

*Elias E. Savellos And Ümit D. Yalçin (eds.) Supervenience: New Essays* (Cambridge University Press, Cambridge: 1995)<sup>1</sup>

*SUPERCALIFRAGILISTICEXPIALIDOCIOUS*

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I must confess to some disappointment at this volume, notwithstanding the excellence of many of the contributors. Partly this is because too few of them have what strikes me as a big or interesting enough point to make, and because, while considerable rigor is deployed in discussing some of the technical issues concerning supervenience (sufficient rigor, by the way, to make the reading rather heavy going), the average standard of argumentation and presentation when it came to discussing the metaphysical issues did not impress me. But the main cause for disappointment was that, from my admittedly eccentric realizationist and reductionist vantage-point, the contributors to this volume, like soft interviewers, fail to put to supervenience the most probing and potentially embarrassing questions.

I

What is supposed to be the point of thinking and writing about the concept of supervenience? Not conceptual analysis of ordinary language, to be sure; for, as several contributors to this volume point out, the concept of supervenience, unlike that of (say) causation, plays only a small and indeed shrinking role in ordinary discourse. Perhaps, then, though the concept of supervenience is a philosophical invention, it is still a useful one, which can be exploited to yield perspicuous formulations of issues hitherto obscure or confused; a few papers in this volume were presumably written in this hope.<sup>2</sup> But the interest assumed to attach to the concept of supervenience by the majority of the contributors to this volume is that it promises—or is thought by others to promise—to play some significant part in the formulation of a doctrine of non-reductive physicalism. Surely there is something to the venerable doctrine of materialism, and yet (it will be said) it cannot be expressed by saying that every property is type-identical with a physical property, since that claim is false, or indeed by saying anything reductionistic, since reductionism is too implausible; so perhaps materialists should say instead that all properties, though not

reducible to physical properties, are still physical in the sense that they supervene upon them.

But if the concept of supervenience is to play this role, then the claim that the non-physical supervenes upon the physical must obviously not entail, either alone or with plausible additional premisses, that the non-physical reduces to the physical. But in a pioneering paper, Jaegwon Kim suggested precisely that it does (Kim 1984). His argument was that if the non-physical strongly supervenes<sup>3</sup> upon the physical (and nothing less than strong supervenience will suffice for physicalism), then every non-physical property has a necessary co-extension in (the Boolean closure of) the physical properties, and these necessary biconditionals might be pressed into service to permit the reductive derivation of the non-physical from the physical. Two papers in this volume (Bonevac, Macdonald) take issue with Kim's suggestion, both arguing, though in different ways, that even if every non-physical property does have a necessary co-extension in the physical properties, reductionism does not follow. Neither paper, however, is sufficiently developed to be convincing. Daniel Bonevac goes little beyond observing that the actual derivation of non-physical truths from physical truths would be humanly impossible; but he does not explain why this observation blocks the inference from strong supervenience to reducibility. One can, of course, easily imagine additional premisses that would secure his conclusion; suppose, for example, (i) that reduction is a species of explanation, (ii) that an explanation is genuine only if it can illuminate humans, and (iii) that a derivation can illuminate humans only if it is humanly possible. But these premisses are hardly self-evident, and Bonevac does not say what extra premisses he thinks he needs, and why we should accept them.

Cynthia Macdonald's paper, which is better developed, argues, in the spirit of Davidson, that the nature of intentional mental states is not exhausted by their causal characteristics, since they also embody a certain distinctive normativity. But the crucial argumentation against Kim's suggestion is crammed into its final paragraph, and officially assumes that the bridge laws in a reduction have to be analytically true, which is implausible: think of bridge laws that are property identity statements only knowable *a posteriori*. A footnote claims that the official assumption is not in fact required: the argument against Kim's suggestion works anyway, "since the *natures* of both biological and intentional properties are such as to be determined by conditions distinct from those that determine any physical property on which they may be said to supervene" (p.156). But something must be wrong here. For the necessity operators in the statement of strong supervenience might express metaphysical necessity, i.e. truth in all possible worlds whatever. So by reasoning of Kim's that Macdonald does not challenge, it would follow that every intentional property is *metaphysically* necessarily coextensive with some Boolean construction of physical properties. But how then is it possible for intentional properties and physical properties to differ in their "natures" as radically as the quoted claim suggests? Surely some explanation and further argument is required. Perhaps Macdonald envisages the necessity operators in the claim of strong supervenience as expressing some weaker grade of necessity, perhaps nomological necessity; but in that case the appeal to Davidson is otiose: it is sufficient to argue that reduction requires bridge laws that are not contingent, whence it follows that biconditional bridge laws that are merely nomologically necessary, hence contingent, are not enough.

In fact, for basically the reason just given, I am inclined to think that a suitable claim even of strong supervenience does not by itself entail reductionism: it entails bridge laws that are physically (*not* nomologically) necessary only, whereas reduction requires bridge

laws that are at least non-contingent. But there are other, and deeper, threats of an inadvertent commitment to reductionism that must somehow be defused by anyone wanting to formulate a doctrine of non-reductive physicalism using the concept of supervenience. These threats arise from considering two issues, only the first of which the contributors to this volume address at all.

This first issue concerns whether a claim of supervenience adequately captures the sense in which, intuitively, a physicalist is committed to maintaining that the physical *determines* the non-physical. Now two of the authors (Macdonald, Post) say explicitly that a suitable claim of supervenience is not even supposed to be a sufficient condition for non-reductive physicalism. Macdonald approaches the matter in Davidsonian spirit: even if one holds some token identity thesis, e.g., that every event is a physical event, one has not adequately captured the sense in which, according to a physicalist, mental *properties* are physical, and in order to do that a claim of strong supervenience is required. Post holds that even if a claim of (for him, global) supervenience is conjoined with some thesis to the effect that every entity is a spatio-temporal sum of basic physical entities we still do not have a sufficient condition for physicalism. Other authors leave it rather unclear exactly what role a claim of supervenience is meant to play in formulating a thesis of non-reductive physicalism. Nevertheless, there seems to be a consensus that the supervenience component in a formulation of nonreductive physicalism is important, and important because it captures some good (but of course non-reductive) physicalist sense in which higher level properties are physical. But does it? The main charge addressed in this volume, again stemming from Kim, is that claims of global supervenience<sup>4</sup> are too weak to do so, since they permit worlds to vary in arbitrarily large (say) mental ways, even though they vary in arbitrarily small physical ways; global supervenience allows, for instance, that every conscious creature in the actual world is a zombie in some other world, even though the only physical difference between this other world and the actual world is the presence of an extra hydrogen molecule in interstellar space. More than one author repeats this charge, but it is effectively rebutted, to my mind, in John Post's substantial and careful paper devoted to the problem, "Global Supervenient Determination: Too Permissive?"

But there is a potentially graver charge, and though the prosecution's opening moves are made in the contribution by Thomas Grimes, following Kim, he fails to press home the attack. Let me try to do so, first in connection with claims of strong supervenience. The crux of the matter is this: the claim that mental properties strongly supervene upon physical properties is consistent with the existence of two individuals in the actual world who greatly differ mentally but who only differ physically in some apparently trivial, perhaps relational, respect—maybe one individual can think, while the other cannot, but the only physical difference between them is that the first individual is slightly closer to some distant galaxy. Now it might be that we have some theory of (say) naturalized intentionality which *explains* why on account of this small physical difference the two individuals differ in whatever mental way they differ—perhaps the theory says that intentionality is in part relationally constituted; if so, there is no problem. But it might equally be the case that there simply is no explanation of this difference; it might just be a brute fact that an individual with certain physical attributes (including relational ones) must be in such-and-such a mental condition, while there just is no parallel necessity for an individual with very nearly the same physical attributes to be in the same mental condition. The general point is that the strong supervenience of the mental on the physical entails the holding of certain physical-mental determination relations, but it does not itself require that these physical-

mental determination relations have any explanation at all; the strong supervenience of the mental on the physical is quite consistent with the physical-mental determination relations it entails being entirely inexplicable, brute facts, holding as a matter of whatever necessity you judge to be most appropriate. But now we can see the difficulty with this. For if these determination relations are brute, inexplicable facts, then it seems to me that we have not yet been given *any* sense in which mental properties are physical; to be sure, we have it that the physical properties of an individual somehow necessitate its having of the mental properties it has, but why should this make the mental properties in any sense physical? A substance dualist would not have to say that soul states are in some sense physical just because they are *causally* necessitated by physical states; so why is there a difference when the necessitation is non-causal? So the strong supervenience of the mental on the physical, I suggest, is not a *sufficient* condition for physicalism about mental properties, even if it is a necessary one.

Why not? One possible reason is that physicalism, at least by some intuitions, requires that all true mental ascriptions—ascriptions to individuals of mental properties—be *made* true by physical conditions; but if the physical-mental determination relations strong supervenience entails are brute modal facts, then we have been given no sense in which true mental ascriptions are *made* true by physical conditions—they are made true by mental conditions, even though these are necessitated by physical conditions. Another possible reason is that physicalism, at least by some intuitions, requires that mental reality in the actual world be *entirely constituted* by physical reality, that in fact there be no more to the mental than the physical; but if the physical-mental determination relations strong supervenience entails are brute modal facts, then we have been given no sense in which this, too, is so. I conclude, then, that if a claim of strong supervenience is to suffice for physicalism about non-physical properties, then the physical-nonphysical determination relations it entails must be explicable somehow and not just brute modal facts. But this requirement, let me stress, is justified not because inexplicable physical-mental determination relations are mysterious and we cannot abide a mystery; for we can abide a mystery, and sometimes we must. The requirement is justified because only if it is met is there any hope of keeping faith with physicalism: strong supervenience that is unexplained in the specified sense is not sufficient for physicalism about nonphysical properties.

Essentially the same point can be made in connection with claims of global supervenience. The claim that the mental globally supervenes upon the physical entails that, given the total way the world is physically, it *must* be the total way it is mentally, with the strength of the 'must' fixed by the class of possible worlds quantified over in the formulation of the claim. Now while there might be an explanation, or a set of explanations, for the holding of this determination-relation between the physical and the mental, it is not *required* by the global supervenience claim itself that there should be; so it is consistent with this claim that the relation should hold as a matter of brute fact, in which case, for the reasons given above, we would not automatically have physicalism about mental properties. I conclude, then, that if a claim of global supervenience is to suffice for physicalism about non-physical properties, then it too must be explicable, in the sense that the physical-nonphysical determination relations it entails must be explicable somehow and not just brute facts. If they are just brute facts, the claim of global supervenience does not suffice for physicalism about properties.

But now, finally, for the punchline, and how the first threat of inadvertent reduction might arise. The *explanations* we offer, and must offer, to account for the physical-

nonphysical determination relations entailed by claims of strong or global supervenience might constitute, or supply the materials for, a *reduction* of the nonphysical to the physical. So even if claims of supervenience do not entail reductionism by themselves, it remains possible that claims of supervenience, when supplemented by explanations of whatever sort is required to make them sufficient for physicalism about properties, do entail reductionism. In fact, I take this threat of reduction to be more than possible. As Barry Loewer points out at the close of his paper, one way to explain the strong supervenience of the mental on the physical is to adopt the realizationist thesis that mental properties are properties with (empirically discoverable) functional essences that are, in the actual world, always *realized* physically. For if a physical state realizes a given mental state, then (by definition) it does so by playing a role the playing of which by something is sufficient for the tokening of that mental state; but then that physical state will play that role, and hence realize that mental state, in any world in which it exists and the actual world's laws of physics hold; so if the physical state is tokened, so must be the mental state, as a matter of physical necessity, and we have therefore explained the supervenience of the mental on the physical. But this explanation assumes that mental properties *are* functional properties, always in fact realized physically; in that case, however, as I have argued elsewhere, there is a perfectly good and important sense in which the mental is reducible to the physical: mental laws can be completely explained in terms of physical premisses, plus necessarily true *a posteriori* statements identifying every mental property with some functional property (Melnik 1995).

Another conclusion is worth noticing. So long as any claim of supervenience used to formulate a doctrine of physicalism needs to be explained somehow, whether in the way Loewer and I suggest or in some other way, there is an additional threat that supervenience will lose its importance. For if the claim of supervenience is explained, and hence entailed, by the thesis that every mental property is functional and in fact physically realized, the claim will certainly remain a necessary condition of physicalism; but what will be capturing the key physicalist intuitions (true mental ascriptions are made true by the physical world; the mental is entirely constituted by the physical) will be the thesis of universal physical realization. The claim of supervenience, though undeniable, will be an idle wheel.

## II

The second threat of an inadvertent commitment to reduction faced by anyone using a claim of supervenience to formulate a doctrine of non-reductive physicalism arises from consideration of a question which none of the papers in this volume addresses, namely, whether there is a philosophically adequate *metaphysics of modality*, consistent with physicalism, to underwrite the evidently modal claims of supervenience that supervenience theorists wish to make. A sign of the cavalier attitude toward this question on the part of contributors to this volume is the exceedingly liberal use they make of the terminology of possible worlds, accompanied by no explanation whatever of how such talk is to be made philosophically, still less physicalistically, acceptable. (I assume, of course, that none of them is an out-and-out Lewisian modal realist.) To formulate claims of global supervenience, quantification over *possibilia* is, on the face of it, inevitable; the same is true if claims of strong supervenience are formulated as quantifications over possible individuals, as Brian McLaughlin argues they should be in part of his paper.<sup>5</sup> But even if claims of strong supervenience are formulated (nonequivalently, according to McLaughlin) using

modal operators, in the way popularized by Kim, there remains the question of how to interpret the necessity operators used, and the prevailing attitude seems to be that we can interpret them as expressing pretty much any kind of necessity we choose. What I am deploring here is, I fear, an unfortunate consequence of the influence of Saul Kripke and David Lewis: the former has emboldened philosophers to invoke so-called metaphysical necessity whenever they feel like it, without any explanation of what it is supposed to be; and the latter has not only got even the enemies of modal realism speaking the language of possible worlds, albeit with the proviso that the worlds are only ersatz, but also encouraged the view that any claim expressible in worlds-talk is automatically guaranteed to be both intelligible and metaphysically acceptable.

Let me try to show that there really is an issue here, and then indicate how the threat of unintended reductionism arises, by discussing the following claim of global supervenience (never mind whether it is true):

- (1) For any physically possible worlds,  $w$  and  $z$ , if the same physical conditions obtain in both, then the same mental conditions obtain in both.

The physically possible worlds, not to be confused with the nomologically possible worlds, are those in which the actual world's laws of physics hold; and according to Post, Loewer, and David Papineau, they are the appropriate worlds to quantify over in formulating any physicalist claim of supervenience. Now this global supervenience claim can surely be rewritten as follows:

- (2) For any possible worlds,  $w$  and  $z$ , if the same physical conditions obtain in both, *and the actual world's laws of physics hold in both*, then the same mental conditions obtain in both.

But now let 'P' be a complete physical description of the actual world (not including the physical laws), 'L' the conjunction of all the actual world's laws of physics, and 'M' a complete mental description of the actual world; then (2) entails that

- (3) Necessarily, if P and L, then M,

where the necessity operator expresses full-strength necessity. But (3) prompts the neglected question I referred to earlier: can philosophical and physicalistically-acceptable sense be made of the necessity expressed by this operator, and if so, how?

The threat of inadvertent commitment to reductionism arises because every attempt to say what sort of necessity this operator expresses either fails to be acceptable (metaphysically or physicalistically) or else entails reductionism. To see why, let us consider the various possibilities. Might the necessity expressed be analyticity? Not if all analytic truths are knowable a priori; for (3) appears not to be knowable a priori. Might the necessity expressed be logical, reflecting the deducibility in accordance with some natural deduction system of the consequent from the antecedent? But given the entirely different predicates, physical and mental, that will enter into the formulation of P and L, on the one hand, and M, on the other, such deducibility would surely require analytically true bridge laws connecting the mental vocabulary with the physical vocabulary; but surely if such analyt-

ical bridge laws exist, which is very doubtful, they would be reductionistic in a way non-reductive physicalists want to avoid.

The obvious suggestion to consider next is that the operator expresses metaphysical necessity; but before we can judge this suggestion satisfactory, we need to know what metaphysical necessity is supposed to be. So perhaps metaphysical necessity can be glossed as truth in all possible worlds. But now, unless we are very incurious, we need to press for an account of what these possible worlds are. I take it that it would not be good metaphysics to claim they are Lewisian possible worlds; certainly I see no sign in this volume of any sympathy toward Lewisian modal realism. But what if they are ersatz possible worlds, maximal consistent sets of sentences or propositions, perhaps? The trouble here, whatever the general merits of ersatzism, is that it is hard to see how to make (3) come out as true if the worlds are ersatz. For if metaphysical necessity is truth in all possible ersatz worlds, then (3) is equivalent to the claim that the set of sentences or propositions containing as members P, L, and the *negation* of M is inconsistent. But there is no formal inconsistency in this set, as can be seen by noting again that entirely different predicates, physical and mental, will enter into the formulation of P and L, on the one hand, and M, on the other. And if the constraint of consistency that a maximal consistent set of sentences or propositions must meet in order to qualify as an ersatz possible world is understood non-formally (or non-formally as well as formally), then we need to know how exactly it is to be understood, what the grounds are for understanding it so, and how the set comprising P, L, and the negation of M fails to meet it. So if there is a way in which a supervenience theorist can exploit ersatz worlds, it is surely not obvious.

Are there any other accounts of metaphysical necessity? One which ought to be of particular interest to physicalists is Alan Sidelle's conventionalist account, according to which metaphysically necessary truths of the sort popularized by Kripke, those expressing necessities of identity, constitution, and origin, are explainable in terms of what he calls general principles of individuation which are analytic and themselves explainable in terms of conventions (Sidelle 1989). Could the account be used to explain the metaphysical necessity allegedly expressed by the operator heading (3)? The trouble is that, on this account, any metaphysically necessary truth has to be underwritten by some appropriate general principle of individuation; and whether there are any such principles of a sort usable by a non-reductive physicalist committed to (3) is not all clear. Certainly the general principles of individuation Sidelle suggests, intended to cover the cases of metaphysical necessity just noted, look unpromising, since the necessity of (3) is not, or is not obviously, the necessity of constitution, origin, or (assuming non-reductionism) identity. If appearances are here deceptive, it would be interesting to hear exactly why.

Let us now consider the proposal that the necessity expressed by the operator at the start of (3) should be treated as some sort of primitive, unanalyzable modality, perhaps reflecting the holding in the world of some sort of primitive, unanalyzable necessitation relation between the totality of physical facts, on the one hand, and the totality of mental facts, on the other. But whatever may be the general philosophical difficulties of treating metaphysical necessity as a primitive relation (Sidelle, Ch.4), surely there are special problems in doing so for a physicalist. First, it is quite unclear that we have a doctrine of physicalism if the necessitation of mental facts by physical facts is a primitive, unanalyzable affair; we seem instead to have emergentism. Secondly, at least pending some clarification of the exact scope of any thesis of physicalism, it seems that for a physicalist everything, and hence metaphysical necessity, must somehow be constituted by the phys-

ical; but if metaphysical necessity is primitive and unanalyzable, it cannot be constituted by anything. And surely there is a similar physicalist objection to any ersatzist who treats the consistency of maximal consistent sets of sentences or propositions as a primitive and undefinable relation.

So it is not as easy as might initially have been supposed to account satisfactorily for the necessity operator in (3). But fortunately there is another way. For on the assumption of realizationism, we can suppose that the full-strength necessity of (3) reflects the logical derivability of M (the complete mental description of the world) from P and L (the complete physical description of the world and the conjunction of its physical laws), together with certain *metaphysically* necessary identity statements which assert the identity of each mental property with some or other functional property, where the necessity of these identity statements could be given an explanation in terms of Sidelle's general principles of individuation; such an explanation would be physicalistically acceptable since it would invoke only physically realized conditions. Given realizationism, every mental state is in fact realized by physical states which, in virtue of physical laws, play certain roles the playing of which by something is metaphysically sufficient for the holding of those mental states. But in that case it will follow logically from a description of those physical states and the physical laws that they play certain roles, roles the playing of which by something (given that mental states have functional essences) metaphysically necessitates the mental states. So given P and L, it *has* to be the case that M. But, as I mentioned previously, the assumption of realizationism arguably threatens reductionism (Melnyk 1995); so a non-reductivist cannot explain the necessity operator in (3) in this way.

Overall, then, I conclude that even if claims of supervenience do not entail reductionism by themselves, it remains possible that, when understood so as to presuppose an adequate metaphysics of modality that is consistent with physicalism, claims of supervenience do entail reductionism. Further investigation of the metaphysics of modality as it pertains to supervenience would be welcome, if for no other reason than to show exactly why this apparent threat of reductionism is illusory.

### III

Nearly all the literature on supervenience has been devoted to precisifying claims of supervenience in various ways and investigating their logical relations both to one another and to other claims of interest, rather than to arguing that any such claims are actually true.<sup>6</sup> Two interesting and valuable papers in this volume, by Loewer and by Papineau, attempt to redress this imbalance by presenting an argument (coincidentally, more or less the same argument) for psychophysical supervenience. I shall raise some questions about Papineau's version, his formulation of which follows:

Premise (1). According to the completeness of physics, the chances of physical consequences are fixed, once physical antecedents are given. So if two systems are physically identical and in the same physical contexts, they will issue in the same physical consequences or chances thereof.

Premise (2). Now add in the assumption, which I call the "manifestability of the mental", that if two systems are mentally different, then there must be some physical contexts in which this difference will display itself in differential physical consequences, or at least in differential chances for such consequences.



Conclusion. It follows that mental differences without physical differences are impossible. (1) tells us that physical identity guarantees identity of physical consequences or chances thereof. And (2) tells us that mental difference requires the possibility of different physical consequences or chances thereof. So physical identity rules out mental difference. (p.229)

Papineau describes this conclusion, without discernible irony, as a “simple consequence of some evident truths” (p.226)! I propose the following reconstruction, for reasons I have no space to give:

(A) IF two physically possible systems, S1 and S2, are physically identical, THEN there is no pair of physically possible worlds, W1 and W2, such that (i) S1 is in W1 and S2 is in W2, (ii) S1 and S2 are physically identical, (iii) S1 and S2 are in identical physical contexts in their respective worlds, but (iv) S1 and S2 issue in different physical consequences (or chances thereof) in their respective worlds.

(B) IF two physically possible systems, S1 and S2, are mentally different, THEN there is a pair of physically possible worlds, W1 and W2, such that (i) S1 is in W1 and S2 is in W2, (ii) S1 and S2 are physically identical, (iii) S1 and S2 are in identical physical contexts in their respective worlds, but (iv) S1 and S2 issue in different physical consequences (or chances thereof) in their respective worlds.

(C) Therefore, IF two physically possible systems, S1 and S2, are physically identical, THEN they are not mentally different (i.e., they are mentally identical).

The validity of the argument is now obvious, but are the premisses, if not evident, then at least true? Whence (A)? Papineau’s official answer—notice the “So” in his (1)—is that (A) follows from the completeness of physics, i.e., the claim that “all physical events are either determined, or have their chances determined, by prior *physical* events according to *physical* laws” (p.228). But I have to say that it does not seem to me to follow: completeness could be true while (A) was false. A pair of physically possible systems, physically identical and in identical physical contexts in their respective worlds, might issue in *different* physical consequences (or chances thereof), just so long as physics is not complete in one of the physically possible worlds; and the incompleteness of physics in another physically possible world is quite consistent with the completeness of physics in the actual world. Now Papineau may be assuming that if physics is complete in the actual world, then it is also complete in all other physically possible worlds; that would explain how he thinks he can get from completeness, a thesis about the actual world, to (A), which quantifies (and must do so, given the desired conclusion of strong supervenience) over all physically possible worlds. But the assumption is mistaken. What makes our world one in which physics is complete is not just the physical laws at our world, but the absence of additional, non-physical factors affecting the chances of physical events; and while, by definition, the actual world’s laws of physics hold in every physically possible world, there are physically possible worlds in which entities (e.g. souls) exist that are in no sense physical, but that affect the chances of physical outcomes, therefore making physics incomplete in those worlds.

Papineau could repair his argument by restricting the definition of physically possible worlds so as to exclude worlds in which the troublesome additional non-physical entities exist, perhaps by requiring the physically possible worlds to be those in which the actual world’s laws of physics hold *and* no entity exists that is not exhaustively decomposable into physical entities. (Obviously the supervenience thesis expressed by his conclusion

would then have to be changed too.) But it is not entirely clear that this repair will suffice. For extra entities may not be the only problem; there may be a way in which physics can be incomplete even in a world that is physically possible in the more restrictive sense. Whether there is such a way depends upon the intelligibility of the idea that an entity that is entirely decomposable into physical entities may yet possess a *property* that is not itself physical, though it raises or lowers the chances of physical events relative to their chances given only purely physical events and laws (Jack 1994). If this idea is intelligible, then Papineau needs to impose some further restriction on the class of physically possible worlds over which his premises and conclusion quantify. I shall not speculate on whether this can be done, but I note that help may be found in the literature on the precise formulation of physicalist supervenience claims (Lewis 1983, p.362; Horgan 1987, p.491).

What, now, of premise (B)? Papineau apparently takes it, not implausibly, to capture the intuitive idea that a mental difference must be “detectable by [some] normal physical means” (p.232) (though he includes no discussion of why the claim is not verificationist or of why, if it is, this does not matter). But the form of dualism taken most seriously today is surely epiphenomenalist dualism about qualia of the sort championed by Frank Jackson, and such a dualist might naturally be expected to deny (B), insisting that a phenomenal difference simply need not issue in different outcomes, whether physical or of any other kind. Papineau claims, however, that an epiphenomenalist could accept (B), since it can be a given a non-causal reading whereby “issues in” merely means “is followed by”. But the issue is not whether an epiphenomenalist can accept (B), but whether he must; and I see no reason why he must. An epiphenomenalist who reckons he can give an account of our knowledge of qualitative states despite the fact that they cause nothing will see no merit in the manifestability requirement, even when read non-causally.

A final remark on Papineau's argument. In order to fend off a somewhat obscure form of dualist he thinks can safely deny the manifestability of the mental, he proposes a separate argument, though one also based on the completeness of physics, for what he calls physical realization, i.e., the realizationist thesis that all mental states are in fact realized by physical states. And this move deserves comment. For while I applaud this separate argument, having proposed a version of it myself (Melnyk 1994), I find the dialectical situation that results bizarre. The original argument for psychophysical supervenience has a loophole, and in order to close it up the argument for physical realization is deployed. But if the argument for physical realization is a good one, and if the thesis of physical realization suffices for physicalism (and Papineau does say that it rules out dualist views of the mind in general), then what is the interest of the original argument? Or, for that matter, of its conclusion? The thesis of physical realization and its supporting argument seem to give us everything we expected of psychophysical supervenience and Papineau's original argument in support of *it*. The peculiarity of the situation is heightened by Papineau's insistence that psychophysical supervenience is consistent with (e.g. epiphenomenalist) dualism, a claim that seems to reflect a confusion of physically possible with nomologically possible worlds<sup>7</sup> but that, if true, entails the insufficiency of psychophysical supervenience for physicalism, thus raising another question about the interest of psychophysical supervenience. Nor would it help Papineau to take a leaf from Loewer's book, and suggest that arguing for supervenience is important because, since the best explanation of psychophysical supervenience is physical realization, it generates an argument for physical realization; for if Papineau's separate argument is a good one, then we already have an argument for physical realization, and a second argument will add nothing if its soundness depends upon that of the first.

As I have noted, there are undoubtedly some valuable papers here which the friends and foes alike of supervenience will want to read. But on the whole, and for reasons that may now be apparent, I look forward to the publication of a collection of new essays on *realization*, in which it is supervenience, not realization, that rates only a few mentions in the text and none at all in the index.<sup>8</sup>

## Notes

1. Despite the title, two of the papers in this volume, as their authors (Heil, Papineau) openly acknowledge, have been published already in pretty much their present form.

2. Elias Savellos' "Supervenience and the Essences of Events" addresses some metaphysical issues concerning the nature of events; Felicia Ackerman's "How Does Ontology Supervene on What There Is?" uses supervenience to argue that certain traditional ontological questions have no determinate answers; Keith Lehrer's "Supervenience, Coherence, and Trustworthiness" argues that epistemic terms do not supervene on non-epistemic ones; and James Van Cleve's "Does Truth Supervene on Evidence?" critically discusses metaphysical anti-realism. Let me also very briefly describe other papers in the volume that I do not go on to mention at all. James Klagge's "Supervenience: Model Theory or Metaphysics?" discusses a pair of technical problems concerning logical relations among supervenience claims; John Bacon's "Weak Supervenience Supervenes" addresses further technicalities; John Heil's "Supervenience Redux" tries to rebut Richard Miller's claim that physicalist supervenience theses are empty; Berent Enç's "Nonreducible Supervenient Causation" proposes a way to avert certain threats of epiphenomenalism; Paul Moser and J. Trout's "Physicalism, Supervenience, and Dependence" discusses the topics mentioned in its title; and Earl Conee's "Supervenience and Intentionality" defends a type identity view of intentionality.

3. Mental properties strongly supervene, in Kim's sense, upon physical properties iff, necessarily, everything which has a mental property has some physical property such that, necessarily, everything with that physical property has that mental property. (Kim-style weak supervenience merely drops the second necessity operator.)

4. Mental properties globally supervene upon physical properties iff any two possible worlds (drawn from some specified class) that are indiscernible physically are indiscernible mentally.

5. "Varieties of Supervenience", the paper from which I have learnt most in this volume and which I strongly recommend to anyone who has followed earlier debates on supervenience.

6. A neglected exception: Horgan 1987.

7. I hope that I am not being uncharitable here, but Papineau says very little to support his claim.

8. Thanks to Peter Markie and an anonymous reader for comments on an earlier draft.

## References

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