

# Thoughts on Sydney Shoemaker's *Physical Realization*

Jaegwon Kim

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**Abstract** This paper discusses in broad terms the metaphysical projects of Sydney Shoemaker's *Physical Realization*. Specifically, I examine the effectiveness of Shoemaker's novel "subset" account of realization for defusing the problem of mental causation, and compare the "subset" account with the standard "second-order" account. Finally, I discuss the physicalist status of the metaphysical worldview presented in Shoemaker's important new contribution to philosophy of mind and metaphysics.

**Keywords** Realization · Multiple realization · Property · Causal profile · Causal power · Mental causation · Subset view · Second-order view · Physicalism · Type physicalism

## 1 The history of "realization"

The concept of realization, unlike most philosophical concepts in use, is relatively new. In this regard, it's a bit like supervenience. Yet there is this difference. It is arguable that the idea of supervenience, though perhaps not the term, had an earlier origin—several centuries before its "official" introduction in 1952 by Hare (Hare 1952).<sup>1</sup> Yet realization is different; I don't think there was such a concept in philosophical use before the second half of the 20th century. Shoemaker refers to "the brief history" of the concept, citing Hilary Putnam's 1967 paper "Psychological Predicates" (Putnam 1975b) and Jerry Fodor's "Special Sciences" (Fodor

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<sup>1</sup> For example, Leibniz used the Latin "supervenire" in a sense that seems quite close to the current sense. For more details, see Kim (1990).

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J. Kim (✉)  
Department of Philosophy, Brown University, Providence, RI 02912, USA  
e-mail: Jaegwon\_Kim@brown.edu

1974), adding that “I do not know who was the first to use the word ‘realizer’ for what does the realizing” (p. 2).<sup>2</sup>

Perhaps, I can add a bit more light on the history of realization. I believe the concept, and the term, were first introduced by Putnam, in an earlier paper, “Minds and Machines” (Putnam 1960), in which we find the following passage:

“In particular the ‘logical description’ of a Turing machine does not include any specification of the *physical nature* of those ‘states’ [a Turing machine’s ‘internal states’] ... In other words, a given ‘Turing machine’ is an abstract machines which may be *physically realized* in an almost infinite number of different ways.”<sup>3</sup>

This is the first occurrence of the idea of physical realization that I know of. Apparently, Putnam himself thought so, too, as he writes later in the same paper (Putnam 1975b, p. 373):

“The functional organization (problem solving, thinking) of the human being or machine can be described in terms of the sequences of mental or logical states respectively...without reference to the nature of the ‘physical realization’ of these states”.

It is plausible to suppose that Putnam put quotes around “physical realization” with the thought that here he was introducing a technical neologism. It is somewhat remarkable, however, that he offers no explanation of what he means by this new term, apparently counting on the reader’s intuitive understanding. It is even more remarkable that no one seems to have raised any questions about how “realization” was to be understood—all this while the term was gaining quick currency through the rest of the century, figuring in some of the most important claims and arguments in philosophy of mind, metaphysics, and philosophy of science in the “post-positivist” era.<sup>4</sup> Without the idea of “realization”, or “multiple realization”, the face of philosophy of mind and of science today would look very different indeed.

The foregoing quote from Putnam is also notable in that, to my knowledge, it is the very first expression of the idea that *mental* states or activities have *physical realizations*—just as computational states of a computing machine have such realizations—namely, the idea that the mind–body relation is analogous to, or even perhaps identical with, the relation between computer software and hardware. (You may be interested to know that this paper also is where the familiar identity “pain = C-fiber stimulation” made its first appearance.<sup>5</sup>)

<sup>2</sup> Parenthetical numerals in the text refer to pages in Shoemaker (2007).

<sup>3</sup> The quotation (with added emphasis) is from the reprinted version of the article in Putnam (1975b, p. 371; with added emphasis).

<sup>4</sup> That is, until quite recently. See works by Lawrence Shapiro, John Bickle, Ronald Endicott, Carl Gillett, Lenny Clapp, Tom Polger, and others. There has been more discussion of the question how widespread the phenomenon of multiple realization is. See, e.g., Bechtel and Mundale (1999).

<sup>5</sup> In Putnam’s “Minds and Machines” (Putnam 1975b, p. 377), we see the following displayed sentence: “Pain *is identical with* stimulation of C-fibers” (original italics). Perhaps this identity is not a neurological fiction that it is often made out to be; Christopher Hill argues, in Hill (2009), for the view that pains are bodily disturbances. Even so, I suppose we should include A $\delta$ -fibers along with C-fibers.

As Shoemaker says, the dictionary meaning of “realize” is something like “make real”. I believe this fits Putnam’s original usage quite well: a physical computing machine “makes real” or “brings into concrete reality” an abstractly characterized Turing machine, a mathematical entity. In this sense, what is realized are things like plans, designs, blueprints, and the like, and realization is a relation between concrete objects in the world and abstract items like Turing machines, plans, and designs. As we all know, this has changed: we now think of realization primarily as a relation between properties; we talk about neural/physical properties realizing mental properties, physicochemical properties realizing biological properties, and micro-physical properties realizing observable macroproperties of physical objects. (Shoemaker also introduces *microphysical states of affairs* as realizers.)

In any case, as Shoemaker observes,<sup>6</sup> realization as currently used in philosophy is a term of art. Although its provenance in Putnam and its earlier uses by philosophers like Jerry Fodor and Ned Block deserve due respect, we are free to define it pretty much anyway we like. What speaks in favor of a proposal is the philosophical usefulness of the concept introduced. In the present case, the usefulness consists in its capacity to illuminate, elucidate, and possibly resolve a cluster of well-known issues about the mind–body problem, such as reduction and reductive explanation, physicalism, mental causation, the autonomy of higher-level properties, and the like.

## 2 What, according to Shoemaker, is wrong with the standard view?

One of the issues Shoemaker is concerned with, and one for which his concept of physical realization is intended to provide a resolution, is the problem of mental causation. He contrasts his “subset” account of realization with the “standard” view according to which a realized property is a second-order functional property defined in terms of a causal role and its realizers are the first-order properties that fill, or perform, the specified role. Suppose being in pain could be given the functional characterization like this (this is for illustration only; I don’t advocate a functional analysis of pain):

$x$  is in pain =<sub>def.</sub>  $x$  has some property P such that P is apt to be caused to instantiate in  $x$  (and systems like  $x$ ) by tissue damage and trauma, and in  $x$  (and systems like  $x$ ) an instance of P is apt for causing winces and groans

For humans, let’s say it is C-fiber stimulation that plays the specified causal role; that is, where  $x$  is a human, Cfs is the property likely to be instantiated when  $x$  suffers tissue damage or trauma and which tends to cause  $x$  to groan and wince. So Cfs is a realizer of pain in humans. And for octopuses (you may recall they were the original example used by Putnam), it may be “O-fiber” stimulation that fits the causal specification, and this makes O-fiber stimulation pain’s realizer for octopuses; for Martians “XYZ-fiber” stimulation might be pain’s realizer; and so on. All this is familiar enough—in fact, a bit tiresome. Let us refer to this concept of

<sup>6</sup> As has McLaughlin in McLaughlin (2007).

realization the “second-order” view. So we have two contending characterizations of realization: the standard second-order view and Shoemaker’s subset view. (Another historical tidbit: this second-order view of functional properties and their realizers is also due to Putnam, in his 1970 paper “On Properties”.<sup>7</sup>)

Why is Shoemaker unhappy with the second-order view? Obviously, he is proposing the subset view because he thinks that it is a better alternative than the standard view. He thinks that the standard view has a fatal flaw: it threatens to lead us down straight on a path to mental epiphenomenalism. He writes:

“A prima facie objection to this [second-order view] is that it seems to make it true, by stipulation, that any causal role we might want to assign to the realized property is preempted by its realizers. So any effects – e.g. wincing – we attribute to someone’s being in pain are really due to whatever neural property realized pain on that occasion” (p. 11).

Shoemaker’s language here, in particular his “seems”, is a bit noncommittal as to whether the causal exclusion actually follows—or whether he believes it follows—from the application of the second-order model to mental properties. In any event, he apparently thinks that once the second-order concept of realization is jettisoned, we can avoid the whole issue of epiphenomenalism.

Shoemaker goes onto say: “I favor an account that is designed to avoid this consequence” (p. 11). We’ll have a chance to look at Shoemaker’s favored account, the subset view, but I have a problem with his rationale for rejecting the second-order view. It seems to me that merely to point out that the second-order view of realization leads to a philosophically unpalatable consequence is not enough, in itself, to reject it. Maybe we have to swallow some unpalatable implications of our assumptions and presumptions, but quite apart from this, *rejecting the allegedly offending concept won’t help*. Definitions are definitions; they fix meanings of our terms and concepts, and they can’t have substantive consequences all on their own. If you are bothered by the possibility that the causal powers of a realized mental property are threatened by those of its realizers (à la the second-order model), what you need to do to defeat the exclusion argument is to show that *mental properties are not realized by neural/physical properties in the sense provided for by that model*. If they are so realized, then the exclusion argument goes through (to the extent that it does), and we must deal with its apparent epiphenomenalist consequences. *Surely, whether or not there is another definition of realization under which the exclusion argument cannot be run is immaterial*. The need to deal with the epiphenomenalist implications of the second-order realization does not go away. Note that it is not enough to argue that the second-order view requires the realized properties to be functional properties, or have functional characterizations,

<sup>7</sup> Reprinted in Putnam (1975a). Although it seems proper to call this the “standard” view, it didn’t take hold till the late 1990s. See the following rather belabored characterization of realization by LePore and Loewer (1989): “The usual conception is that e’s being P realizes e’s being F iff e is P and there is a strong connection of some sort between P and F. We propose to understand this connection as a necessary connection which is *explanatory*. The existence of an explanatory connection between two properties is stronger than the claim that  $P \rightarrow F$  is physically necessary since not every physically necessary connection is explanatory”.

and that functionalism is not in general true. As long as there are functional mental properties that we want to protect as causal properties—and, like many others, I believe that cognitive/intentional properties are among them—those mental properties would be vulnerable to the exclusion argument.

### 3 Does the “subset” account avoid epiphenomenalism?

We now turn to Shoemaker's subset account. According to him, properties are individuated by causal profiles. What are “causal profiles”?

“The *causal profile of a property* consists of two sorts of causal features – *forward-looking causal features*, having to do with how the instantiation of the property contributes to producing various sorts of effects (and contributes to bestowing causal powers on its possessors), and *backward-looking causal features*, having to do with what sorts of states of affairs can cause the instantiation of the property” (p. 12, emphasis added).

Shoemaker's subset definition of realization, at least its “first approximation” is this:

“property P has property Q as a realizer just in case (1) the forward-looking causal features of P is a subset of the forward-looking causal features of property Q, and (2) the backward-looking causal features of P have as a subset the backward-looking features of Q” (p. 12).

Shoemaker's “causal features” are not exactly what are usually called causal powers. For him, corresponding to each forward-looking causal feature of a property there is a “conditional power” bestowed by that property upon an object that has it. An object with a conditional causal power (I am adding “causal”) can have a certain causal power *simpliciter* if the object also has certain other properties. To use Shoemaker's example, being knife-shaped is a conditional causal power; when it is combined with the property of being made of wood, the object having these properties has the power to cut butter. When the object is made of steel, it would have the power to cut wood. And so on. Hereafter, I will focus on forward-looking causal features only and also to speak of causal powers of properties. I will also think of the causal profile of a property as the set of its causal powers. Shoemaker's more fine-grained concepts must have a purpose and may be important in some contexts. But I do not believe that the kind of simplification I am adopting will make a difference to what follows.

So I will be working with a simplified definition of the subset account, in the following form: Q is a realizer of P just in case P's causal powers are a subset of Q's causal powers—or P's causal profile is a subset of Q's causal profile.<sup>8</sup>

How does this conception of realization elude the exclusion-style argument? Here is what Shoemaker says:

<sup>8</sup> I believe my simplified version more closely resembles the earlier statement of the subset view in Shoemaker's work (2001).

“The subset account obviously avoids the threat that the causal role of the realized property will be preempted by its realizers. It starts with the *assumption* that the realized property has a causal profile, and nothing in the account takes this assumption back” (p. 13, added emphasis).

Let us assume that pain is physically realized and that C-fiber stimulation (Cfs) is one of its realizers. According to the subset account, this means that pain’s causal powers are a subset of Cfs’s causal powers. Pain’s causal profile is the set of its causal powers. So when Shoemaker says his account “starts with the assumption that the realized property has a causal profile”, implying that this protects the property from the epiphenomenalist threat, he must mean that pain’s causal profile is *nonempty*. That is, when Shoemaker says that a realized mental property’s causal powers are a subset of the causal powers of its realizers, he is to be understood as saying that they are a *nonempty subset*. As we all know, the empty set is a subset of any and every set, and the claim that the causal powers of mental properties are subsets of the causal powers of neural/physical properties is consistent with epiphenomenalism; in fact, epiphenomenalism entails it. So when Shoemaker’s “starting assumption”, when unpacked, comes to this: *Mental properties have causal powers – indeed, they have physical causal powers – that is, the causal powers of the kind that make up the causal profiles of physical properties.*

I find Shoemaker’s strategy here difficult to understand. Suppose you are impressed by one or another of various considerations that apparently point to epiphenomenalism. The exclusion-style argument is by no means the only source of epiphenomenalist pressures. As far as I can tell, T.H. Huxley’s reasons for advocating epiphenomenalism had nothing obviously to do with the exclusion-style considerations. There are more recent arguments based on the causal closure of the physical domain, for example. (However, I think that Shoemaker’s mental causation is probably consistent with physical causal closure; this is because Shoemaker’s overall picture, as I will argue, is strongly physicalist.) And we don’t need a second-order functionalist view of mental properties to motivate an epiphenomenalist argument. A simple line of consideration like the following, for example, seems sufficient to arouse doubts and anxieties about mental causal efficacy in most people, philosophers and nonphilosophers alike. Suppose I experience a sharp pain in my hand and jerkily withdraw the hand.<sup>9</sup> We say: the pain caused the hand movement. That gives the mental event its causal due. But suppose we trace back the causal chain that culminated in my hand movement. I believe we understand the physiology of such limb movements pretty well. There is every reason to think that if we traced this causal chain backward, we will end up in a neuronal event somewhere in our nervous system as its initiating cause. There seems no chance that the brain researcher will identify and recognize pain (qua a nonneural conscious event) as the initiating causal source; it is more likely that the causal chain will entirely bypass the pain—unless we are prepared to say that the pain is the very same event as some event in the neural causal chain. If the pain causes my hand movement, it is difficult to imagine its performing the causal work by some

<sup>9</sup> Let us now worry here about the point that the motion of the hand often occurs before the pain is consciously felt.

telekinetic causal action, or via some causal path independent of the neural-physical chain of events. It seems clear that this line of thinking can give rise to doubts about the role of mental events as causes.

I think that Shoemaker's starting assumption that mental events have causal powers will do little to allay these worries. It seems fair to say that Shoemaker's strategy merely verbally transforms the problem of mental causation: The question whether mental properties have physical causal efficacy has now been turned into another, equivalent, question, the question whether mental properties have physical realizers. I can imagine T.H. Huxley responding to Shoemaker: *Now, you show me that mental properties have physical realizers!* If realization is going to save mental causation, a more credible approach, I believe, would be to explain realization in such a way that the claim that mental properties are physically realized does not presuppose—or itself affirm—the reality of mental causation. For a positive resolution of the mental causation problem, I believe we should reach the statement that mental properties are causally efficacious as a conclusion, not start with it as an assumption. What troubles me is that Shoemaker's procedure seems the opposite; for him, mental causal efficacy is a “starting assumption”, as he puts it.

A vindication of mental causation with Shoemaker's concept of realization could, I suppose, proceed as follows: you begin with the subset definition taken literally—as saying that P is realized by Q just in case P's causal powers are a subset, *possibly empty*, of Q's causal powers—and then you show, by independent considerations, that mental properties, or at least most of them, have nonempty sets of causal powers. If so, you are back on square one, and it seems plain that the subset definition of realization itself is not going to give you special help.

#### 4 Realization, reductive explanation, and the “gap”

For these reasons, I believe that a possible epiphenomenalist threat is not what distinguishes Shoemaker's subset view from the standard second-order view. As far as I can see, they are pretty much in the same boat in regard to mental causation. I will now turn to what appears to me like a more significant difference between the two, a difference that I believe speaks in favor of the second-order view. Briefly, there is reason to believe that second-order realization is an *explanatory relation*. That is, knowing that Cfs is a realizer of pain, in the second-order sense, enables us to explain why pain is experienced when Cfs occurs—or why pain and Cfs are correlated as they are. This is of course the explanatory gap problem; so the claim is that if Cfs is a physical realizer of pain, the gap between Cfs and pain could be closed.

Consider the following series of statements:

- (1) Jones is undergoing Cfs at *t*.
- (2) In creatures like Jones, tissue damage is apt to cause Cfs and Cfs in turn is apt to cause wincing, groans, and escape behavior.
- (3) For something to be in pain is for it to be in a state that is apt to be caused by tissue damage and that is apt for causing wincing, groans, and escape behavior.
- (4) Therefore, Jones is in pain at *t*.

Together (2) and (3) say that in creatures like Jones, Cfs is a realizer of pain in the second-order sense. The entire array of statements strikes me as a good explanation—in fact, a “reductive” explanation—of why Jones is in pain in terms of her undergoing Cfs at the time. Notice that the deduction involves a law, in premise (2), and that it qualifies as a Hempelian D-N explanation. Actually, whether, and in what sense, we consider this an “explanation” is less important than the fact that it shows us how *pains can be deduced from Cfs and other facts at the physical/neural level alone*. That is what can close the explanatory gap. You might ask: What about premise (3), which speaks about pain? The answer is that (3) is a definition, and that definitions in general don’t count as premises in a deduction; (3) is not a report of some a posteriori facts about pain—if it is a report of anything, it is a report on the concept of pain, or the meaning of the term “pain”.

I have argued elsewhere that in contrast to a functional reduction of pain, the psychoneural identity reduction, which identifies pain with Cfs, claims that the explanatory gap does not exist, rather than that it helps close the gap. If pain = Cfs, there is just one thing and you need at least two things to create a gap. The identity is a perfectly legitimate way of dealing with the gap issue. When we are asked how we might close the gap, we reply: There is no gap to be closed.

It seems to me that Shoemaker’s subset view is considerably nearer the type identity theory than the second-order view on this explanatory issue. On the subset view, pain’s causal profile falls short of being identical with that of a physical property, as its causal profile is a proper subset of Cfs’s causal profile. If only the two profiles completely coincided, we could have the identity “pain = Cfs”, but, on Shoemaker’s view, we are not there yet and won’t ever get there, on account of the multiple realizability of pain. Perhaps, friends of the subset view could argue that there can be no more of a gap between something and a proper part of it any more than something and it itself. That, however, seems full of metaphors that need to be cashed out. What seems clear is that we cannot formulate the kind of explanatory deduction that we’ve seen under the second-order view. Consider, for example, a possible attempt:

- (1) Jones is undergoing Cfs at t
- (2) Pain’s causal powers are a subset of Cfs’ causal powers
- (3) Jones has, at t, pain’s causal powers.
- (4) Therefore, Jones is in pain at t

One obvious question concerns whether (4) follows from (3). To justify this transition, we probably need a full causal theory of properties, according to which a property is identified with its causal profile.<sup>10</sup> But the far more important question is whether this array of statements gives us *a derivation of pain facts exclusively from*

<sup>10</sup> Shoemaker says that for his purposes in the book, all he assumes is that properties are individuated by their causal profiles in worlds that share the prevailing laws of the actual world. Perhaps this suffices to give us (4) from (3)—at least, in this world. Elsewhere, he also says this: “The realizer of a property instantiation should be metaphysically sufficient for the occurrence of that property instantiation” (p. 6). In his review of *Physical Realization* in the *Notre Dame Philosophical Review* (McLaughlin 2009), Brian McLaughlin argues that Shoemaker’s principal views in the book commit him to the full causal theory of properties.



*the underlying neural-physical facts*, as the foregoing derivation based on the second-order account of realization apparently does. Here, the answer is no. The crucial premise to consider is (2); this obviously seems like an empirical statement about what pain's causal powers are and what Cfs's causal powers are, and this strikes me as a huge empirical research project. It is unlike (3) in the previous derivation; it is a conceptual definition, not an empirical statement about facts about pain. This means that, whatever explanatory significance this derivation may have, it cannot claim to be a derivation of pain facts from facts about pain's neural-physical realizers alone. The difference between the two derivations, then, is this: in the former, the transition from Cfs to pain is made via a conceptual connection, whereas in the latter it is made via an empirical connection (like C.D. Broad's "trans-ordinal law", or a Nagelian "bridge law"). To me, this makes all the difference in the world for issues like psychophysical reduction, emergence, and the explanatory status of physicalism.

## 5 Shoemaker realization and physicalism

To my knowledge, Shoemaker doesn't explicitly claim himself to be a physicalist. At the very end of his "Introduction", he writes:

"Nevertheless, much of this work will be concerned with the physical realization of mental properties, and this does require the truth of physicalism. I will not undertake to establish the truth of physicalism, or to defend it against standard objections; *my concern will be with what must be true of mental properties and their instances if physicalism is true*" (p. 9, emphasis added).

His initial characterization of physicalism is this:

"But if physicalism is true, all of these [ostensibly nonphysical] properties must in some sense be determined, constitutively rather than just causally, by physical properties or physical states of affairs" (p. 1).

With the notion of realization in hand, Shoemaker offers a more exact statement of physicalism:

"...it is arguable that [the notion of realization] provides the most revealing characterization of physicalism itself: physicalism, we can say, is the view that all states and properties of things, of whatever kind, are physical or physically realized" (p. 1).

It seems fair, though, to take Shoemaker of this book to be a physicalist. In Chapter 6, he defends the view that qualia have physical realizers. Although I won't take up this issue for discussion, this defense strikes me as unconditioned; it isn't merely that the truth of physicalism requires it (obviously it does); it seems that Shoemaker unconditionally advocates the position that qualia are physically realized. What more can we expect from a physicalist?

And yet Shoemaker rejects reductive physicalism, or type physicalism, the position that mental properties are physical properties. On pp. 10–11, he describes

the familiar multiple realization argument against type physicalism in a way that I can only take to imply his endorsement of the argument. In a footnote on p. 11, he says that the exclusion argument could be stopped if pain could be identified with a neural property, but that the multiple realization of pain does not allow it. And his rejection of the view that an instance of a realized property can be identified with an instance of its realizer (on that particular occasion) leaves no doubt as to his negative stance on type physicalism (I assume that the rejection of token physicalism entails the rejection of type physicalism).

But the large picture Shoemaker presents to us about the relationship between the mental and the physical strikes me as a very strong form of physicalism, something like type physicalism. So then, why does Shoemaker's overall scheme impress me as type physicalism? On an intuitive level, my picture of Shoemaker's scheme is something like this: The fundamental ontological items of this world are physical causal powers—or Shoemaker's "causal features". These are packaged, or bundled, into properties, or Shoemaker's "causal profiles". Of course, not every set of causal powers will turn out to be, or coincide with, a property; to constitute a property, the causal powers must, at least, be able to be co-instantiated, or co-present, in an object. I don't know whether this co-instantiability should be taken as a purely metaphysical notion, or understood in relation to fundamental laws of physics, or perhaps in some other way. In any event, the picture I have is a world of properties which are, or constituted by, bundles of causal powers, all of them physical causal powers. I won't be surprised if this misses many of the subtleties of Shoemaker's constructions and proposals, but, as I said, that is the intuitive way I visualize Shoemaker's world.

In this picture, where do mental properties find a place? If all properties are bundles of physical causal powers, or physical causal features, what makes some properties mental and others physical? As far as I know, Shoemaker does not address, on any level, the question what makes mental properties *mental*, or what makes physical properties *physical* (as opposed to *nonphysical*). On p. 20, he distinguishes between "mental causal features" and "physical causal features", saying:

"Let's say that a forward-looking causal feature is a *mental causal feature* if the properties referred to in specifying it are mental properties, and that it is a *physical causal feature* if the properties referred to in specifying it are physical properties" (p. 20).

Following Shoemaker, let Br be the property of *having the belief that it is raining*. We can take this property to include, following him again, the causal feature of "*being such that if it is instantiated together with the desire to keep dry and the belief that umbrellas keep off rain, this results in the subject's taking an umbrella*" (p. 19). I am not sure whether this causal feature counts as mental or physical as it is specified by reference to both mental and physical properties (e.g., desire, umbrella). Shoemaker points out that, on the subset view, if a physical property, P<sub>1</sub>, is a realizer of Br, the aforementioned causal feature must be part of P<sub>1</sub>'s causal profile—it is one of the causal powers that constitute P<sub>1</sub>. As Shoemaker goes on to say, the mental states mentioned in the specification of this causal feature,

a belief and a desire, must themselves be physically realized. What Shoemaker doesn't say is whether or not this and other such mentalistic causal features—"mentalistic" because their specifications refer to mental properties even though not exclusively—are in some sense ultimate, or they will in the end be all cashed out in purely physical terms. That is, whether the references to mental properties in the specifications of these causal features are ultimate and ineliminable, or they will at some point be somehow eliminated in favor of physical properties. Perhaps, Shoemaker says in the book something about this, or something that is relevant to this, but if he does, I have missed it.

I raise this question because it is relevant to the correctness, or perhaps approximate correctness, of what I called my intuitive picture of the Shoemaker world. The reason is that one might claim my picture is wrong because, on Shoemaker's view, a physical property can have nonphysical causal powers (or Shoemaker's mental causal features); for example, property  $P_1$  above, which realizes believing that it is raining, has in its causal profile the power to cause someone to carry an umbrella when that person also has the desire not to get wet, and so forth. So it is not the case that all physical properties are constituted by purely physical causal powers; many of them will include nonphysical causal powers, or causal powers that are not purely physical, in their causal profiles. (Even this celadon vase sitting on my desk—or, to be more precise, its weight—has the causal power of causing pain if dropped on my toes!)

The question this raises is the following. If these nonphysical causal powers are ineliminably constitutive of physical properties, that is, if they cannot somehow be eliminated so that the causal profiles definitive of physical properties are constituted exclusively by purely physical causal powers, then that may render Shoemaker's characterization of physicalism inadequate. As you will recall, physicalism, for him, is the thesis that "all states and properties of things, of whatever kind, are physical or physically realized" (p. 1). It seems to me that if mental properties are real and if they are realized by physical properties which essentially include nonphysical causal features or powers, then physicalism as characterized by Shoemaker cannot count as a form of physicalism. For the Shoemaker world as pictured would include in its ontology mentalistic causal features as fundamental entities.

On the other hand, if physical properties are constituted by purely physical causal powers and mental properties are physically realized in Shoemaker's sense, there seems no good reason not to consider these supposedly mental properties to be physical properties, pure and simple. Mental properties turn out to be constituted by causal powers of exactly the same sort that constitute physical properties. It is a direct consequence of the subset definition of realization that, like any other antecedently certified physical properties, mental properties, given that they have physical realizers (and presumably no nonphysical realizers), are composed of purely physical causal powers and individuated by their purely physical causal profiles. In this connection, it may be useful to reflect on Shoemaker's reason for rejecting type physicalism. As I mentioned before, his rejection is based on the multiple realizability of mental states; he takes this to show that mental properties cannot be identified with any of their realizers. That of course is the standard argument against type physicalism. However, *a type physicalist need not identify*

*mental properties with their realizers.* It is enough if mental properties *are* physical properties. That precisely is the thesis of type physicalism.

What I am suggesting, then, is a dilemma for Shoemaker: Either his physicalism does not qualify as physicalism, or his physicalism is a version of type physicalism.<sup>11</sup>

Let me conclude with an expression of my appreciation and admiration for Sydney's book—and Sydney's philosophical contributions over the years. I do not believe there is a single working philosopher of mind or metaphysician who has not learned something important from him. This book, like Sydney's other works, is full of ideas, subtle and deep, and it addresses many of the most profound and complex issues in philosophy of mind and metaphysics. It exemplifies the kind of excellence we have come to expect from Sydney; it has enriched our understanding of the metaphysics that underlies minds and much else in the ontology of the world.

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## References

- Bechtel, W., & Mundale, J. (1999). Multiple realizability revisited: Linking cognitive and neural states. *Philosophy of Science*, 66, 175–207.
- Fodor, J. A. (1974). Special sciences, or the disunity of science as a working hypothesis. *Synthese*, 28, 97–115.
- Hare, R. M. (1952). *The language of morals*. Oxford: Oxford University Press.
- Hill, C. (2009). *Consciousness*. Cambridge: Cambridge University Press.
- Kim, J. (1990). Supervenience as a philosophical concept, *Metaphilosophy*, 21, 1–27. Reprinted in Kim (1993).
- Kim, J. (2003). *Supervenience and mind*. Cambridge: Cambridge University Press.
- LePore, E., & Loewer, B. (1989). More on making mind matter. *Philosophical Topics*, 17, 175–192.
- McLaughlin, B. (2007). Mental causation and shoemaker-realization. *Erkenntnis*, 67, 149–172.
- McLaughlin, B. (2009). "Review of Sydney Shoemaker, *Physical Realization*," *Notre Dame Philosophical Review*, 2009.07.17.
- Putnam, H. (1960). Minds and machines. In S. Hook (Ed.), *Dimensions of mind*. New York: New York University Press. Reprinted in (Putnam 1975).
- Putnam, H. (1967). Psychological predicates. In W. H. Capitan & D. D. Merrill (Eds.), *Art, mind, and religion*. Pittsburgh: University of Pittsburgh Press.
- Putnam, H. (1970). On properties. In N. Rescher et al. (Eds.), *Essays in honor of Carl G. Hempel*. Dordrecht Holland: Reidel. Reprinted in Putnam (1975a).
- Putnam, H. (1975a). *Mathematics, matter, and method*. Cambridge: Cambridge University Press.
- Putnam, H. (1975b). *Mind, language, and reality*. Cambridge: Cambridge University Press.
- Shoemaker, S. (2001). Realization and mental causation. In C. Gillett & B. Loewer (Eds.), *Physicalism and its discontents*. Cambridge: Cambridge University Press.
- Shoemaker, S. (2007). *Physical realization*. Oxford: Oxford University Press.

<sup>11</sup> I have argued elsewhere that we have to accept either epiphenomenalism for mental properties or else their reducibility to physical properties. My reading of Shoemaker is that he escapes epiphenomenalism by taking the reductionist route.