (ID-Closure) are metaphysically necessary, they will have the same supervenience base: everything (necessary truths supervene on all truths). But this does not tell us why the two causal closure theses are true (or necessary), or whether they depend upon or are determined by quite different features of the world. For this, we need grounding.

Finally, consider an example of grounding. Why is (Harmonica-Closure) true, what grounds its truth? The intuitive answer, which I endorse, is that it is true for the simple reason that I do not own a harmonica. This truth, together with the further truth that causation is a (genuine) relation and as such requires existent relata, fully explains why (Harmonica-Closure) is true.²⁴ Jointly, these two truths ground (Harmonica-Closure)'s truth.^{25,26}

A natural way of trying to capture this grounding relation is by using a counterfactual: If, counterfactually, I did own a harmonica, (Harmonica-Closure) would not be true. The intuitive idea is that there is a close connection between counterfactuals and explanatory relations, a point that is familiar from discussions of causation, but that I believe extends to the non-causal explanatory relation of grounding as well – roughly, if the ground for a certain truth had not obtained, the truth in question would not have obtained (barring overdetermination and so on). But let me be clear, the suggestion is not that grounding can be analyzed in terms of counterfactual dependence – on my

view, grounding is primitive and so unanalyzable. It's just that counterfactuals often give us a rough handle on grounding relations.²⁷

Similar remarks will apply to (Unicorn-Closure), but let's skip that example and go straight to (ID-Closure). On analogy with the case of the harmonica, I suggest that the reason (ID-Closure) is true is simply that there do not exist any mental properties identical with physical properties. This truth, together with the truth that causation is a relation, is what grounds (ID-Closure)'s truth. As with my harmonica, it is natural to try to capture this point using a counterfactual: If, counterfactually, mental properties were identical with physical properties (as identity theorists assert), events possessing such properties would (non-redundantly) cause various physical effects, violating (ID-Closure). Intuitively, this seems right. However, given our assumption that the identity theory is necessarily false, this is a *counterpossible* – a counterfactual whose antecedent is metaphysically impossible. And on the standard, possible worlds-analysis analysis of counterfactuals, all counterpossibles come out vacuously true.²⁸ In that case, we could just as (vacuously) truthfully say that if the identity theory were right and mental properties were identical with physical properties, events possessing such properties would be epiphenomenal dangles causing nothing at all, and (ID-Closure) would be true.

Once again we are running up against the inadequacy of modal notions to serve our purposes. I regard this as reason to reject the standard analysis of counterfactuals in favor of some alternative account allowing for both non-vacuously true counterpossibles as well as false counterpossibles, and so in what follows I will not hesitate to deploy counterpossibles when talking about grounding.²⁹ However, this use of counterpossibles won't be essential to my argument. What are essential are the claims about grounding.

Let's now consider how grounding helps answer the central question of the article. Why is it that the identity theory counts as a causally unproblematic mind-body view even though (ID-Closure) is true, necessary, and entailed by physics? Because, I say, (ID-Closure)'s ground is merely that there are no mental properties identical with physical properties, and this is the wrong sort of ground. Why the wrong sort of ground? Because although it is the case that nonexistent cannot enter into causal relations, this is not a *special point* about causation. Nonexistents cannot enter into spatial, or temporal, or mereological relations either; they cannot enter into any (genuine) relations at all. Nor can they exemplify (genuine) monadic properties. The identity theory is thus *no more* causally problematic than it is spatially problematic, or temporally problematic, or mereologically problematic, or etc. What the identity theory has is not a distinctively causal problem, but a far more general *existence problem*: it posits entities that do not exist. Everything else is derivative upon this more basic truth.

Taking the case as illustrative, I claim that dualism is causally problematic just in case (Closure)'s truth is grounded not merely in the truth that

nonphysical events do not exist, but instead is grounded in some truth that is more specifically about causation (or, alternatively, it is an ungrounded primitive truth). I believe the most promising view to pursue here is that (Closure)'s truth is grounded in some truth about causation's real essence, and in the section that follows I will sketch how this might go. First, though, I will use the remainder of this section to defend my proposal in broad outline.

Perhaps the best way to do so is by expounding on my own view, mentioned in the introduction to the article. Again, I am a physicalist, but unlike typical physicalists, I deny that dualism is causally problematic in any interesting sense. In taking this line, I do not deny that the physical realm is causally closed, or that violations of causal closure are impossible, or that the causal closure of the physical realm is entailed by physics. I concede all these points, but deny that they add up to a causal problem for dualism, just as I deny that the truth, necessity, and entailment by physics of (ID-Closure) add up to a causal problem for the type identity theory. But then, where do I disagree with those physicalists who insist that dualism *is* causally problematic?

The key point of disagreement is that I claim that the causal closure of the physical realm is a *metaphysically superficial, philosophically uninteresting* truth about the world. It obtains only because there are no entities of the sort dualists posit, no nonphysical events. This is the metaphysically deep and interesting truth in the vicinity. It grounds a great many comparatively shallow truths, for instance, the truth that nonphysical mental events never occur during leap years, that no left-handed redhead has ever had a non-physical conscious experience, and, yes, that the physical realm is causally closed. To focus on the causal closure of the physical realm and maintain that it poses a special causal problem for dualism is metaphysically perverse in much the way it would be perverse to focus on these other shallow truths and take them to show that dualism has a special problem accounting for mental activity during leap years, or that it has a special problem accounting for the minds of left-handed redheads. What dualism really has is a far more general existence problem, just as we saw with the identity theory: it posits entities that do not exist. Everything else is derivative on that. Or at least so I claim.

We can use counterfactuals to further clarify my disagreement with typical physicalists. Typical physicalists and I agree both that the physical realm is causally closed and also that in fact there are no nonphysical events. But what if, counterfactually (and perhaps counterpossibly), there were such events? If there were, then I say they would (non-redundantly) cause all sorts of physical effects in violation of (Closure) – just as if, counterfactually, I owned a harmonica it would violate (Harmonica-Closure), and if, counterfactually (and counterpossibly), mental properties were identical with physical properties then events possessing such properties would violate (ID-Closure). And I make this counterfactual claim about (Closure) precisely because I hold that what grounds its truth is just that there are no

nonphysical events. If you were to take this ground away by adding such events to the world, there no longer would be anything grounding (Closure), there would be nothing to prevent its violation.

In contrast, Papineau, in setting out what he takes dualism's causal problem to be, claims that 'If conscious properties were non-material they would be ... epiphenomenal "danglers," caused by physical occurrences but themselves having no effects on physical activities.'³⁰ In endorsing this counterfactual, Papineau must be supposing that the causal closure of the physical realm has some explanation, some ground, that would obtain *even if* there were nonphysical mental events. Papineau does not say what this ground might be, but he cannot endorse the counterfactual he does while agreeing with me that what grounds (Closure)'s truth is just that there are no nonphysical events – if that's all there is to it, why would (Closure) continue to be true even if such events existed? By my lights, taking the truth (or necessity) of (Closure) to show that nonphysical mental events would be epiphenomenal danglers if they existed is akin to taking the truth of (Harmonica-Closure) to show that if you bought me a harmonica it would be an epiphenomenal dangler; it is akin to taking the truth (or necessity) of (ID-Closure) to show that if the type identity theory were true, mental events would be epiphenomenal. For the sake of his counterfactual, Papineau needs (Closure) to have a different sort of ground than (Harmonica-Closure) or (ID-Closure) has.

Perhaps my view that dualism is false but causally unproblematic is mistaken. Regardless, the view is *intelligible*. We should therefore want an account that explains how such a view differs from the more typical physicalist view that dualism *is* causally problematic, and we should expect such an account to clarify the burden involved in taking dualism to have a causal problem. My proposal is that the difference is to be explained in terms of how (Closure) is grounded, and that the burden facing physicalists who maintain that dualism has a causal problem is that they must take (Closure)'s truth to be grounded by something other than just the truth that there are no nonphysical events – they need a different sort of ground, or else they lose the distinction between (Closure) and various other causal closure theses, including (ID-Closure). As long as you agree with me that this is the burden that must be met to establish that dualism has a causal problem, you agree with the thesis of this article, even if you disagree with my further view that physicalists cannot meet this burden.

7. *Causation's real essence*

To further clarify my proposal, I will use this final section to sketch one potential account of the ground of (Closure)'s truth that would render dualism causally problematic on my view. Let me emphasize in advance that

I cannot hope to cover all possible options, so I will limit my attention to the sort of account I find most promising, one that appeals to causation's real essence. We will begin by looking at a particular example of such an account, but once the general idea is clear, alternative examples will be considered.

In a recent argument against substance dualism, Kim suggests that causation requires that there be some spatial relation between cause and effect.³¹ Assume for now this is right, and further assume (as Descartes held) that nonphysical mental events are not candidates to have spatial locations or enter into spatial relations. This potentially could ground (Closure)'s truth in a way that would render dualism genuinely causally problematic. But it depends on just what it means to say that causation 'requires' this. It is not enough that all actual or even all possible causal relations hold between spatially related events, for this would not causally distinguish dualism from the type identity theory. After all, all possible causal relations hold between events that do not possess mental properties that are identical with physical properties – since such properties are instantiated in no possible worlds – and yet we do not take this necessary truth about causation to show that the type identity theory is causally problematic.

But suppose instead the suggestion is that causation 'requires' that cause and effect be spatially related in the sense that this is part of causation's real essence, where causation has the real essence it does independently of how things stand with nonphysical events – whether such events are actual, possible, or whatever. Given this real essence, (Closure) would be true even if, *per impossibile* perhaps, nonphysical events existed, since causation would continue to have the real essence it does under this counterfactual and perhaps counterpossible supposition.

I am assuming here something like Kit Fine's conception of real essences, and in connection his distinction between properties that are essentially possessed and properties that are necessarily but accidentally possessed.³² In Fine's familiar example, Socrates necessarily has the property of belonging to the singleton {Socrates}, if he exists. But belonging to this set is not essential to Socrates; it does not help define what he is, and so it is an accidental property of his even if it is one he possesses necessarily (a necessary accident). Socrates has the essential properties he does independently of which sets he belongs to, independently even of whether there are such things as sets.

Similarly, if, as I have argued, (ID-Closure) is metaphysically necessary, then it is a necessary property of the causal relation that whenever some physical effect has a cause, it has a cause that does not possess any mental property identical with some physical property. But this is not plausibly an essential property of causation; it does not define what causation is. The reason causation possesses this necessary but accidental property is not because of anything very specific about causation's nature, but because,

independently of causation's nature, it is impossible for events to possess such properties.

In contrast, imagine that built into causation's very nature is the requirement that cause and effect be spatially related. In that case, causation's nature would by itself preclude causal relations from obtaining between physical effects and nonphysical causes, and so causation's nature would ground (Closure)'s truth. In that case, my proposal entails that dualism really would have a distinctively causal problem. The problem is posed by the nature of causation itself. Finally, we have found a metaphysically significant point of potential difference between (Closure) and (ID-Closure), a difference that would entail that dualism is distinctively causally problematic in a way the identity theory is not.

Turning back to epistemology briefly, there is reason to expect that this proposed metaphysical difference could help explain the alleged epistemic difference between (Closure) and (ID-Closure) discussed back in §3. Recall, the idea was that there is justification for believing (Closure) that is independent of any prior justification for believing the negation of dualism, while in contrast there is no justification for believing (ID-Closure) that is independent of any prior justification for believing the negation of the identity theory. To connect this to grounding, you might think that this epistemic difference obtains because we can know causation's real essence prior to settling the question of which mind-body theory is correct, much as we can know what is essential to Socrates prior to settling the vexed question of whether sets exist. Knowledge of causation's real essence allows us to infer (Closure)'s truth, but not (ID-Closure)'s. I won't further develop this epistemological suggestion here. I mention it just to lend support to my proposal in terms of grounding, and to reinforce my claim from above that if there is such an epistemic difference between the two causal closure theses (and again, I myself deny that there is), we should expect it to be at least partly explained by some non-epistemic, metaphysical difference between them.

Again, Kim's view of causation is but one example of how causation's real essence might ground (Closure)'s truth. Alternatively, inspired by various early modern philosophers, you might hold that part of causation's real essence is that causes must resemble their effects, and then further hold that nonphysical events would not resemble physical events enough to cause them. Or, inspired by Davidson's anomalous monism, you might hold that part of causation's real essence is that causal relations must be backed by strict laws, and then further hold that physical properties are the only candidates to enter into strict laws.³³ Or, inspired by so-called physical theories of causation, you might hold that part of causation's real essence is that causes must transmit or possess some conserved physical quantity, like energy or momentum, and then further hold that nonphysical entities are not candidates to transmit or possess such physical quantities.³⁴ Or you might hold

some further view yet. There are various potential proposals as to how causation's real essence might ground (Closure)'s truth in the sort of way needed to make dualism genuinely causally problematic.

On one hand, I claim it as a virtue of my proposal that you can plug into it all these different but familiar lines of causal criticism of dualism. On the other hand, I claim it as a further virtue of the proposal that when this is done, it becomes transparent just how controversial these familiar lines of causal criticism really are. To adopt any one of these views of causation's real essence is to take on substantive metaphysical commitments that go well beyond the commitments of physicalism itself; it is to take on a view of causation that, in my view, is wildly less plausible than physicalism itself.

Physicalists as such are free to be agnostic on what causation's real essence consists in. They are free to deny that it has a real essence, perhaps on the grounds that it is a gerrymandered relation that fails to carve nature at its joints. They are free even to hold that causation has a real essence that *fails* to ground (Closure)'s truth, provided that they insist that (Closure) is true nevertheless – that it has some other ground. For instance, you can be a physicalist who holds that, in principle, nothing about the nature of causation precludes nonphysical events from (non-redundantly) causing physical effects, but that as it turns out no such nonphysical events exist, and this is why (Closure) is true.

This point is obscured in standard accounts of what dualism's causal problem is supposed to be. If the problem merely consists in (Closure)'s truth, necessity, or entailment by physics, then it might seem that *every* physicalist is committed to regarding dualism as causally problematic, at least if we suppose that every physicalist must hold that all events are physical (i.e., must accept token physicalism), and that this is a necessary truth about the world.³⁵ No wonder then that so many physicalists end up embracing the idea that dualism is causally problematic. Doing so doesn't seem to saddle them with any theoretical commitments they aren't saddled with anyway. But surely this is mistaken. Regardless of whether you accept my proposal in terms of grounding, surely it is one thing to maintain that dualism is false, and another, further thing to maintain that it is causally problematic, just as it is one (plausible) thing to maintain that the identity theory is false, and another (in this case, absurd) thing to maintain that the identity theory is causally problematic.

If we divide the space of physicalist views in the way I recommend, I suspect that comparatively few contemporary physicalists will count as holding that dualism is causally problematic, that it is causally worse off than the identity theory. There will be some physicalists who have no view regarding what grounds (Closure)'s truth. Perhaps this is because the notion of grounding is still unfamiliar to them, or perhaps it is familiar but they have never considered the specific question of what grounds (Closure)'s

truth, or perhaps they have considered the question but have not settled on an answer. Fair enough. This does not undermine these philosophers' credentials as physicalists, since again, physicalism as such requires no view on the matter. However, I say that such physicalists are – or at least should be – agnostic on whether dualism is causally problematic. They are neutral on whether there is any metaphysically significant causal difference between dualism and the identity theory, the paradigmatic example of a causally unproblematic mind-body view.

Other physicalists will hold that the physical realm is causally closed just because everything is physical (the physicalist slogan), or, limiting our attention to events (the relata of causal relations), just because all events are physical. Such physicalists are – or at least should be – on my side in denying that dualism is causally problematic. This might not be how such physicalists presently understand the implications of their own view. But if not, I say they are confused. On their account, there is no metaphysically significant causal difference between dualism and the identity theory.

Finally, some physicalists will hold that the physical realm is causally closed for some other reason. They might think that (Closure)'s truth is grounded in causation's real essence, as we have been considering, or they might think it has some other ground that we have not explored here, or they might think it is an ungrounded primitive truth. These physicalists, and they alone, meet the burden attached to holding that dualism is genuinely causally problematic, according to my proposal. I suspect that this will be a minority of contemporary physicalists, although because the question of what grounds (Closure)'s truth is not often explicitly discussed, this is pure speculation.

At any rate, what grounds the causal closure of the physical realm is the key issue. Going forward, I believe that it should become a central, explicit focus for metaphysicians of mind interested in mental causation. The introduction of the notion of grounding within contemporary metaphysics is exciting because it promises to throw new light on old debates. The same is true of debates over mental causation, debates that otherwise might have seemed to be at an impasse. Grounding allows us to draw unfamiliar but intuitively plausible distinctions that the old debates had missed, thereby enlarging our conception of the metaphysical options.³⁶

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NOTES

¹ Classic defenses of the type identity theory include Place, 1956; Feigl, 1958; Smart, 1959; Lewis, 1966 and, 1972; and Armstrong, 1968.

² On grounding, see for instance Fine, 2001, 2010, 2012a, 2012b; Schaffer, 2009, 2012; and Rosen, 2010. The idea to frame this article's argument in terms of grounding was inspired by discussion with Paul Audi; see Audi, 2012a and, 2012b.

³ Kim, 2005, p. 15. As Lowe (2008, ch. 2) observes, the causal closure thesis has been formulated in subtly different ways by different authors. The exact formulation we use should not affect my argument.

⁴ See Davidson, 1967, 1969, 1970.

⁵ So for instance, my argument is meant to be compatible with Kim's (1976) more fine-grained conception of events as property exemplifications, even though that conception does not allow for token physicalist views that reject type physicalism: it entails that if a pair of properties are distinct, then any event that is the exemplification of one property will be distinct from any event that is the exemplification of the other.

⁶ A non-unicorn event is one whose constitutive object is not a unicorn. Since there are no unicorns, every actual event qualifies as a non-unicorn event, and (Unicorn-Closure) is thus true.

⁷ A not-my-harmonica event is one whose constitutive object is not my harmonica.

⁸ See Putnam, 1967, and Fodor, 1974, for the classic multiple realizability objection to the identity theory.

⁹ Taken from Papineau, 2001, but using Kim's formulation of the causal closure thesis.

¹⁰ If we wanted to reformulate the argument while dropping the Davidsonian conception of events in favor of the Kimian conception, we could replace (P3) with the following alternative premise: The physical effects of mental causes are not causally overdetermined by *wholly distinct* events. 'Wholly distinct' is then to be understood so that a mental event *realized* by a physical event does not qualify as wholly distinct from that physical event, even if it is not identical with it. The argument's conclusion, (C), would then be replaced with the following alternative conclusion: Mental events are *either* identical with *or realized by* physical events. Within the Kimian framework, this is a thesis that physicalists generally (whether they accept or reject the type identity theory) must accept, and that antiphysicalist dualists must deny. Thanks to an anonymous referee for comments on this point.

¹¹ In case it is not immediately obvious how to generate such arguments outside the discussion of mind-body theories, here is a sound causal argument for the conclusion that I do not own a harmonica (P1): (Harmonica-Closure); (P2): No musical instrument I own is epiphenomenal with respect to physical effects; (P3): No musical instrument I own is entirely causally redundant with respect to physical effects; (C): No musical instrument I own is a harmonica. The argument is plainly valid and each premise is true.

¹² In Tiehen (2015), I analyze this in terms of the *failure* of warrant *to transmit* from premises to conclusion. On the notion of transmission-failure, see for instance Wright, 2003, 2004; Davies, 2004; Pryor, 2004; Silins, 2005; Tucker, 2010. My analysis requires extending standard conceptions of transmission-failure in certain ways.

¹³ This would need to be refined in various ways for the proposal to be viable. To illustrate just one difficulty, imagine *S* is a subject who has no prior views on the identity theory and who has never even heard of the multiple realizability objection. I go up to *S* and express my sincere, justified belief that (ID-Closure) is true. Now, the basis of my belief is that the multiple realizability objection establishes the negation of the identity theory, which entails (ID-Closure). But I don't convey any of this to *S* – I simply tell her that (ID-Closure) is true. *S* knows that I am an expert in the philosophy of mind, and so on the basis of my testimony *S* justifiably believes (ID-Closure). She does so prior to taking any stance on the identity theory, and so prior to justifiably believing the negation of the theory. At this point, however, *S* goes on to reason in accordance with the causal argument against the identity theory, and concludes that the identity theory is false. In this scenario, *S*'s justification for believing (ID-Closure) does not depend on any prior justification that she possesses to believe the negation of the identity theory, and so the causal argument against the identity theory can, after all, be her epistemic basis for knowing the identity theory's negation. Still, this does not show that the identity theory really is causally

problematic after all – if the present proposal in the text entails otherwise, that is a reductio of the proposal. I believe there are ways to modify the proposal to get around this (and other) difficulties, but doing so here would take us too far afield.

¹⁴ Papineau (2001) and Melnyk (2003, pp. 289–290) offer inductive defenses of (Closure). Tiehen (2015) denies that (Closure) is inductively confirmable.

¹⁵ Kripke, 1980, p. 24. Kripke doesn't fully commit himself to unicorns' metaphysical impossibility.

¹⁶ Here are just a few of the major figures to advance such an argument: Fodor (1981); Lewis (1990); Dennett (1991, pp. 34–5); and Papineau (2001).

¹⁷ There is debate over whether these entailments must be entirely a priori or whether they can be in part a posteriori—see for instance the exchange between Block and Stalnaker (1999) and Chalmers and Jackson (2001). But all parties to the debate agree that physicalism requires some such entailment for all truths.

¹⁸ See n. 34 below.

¹⁹ I take propositions to be Russellian and so to have worldly constituents: they are made up of objects and properties, for instance, rather than concepts thereof.

²⁰ Fine (2001, pp. 15–16) also takes grounding to be a relation between true propositions, but in addition is open to treating 'ground' as a sentential operator, allowing him to avoid reference to propositions or truth. Schaffer (2009) takes the grounding relation to hold between various sorts of entities, including but not limited to true propositions. Audi (2012b) takes the grounding relation to obtain between facts, not true propositions. The differences between these views will be irrelevant to our discussion.

²¹ Fine (2012b) distinguishes between a notion of strict ground, which is irreflexive, and weak ground, which is reflexive. I am thus working with something like Fine's notion of strict ground.

²² Schaffer (2012) argues that grounding is not transitive, drawing on alleged failures of the transitivity of causation as an analogy. I will not try to address this argument here.

²³ Cf. Schaffer, 2009, p. 364.

²⁴ Here, I am content to beg the question against views denying that causation is (always) a relation, like Mellor, 1995, and Lewis, 2000, p. 100.

²⁵ In what follows I will often drop explicit mention of the truth that causation is a relation requiring *relata*, but I continue to assume that this is part of what grounds the truth of (Harmonica-Closure), and that it plays a similar role in grounding the truth of other causal closure theses to be discussed.

²⁶ That I do not own a harmonica is a so-called *negative truth*. Many philosophers deny that negative truths can be primitive, insisting instead that they be grounded in non-negative features of reality—see the voluminous literature on finding truthmakers for negative truths. We can remain agnostic on the question. The discussion assumes that negative truths can serve as the grounds for other truths, but leaves it open that negative truths themselves may have non-negative grounds.

²⁷ Cf. Lowe's (2005) discussion of attempts to analyze ontological dependence in terms of counterfactuals.

²⁸ See Stalnaker, 1968; and Lewis, 1973.

²⁹ Cf. Sider, 1999; and Merricks, 2003, pp. 5–7, on the use of counterpossibles to draw out the consequences of necessarily false metaphysical hypotheses. On the use of counterpossibles to make sense of causal claims involving metaphysically impossible entities, see Bernstein, forthcoming.

³⁰ Papineau, 2001, p. 11.

³¹ Kim, 2005, ch. 3.

³² Fine, 1994.

³³ Davidson, 1970.

³⁴ See for instance Salmon, 1997, and Dowe, 2000, although these authors do not themselves put forward their view as a claim about causation's real essence. Back in §5 we rejected the

proposal that what makes dualism causally problematic is that physics entails (Closure), while allowing that there may be a better way to develop the thought that physics (or science more generally) tells us that dualism has a causal problem. One example of how this might go is to maintain that science reveals real essences, and that physics reveals that causation's real essence involves the possession or transference of some conserved physical quantity.

³⁵ It is generally thought that physicalism requires not just that nonphysical entities happen not to exist, but that their existence is at least nomologically impossible.

³⁶ Thanks to Anthony Dardis, Douglas Cannon, Doug Keaton, Andrew Melnyk, Matthew Parrott, Ariela Tubert, Gene Witmer, Johanna Wolff, and an anonymous referee for discussion and comments on the paper.

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