Must Physicalism Imply the Supervenience of the Mental on the Physical?

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The standard arguments against physicalism, such as the knowledge argument and the zombie argument, purport to establish that certain mental properties do not supervene on the fundamental properties of physics, where supervenience is supposed to capture the idea, roughly speaking, that one set of properties determines, or suffices for, another set of properties.[1] The supervenience of mental properties on fundamental physical properties is taken as a necessary condition for physicalism because the failure of such supervenience is thought to render mental properties nonphysical; and if there is something nonphysical, then physicalism, which holds that everything is physical, is false. Although many of those engaged in the debate over the mind-body problem object to various aspects of these standard antiphysicalist arguments, most, if not all, agree that if physicalism is true, then mental properties supervene on fundamental physical properties. I aim to question this widely held view. Why should the supervenience of the mental on the physical be a necessary condition for physicalism?

I. A Weak Supervenience Principle

How, exactly, are we to understand the supervenience relation at play in the standard antiphysicalist arguments? In the literature on physicalism, one finds a plethora of different supervenience principles along with a sprinkling of debates over whether the stronger of these versions can serve as necessary conditions for physicalism. However, it is widely, if not universally, accepted that a weak supervenience principle, of the sort proposed by Frank Jackson, David Chalmers, and David Lewis is necessary for physicalism.[2] It is this weak version of supervenience that is my target. For simplicity, I focus on Jackson's formulation of supervenience, though my reasons for questioning whether it is necessary for physicalism apply to the other formulations as well.[3]

Jackson states his supervenience principle, what I call, "restricted supervenience," as follows:

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[1] These two standard arguments against physicalism are presented, respectively, in Frank Jackson, "What Mary Didn't Know," *Journal of Philosophy* 83 (1986): 291–295 and David Chalmers, *The Conscious Mind: In Search of a Fundamental Theory,* (New York and Oxford: Oxford University Press, 1996).

[2] Frank Jackson, *From Metaphysics to Ethics: A Defense of Conceptual Analysis* (Oxford: Clarendon, 1998), Chalmers *op. cit*., and David Lewis New Work for a Theory of Universals," *Australasian Journal of Philosophy* 61 (1983): 343-377.

[3] Though my arguments apply equally to Lewis', Jackson's and Chalmers' versions of supervenience, Stephen Leuenberger, in "*Ceteris Absentibus* Physicalism," in D. Zimmerman (ed), *Oxford Studies in Metaphysics*, Oxford: Oxford University Press 2008, 145-170, argues that Chalmersian supervenience alone is not necessary for physicalism. Following John Hawthorne (Hawthorne, J, 2002, "Blocking Definitions of Materialism," *Philosophical Studies* (2002), 110(2): 103-113. Leuenberger points out that Chalmersian supervenience, which states, roughly, that any world that duplicates all the fundamental physical properties of our world, duplicates all the positive properties of our world, is not compatible with the possibility of "blockers," which are understood as nonphysical entities that block phenomenal experiences, such as pain. Hawthorne argues that if blockers are possible, physicalism is false, and so we should reject Lewisian and Jacksonian supervenience as sufficient conditions for physicalism. However, Leunberger argues that physicalism should be seen as compatible with the possibility of blockers and so Chalmersian supervenience is not necessary for physicalism. Luenberger formulates his own thesis of physicalism, "*ceteris absentibus* physicalism," which, like Lewis' and Jackson's, is consistent with the possibility of blockers. My argument, applies to *ceteris absentibus* physicalism as well.

> Restricted Supervenience (RS): Any world which is a *minimal* physical duplicate of our world is a duplicate *simpliciter* of our world.[4]

A minimal physical duplicate is, as Jackson puts it, what you get "if you duplicate our world in all physical respects and stop right there," where all "physical respects" means, roughly, the entities, properties, laws and relations posited by the physical sciences, or what I shall call the "narrowly physical."[5] In other words, then, RS says that any world that duplicates the narrowly physical properties, relations and laws of our world and nothing extra, save for what follows by necessity from this, duplicates everything in our world.

Although there is a lively debate in the literature about whether RS is a sufficient condition for physicalism, many seem to find the claim that physicalism implies RS simply obvious, perhaps even definitional.[6] Of course, if it were definitional, we would have a good explanation for this rather rare occurrence of widespread agreement in philosophy. However, I shall suggest that not only does it not follow by definition, but it doesn't necessarily follow at all.

II. Arguments that Physicalism Must Imply Supervenience

Although most philosophers simply assume that physicalism entails RS, one occasionally runs across arguments for this entailment. Jackson, for example, defends it as follows:

> Suppose, to start with, that [RS] is false. Then our world and some minimal physical duplicate of it differ: at least one contains something the other does not. But, by definition, a minimal physical duplicate of our world does not contain any laws and particulars, or instantiate any properties or relations, that do not appear in our world—everything in any minimal physical duplicate of our world is in our world. Does our world contain some laws or particulars, or instantiate some properties or relations, that the minimal physical duplicate does not? But then these particulars or properties and relations would have to be non-physical, as our world and the duplicate are physically identical, and physicalism would be false. Hence, if [RS] is false, physicalism is false. That is, physicalism is committed to [RS].[7]

The argument is straightforward; laying it out in steps we have:

1) Suppose RS is false.

2) If RS is false, then our world and some minimal physical duplicate of it differ: at least one contains something the other does not.

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[4] Jackson *op. cit.*, p.12. Jackson calls this "thesis (B)" rather than "restricted supervenience."

[5] More specifically he says, "physicalists have three reasonable way[s] of explaining what they mean by physical properties and relations—they are those that we need to handle the nonsentient, they are broadly akin to those that appear in current physical science, they are those we need to handle the relatively small." (Jackson *op. cit.* p. 12.) For a discussion about how to interpret "minimal physical duplicate" see Gene Witmer, "Supervenience physicalism and the problem of extras," *Southern Journal of Philosophy* 37 (2) 1999:315-31.

[6] For arguments that RS is not sufficient for physicalism as well as attempts to revise it so as to make it sufficient
See, for example, Horgan, T. 1993, "From Supervenience to Superduperveninece: Meeting the Demands of a Material World, *Mind,* 102 (408) (1993): 555-8 and Jessica Wilson, "Supervenience-based Formulations of Physicalism," *Nous*, 39:3 (2005): 426-459.

[7] Jackson *op. cit.,* p.13.

3) But by definition, every entity or law in a minimal physical duplicate of our world is in our world, and every property or relation instantiated in a minimal physical duplicate of our world is instantiated in our world.

4) Moreover, if our world were to contain or instantiate anything that the minimal physical duplicate does not, then whatever it is wouldn't be physical, and physicalism would be false.

5) Thus, physicalism implies RS.

Premises 2) and 3) are, as Jackson points out, self-evident. However, 4) requires defense. It tells us that if our world were to contain something that a minimal physical duplicate would not, then whatever it is would not be physical, where the notion of physical at issue is not the narrow sense of "physical," since the existence of something not narrowly physical, such as a blade of grass, does not suffice to refute physicalism, but, rather, the "broadly physical" which encompasses, the narrowly physical as well as grass, tables, chairs and, assuming that physicalism is true, everything else. [8] But why should we accept this fourth premise? Why must our world contain something broadly nonphysical, if it were to contain something that a minimal physical duplicate would not? If you assume that physicalism implies supervenience, then these our-worldly supernumeraries would count as nonphysical; but obviously we cannot make this assumption in the context of an argument intended to prove the implication. The only reason Jackson provides for thinking that these extra occupants must be nonphysical is that "our world and the duplicate are physically identical."[9] Yet how do we know this? Certainly, we know that our world and the minimal physical duplicate are narrowly physically identical since a minimal physical duplicate duplicates our world in all narrowly physical respects. But how do we know that they are broadly physically identical? How do we know, in other words, that anything in our world that does not appear in the minimal physical duplicate cannot be broadly physical?[10] Jackson hasn't provided an argument for this, yet we must know this in order to conclude that the difference between worlds is due to our world containing something broadly nonphysical, which, in turn, is what is needed to show that physicalism would be false in such a situation. [11]

Gene Witmer defends the implication from physicalism to supervenience, as well, telling us that if mental properties are nothing over and above fundamental physical properties (as is claimed by physicalism), then fundamental physical properties suffice for mental

[8] Or, as some prefer to see it, if physicalism is true, the broadly physical encompasses everything contingent or causally efficacious. See, for example, Andrew Melnyk, *A Physicalist Manifesto: Thoroughly Modern Materialism,* (Cambridge: Cambridge University Press, 2003, p. 27).
[9] Jackson, *op. cit.,* p.13.
[10] Remember, we are assuming that RS fails so we cannot merely say that in a minimal physical duplicate the rest of the physical properties come along for free, as it were. If they did, it would of course be trivial that anything that is in our world that is not in a minimal physical duplicate world would be nonphysical.
[11] Apart from this argument for why physicalism implies RS, Jackson also tells us that supervenience is of use in formulating physicalism because supervenience excludes independent variation between fundamental physical properties and mental properties, and such independent variation would imply that mentality is over and above the fundamental physical. For example, he explains, position in space-time would seem to be over and above what can be specified by three coordinates since although four coordinates completely specify position in space-time, the position of an object in space-time can vary without varying any of its three coordinates; similarly average density is over and above mass since although mass and volume completely specify average density, you can vary average density without varying mass. (Jackson *op. cit.* p.9.) But must physicalism exclude independent variation between fundamental physical properties and mental properties? Jackson's examples are of identities and so certainly exclude such variation. Four coordinates completely specify position in space-time because an object's position in space-time just is its position specified by these coordinates; a body's mass and volume completely specifies its average density because average density just is total mass divided by total volume. However, physicalism needn't imply mind-brain identity.

properties (as is asserted by supervenience).[12] The general argument, he says, is "short and sweet":

> Suppose Q didn't suffice for P. That is, suppose it is possible for it to be true that Q, while not true that P. Then something in addition to the fact that Q is needed to make it true that P, in which case, surely, the fact that P *is* something over and above the fact that Q.

The argument is short, but I question its sweetness. To be sure, if P does not supervene on Q, then P will be, in some sense, over and above Q. But Witmer has not argued that physicalism must imply that higher-level properties cannot be over and above lower-level properties. Certainly, physicalism must imply that all properties are physical in the broad sense, but we do not yet have a reason for thinking that in order for higher-level properties to be physical in the broad sense, they must supervene on fundamental physical properties.

Perhaps the most common reason for thinking that physicalism requires a supervenience principle such as RS is that physicalism is thought to imply that God, as it were, after creating the fundamental physical facts, rested; and the failure of RS means that there was more work to be done. But why must physicalism imply this?

The idea of physicalism entailing that God had only to set the quantum gambol in motion has its roots in Saul Kripke's figurative description of the relation between pain and C-fiber stimulation.[13] On Kripke's account, in order for us to feel C-fiber stimulation as pain, God had to perform an extra task beyond merely creating C-fiber stimulation; thus the relation between C-fiber stimulation and pain, according to Kripke, could not be identity. Many, then, take this one step further and also assume that if God had more work to do, or in other words, if supervenience fails, then physicalism must be false. Yet if we accept that physicalism need not be an identity thesis, why should the failure of supervenience have this implication? Physicalists who accept the "all-God-had-to-do" metaphor do not think that God actually enters the picture. Rather, God is understood as a placeholder for certain unknown forces of nature. So as long as God doesn't really exist, what's wrong with having her do a little extra work?

This extra work may appear suspect because it seems to involve further acts of creation, as it were, beyond the initial creation of that extremely hot, swarming soup that emanated from the big bang. But if physicalists can accept that nature can take care of the initial creation, it seems that they should be able to accept that, if further work were needed, nature could take care of that as well. How she does it, might be rather mysterious to us, at least for now, however, just as with the big bang, this need not be a reason to take the results of her work as nonphysical.[14]

To be sure, if RS or some other similarly weak supervenience principle does not hold in our world, then additional laws are needed to account for observed regularities between lower-level and higher-level properties. For example, if the properties, entities and laws of chemistry did not supervene on the properties, entities and laws of physics, we might need an extra law that guarantees that every time that, say, a certain quantum configuration occurs, a certain event at the chemical level occurs. And one might object that this is exactly the type of law that would hold between the neural and the mental, if dualism were true. This may be, but what is the

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[12] Gene Witmer, "Sufficiency Claims and Physicalism: A Formulation," in Gillett, C. and Loewer, B., *Physicalism and Its Discontents,* (Cambridge: Cambridge University Press, 2001). See also Barry Loewer, "From Physics to Physicalism," in Gillett and Loewer *op. cit.* p. 39.
[13] Saul Kripke, *Naming and Necessity* (Cambridge: Harvard University Press) 1980, pp. 153-154.
[14] Some may see this position as a robust emergentist view. If so, my argument implies that robust emergentism could be a version of physicalism. For another perspective on emergentism as a form of physicalism see William Wimsatt, "Emergence as Non-Aggregativity and the Biases of Reductionisms," *Foundations of Science,* 5(2) (2000), 269-297.

argument that such linking laws, in and of themselves, are incompatible with physicalism? The law of gravity, for example, would presumably also hold if dualism were true. Yet since the law of gravity does not pose a problem for physicalism, it seems that the mere fact that a certain type of law would need to hold in a nonphysical world does not imply that any world with that type of law is nonphysical.

No doubt, there is Occham's razor to consider, and a world with additional laws connecting higher and lower-level properties might seem ontologically profligate. However, this razor is merely a methodological tool, and in terms of leading us to the true nature of the world, it has always been of the disposable variety. In other words, when devising a theory, it may be preferable to pick the simpler of two empirically equivalent hypotheses, but the world itself might not conform to the simpler hypothesis. The world, even if physicalism is true, might not be clean-shaven. Or, at least, there seems to be no reason to think that physicalism excludes this possibility.

III. Physicalism without Supervenience

If there is no more to the argument that physicalism requires the supervenience of the mental on the physical than the type of considerations presented by Jackson and Witmer, along with the all-God-had-to-do contention and some worries about adventitious laws—and from what I can tell there is nothing significantly different from this to be found in either the literature or the lore—we should conclude that there are no good arguments for the view that physicalism requires supervenience. Although I take this to be a worthwhile result in itself since hitherto these arguments have gone unquestioned, it is, of course, not yet an argument against the view that physicalism entails the supervenience of the mental on the fundamental physical, especially given that there are those who think this entailment doesn't even call for argument. What should come next, then, is the knock-down refutation the view. This, alas, I cannot provide. However, here is an argument of a rather gentler persuasion.

Imagine that our world were such that duplicating our fundamental physics—that is, duplicating the world's quantum state, or whatever it is that is actually fundamental—would fail to duplicate any higher-level entities or properties whatsoever.[15] That is, imagine that duplicating fundamental physics could give us a world with, say, just quarks, leptons, their antiparticles and such like, but, no chemical bonds, no molecules, no cells, no organisms. If our world were like this, higher-level properties would fail to supervene on fundamental physical ones. Must this be a world in which physicalism is false? Or to narrow the question down, must we take the chemical bonds (and the properties thereof) in this world as nonphysical? There seems to be no reason to think that we must. Yes, in such a situation, chemical bonding would not supervene on the fundamental physical properties, but why should this alone matter as to whether chemical bonding physical? It seems that it shouldn't. Yet if the failure of chemical bonding to supervene on fundamental physics does not suffice to make chemical bonding nonphysical, the failure of any other higher-level property, including mental properties, to supervene on physics should, it seems, similarly not suffice to make those higher-level properties nonphysical.[16] In other words,

[15] This supervenience base is narrower than Jackson's, which encompasses all of the physical science. However, as I'll suggest shortly, a similar argument can be made with a broader supervenience base.

[16] I am assuming that facts about composition, that is, facts about when certain entities compose a further object, are contingent since, for example, in the imagined scenario the fundamental entities of physics only contingently compose chemical bonds. Though this is a controversial view, it does have its defenders. See, for example, Nolan, D. *David Lewis,* McGill-Queens University Press, 2005 and Cameron, R. "The Contingency of Composition," *Philosophical Studies,* 133, 2007: 99-121.

if the nonsupervenience of chemical bonding on physics is consistent with physicalism, then the nonsupervenience of the mental on physics should be consistent with physicalism as well.

Are we loath to take chemical bonding as nonphysical merely because we are utterly convinced that it does supervene on physics? For some, this may be part of the motivation. But I think it is not all of it, for I think that if it were widely accepted that chemical bonding does not supervene on physics, even the staunchest believer in the implication from physicalism to supervenience would relent; the nonsupervenience of chemical bonding on physics just doesn't matter enough to make us give up physicalism.

Is it even possible to imagine that chemistry fails to supervene on physics? *A priori* physicalists hold that if physicalism is true, then the fundamental physical properties of our world *a priori* necessitate the higher-level properties of our world.[17] Thus, for the *a priori* physicalist, if physicalism is true, it is not possible to imagine coherently that a world that duplicates our physics (in the relevantly restricted way) fails to duplicate everything else about our world.[18] But even *a priori* physicalists think that physicalism is a contingent doctrine in as much as it could have been false. For example, they allow for the possibility of Cartesian dualism, which involves a physics that is substantially different from ours, a physics which is such that duplicating it would not duplicate the mental realm. Thus, it seems that they would also allow for the possibility of a physics that could be duplicated without duplicating anything else. If in order to clearly imagine this physics-only scenario you, you need to imagine a fundamental physics different from our own, so be it. My point remains that it is at least not clear why a world (possibly different from our own) whose physics does not necessitate (*a priori* or otherwise) any higher-level properties must be nonphysical. David Lewis identified a weak supervenience principle along the lines of RS as a minimal physicalist commitment, a principle shared by all versions of physicalism.[19] But the failure of chemistry to supervene on physics is actually compatible with various apparently physicalistic views. For example, if chemistry failed to supervene on physics we could still maintain a mind-brain identity thesis, one that holds that mental properties just are certain neural properties, since even if duplicating physics would fail to duplicate the chemical and everything above that, it still could be that, say, experiencing intense, painful heat is nothing more than activity in the anterior cingulate cortex (or whatever it is that on the identity theory is thought to be identical to such an experience).[20] Mind-brain identity might not be sufficient for physicalism, if, say, the brain itself is fundamentally constituted by little minds. But supervenience could fail in this way even if the mind-brain identity theory held and the fundamental constituents of the world were entirely nonmental. The failure of supervenience of chemistry on physics is also consistent with eliminativism since it is compatible with there being no mental properties at all in our world. Yet a world bereft of mentality, it seems, could be physical regardless of whether chemistry supervenes on physics.[21]

Of course, even if chemistry fails to supervene on physics, the mental could still supervene on the neural, and ultimately on the chemical in the sense that any world that

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[17] See, for example, Jackson *op. cit.* and Chalmers *op. cit.*

[18] For a discussion of the type of imagination thought to be involved in such cases see David Chalmers, "Does Conceivability Entail Possibility?" in Gendler, T., and J. Hawthorne (eds.) *Conceivability and Possibility*, (Oxford: Oxford University Press) 2002.

[19] Lewis, *op. cit.* p. 364.

[20] Note that this lower-level failure of supervenience is distinct from the higher-level failure of supervenience between the mental and the neural that Kripke argues refutes the mind-brain identity theory.

[21] In order to satisfy the physicalists, some might want to add that there are also no irreducible moral properties. In other work I discuss what sorts of properties physicalists might want to exclude in their ontology. See, for example, my "Physicalism in an Infinitely Decomposable World" *Erkentnis,* 64: 2, (2006) pp. 177-191, and (2009) *op. cit.*

minimally duplicates the chemical might also duplicate the mental. Thus, one might think that all my thought experiment shows is that if our world were like this, then the supervenience base should expand to include the chemical, or as Jackson suggests, all the physical sciences. But if physicalism does not require the chemical to supervene on physics, why should it require the mental to supervene on the physical sciences? Of course, the realization that that the mental does not supervene on the physical sciences might take physicalists aback. However, if the world were not generally ordered by supervenience relations, physicalists should take this in stride: "That's just the way the physical world is," they should say.

The reason, as I see it, why physicalism could still hold in such a disorderly world is that the core physicalist commitment is a rejection of the idea that mentality requires special consideration, as it were, in the creation of the universe, a rejection of the idea, that in order to set the universe in motion, God needed to create not only fundamental physics, but also mentality, in other words, that the command "let there be light," gave rise to electromagnetic radiation as well as to the light of reason. To be sure, it is unclear just what precise conditions must be met in order to show that the mental is not given this sort of special consideration. However, if the universe is generally unordered by supervenience relations, the mere failure of mental-physical supervenience does not exalt mentality. If what really matters to physicalists is that the mental fits into our world more or less like any other higher-level features of the world, the quarks-and-leptons-only possibility or the-natural-sciences-only possibility should be perfectly, physically acceptable. Yet if such possibilities are acceptable, even a weak form of supervenience, such as RS, is not a necessary condition for physicalism.

This may at first sound wrong, for we've all been steeped in supervenience lore. But there is an important question that has not been addressed in this tradition: Why should the existence of a supervenience relation be important to physicalists? To respond, "that's just what we mean by 'physicalism,'" would be reasonable, if a supervenience thesis were included merely as part of a stipulative definition of "physicalism." Typically, however, this is not the game being played. Rather, when philosophers implicitly or explicitly understand physicalism as entailing supervenience, they aim to capture what those involved in the debate think is really at stake, that is, to capture what Chalmers calls "the spirit" of physicalism.[22] I have been arguing that when we understand physicalism as entailing supervenience, we do not capture this, for the relevant physicalist commitment is not to the supervenience of the mental on the physical but to the idea that mentality fits into the world more or the less the way such things as chemical bonding, photosynthesis and biological fitness fit into the world. One way this could happen would be if all higher-level features of the world were to supervene on the properties, entities and laws of physics. But another way would be if supervenience failed altogether. If so, physicalism does not entail the supervenience of the mental on the physical.

Since many see physicalism as espousing a commitment to the ontological fundamentality of physics, another response to the question of why a supervenience relation is important to physicalists is that if everything ultimately supervenes on fundamental physics, fundamental physics acquires a privileged place in our ontology. However, physics could still be more fundamental than the other sciences in a world without supervenience. For example, even if higher-level features of the world failed to supervene on fundamental physics, physicalists could still uphold the primacy of physics in claiming that that physics, as opposed to, say, genetics, studies certain aspects of everything: quarks and leptons comprise genes but not vice versa.

[22] David Chalmers, "Consciousness and its Place in Nature" in D. Chalmers, ed., *Philosophy of Mind: Classical and Contemporary Readings* (Oxford University Press) 2002, p. 265

According to others, the relevant physicalist commitment is not to physics, but to the fundamental role nonmental reality plays in our ontology; such philosophers take physicalism as implying the view that everything else supervenes upon nonmental reality.[23] However, my point applies here as well: even if the mental does not supervene on the nonmental, such "*via negativa*" physicalists, as they are sometimes called, could still hold that the nonmental is more fundamental than the mental because the mental is composed of the non-mental but not vice versa.[24]

If the failure of mind-body supervenience does not show that physicalism is false, what else might show this? One possibility is that that physicalism would be false, if everything save for the mental were to supervene on the narrowly physical (be this fundamental physics, or the physical sciences more generally). This instance of failed supervenience would matter, as I see it, because of that core physicalist commitment to the idea that that the mental does not require a special place in the order of the universe. And this, in turn, matters, as I see it, because a world-view that exalts the mental, suggests that humans are exalted as well, which itself is a view that hints at, though does not imply, the clearly antiphysicalist conception of the world being created by God with us in mind. If this is right, we then have a correct necessary condition for physicalism: mental properties are not uniquely nonsupervenient on (narrowly) physical properties, a double *via negativa,* as it were.[25] It seems to me, then, that the mere failure of mind-body supervenience does not refute physicalism, but its unique failure does.

Although others may not explicitly claim that the crux of the debate over physicalism is whether mental properties uniquely fail to supervene on physical properties, this view is implicit in certain arguments against physicalism. For example, although many explicitly state that physicalism implies that all higher-level facts about our world supervene on the fundamental facts of physics, it is not uncommon to see the standard antiphysicalist arguments underscored by the claim that, apart from the nonsuperveninece of the mental on the physical, we do not find similar failures of supervenience in any other relevant cases.[26] This addition would be superfluous if the mere supervenience of the mental on the physical were a necessary condition for physicalism. But, if I am correct, it is not superfluous. Rather, it is essential precisely because, in itself, the failure of the mental to supervene on the physical—despite what many explicitly say—doesn't really matter to physicalists. If so, physicalism does not imply even a weak mind-body supervenience principle of the sort formulated by Jackson, Lewis and Chalmers.

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[23] See, for example, Joseph Levine, *Purple Haze: The Puzzle of Consciousness* (Oxford: Oxford University Press) 2001, Seth Crook and Carl Gillett, "Why Physics Alone Cannot Define the 'Physical,'" *Canadian Journal of Philosophy*, v.31 (2001), pp.333-60, and Jessica Wilson "On Characterizing the Physical," *Philosophical Studies* 131 (1) (2006): 61-99, though Wilson also maintains at least a verbal commitment to the priority of physics. I have also assumed that the supervenience of the mental on the fundamentally nonmental is a necessary condition for physicalism in various papers, such as "What is the Physical?" in *Oxford Handbook in the Philosophy of Mind,* McLaughlin B. and A. Beckermann. eds., (Oxford: Oxford University Press), 2009 pp. 173-188.

Are these philosophers changing the meaning of the term "physical"? Not necessarily since they could be understood as—and I think they see themselves as—uncovering that to which those who uphold the priority of physics are, despite their rhetoric, truly committed. Nevertheless, they are revising the notion of physicalism from how it was used by Otto Neurath and Rudolph Carnap, who first introduced the term, physicalism, and understood it as a linguistic thesis to the effect that every meaningful statement can be translated into a statement couched in purely observational terms. See Otto Neurath, 'Physicalism: The Philosophy of the Vienna Circle' in R.S. Cohen, and M. Neurath (eds.), *Philosophical Papers 1913–1946*, *Dordrecht: D. Reidel Publishing Company*, 1983, pp. 48–51 and Ruldolph Carnap, "Psychology in Physical Language," in A.J. Ayer (ed.), *Logical Positivism*, (New York: The Free Press), 1959, pp. 165–198. However, this understanding of physicalism has long been left behind.

[24] See Carl Gillett, C. and Gene Witmer "A 'Physical' Need: Physicalism and the *Via Negativa*," *Analysis 61:4* (2001), for a criticism of *via negativa* physicalism and Barbara Montero and David Papineau, "The *Via Negativa* Argument for Physicalism," *Analysis*, Vol. 65, No. 3 (2005) pp. 233-237, for a defense of it.

[25] Or for those who favor the *via negativa* with respect to what counts as physical (that is, for those who take the fundamental physical to be the fundamental nonmental) we have the triple negative: mental properties are not uniquely nonsupervenient on fundamental nonmental properties.

[26] see, for example, Chalmers *op cit.* (1996), p. 38.

IV. The Relevance to the Mind-Body Problem

How would abandoning the view that physicalism implies mind-body supervenience affect the debate over the mind-body problem? Since the standard antiphysicalist arguments aim to disprove physicalism by refuting mind-body supervenience, they would not attain this end. Zombies, those microphysical duplicates of us that lack consciousness, could be consistently accepted as possible even by those who uphold physicalism. This, of course, does not show that physicalism is correct, but just that the antiphysicalist's arguments fail. To improve them, if I am right, antiphysicalists would need to show not only that the mental does not supervene on the fundamental physical, but also that everything else does.[27] As for those who aim to defend physicalism, they could, if they so desire, continue their crusades against zombies. However, on my view, another option emerges: they can turn to questioning whether supervenience on the fundamental physical is ubiquitous in the nonmental realm, for if it is not, the possibility of zombies might be irrelevant.

Is it reasonable to question the ubiquity of supervenience in the nonmental realm? My sense is that although some philosophers of science question whether we can reductively explain chemistry and other higher-level sciences in terms of physics, they are hesitant to claim that these higher-level sciences do not supervene on physics because, after all, the philosophers of mind say that this would mean that physicalism is false! [28] As I have tried to argue, however, there seems to be no reason to think that physicalism requires even the sort of weak supervenience principle proposed by Jackson. And once this requirement is given up, it just might happen that the clues which lead some philosophers to question the reducibility of higher level sciences to physics would lead these same philosophers to question the supervenience of higher level sciences on physics.

How would the debate over the mind-body problem be affected if it were generally accepted that the hierarchy of the sciences is not organized in terms of supervenience? Assuming that mentality does not reside at the level of fundamental physics, one possibility is that this would put an end to the debate over physicalism. Minds would fit into the physical world just as chemical bonds do and thus would seem to be perfectly physically acceptable. Another possibility, however, is that a new necessary condition for physicalism would arise and the debate over the mind-body problem would revolve around whether mental properties satisfy this necessary condition. Yet what this necessary condition could be is a wide open question.

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[27] Or at least they need to show that everything else of significance does. Chalmers argues that indexical facts do not supervene on fundamental physical facts but that this is readily settled with the addition of a fact about the location of the agent in question. (See Chalmers *op. cit.* p. 84-85) Moreover, according to some, the basic physical laws do not supervene on the fundamental physical properties. See, for example, Michael Tooley, "The Nature of Laws," *Canadian Journal of Philosophy*, 7, 1977: 667–698 and Jessica Wilson "On Characterizing the Physical," *Philosophical Studies* 131 (1): 61-99. *Philosophy*, 7, 2006: 667–698. Yet this can be easily addressed by adding the basic laws to the supervenience base (as does Chalmers *op. cit.* p. 86 and Jackson *op.cit.*, p.13. A further question is whether physicalism is and ought to be incompatible with haecceitism, which is, roughly, the thesis that in addition to all the facts about the way things are, there are further facts about which object is which. Thus, if haecceitism is true, a world could be qualitatively identical to our world yet it might be, for example, that President Obama and Martha Stewart switch places so that, despite the lack of any perceptible differences between this other world and ours, in the other world President Obama is Martha Stewart and Martha Stewart is President Obama. According to Brian McLaughlin, B. 2001, "On the Limits of *A Priori* Physicalism," in McLaughlin, B. and Cohen J. (eds.), *Contemporary Debates in Philosophy of Mind,* Oxford: Basil Blackwell, 2001, pp. 200-224, haeccietism is incompatible with RS; as he sees it, it is common ground that physicalists reject haeccietism, (p. 201). If what I am arguing is correct, physicalists could consistently accept that haeccietistic properties fail to supervene on the fundamental physical properties, or at least, if they reject haeccietism, it must be for a reason other than its inconsistency with RS.

[28] For an argument against the reduction of chemistry to physics see Jaap van Brakel *Philosophy of Chemistry: Between the Manifest and the Scientific Image*, Leuven: Leuven University Press.
(2000, pp. 119-150).