

DISCUSSION

MICRO-BASED PROPERTIES AND THE SUPERVENIENCE ARGUMENT: A RESPONSE TO KIM

by Paul Noordhof

Many of us thought (some still think) that Jaegwon Kim's work on Supervenient Causation helps to explain how the layered world can have efficacy in each of its layers. At the bottom, there is physics with its efficacious micro-events and properties, then chemistry with its elements and compounds, then biology with its interest in particular kinds of compounds and their organisation into living creatures, and, for our purposes, we can stop at psychology, which, if we are lucky, will include mental events such as belief, desire and pain. Each layer is in some way made up of the events and properties at a layer lower than itself. Everything is ultimately composed from the things identified by physics.

Those who subscribed to the layered world became worried about whether recognising the existence of the other layers would threaten the following claim:

If you pick any physical event and trace its causal ancestry or posterity, that will never take you outside the physical domain ('The Causal Closure of the Physical Domain'—Kim (1997), p. 282).

The answer seemed to be 'no' so long as every time it looked as if you were about to go outside the physical domain—for instance by referring to a *biological* entity!—everything turned out all right because the entity in question was composed from the things identified by physics. Then the worry was that entities from these other layers might have no efficacy at all—it was always their physical constitution that was doing the causal work. That's where Kim stepped in. He argued the other layers—biology, chemistry, and psychology—also have efficacious events and properties because they supervene on (by being constituted from) the efficacious events and properties of physics (Kim (1984), pp. 96–102—cf. Kim (1997), pp. 293–296). The argument was particularly important in the case of mental events and properties. One of the merits of adopting the layered world picture was supposed to be that mental causation ceased to be problematic—so this had better be the case.

His position has changed. The Supervenience Argument is responsible. It runs as follows.

- (1) An instance of mental property M causes another mental property M* (assumption).
- (2) M* has physical supervenience-base P*.
- (3) If M causes M* and M* has physical supervenience-base P*, then M causes M* via causing P*.
- (4) M has a supervenience-base P.
- (5) P is a sufficient cause for P*.
- (6) If P is a sufficient cause for P*, then M is not causally necessary for M*.

Therefore,

- (7) Not (1)

(for details and defence, see Kim (1997), pp. 282–287).

Now let me make clear. I do not endorse this argument. In fact, I think that premise (6) is false—even in the circumstances that Kim envisages. But I don't want to argue that yet. What I want to do is show that his rejection of a certain objection to this argument doesn't work: the Generalization objection.

The Generalization objection says that something must be wrong with the argument because it doesn't just threaten mental causation, versions of the same objection can be run with chemical properties and events, biological properties and events, and so forth (see Burge (1993), p. 102). Part of Kim's response is to suggest that since the argument is sound, one should take it as presenting a challenge to the efficacy of all properties that supervene upon physical properties (Kim (1997), pp. 288–289). So far we have a dialectical standoff. But then a little movement appears to occur because, Kim argues,

- (I) Many of the chemical and biological properties are not supervening properties but micro-based properties for which the argument does not hold.
- (II) Mental properties are not micro-based properties but mere supervening properties for which the argument does hold.

My aim is to show two things. First, that the Supervenience Argument can be reformulated to threaten the efficacy of micro-based properties. Second, that mental properties can be seen as micro-based properties just as easily as they can be seen as supervening properties. So, if I was wrong about the possibility of reformulating the Supervenience Argument, mental properties could be efficacious by Kim's own lights. In doing this,

I shall also indicate some grounds for rejecting the Supervenience Argument and its reformulation.

I

The Reformulation of the Supervenience Argument. Micro-based properties are properties that are instantiated as a result of aggregates of entities possessing properties but where these micro-based properties are not themselves properties of the entities upon which they are based. For instance, a desk can have a mass of 10kg as a result of the weight of its parts none of which is 10kg. Thus:

P is a micro-based property just in case P is the property of having proper parts $a_1, a_2, a_3, \dots, a_n$ such that $P_1(a_1), P_2(a_2), \dots, P_n(a_n)$ and $R(a_1, \dots, a_n)$ (Kim, (1997), p. 291–292).

For ease of discussion, let me introduce a term A to describe the following fact: $a_1, a_2, a_3, \dots, a_n$ are such that $P_1(a_1), P_2(a_2), \dots, P_n(a_n)$ and $R(a_1, \dots, a_n)$. A^* describes a similar fact for another micro-based property M^* . Then my reformulation of the Supervenience Argument for this kind of case is as follows.

- (1) An instance of micro-based property M causes another micro-based property M^* (assumption).
- (2) M^* has a micro-base A^* .
- (3) If M causes M^* and M^* has a micro-base A^* , then M causes M^* via causing A^* .
- (4) M has a micro-base A.
- (5) A is a sufficient cause for A^* .
- (6) If A is a sufficient cause for A^* , then M is not causally necessary for M^* .

Therefore,

- (7) Not (1).

The reason why this argument is sound if the original Supervenience Argument is sound is that it rests upon an appeal to the same kind of determinative relation between base and supervening or micro-based property. Just as the supervenience relation to which Kim appeals holds that

$$(i) \quad \Box(x)(P^*x \rightarrow M^*x)$$

so the micro-basing relation holds that

$$(ii) \quad \Box(a_1)(a_2) \dots (a_n)(\exists x)(A^*a \rightarrow M^*x).$$

Where a_i is supposed to range over a domain which includes the kind of entities that, when aggregated, are the micro-base of a property M^* , and

'A*a' is an abbreviation for $P^*_1(a_1), P^*_2(a_2), \dots, P^*_n(a_n)$ and $R^*(a_1, \dots, a_n)$. The Supervenience Argument rested on claiming that M could only cause M* by causing P* since P* fixed the instantiation of M*. By parallel reasoning, M can only cause M* by causing A*a since A*a fixes the instantiation of M* (Kim (1997), pp. 284–285). The Supervenience Argument then went on to claim that P is a sufficient cause of P*. Again, by parity of reasoning A is a sufficient cause of A* (Kim (1997), pp. 285–287).

Kim is right to point out that certain micro-based properties have causal powers that each of its microconstituents by themselves don't have (Kim (1997), pp. 292–293). For instance, the desk with mass 10kg in virtue of having this weight, has causal powers that a drawer does not have. Water has causal powers that oxygen and hydrogen do not—like being able to douse fires. However, this point is just the familiar fact that anything requires cooperating circumstances to make a particular contribution. One can say in circumstances C (where this is a description of the relation between a drawer and the other components of the desk making up the remaining 9.5 kg), if a drawer is present, the 10kg effects follow. There is no problem with relating the contribution of each microconstituent to the joint effect of the aggregate of the microconstituents. But, as before, there appears no need to postulate a property—in this case a property micro-based in micro-constituents having certain other properties—to capture the causal relationship.

II

Why aren't Mental Properties Micro-based Properties? Kim denies that mental properties are micro-based because the mental properties supervene upon neural properties which are possessed by the same individual that possesses the mental properties. His example is the familiar claim that the property of being in pain supervenes on the property of having c-fibres firing. But this claim is just a particular way of characterising the determinative relation between the neural and the mental. Instead, one might claim that the property of being in pain is micro-based in each of the c-fibres possessing the property of firing (or some such thing).¹ If Kim's examples of micro-based properties are ones which were not susceptible to redescription as supervening properties,

1. This is probably the wrong thing to say because—by Kim's definition of micro-basis—it appears to rule out the variable realisation of pain. But that would just show that we have been too specific in giving the micro-basis. Instead, one should claim that pain is micro-based in a number of information pathways, which convey information about tissue damage and the like, each having the property of firing. But he does not seem to be too careful on this score since he gives as the micro-base of a 10kg desk, the fact that it has two parts 4kg and 6kg. Obviously there are many other ways in which the property of weighing 10kg can be realised. Either way I think that my point stands.

we might still have a genuine difference. But this is not so. One could just as easily describe the property of weighing 10kg as supervening upon the property of having two parts weighing 4kg and 6kg respectively. The latter property would be had by the thing which is 10kg. One could describe the property of being a cube as supervening upon the property of having constituents with such and such spatial relations to each other. And one could describe the property of being water as supervening upon the property of being made up of two hydrogen atoms and one oxygen atom.

III

The Real Issue. So what is the real issue if the circuit through talk of micro-based properties does not help. It seems to me that the issue is:

When do determinative relations such as micro-basis or supervenience generate new causal powers to go with the determined properties—causal powers that the determiners (the supervenience-base or the micro-constituents of the micro-base) don't have?

If a particular determinative relation does introduce novel causal powers, then (6) is false in either argument. It might be the case that P or A is a sufficient cause of P* or A* but that is only because P or A generates new causal powers (and hence a new property M) that is sufficient for the occurrence of P* or A*. So it doesn't follow that M is not causally necessary for M*. The examples that Kim produces might suggest that if M is variably realised by different supervenience-bases or different micro-bases, then no new causal powers are introduced. For instance, in the case of pain, one may agree that the aggregate of firing c-fibres may have causal powers that individual firing c-fibres don't have, but deny that the property of being in pain does. The property of being in pain is not identical to the aggregate of firing c fibres since it is variably realised and a seductive line of thought is that no other new causal powers are generated by the determination of the property of being in pain. But I don't think that this fingering of variable realisation is defensible (cf. Kim (1997), p. 297). First, the property of weighing 10kg is variably realised yet appears to have novel causal powers that the micro-constituents that constitute the micro-base of 10kg don't have. Second, variably realised properties do not just have the causal powers of their current realisation but also those given to them by all their other realisations. For instance, pain realised by c-fibres in me may cause me to wince. However, it won't cause wincing in my silicon friend. For that one needs d-circuit firing. The property of pain causes wincing in these various circumstances because it is realised in different ways. But these causal powers of pain stretch beyond what is provided by any particular way in which it is

realised (see Noordhof (1997), p. 246). That means that quite generally supervenience or micro-bases may determine properties with the novel causal powers. Perhaps this is not enough novelty for some. It may help if we spell out what more is required.

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