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Nonreductive Materialism

I. Introduction.

The expression 'nonreductive materialism' refers to a variety of positions whose roots lie in attempts to solve the mind-body problem. Proponents of nonreductive materialism hold that the mental is ontologically part of the material world; yet, mental properties are causally efficacious without being reducible to physical properties.s After setting out a minimal schema for nonreductive materialism (NRM) as an ontological position, I'll canvass some classical arguments in favor of (NRM).[1] Then, I'll discuss the major challenge facing any construal of (NRM): the problem of mental causation, pressed by Jaegwon Kim. Finally, I'll offer a new solution to the problem of mental causation.

First, a word about terminology. Unfortunately, nonreductive materialists do not share a standard terminology; indeed, they often use the same words (e.g., 'realized by') for different relations. I shall speak of mental properties and their instances (or instantiations). Following Kim's construal of events as states of affairs at a time, I take mental states (or events) to be mental properties instantiated at a time. Mental events/states may be thought of as instantiations or instances of mental properties. As I am using these terms, mental events are to mental properties as tokens are to types.

II. A Schema for Nonreductive Materialism (NRM)

For purposes here, I consider nonreductive and reductive materialism to be ontological positions.[2] All forms of materialism, reductive and nonreductive, disavow immaterial souls, vital spirits, entelechies and the like. According to any materialist, every concrete particular is made up entirely of microphysical items. Nonreductionists

[1] I take nonreductive materialism to concern the causal efficacy of intentional phenomena—e.g., beliefs, desires and intentions. Because of limited space, I shall omit specific consideration of qualia—e.g., the smell of garlic, or the sound of trumpets.

[2] Historically, reduction has been taken to be a relation between theories. According to Ernest Nagel's theory-reduction, theory T2 is reduced to theory T1 just in case there are "bridge laws" connecting the predicates of T2 and T1, and T2 is deducible from T1 together with the bridge laws. See Nagel (1961).

part company with reductionists, however, with respect to identity or nonidentity of various kinds or types.

The nonreductionist distinguishes mental kinds from physical kinds, where the mental includes sensation and thought, and the physical is roughly the domain of the physical sciences, including neurophysiology. Even after three and a half centuries, we still cast discussion of the mind/body problem in blatantly Cartesian terms, albeit now with a materialistic twist: sensation and thought turn out to be part of the material world. It is just assumed by most parties to the dispute that there is an antecedently unproblematic pretheoretical distinction between the physical and the mental. Although I believe that this initial "mental/physical" distinction itself needs scrutiny, I'll follow the mainstream and take for granted the (unexamined) distinction between the mental and the physical.

Reductionists in the philosophy of mind (e.g., Lewis (1999), Kim (1998), recently Heil (2003)) hold that there are no properties that are distinctively mental properties. There are mental predicates, of course. There are distinct levels of explanation. We have different vocabularies in which to explain phenomena at different conceptual levels, but there is no corresponding irreducible difference in level among the phenomena themselves. According to reductionists, levels of description do not indicate levels among what is described. So, reductionists hold that if mental predicates designate any properties at all, they designate physical properties.

By contrast, all nonreductive materialists hold:

(1) There are mental properties that are distinct from any physical properties.

However, (1) is compatible not only with materialism, but also with substance dualism and neutral monism; hence (1) does not suffice for nonreductive materialism. So, we need to add another thesis to yield nonreductive materialism. Typically, nonreductive materialists hold that the mental depends on the physical. The kind of dependence at issue is usually a relation of determination—some kind of supervenience relation. Since

the kind of dependence differs in different versions of nonreductive materialism, I'll formulate the thesis in the most general (and imprecise) way:

(2) Mental properties depend on physical properties.

Nonreductionists may elucidate thesis (2) in more or less strict ways, but as materialists, they agree that mental properties do not depend on anything other than physical properties. Finally, nonreductive materialists eschew epiphenomenalism about mental properties: mental properties make a causal difference (whether or not there are any properties that are epiphenomenal). Different nonreductive views construe the causal difference that mental properties make in different ways.

(3) Mental properties make a causal contribution to what happens.

I take the conjunction of theses (1) – (3) to be a minimal schema for any variety of (NRM). However, the conjunction of theses (1) – (3) remains incomplete in several ways:

The conjunction of (1) – (3) yields only a schema because different versions of (NRM) result from different elucidations of 'depends on' in thesis (2) and 'makes a causal contribution' in thesis (3). For example, 'depends on' in thesis (2) may be understood variously as: 'weakly supervenes on' (e.g., Davidson (1980)), 'strongly supervenes on' (e.g., Kim (1998)), 'globally supervenes on' (e.g., van Gulick (1993)). Any of these kinds of dependence may be invoked by proponents of (NRM) who hold that mental properties are realized by physical properties. And 'makes a causal contribution' in thesis (3) may be understood as nomological sufficiency (e.g., Kim (1998)) or counterfactual dependence (e.g., Lewis (1986)), or something else.

The schema defined by the conjunction of theses (1) – (3) is only minimal, because different versions result from supplementing (1) – (3) by various further theses. For example, some nonreductive materialists (e.g., Antony (1999), Horgan (1993)) hold that mental properties must be fully explainable and predictable in principle in the vocabulary proper to the physical sciences. But others (e.g., Davidson (1980), Burge (1993), Baker (1993)) hold the negation: mental properties cannot be both fully explained

and predicted, even in principle, in the vocabulary proper to the physical sciences.[3] And many materialists (e.g., Loewer and Lepore (1989), Kim (1998)), supplement (1) – (3) with a thesis of the causal closure of the physical: Every physical event has a complete physical cause.

III. Classical Arguments for (NRM): Putnam, Fodor, Davidson

(NRM) is supported (i) by Putnam's (and Fodor's) focus on multiple realizability, (ii) by Fodor's work on the special sciences, and (iii) by Davidson's anomalous monism.[4]

(i) Multiple Realizability: A property G is realized by a property F only if G supervenes on F. An instance of F necessitates (in some sense) an instance of G. Mental properties are realized by indefinitely many different kinds of neural properties. For example, consider *being hungry*. Although a mammal and an octopus may both be hungry, hunger in a human being may well not even be "correlated" with the same physical-chemical property as hunger in an octopus. Since hunger is realized by one physical state in a mammal and a distinct physical state in an octopus, there is no physical-chemical or neural property with which to identify hunger.[5] Hence, there is no physical property with which hunger can be identified. Nor is there even a physical property that is necessary for hunger; different instances of hunger are realized in different kinds of physical states. Thus, the phenomenon of multiple realizability supports thesis (1) of NRM, and is seemingly neutral with respect to theses (2) and (3).

(ii) Special Sciences: The special sciences (e.g., psychology) appeal to mental properties that are neither identical to physical properties, nor reducible to physical properties. A science like psychology is reducible to a science like neurophysiology only if the laws of psychology are reducible to laws of neurophysiology by means of biconditional bridge laws containing predicates of both psychology and neurophysiology.[6] Bridge laws would connect the kinds to which psychology appeals to

[3] There is also room to hold that mental properties are predictable, but not explainable, in the vocabulary of the physical sciences.

[4] See Putnam (1975), Fodor (1974), Fodor (1975), Davidson (1980).

[5] Putnam (1975), p. 436. There is an enormous literature on multiple realization. For example, see Block (1997).

[6] Fodor (1974). For a different non-reductive conception of the special sciences, see Boyd (1999).

the kinds to which neurophysiology appeals. But because of multiple realizability, a psychological kind is not correlated with a single neurophysiological kind, but with a vast disjunction of neurophysiological kinds. Moreover, the same issues surrounding the reduction of mental to neurophysiological properties also arise for the reduction of neurophysiological properties to cellular properties: neurophysiological properties are multiply realized at the cellular level.[7] (So, (ii) is a special case of (i) that also supports thesis (1).) Further, events recognized by the special sciences supervene on events recognized by microphysics. (This point supports thesis (2).) Nevertheless, lawlike, counterfactual-supporting generalizations of the special sciences are causal: If someone is thirsty, and believes that the bottle has water in it, then ceteris paribus, he will drink. (This point supports thesis (3).)

(iii) Anomalous Monism: According to Davidson, there are no strict psychophysical laws at all. Mental and physical predicates are not made for each other. Correct application of mental language is constrained by holism and normativity that have no place in correct application of physical language. (This point supports a Davidsonian analogue of thesis (1). Davidson appeals to predicates or descriptions, instead of to properties.) Furthermore, Davidson holds that the mental weakly supervenes on the physical in that there is no mental change without a physical change. (This point supports a version of thesis (2).) Davidson endorses a token-identity theory. All events are physical events, but some physical events are described in mental terms (viz., in the vocabulary of propositional attitudes). The difference between mental and physical events is merely a difference in how they are described. Since causation is a relation between events no matter how they are described, mental events (i.e., physical events described in mental language) can cause physical events. (This point supports a version of thesis (3).) Since explananda are events only as described, mental events cannot be given purely physical explanations. Davidson argues that mental events weakly supervene on physical events. Modifying theses (1) – (3) for Davidson's appeal to descriptions instead of properties, anomalous monism supports (NMR).

[7] Since the special sciences include all the sciences above the level of microphysics, if all the special sciences were reduced to microphysics, there would be no macro-causation at all. I'll return to this matter in section V.

IV. The Problem of Mental Causation

(NRM) faces a serious difficulty. It is unclear whether (1) – (3) can be jointly satisfied in a way that avoids epiphenomenalism. For example, according to Davidson's anomalous monism, mental events—i.e., physical events with mental descriptions—figure in causal explanations of action. But the laws in virtue of whch mental events have their effects are physical laws; the fact that some events have mental descriptions is irrelevant to what events they cause.[8] The mental is causally efficacious only in virtue of being physical. Being mental contributes nothing to what a mental event causes. (The causal contribution of mental events, on Davidson's view, is to causal explanation, not to causal relations.) Hence, although Davidson can jointly satisfy (1) – (3), his view does not avoid epiphenomenalism of the mental.

In the past fifteen or so years, Jaegwon Kim has mounted a sustained attack on various versions of (NRM) in numerous articles. Unless mental properties are reducible to physical properties, he argues, they are causally inert or else there is massive (and implausible) overdetermination. In Kim (1998, Ch. 2), Kim has pressed his objections from several directions. I shall focus on two arguments against (NRM): The Overdetermination Argument, which I'll sketch briefly, and the "Downward-Causation" Argument, which I'll set out in detail. Both arguments need recourse to the idea of higher-level properties, which Kim roughly takes to be this: P_2 is a higher-level property than P_1 iff the entities where P_2 makes its "first appearance" have "an exhaustive decomposition, without remainder, into entities belonging to the lower levels." (Kim 1998, p. 15) Each of Kim's arguments against (NRM) relies on one or more of the following metaphysical assumptions:

1. The Physical Realization Thesis: A higher-level property is instantiated only if it is realized by a physical property. If P realizes M, then P is nomologically sufficient for M, and M supervenes on P. (Kim (1993b), p. 200.)

2. The Nomological-Sufficiency Conception of Causation: Causation as nomological sufficiency. (Kim (1993b), p. 204)

[8] See Part I of Heil and Mele (1993). See the chapter on Anomalous Monism, this volume.

3. The Causal-Realization Principle: If an instance of S occurs by being realized by an instance of Q, then any cause of this instance of S must be a cause of this instance of Q (and of course any cause of this instance of Q is a cause of this instance of S). (Kim (1993b), pp. 205-6; cf. Kim (2000), p. 310.

4. The Causal-Inheritance Principle: If mental property M is realized in a system at t in virtue of physical realization base P, the causal powers of this instance of M are identical with the causal powers of P. (Kim (1993a), p. 326)

5. The Causal-Closure Principle: Any physical event that has a cause at t has a complete physical cause at t. (Kim (1993c), p. 43.)

6. The Principle of Causal/Explanatory Exclusion: There is no more than one complete and independent cause (or causal explanation) of any event. (Kim (1989), p. 89)

The Overdetermination Argument: Assume that mental events are realized by physical events (in the sense of the Physical Realization Thesis), and hence that mental events supervene on physical events. If one mental event, M, caused another M*, then there would be a physical event P* that realized M*, and M* would supervene on P*. On the assumption that the physical is causally closed, P* has a complete physical cause. Since M* supervenes on P*, the complete physical cause of P* is also a cause of M*. In that case, M* is overdetermined—by M and by the complete physical cause of P*. So, if mental properties are not identical with physical properties, and mental events have physical effects, then these physical effects are overdetermined: All mentally-caused events have complete physical causes as well as mental causes. But it is implausible, claims Kim, that every event with a mental cause is causally overdetermined.

To bolster his case, Kim bids us consider an example of overdetermination. Suppose that there are two assassins acting independently who shoot a politician at the same time. As Kim says, it is not plausible that all events with mental causes are overdetermined in that way. However, as Barry Loewer points out (Loewer (2001), Loewer (2002)), in contrast to the case of the two assassins, a mental event and a physical

realizer of it are not independent; they are metaphysically connected. So, the analogy misfires.

A number of philosophers reply to the Overdetermination Argument by arguing that if there is any overdetermination of mentally-caused physical effects, it is harmless. (E.g., see Thomasson (1998), Pereboom (2002), Loewer (2002), and Crisp and Warfield (2001).) The mental and physical causes are not in competition since mental properties supervene on the physical properties. Such philosophers can concede that nonidentity of mental and physical properties leads to overdetermination, but can also maintain that the overdetermination involved is quite plausible.

The "Downward-Causation" Argument: There is a single argument that can be reconstructed from Kim's writings that, I believe, is his most forceful and sweeping assault on (NRM). After stating the overall argument (as I – IV below), I'll give it in greater detail. Each of the premises in the overall argument is defended by one of the subarguments (1–3, 4–7, 8–10, respectively).

Say that a higher-level property is irreducible iff there is no lower-level property to which it is identical. Then Kim's Overall Argument against (NRM) is this:

I. If higher-level properties are both irreducible and causally efficacious, then there is downward causation by irreducible higher-level properties.

II. If there is downward causation by irreducible higher-level properties, then there are two distinct nomologically sufficient conditions of a single event.

III. There are not two distinct nomologically sufficient conditions of a single event.

∴ IV. Higher-level properties are not both irreducible and causally efficacious.

Now turn to the arguments for the Premises I – III. If mental states are causally efficacious as (NRM) holds, then one irreducible and causally efficacious mental state

may cause another mental state. Suppose that M and M* are mental states realized by physical states, P and P*, respectively, and that M ≠ P and M* ≠ P*.

Argument for Premise I:

1. M causes M*. (supposition for reductio)
2. If M causes M*, then M causes P*. (Causal Realization Principle)

∴ 3. M causes P* (1,2 MP)

Argument for Premise II:

4. If M causes P*, then M is nomologically sufficient for P*. (Kim's nomological conception of causation)
5. M is nomologically sufficient for P* (3,4 MP)
6. P is nomologically sufficient for P*. (Causal-Closure Principle + Kim's nomological conception of causation)

∴ 7. M and P are distinct nomologically sufficient conditions for P*. (5,6 conjunction + assumption that M ≠ P)

Argument for Premise III:

8. P is nomologically sufficient for M. (Physical Realization Thesis)
9. If 7 & 8, then P is the only genuine cause of P*. (Causal-Closure Principle + Principle of Causal/Explanatory Exclusion)

∴ 10. P is the only genuine cause of P*.

11. If P is the only genuine cause of P* and M ≠ P, then M does not cause P*. (conceptual truth)
12. If M does not cause P*, then M does not cause M*. (Causal-Realization Principle)

∴ 13. M does not cause M*. (10-12 MP twice)

Hence the supposition that M causes M* leads to a contradiction (1 and 13). The only causally efficacious properties are microphysical (or micro-based macrophysical

properties that are mereological aggregates of subatomic properties—see next section). Therefore, it appears that if (NRM) is correct, mental states are causally inert, and epiphenomenalism carries the day. I shall respond to the "Downward-Causation" Argument by proposing another model of (NRM) that satisfies the schema for (NRM) given in section II. If my model is correct, then the "Downward-Causation" Argument is unsound. (In particular, lines (2) and (8) are false.) Before proposing my own model, however, I want to revisit an old controversy about the scope of Kim's conclusion.

V. Does Kim's Argument Against Nonreductive Mental Causation Generalize?

The "Downward-Causation" argument has an extremely strong conclusion. It applies not just to mental properties, but to any putatively irreducible macrophysical property. If Kim's argument is sound, then there may be no macrophysical properties that are both irreducible and causally efficacious.[9] Kim has replied to the charge that his arguments against mental causation generalize to threaten all macrocausation. I shall argue that although Kim's arguments against mental causation do not threaten *all* macrocausation, they do threaten enough macrocausation to render them untenable.

Kim made a two-pronged reply to the charge that his arguments threaten all macrocausation (in Kim (1998)): (i) The first prong introduces a distinction between micro-based macroproperties and others; (ii) the second prong introduces a distinction between levels and orders.

(i) Kim's first prong: Micro-based (or microstructural) macroproperties are properties of macro-objects that can be characterized in terms of microstructure: "P is a micro-based property just in case P is the property of being completely decomposable into nonoverlapping property parts, a1, a2,...,an, such that P1(a1), P2(a2),....Pn(an), and R(a1,....an)." (Kim (1998), p. 84) For example, being a water molecule is a micro-based property: it is the property of having two hydrogen atoms and one oxygen atoms in a certain bonding relationship. Micro-based properties, Kim argues, are both macroproperties and causally efficacious.[10] For example, my table's having a mass of

[9] See Burge (1993), Baker (1993) and van Gulick (1993) for arguments that Kim's claims against mental causation generalze to all macroscopic properties.

[10] Note that micro-based properties are not irreducible, however.

10 kg. is a micro-based property: it is the property of being completely decomposable into 10 nonoverlapping parts each weighing 1 kg. Having a mass of 10 kg. is a property of the table that is causally efficacious (it makes the pointer on the scale read '10 kg') and is not a property of the table's proper parts. Hence, says Kim, we were mistaken to suppose that all macrophysical properties fall to the argument against nonreductive mental causation. Micro-based macroproperties are causally efficacious.

(ii) Kim's second prong: Mental properties and their realizers are on the same level. All properties of a single bearer are at a single level. So, my property of intending to lock the door is at the same level as my property of having microparts with such-and-such microproperties and related in a certain way. So, the competition between mental and physical properties is intralevel. Belief properties and the neural properties that realize them are at same level; I have both. So, a belief is a second-order functional property: the property of having a first-order property that plays a certain causal role. The distinction between first- and second-order properties should be distinguished from the micro-macro hierarchy of levels: "the realization relation does not track the micro-macro relation." (Kim (1998), p. 82) Neural properties are the first-order properties—the realizers—that play the causal role. Mental and neural properties are at the same level, and neural properties have the causal powers.

On Kim's view, a property can have a realizer only if it can be "functionalized"—that is, only if it can be construed "as a property defined by its causal/nomic relations to other properties, specifically properties in the reduction base."[11] Kim ties realization to supervenience: If P realizes M, then M supervenes on P.[12] The functional property and its realizers—the supervening property and its base—are on the same level. In short, says Kim, the problem of mental causation does not generalize to cross-level causation because mental and neural properties are at the same level, and micro-based properties

[11] Kim (1999): p.10. On Kim's view, functional properties are reducible to the bases that realize them. Kim gives a procedure for property reduction. To reduce E to a reduction base B, first, give a functional definition of E in terms of its causal relations to other properties (properties in reduction base B); second, find the physical realizers of E in B; third, find a theory at the level of B that explains how realizers of E fulfill the causal role specified in the definition.

[12] Kim (1993b), especially pp. 196-7.

are macroproperties that are not susceptible to an analogue of the problem of mental causation.

Let me respond to Kim's argument. Even if we accept everything that Kim says, there remains a huge class of important properties that Kim's view will render epiphenomenal (and hence, by Alexander's Dictum, nonexistent). These are properties mentioned in causal explanations of psychology, economics, and political science, as well as in everyday life. They are properties without which we cannot begin to make sense of the world that we encounter.

I shall coin the term 'intention-dependent' or, for short, 'ID' for such properties. They are properties that cannot be instantiated in a world without beings with propositional attitudes—e.g., being in debt, being a driver's licence, being a delegate. Nobody can be in debt and nothing can be a driver's license in a world without beings with propositional attitudes. Call any property that either is a propositional-attitude property (like believing, desiring or intending) or is one whose instances presuppose that there are beings with beliefs, desires and/or intentions is an 'intention-dependent' property—or ID property.[13] These are properties, nonmental as well as mental, whose instances depend on there being creatures with intentionality. ID properties that we are familiar with include being a wedding, being a carrot scraper, being a treaty, and so on. Other communities may be familiar with other kinds of ID properties; but all communities recognize many kinds of ID properties—as well as other ID objects like pianos and paychecks, and ID phenomena like conventions and obligations.[14] All artifacts and artworks, and most human activities (getting a job, going out to dinner, etc.), are ID phenomena: They could not exist or occur in a world without beliefs, desires, and intentions. ID Properties are not plausibly construed as micro-based properties.

However, ID properties are causal properties. By 'causal properties,' I mean roughly the properties in virtue of which an object can have some effect: Property P is a

[13] Thanks to Gary Matthews for the label.

[14] In other places, I've used the expression 'intentional property' to refer to ID properties, and less fortunately, 'intentional object' to refer to ID objects. Although I characterized what I meant by 'intentional object' carefully, I am now resorting to the technical term 'ID object' in order to avoid confusion with uses of 'intentional object' associated with Brentano and Meinong.

causal property of x iff it's possible that there is some event E such that x causes E in virtue of having P. Without ID properties, we could explain almost nothing that happens in the world—a President's ordering an invasion, a dean's cutting the departmental budget, a person's arrest on charges of fraud.

It is highly unlikely that on Kim's account, ID properties would turn out to be causally efficacious. In order to take ID properties to be causally efficacious, Kim would have to construe them as functional properties, whose causal powers are just the causal powers of their nonintentional realizers. Consider the property of being a payment of a debt. Your payment of a debt confers on you the causal power of clearing your name, and putting an end to harrassing phone calls from your creditor. So, payment of a debt is causally efficacious. Can Kim's view count payment of a debt as causally efficacious? The answer is affirmative only if three conditions are met:

The first condition, on Kim's view, is that the property must be "functionalized." It is not at all clear to me that the property of being payment of a debt has a single causal role, and even how to determine whether it does or not. The second condition is that the causal powers of an instance of paying a debt reside in its nonintentional realizer. It is difficult even to find a candidate to be a nonintentional realizer of a payment of a debt. Here's why:

Kim ties realization to supervenience: If P realizes M, then M supervenes on P. So, an instance of the property of being payment of a debt supervenes on the instances of its nonintentional realizer. Thus, given a nonintentional realizer of an instance of the property of being a payment of a debt, necessarily, the property of being a payment of a debt is instantiated. But the nonintentional properties on which any instance of being a payment of a debt supervenes are not locally instantiated. That is, the nonintentional base properties must be instantiated long before and far away from the instance of being a payment of a debt. Nothing would count as a payment of a debt without properties like ownership and borrowing. But ownership and borrowing are also ID properties. We have no idea what the base properties on which being a payment of a debt supervenes. Yet, if Kim is right, the causal efficacy of the payment of the debt resides in the

nonintentional realizer (whatever that is). So, Kim's view would have us transform a causal connection that we all understand, and that we can predict—the causal connection between Jones' payment of his debt and his putting an end to harrassing phone calls from his creditor—into a causal connection between we-know-not-what.

The third condition is to find a theory at the base level that explains how the realizers of the higher-level property can instantiate the functional specification. Since we have no idea of the identity of any nonintentional realizers, we are in no position to find such a theory. Thus, it is highly unlikely the property of paying a debt can be functionalized. So, it is unlikely that Kim's reductive approach can rescue ID-properties as causally efficacious.

An objector may be tempted to brush aside my argument that Kim's conditions cannot be met by ID properties, on the grounds that it is merely epistemological. The fact that we do not know how to carry out the reduction, as we are reminded often, does not imply that there is no reduction to be carried out.[15] To such an objector, I reply that if one advocates a particular strategy to meet a challenge, one should give reason to think that the strategy can succeed. If we have no idea of what a reduction would look like, we are in no position to claim that it can be carried out in principle. Without the "merely epistemological," one has little reason to believe the loftily metaphysical.

Finally, even if Kim's conditions for functionalization were met, ID properties like being the payment of a debt would violate Kim's Causal Realization Principle. The Causal Realization Principle, you recall, is this: If an instance of S occurs by being realized by an instance of Q, then any cause of this instance of S must be a cause of this instance of Q (and of course any cause of this instance of Q is a cause of this instance of S). So, if Jones' payment of his debt is to have the effect of putting an end to harrassing phone calls, it must bring about the nonintentional realizer of the instance of the property of putting an end to harrassing phone calls. But the nonintentional realizer, as we have just seen, includes all the properties on which this instance of putting an end to harrassing phone calls supervenes, and these include properties far beyond any individual's control today.

[15] See Antony and Levine (1997).

So, if Kim is correct, there may well be no intentional causation whatever. Not only is mental causation at stake, but all causation by object's having properties whose instances depend on there being things with propositional attitudes—e.g., being written in Dutch, being in debt, being a delegate. If we are realists about causal explanation (as Kim and I both are), then without ID properties, we would have no causal explanations of, say, the President's vetoing a spending bill—or of any other historical, political, economic, social, and legal phenomena. So, the problem of mental causation may not generalize to all macroproperties, but it does seem to generalize to a great swath of macroproperties that we cannot do without.

Not only does Kim's reductionism lead to epiphenomenalism regarding ID properties generally, but even some versions of nonreductive materialism leave us with no recognition of the causal efficacy of ID properties generally. Versions of (NRM) that hold that instances of mental properties confer (or are) causal powers and are intrinsic to their bearers (Pereboom (2002), Clapp (2001), Shoemaker (2003b) will not generalize to account for other ID properties like the property of being written in Dutch or the property of being a delegate—putative properties whose realizations may have nothing in common. If predicates like 'having a credit card' or 'being a felon' do not designate properties, then we have no idea of any causal explanations of ordinary phenomena like being able to buy things without cash or of losing certain rights. Many ordinary phenomena are ID phenomena whose causal explanations appeal to ID properties.

VI. Another Version of (NRM)

I take it to be a condition of adequacy on an account of (NRM) that it allow that ID properties generally are causally efficacious. I want to propose a new version of nonreductive materialism—I'll call it the 'PC View', 'PC' for 'property-constitution'[16]—and to suggest that it refutes Kim's arguments against nonreductive mental causation. Moreover, it accommodates ID properties, of which propositional attitudes are a special case, as causal properties. There are three elements of the PC View to be explained: the

[16] Pereboom and Kornblith (1991), Pereboom (2002) and Clapp (2001) all use the term 'constitution', but my view differs significantly from each of theirs.

ideas of properties at different ontological levels, of property-constitution, and of independent causal efficacy.

First, consider the notion of properties at different ontological levels. Properties in general confer causal powers on their bearers.[17] I use the term 'causal power' in a rough-and-ready way. Without endorsing Shoemaker's whole theory of properties, I follow him in holding that for something to have a causal power "is for it to be such that its presence in circumstances of a particular sort will have certain effects."[18] For any causal power C that an object has, there is some property P that the object has in virtue of which the object has that causal power C.

There are distinct ontological levels: atoms (and aggregations of atoms) are on a lower level than are credit cards or passports.[19] Every object is of some primary kind or other.[20] An object's primary-kind property determines its level and confers on it causal powers that cannot be manifested at lower levels. But an object also has other causal powers at lower levels, as well as at the level of its primary-kind property. E.g., a bronze statue is has some causal powers in virtue of being a statue and some causal powers at a lower level in virtue of being made of bronze. (So, I reject Kim's conception of levels according to which all properties with a single bearer are on the same level.) An ordinary woman has causal powers at a personal level (she can make her friends feel good), as well as at a subpersonal level (she can rearrange air molecules when she dives into the pool.)[21]

Although there is much more to be said about levels, I have said enough to state the first thesis of my view: Mental properties are distinct from physical properties,

[17] Shoemaker (2003b).

[18] Shoemaker (2003b), p. 211. Powers "can be thought of as functions from circumstances to causal effects." p. 212. I am not assuming Shoemaker's view in general. E.g., Shoemaker takes properties to be nondispositional, and holds that "the word 'power' refers only to intrinsic powers." I take properties to include dispositional properties, and I take powers to include extrinsic powers. p. 221 See McKitrick (2003).

[19] Kim defines levels mereologically: objects having properties of one level become parts of objects having properties at higher levels.

[20] See Baker (2000).

[21] The person has the property of being a dean; she does not constitute the dean, because her persistence conditions do not result from her being a dean, but from her being a person. She existed before she was a dean, but not before she was a person.

because they confer causal powers at different levels. The PC View thus satisfies thesis (1) of (NRM): There are mental properties that are distinct from physical properties.

Second, consider the notion of property-constitution. The heart of the PC View is the idea of property-constitution: Property instances are constituted by other property instances at a lower level.[22] A property's constituter on a given occasion may be a proper part of a supervenience base for the property, but the constituting instance (e.g., being an extension of an arm out of a car window) does not suffice for the constituted instance (e.g., being a left-turn signal). Property-constitution is much weaker than supervenience: Whether or not one property-instance constitutes another depends on circumstances. E.g., Raising one's hand in certain circumstances constitutes voting; one's hand's going up in certain circumstances constitutes raising one's hand; certain muscles' contracting in certain circumstances constitutes one's hand's going up; certain molecular motions in certain circumstances constitutes the muscles' contracting; and so on.[23] Even the relation of atomic properties to molecular properties requires that the atomic-property instantiations be in certain circumstances: Instances of being a sodium atom and being a chlorine atom do not constitute anything unless they are in circumstances of bonding.[24]

Although I can only be brief here, let me informally introduce another term needed for a schema for property-constitution:[25] 'G-favorable circumstances': G-favorable circumstances are the milieu in which something can have the property of being a G. The G-favorable circumstances are conditions such that the addition of an appropriate F-instance makes it the case that there is a G-instance, but not so

[22] I say 'property-constitution' for convenience. What is constituted are property instances, not properties themselves. Property-constitution is analogous to the idea that I developed in Baker (2000) for understanding material objects in terms of what I simply called 'constitution'.

[23] Pace Kim (Kim (1998)), I take the voter to be the bearer of all the properties at the different levels.

[24] I individuate property-instances in such a way that the same property-instance could have occurred in different circumstances. Any G-instance must be in G-favorable circumstances, but if a G-instance is constituted by an F-instance, the F-instance (which in fact is in G-favorable circumstances) could have occurred in non-G-favorable circumstances.

[25] The schema for constitution of properties differs from the one for constitution of particulars given in Baker (2000) and elsewhere. In the schema for constitution of particulars, F and G are x's and y's primary-kind properties, respectively; and x and y are guaranteed to be nonidentical. In the schema for constitution of property-instances, F and G are any properties; and although F and G are guaranteed to be nonidentical, there may be a single bearer of the properties, F and G.

comprehensive that just anything in G-favorable circumstances guarantees that there is a G-instance. Then, when a suitable F-instance is in G-favorable circumstances, it comes to constitute a G-instance. (To be suitable, an F-instance cannot cease to be an F-instance when put in G-favorable circumstances.) G-favorable circumstances may be characterized by open sentences which are satisfied by an appropriate F-instance. G-favorable circumstances are conditions that are necessary but not sufficient for a G-instance. If an F-instance is in G-favorable circumstances, then ipso facto there is a G-instance. E.g., if a hand raising is in vote-favorable circumstances, then ipso facto there is a vote. Here is a schema for property-constitution:[26]

(P-C) x's having F at t constitutes x's having G at t $=_{df}$

(a) x has F at t and x has G at t; &

(b) x is in G-favorable circumstances at t; &

(c) It is necessary that: $\forall z$[(z has F at t & z is in G-favorable circumstances at t) $\rightarrow$z has G at t]; &

(d) It is possible that: x has F at t & x lacks G at t.[27]

The potential constituters of an instance of G may have nothing in common, other than their suitability to constitute an instance of G in various circumstances.[28] For example, a single instance of the property of voting may be constituted by an electronic signal, a mark on paper, a hole in paper or something else.[29] There is no general answer

[26] The objectual quantifier 'x' ranges over constituted objects (e.g., chairs) that have some properties nonderivatively (e.g., being comfortable) and some properties derivatively (e.g., weighing 5 kg). The relation of 'having a property' in (P-C) should be understood as having a property either derivatively or nonderivatively. For details, see Baker (2000).

[27] x has F but lacks G at t if the F-instance is not in G-favorable circumstances. X's having the property of being a salt molecule is constituted by x's having the compound property of being a sodium atom and being a chlorine atom—but only in salt-favorable circumstances. If the properties of being a sodium atom and being a chorline atom were instantiated in circumstances that prevented bonding, there would be no salt molecule.

[28] This feature distinguishes my idea of property-constitution from ideas of constitution found in Pereboom (2002) and from Clapp (2001).

[29] For a defense of this claim, see Pereboom and Kornblith (1991); See also Pereboom (2002). My view differs from Pereboom's in the latter article in several important ways. Most significantly, (i) Pereboom sets aside "any fundamentally relational causal powers." (ii) Pereboom takes the relation between levels to be realization, where a realizer is nomologically sufficient for the realized property. (iii) Pereboom takes the causal powers of the realized property to be determined by ("constituted by") those of the realizer. I differ on all scores: (i) Assuming that causal powers derive from properties in virtue of which something has an effect, I take almost all intentional causal powers to be relational. (ii) I take the relation between levels to be constitution, where a constituter is *not* nomologically sufficient for the

to the question of how much latitude there is among potential lower-level property-instances that may constitute a single higher-level property-instance. My only point is that there is some latitude: a constituted property-instance may have any of a variety of different kinds of nonintentional constituters, and there may be no physical similarities among the potential constituters.

The definition (P-C) is too broad. It allows that, say, an instance of having mass constitutes an instance of being a passport. To remedy that, we may define 'direct property constitution' as follows:

(DP-C) x's having F at t directly constitutes x's having g at t = $_{df}$

(a) x's having F at t constitutes x's having G at t, &

(b) There is no H such that x's having F at t constitutes x's having H at t and x's having H at t constitutes x's having G at t.

Although an instance of having mass at t may constitute an instance of being an instance of being a passport at t, there are intermediate constituters (e.g., being an aggregate of pieces of paper, plastic and ink.) So, the instance of having mass at t does not directly constitute the instance of being a passport at t.

Wherein, then, lies the dependence of the mental on the physical, or more generally, of the constituted property instances on their constituters? Although constitution is not itself a supervenience relation, where there is constitution, there is a supervenience relation in the neighborhood. A constituted property-instance supervenes ultimately on its subatomic constituters together with the microphysical supervenience base of all the circumstances in which the instance of the constitution relation obtains. The supervenience base will be very broad—too broad to be specified or to be useful in explanation—but it will be metaphysically sufficient for the constituted property-instance. The PC View separates constitution from supervenience: Constitution is contingent and highly context-dependent; supervenience is necessary and independent of context. However, supervenience supplies the dependence of the constituted property

constituted property, and (iii) I take the causal efficacy of ID properties *not* to be determined by their constituters.

instances on their constitutors; constitution supplies the causal properties referred to in causal explanations. The PC View thus satisfies thesis (2) of (NRM): Mental Properties depend on physical properties.

Third, consider the notion of independent causal efficacy. Constituted property-instances confer causal powers that are "over and above" the causal powers of their constituters. Some nonreductionists hold that a property-instance has independent causal efficacy if and only if it would have had its effect even if its constituter had been different.[30] I would add that the causal powers of the constituted properties are not determined by those of the constituter alone. The G-favorable circumstances are required for the constituted property to be instantiated. So,

(IC) A property-instance has independent causal efficacy if and only if (i) it would have had its effect even if its constituting property-instance had been different, and (ii) it confers causal powers that could not have been conferred by its constituting property-instance alone.

Any property whose instances have independent causal efficacy is a genuine causal property. My thesis, then, is this: ID properties generally (with mental properties as a special case) are causal properties because their instances have independent causal efficacy. Consider an example.

Let: V be Jones' voting against Smith at t.
P be Jones' hand's going up at t
V* be Smith's getting angry at Jones at t'
P* be Smith's neural state at t'.
C be circumstances that obtain at t in which a vote is taken by raising hands ("vote-favorable circumstances").

The causal powers conferred by the constituted property-instance (Jones's voting against Smith) are independent of the causal powers conferred by the constituter (Jones's hand's going up). The causal powers conferred by Jones' hand's going up include the

[30] Pereboom (2002) and Kornblith and Pereboom (1991) explain this point fully and persuasively.

power to move air molecules. The causal powers conferred by Jones' voting against Smith include the power to anger Smith—no matter how the vote was cast. In short, the causal efficacy of constituted property-instances—of mental property-instances and of instances of intention-dependent properties generally—is independent of the causal efficacy of their constitutors. The PC View thus satisfies thesis (3) of (NRM): Mental properties make a causal contribution to what happens.

The PC View thus satisfies the schema for (NRM) given in section II. The PC View, I believe, vindicates nonreductive mental causation.

VII. Saving Nonreductive Materialism

Now I shall apply this new version of nonreductive materialism to the metaphysical principles underlying Kim's arguments against nonreductive mental causation. *Any* nonreductive materialist, I believe, will have to reject three of Kim's Principles: (a) The Physical-Realization Thesis, which guarantees that a putatively higher-level property can be instantiated only if it is reducible to lower-level properties; (b) The Causal-Realization Principle, which guarantees that no irreducible higher-level property can be causally efficacious (by requiring that the cause of any higher-level property must bring about its supervenience base); and (c) The Causal-Inheritance Principle, which guarantees that no higher-level property-instance confers on its bearer any new causal powers.

Since each of these principles precludes irreducible, higher-level, causally-efficacious properties, each should be disavowed by any nonreductionist. Indeed, the PC View provides the resources to justify rejection of each: if the PC View is correct, then each is false. The Physical-Realization Thesis and the Causal-Realization Principle were both needed for Kim's "Downward-Causation" Argument; the Causal-Inheritance Principle insures that higher-level properties have no independent causal efficacy. Hence, the PC View, if correct, renders Kim's argument unsound. (Conversely, of course, if Kim's argument is sound, then the three principles are true, and the PC View is incorrect.) My aim, however, is only to show that there is a coherent version of (NRM) that vindicates intentional causation and that justifies discarding these three principles.

No nonreductionist of any stripe can accept the three principles, and the availability of the PC View provides the grounds for rejecting them.

Finally, note that the PC View does not violate the Causal-Closure Principle. The Causal-Closure principle says, roughly, that any physical event that has a cause at t has a complete physical cause at t.[31] On my view, all property-instances are physical in this respect: any property-instance is either identical to or ultimately constituted by microphysical property-instances. ID properties thus are physical properties. So, their causal efficacy does not violate the causal-closure principle.

Someone may object that ID properties as I have construed them are not really physical properties: the only physical properties are microphysical or "micro-based properties" that are just aggregates of micro-physical properties.[32] Even so, the PC View would not violate the Causal-Closure Principle. Consider a case of basic action: Suppose that Jane is going through the security gate at a U.S. airport, and she is instructed by a Federal agent to raise her arms, so that the agent can "wand" her. Jane wills[33] to raise her arms and she raises them. Suppose that her willing to raise her arms causes her to raise them. Let MP be the microphysical constituter of Jane's willing to raise her arms and let MP* be the microphysical constituter of Jane's raising her arms. (Note that the relation between MP and M, on the one hand, and MP* and M*, on the other hand, is not Kim's realization relation but my constitution relation.)

On the PC view, MP is not a complete cause of MP*. The Causal-Closure principle requires only that MP* *have* a complete microphysical cause, not that MP *be* that complete cause of MP*. MP is only a proper part of a larger aggregate of microproperties that is nomologically sufficient for MP*.[34] There is no difficulty for the property-constitution view in saying: (i) Jane's willing to raise her arms causes her to raise her arms; (ii) Jane's willing to raise her arms is constituted by MP; (iii) Jane's

[31] Kim (1993c), p. 280. This principle is important, says Kim, because to deny it "is to accept the Cartesian idea that some physical events have only nonphysical causes...."

[32] See Kim (1998), p. 114.

[33] I am using 'will' as an all-purpose term that covers choosing, deciding, forming an intention for the immediate future. 'Will' carries no metaphysical weight here.

[34] cf. Noordhof (1999) and Segal and Sober (1991). I discovered these articles after I had written the paragraph to which this note is appended.

raising her arms is constituted by MP*; but (iv) MP does not cause MP*. If the microphysical state of one sizable spatiotemporal region that ends at the time of Jane's willing, caused the microphysical state of slightly later sizable region that begins at the time of Jane's raising her arms, then the Causal-Closure Principle is honored.[35] So, although the PC view does not require MP to be causally sufficient for MP*, it nevertheless does not violate the Causal-Closure Principle.[36]

There remains overdetermination, which, I suggested earlier, is benign. Better than benign, however, the possibility of overdetermination can be deployed in defense of (NRM). For all we know, there is no fundamental level. (See Schaffer 2003) If it turns out that there is no fundamental microphysical level, we cannot deny overdetermination, lest all the causal powers drain away. So, we may have to countenance overdetermination in any case. Overdetermination resulting from "infinite descent" would falsify reductionism but not (NRM). So, we have good reason to prefer (NRM).

VIII. Conclusion

Nonreductive materialism is the most promising metaphysical view for understanding the world as we encounter it—the world filled with ordinary things like people and artifacts and artworks. Only nonreductive materialism offers a metaphysics that takes ordinary things and their interactions with them at face value and makes them intelligible. Only nonreductive materialism respects a commonsense conception of reality in the context of a broadly scientific outlook. These features of nonreductive materialism make it desirable to work out an adequate account of it.[37]

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[35] There is much more to be said about the Causal Closure Principle. Kim holds that physicalism "need not be, and should not be, identified with micro-physicalism." In that case, if we disentangle the Causal Closure Principle from the thesis of mereological supervenience, my own nonreductive view satisfies the Causal Closure Principle. See Kim (1998), p. 117.

[36] We may still have a harmless kind of overdetermination. But note that the overdetermination is generated by the whole supervenience base, not by the constituter.

[37] I am grateful to Gareth B. Matthews, Hilary Kornblith and Jonathan Schaffer for reading drafts of this paper and making helpful suggestions.

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