Causation, Coincidence, and Commensuration

Paul Audi

What does it take to solve the exclusion problem? An ingenious strategy is Stephen Yablo's idea that causes must be *commensurate* with their effects. Commensuration is a relation between events. Roughly, events are commensurate with one another when one contains all that is required for the occurrence of the other, and as little as possible that is not required. According to Yablo, one event is a cause of another only if they are commensurate. I raise three reasons to doubt that this account solves the exclusion problem successfully. First, it leaves a mystery about what determines a particular's causal capacities. Second, because there are two ways of construing *coincidence* between particulars, a dilemma arises: either the solution to the exclusion problem is threatened, or the account of coincidence loses an attractive feature concerning ontological economy. Third, even if we assume the commensuration constraint, a plausible principle about overdetermination seems to regenerate the exclusion problem.

1   Introduction

Anywhere there is difference without distinctness, the threat of overdetermination looms. That is, if two things are numerically different but perfectly overlap in their parts or constitution, then there is a strong case to be made that any effect of one is an effect of the other, hence the effect of two different things, hence overdetermined. Coincidence, in other words, at least appears to entail causal competition. One way to resist this conclusion is to find a principled reason for thinking that in these cases, the putative overdeterminers are too intimately related to count as different causes. But here a new threat arises, exclusion, and with it the denial of any causal efficacy to the macroscopic, higher-level, determinable, or otherwise not-narrowly-physical member of the coincident pair. How are we to find a way between rampant overdetermination and epiphenomenalism about mental and other macroscopic phenomena?

An ingenious strategy, due to Stephen Yablo, is to require that causes be *commensurate* (or *proportional*) to their effects.[1] Yablo's view is that coincident events are coincident by sharing all their categorical (roughly, non-modal) properties, but different owing to having different sets of those categorical properties essentially.[2] To be commensurate with an effect requires having—and having essentially—all that is required to produce the effect, and as little as possible that is not. Call this the *commensuration constraint on causation (CCC)*. (CCC is importantly different from other accounts of proportionality inspired by Yablo, such the one deployed in Shoemaker's subset account of realization.[3])

Can CCC solve the causal exclusion problem? Can it avoid both overdetermination and the causal inefficacy of higher-level phenomena? After setting up the exclusion problem, and then showing how CCC is meant to solve it, I will raise three reasons for doubting that it does so successfully. First, it leaves a mystery about what determines a particular's causal capacities. Second, the fact that there are two ways of construing *coincidence* between particulars forces a dilemma: either the solution to the exclusion problem is threatened, or the account of coincidence loses an attractive feature concerning ontological economy. Third, a plausible principle about overdetermination seems to bring the exclusion problem to bear even if we grant that commensuration is required for causation.

A clear view of these matters will aid us not only in our attempts to solve the exclusion problem, but also in our attempts to understand the metaphysics of properties, events, and causation.

2   Exclusion

The causal exclusion problem (powerfully posed by Jaegwon Kim, among others) seems to show that if physicalism is true, then any effect of a non-physical cause is overdetermined.[4] This is a problem for anyone who believes there to be non-physical causes, that is, events that are not *narrowly physical* (i.e., do not consist in the instantiation of the kinds of properties, or the behavior of the kinds of objects, to which physical theories appeal). An especially stark

---

[1] Yablo 1992.

[2] Yablo 1987.

[3] Shoemaker 2001 and 2007. I criticize Shoemaker's view in Audi forthcoming.

[4] E.g., in Kim 1998.

application of the problem is in the domain of mental events. Four principles generate the trouble:

(1)   Some events are caused by mental events (denial of epiphenomenalism).
(2)   Every event is caused by a physical event (causal completeness of the physical).
(3)   Mental events are not physical events (anti-reductionism).
(4)   Any event with more than one cause is overdetermined (exclusion principle).[5]

Together, these entail that

(5)   Every effect of a mental cause is overdetermined.

By (1), there are some such events. Pick one. By (2), it has a physical cause; by (3), its physical cause is not its mental cause; so by (4), it is overdetermined. Any causal work mental events may do, then, is altogether redundant. This seems at odds with common sense, which maintains that some events—notably actions— are best explained by mental causes.[6] It is also at odds with philosophical scruples, since the best accounts of our actions treat them as effects of mental causes.

3   Commensuration

Suppose we distinguish between being a *cause* of an event, and being *causally sufficient* for it. We might then be able to say that every event has a causally sufficient physical antecedent, while denying that every event has a physical cause. Events with mental causes, then, might not be overdetermined.

---

[5] Strictly speaking, the exclusion principle, (4), should make the qualification that any event with two *causally independent* causes is overdetermined, where two events are causally independent just in case neither is a cause (or causal ancestor) of the other. Overdetermination does not occur in virtue of an effect's having multiple causal antecedents in the form of a chain. (3), then, needs to be strengthened to say that mental events are causally independent from the relevant physical ones, which the physicalist should be happy to grant (since the relevant physical events are coincident with, rather than causes of, the mental events). For the sake of simplicity, I leave out these qualifications in the main text.

[6] It would be a stretch to claim that common sense has an opinion (*de dicto*, at least) on whether mental causes are nonredundant causes. But common sense may well hold both that mental events are not physical events and that actions are caused by mental events alone. Thus (5) is inconsistent with propositions plausibly attributed to common sense.

This distinction is at the core of CCC. For each event, the relation of commensuration selects one cause from among multiple causally sufficient candidates. The candidates for the role of cause will be coincident events, and more specifically, will stand in the determinate-determinable relation (as Yablo understands that relation).

Before setting out the details of these relations, it is worth viewing the bigger picture. It would be strange to think that determinates and determinables threatened to exclude one another's causal efficacy. Imagine a matador waving a scarlet cloth, and the bull's ensuing charge. Now, suppose we say there are two events here, the waving of a scarlet cloth and the waving of a red one, differentiated by their different essences (the waving of a red cloth could occur even if the cloth faded to a dull maroon). It would be strange in such a case to think that if the waving of a scarlet cloth caused a bull to charge, then the waving of a red cloth was just causally irrelevant to the bull's charging. Yablo's account seeks to accommodate the causal influence that a determinable—in this case, the waving of a red cloth—can have on some effect. As he puts it:

> Although determinables and determinates do not compete for causal *influence*, broadly conceived as encompassing everything from causal relevance to causal sufficiency, they *do* compete for the role of *cause*, with the more commensurate candidate prevailing.[7]

Applying this account to the above example, while only one event—either the waving of a scarlet cloth or the waving of a red one—can properly speaking be the cause of the bull's charging, they may both count as having causal influence on that event, and indeed, they may both count as causally sufficient for it. (Of course, we will want to know precisely what causal influence is, and how it differs from causation proper, as I discuss further below.)

In light of this distinction, even if (1)—which is put in terms of *causes*—must be denied, it is now possible to preserve its spirit in the following principle:

(1*)   For every event, there is a physical event causally sufficient for it.

Now, if we replace (1) with (1*) in the argument above, (5) will not follow. Thus, the distinction between causation and causal influence promises a nice way around the exclusion problem.

---

[7] Yablo 1992, p. 274.

But so far, the distinction is only schematic. It remains to say exactly what commensuration is and how it separates true causes from among competing candidates. Commensuration depends on Yablo's understanding of coincidence between particulars, and the related notion of one particular's being a determinate of another. Coincidence is defined in terms of *categorical properties*. Yablo does not formally define the notion, but a categorical property is roughly the kind of property things have at a world just in virtue of their character at that world, i.e., independently of their character at other worlds.[8] (So construed, the complement of categorical property is *hypothetical property*, not dispositional property.) Examples of categorical properties are shape and mass. Examples of non-categorical properties are being essentially round, being possibly 25kg, and so forth. Bearing this notion in mind, we can define coincidence between particulars as follows:

(6) *p* is coincident with *q* iff necessarily, *p* and *q* have all their categorical properties in common.

To be clear about what the definition entails, suppose that mental events are coincident with physical events. (6) entails that a *particular* mental event could not exist without the particular physical event with which it is coincident. But it does not follow that physical events of any particular kind are required for mental events of any particular kind.

  We can employ coincidence, now, to define the determinate-determinable relation for particulars:

(7) *p* is a determinate of *q* only if
    (i) necessarily, if *p* exists, then *q* exists and is coincident with *p*, and
    (ii) possibly, *q* exists and *p* does not.

---

[8] Circularity creeps in, according to Yablo, because we need to qualify *character* with *categorical* in the definiens. For any property, *P*—categorical or not—if *x* has *P* then automatically, *x* is *possibly P* in any world in which *x* exists at all. So even when *P* is categorical, being *P* depends in some sense on being possibly *P* in other worlds. (If 'depends' is understood to be asymmetrical, or replaced with an asymmetrical notion, the problem can be avoided. E.g., if 'in virtue of' expresses an asymmetric relation of determination, then we could say *P* is categorical iff if *x* has *P* in *w*, then *x* does not have *P* in virtue of how *x* is at worlds other than *w*. Then, even though at any world other than *w*, *x* is automatically *possibly P*, it is not *in virtue of* that transworld fact that *x* is *P* at *w*.)

(Note that this is only a necessary condition. Yablo does not say why it is not sufficient as well.)

Let me illustrate how this understanding of determinables applies to events. In slamming the door, I also close it. Arguably, the closing is not the same event as the slamming. After all, the closing could have occurred gently, while the slamming could not have. But note the modality here. It is not that the closing is a mere closing, and only the slamming is hard and fast. The closing is exactly as hard and fast as the slamming. The difference is that the closing is only accidentally so, while the slamming is essentially so. What is more, the slamming contains essentially everything the closing does. It must, since the slamming of a door cannot fail to be the closing of a door. So these two events meet the condition set by (7) for being related as determinate and determinable. Necessarily, if the slamming occurs, so does the closing, and possibly, the closing exists without the slamming.

4   Commensuration and Causation

Now on to causation. To motivate the idea that causation obeys a kind of commensuration constraint, consider two cases in which I slam (and thereby close) the door, thus causing you to wake up.

> *Case 1*: I slam the door and the noise startles you, and you awake.

> *Case 2*: I slam the door and you get hot without the breeze, and wake up.

In case 1, it makes sense to say my *slamming* the door caused you to wake up, and it seems mistaken to say my closing the door did, since if I'd closed it *gently*, it would have been a quiet closing, and would not have awakened you. In case 2, however, it makes sense to say my *closing* the door caused you to wake up, since even if I'd closed it gently and quietly, it would have cut off the cool breeze that kept you comfortable enough to sleep. In that case, the fact that the closing happened to be a slamming seems irrelevant to the causal process in question, i.e., the one terminating in your awaking.

CCC states a rule to fit these pre-theoretical judgments about what causes what.[9] The rough idea is that the cause should contain all that is needed for the

---

[9] It is worth considering whether the kinds pre-theoretical judgment to which Yablo apeals are truly about what *causes* what, rather than what (contrastively) *explains* what. Of course, one might think that our pre-theoretical judgments about what explains what

effect to occur, but nothing superfluous. Precisely, an event, c, is commensurate to an event, e, *if and only if*:

(8)   If c had not occurred, e would not have occurred;

(9)   If c had not occurred, then if it had, e would have occurred;

(10)   For any determinable, $c\text{-}$, of c, if $c\text{-}$ had occurred without c, then e would not have occurred; and

(11)   There is no determinate of c, $c+$, such that if $c+$ had not occurred but c had, e would not have occurred.

Yablo dubs (10) the condition that causes be *required* for their effects, and (11) the condition that causes be *enough* for their effects. For c to be enough for e is just for there to be no determinate of c that is required for e.

     Now look back at our cases. In case 1, we can now say that the reason the closing did not cause you to wake up is that the closing was not *enough* to wake you up. There was a determinate of the closing—the slamming—that was required to wake you up. So by (11), the closing is not the cause. In case 2, the slamming was not *required* to wake you up. There is a determinable of the slamming—the closing—which, had it occurred without the slamming, would still have woken you. So by (10), the slamming is not the cause.

     Commensuration constrains what can be properly reckoned a *cause* of some effect. Being a proper cause of something is a quite demanding causal relation, but not the only causal relation recognized by the present account. This is important because we do not want to say that when a determinate is not a *cause* of some effect, it is completely causally inert with respect to that event. Recall that, according to Yablo,

> Although determinables and determinates do not compete for causal *influence*, broadly conceived as encompassing everything from causal relevance to causal sufficiency, they *do* compete for the role of *cause*, with the more commensurate candidate prevailing.[10]

(at least for a certain kind of explanation) are a reasonably reliable guide to what causes what.

[10] Yablo 1992, p. 274.

So in case 2, even though the slamming of the door was not a cause of your awaking, it still causally *influenced* your waking up, and indeed, was *causally sufficient* for it.

So we have a very elegant account here. Nevertheless, it faces a number of problems. I do not claim that they are, singly or jointly, a decisive refutation of this theory. But they require resolution if CCC is to solve the causal exclusion problem. I will discuss three difficulties. First, I show that Yablo's account is incompatible with certain plausible principles about the relation between a thing's categorical properties and its causal powers. Second, I indicate an ambiguity in Yablo's account of coincidence, and argue for a dilemma. One disambiguation threatens the account of causal non-competition. The other presents an implausible ontology, and requires a suspicious account of how modal features of things affect what they may cause. Third, I argue for a plausible sufficient condition of overdetermination, and show that if it is true, the exclusion problem arises even granting CCC.

5　　Coincidence, Categoricity, and Causation

It seems plausible to suppose that things have their causal powers in virtue of their categorical properties. A weaker claim, which I take to be entailed by this, is that

(12)　　Two things differ in what they are capable of causing only if they differ in their categorical properties.

Recall that Yablo uses 'categorical' in a special sense. Categorical properties, in that sense, are not merely the intrinsic grounds of dispositions. Surely intrinsic duplicates can differ in what they cause because of non-intrinsic differences between them—say, in spatial or temporal relations to potential effects. But in the sense of 'categorical' in use here, spatial and temporal properties are categorical. Since coincident items share all categorical properties, on Yablo's view, they will never differ in the extrinsic features (such as spatiotemporal location) that might be responsible for causal differences between intrinsic duplicates.

Yablo cannot accept (12). His understanding of determinables and coincidence—(6) and (7) above—entails that

(13)　　If p is a determinate of q, then p and q have exactly the same categorical properties.

(12) and (13) together imply that

(14)   If p is a determinate of q, then p and q do not differ in what they are capable of causing.

This is precisely what Yablo denies (though he might accept it if we phrased it in terms of causal sufficiency, rather than causation proper). So Yablo's account is incompatible with (12).

Having to reject (12) is a problem for CCC if there is strong independent reason to accept it, i.e., to accept that what things are capable of causing is owed just to their categorical properties. Let me consider a number of points in favor of (12).

First, (12) has at least some initial plausibility considered on its own. It fits with many explanations it would be natural to give of why events cause what they do. It would be very natural to say, e.g., that the brick's striking the window caused the window's breaking in virtue of relatively simple, non-modal properties of the striking, such as its force.

Another point in favor of (12) concerns how things get their non-categorical (i.e., modal) properties. Consider first why Yablo is committed to denying (12), namely that, on his view, being the cause of an event requires being commensurate to it, and commensuration is fundamentally a matter of how the essence of a candidate cause matches up with a putative effect. So causation, for Yablo, ineliminably involves the modal properties of events. Now according to one plausible account of modality, things have the modal properties they do in virtue of their non-modal properties—that is, in virtue of their *categorical* properties, in Yablo's sense of that term. This entails that

(15)   Two things cannot differ in their modal properties unless they differ in their categorical properties.

According to Yablo, events cause what they do in virtue of their modal properties (given how those properties determine to what an event is commensurate). So presumably Yablo would accept

(16)   Two things cannot differ in what they cause unless they differ in their modal properties.

(15) and (16), like (12), are supervenience claims, and supervenience is transitive. So together they entail (12), which as we have seen, is incompatible with Yablo's account. So Yablo just reject (15) in order to avoid commitment to (12). He thus faces a version of the *grounding problem* for modal properties: assuming it is possible for categorically indiscernible things to differ modally, in virtue of what do they differ? Yablo's view appears to close off the possibility of answering this question. (There at least can be no account of things' modal properties in terms of their categorical ones, on his view.) Of course, he will presumably deny that the question needs answering, and insist that the modal properties in question are had brutely. But it is a disadvantage of the view that it cannot account for why all these particulars have the *de re* modal properties that they do.

The grounding problem shows that there is good reason to accept (12), the principle that causal powers supervene on categorical properties, independently of the workings of CCC. But there is also good reason for a defender of CCC to accept something similar. An essential part of Yablo's way around the exclusion problem is his claim that physical events are causally sufficient for everything for which mental events are sufficient. But why are they? More generally, why are determinates causally sufficient for whatever their determinables are? One answer would be that things are capable of exerting the causal *influence* they are in virtue of their categorical properties, which implies that

(12*)   Two things differ in what they are capable of *causally influencing* only if they differ in their categorical properties.

Now, (12*) won't do the work (12) did in the argument for (14), which flatly contradicts the account of commensuration. But it raises a very difficult question: What is the difference between causal influence and causation proper, and why do categorical properties secure capacities for causal influence, but fall short of determining what a thing may cause?

On the present view, the relation properly called *causation* depends on the essences of things in a way that mere causal influence does not. I assume that is part of the reason why what causes what depends on the modal properties of the things in question. This is the best candidate for a relevant difference between causation and causal influence, one that might explain why (12) but not (12*) is true. But we still lack an account of why the difference is relevant.

6   How Many Instances? A Dilemma.

As I noted above, one attractive feature of Yablo's view is that it includes an elegant and original account of coincidence. But there are at least two incompatible interpretations of this account of coincidence. Each faces serious difficulties. One concerns whether coincident events could possibly differ in what they *cause* (let along what they *causally influence*). The other concerns whether the account of coincidence presents a plausible ontology of events or of the relation between a thing's modal properties and what it may cause.

According to Yablo, once again,

(6)   *p* is coincident with *q* iff necessarily, *p* and *q* have all their categorical properties in common.

Now, there are two things one might mean by saying that *p* and *q* have categorical property *C* in common. First, it might be that

(17)   If *p* and *q* are coincident and share categorical property, *C*, then *p* and *q* *overlap* in their instantiation of *C*; there is a single instance of *C*-ness that they share.[11]

Second, it might be that

(18)   If *p* and *q* are coincident and share categorical property, *C*, then *p* and *q* share *C* only in the sense that each instantiates *C*; each possesses a different instance of *C*-ness.[12]

To see the difference, consider the famous statue-clay example of coincidence. Even assuming the statue and the clay to be numerically different, we think that between them there is just one instance of whatever determinate mass they are,

---

[11] As I read Shoemaker, this is the view propounded in Shoemaker 2001. For criticism, see Audi forthcoming.

[12] The distinction could also be drawn in terms of how many *tropes* of *C*-ness there are among *p* and *q*:

(17*)   If *p* and *q* are coincident and share categorical property, *C*, then *p* and *q* share a *C*-ness trope.

(18*)   If *p* and *q* are coincident and share categorical property, *C*, then *p* and *q*, then each has a *C*-ness trope but the *C*-ness of *p* is not the *C*-ness of *q*.

say, 15kg. There are two things, and each is 15kg, but—á la (17)—they share a particular instance of 15kg, and that is why they don't read 30kg on a scale. It is hard to motivate the understanding of coincidence that goes with (18) by example, but in the abstract, one might think it is the correct understanding because one takes property instances to be individuated by the objects that instantiate them, so that whenever $a \neq b$, the F-ness of $a \neq$ the F-ness of b.

Suppose one opts for (17), the 1-instance view. Then the speed of the door-slamming is the very same instance of speed had by the door-closing. Now take case 1 from above, the case in which the determinate slamming of the door causes you to awake. It seems undeniable that

(19)   The slamming of the door causes you to awake in virtue of its speed.

But if (17) is correct, then that very speed-instance—precisely that entity—belongs also to the closing. If so, how can the closing fail to be the cause of your awaking? Both events contain the causally active property-instance.

Here is an analogy to back up the objection.[13] Suppose you hit a baseball and the ball impacts your bat 6″ from the end of the bat. Now suppose we regard the whole bat and all but its last 6″ as two entities (after all, they have different persistence conditions, likely owed to different essences). Which of them is responsible for causing the home run? It doesn't seem plausible to deny responsibility to either, since they share the part that hit the ball.[14] Now, this is not a perfect analogy, since properties are not constituents of objects in the same way that material parts are. But I think it recommends the idea that if two things share a constituent in virtue of which one is a cause of something, the other must be a cause of that thing as well.

So if one accepts (17), one is bound to allow that both coincident events count as causes of the relevant effect, and CCC fails to solve the exclusion problem.

It might be objected that events and not properties are causes, so that I am making a category mistake in attributing causal efficacy to a property-instance. But I am not claiming that the speed-instance is the cause of anything. Rather, I am claiming that whatever is a cause is so in virtue of having that property-

---

[13] Paul Kelleher gave me this example. Compare Shoemaker's Salvo example, Shoemaker 2007, p. 13.

[14] We must pretend that the end of the bat is not causally relevant to how the ball comes off the bat, which of course is not really the way things work. But this idealization will serve to make the point.

instance. When two things have that property-instance, we have a strong case for saying both are causes of the effect in question.

Now, one could deny (19), or deny that it entails

(20)   If *p* causes *e* in virtue of being *C and q* is *C and* the *C*-ness of *q* is the *C*-ness of *p*, then *q* also causes *e*.

Note that this involves more than denying

(12)   Two things differ in what they are capable of causing only if they differ in their categorical properties.

In the sense relevant to (12), two things do not differ in their categorical properties even if they have non-identical instances of those properties. That is, (12) expresses the view that type-differences are necessary for differences in causal capacities. (20) expresses the view that token-differences are necessary for differences in singular causal relations. The present worry would arise even granting that two things with all the same categorical properties may differ in what they cause, provided that they have different *instances* of those properties. In such a case, the causal difference can be attributed just to the fact that there are two different property-instances with the relevant causal power, only one of which is exercising it (say, because what possesses it is not appropriately situated relative to the effect). This is precisely what we cannot say on the 1-intance view.

Now suppose one opts for the 2-instance view, on which each particular has its own instance of any given categorical property, a numerically different instance from any instance belonging to a coincident particular. One attractive feature of an account of coincidence is immediately threatened, namely, a straightforward sense in which coincident particulars are nothing over and above one another.

Let's look at this worry as it applies specifically to events. Here are some attractive but controversial ideas about events. Events are dependent particulars. They are changes that occur in objects, and those objects are the particulars on which events depend. In the example of the slamming and the closing, the events are dependent on the door. The door's being slammed consists in certain changes, among them the change from being at rest to being in motion, and then suddenly being at rest again (upon hitting the jamb). Now, surely the door does not instantiate twice over the property of being in motion, and surely its motion does not instantiate twice over the properties of being fast or sudden. It even seems plausible to suppose that the events' instances of the relevant properties

are just the instances that belong to the door. For instance, it seems that the slamming's speed just is the door's speed; for the slamming to occur quickly is just for the door to move quickly, and for the slamming to last 1 second is for the door's motion to last 1 second. And the same goes for the closing, so that the door's speed=the slamming's speed=the closing's speed. But saying so is inconsistent with (18). The 2-instance view closes off this plausible understanding of how events are related to the objects that undergo them.[15] The 2-instance view requires many extra property instances.

Putting that aside, consider what we must say about causation on the 2-instance view. When the slamming causes you to awake, the closing is utterly inactive vis-à-vis that effect. While it possesses the same degrees of speed and force that, in the slamming, caused you to awake, it does not enter into that causal relation. We can still say that it was causally sufficient for you to awake, and was so in virtue of those very properties. But they are not enough to insure that it will *cause*, properly speaking, the relevant effect.

A quotidian story about why only one of two events causes something might appeal to properties or circumstances of one that the other does not share. But if the events are coincident, they share all such *categorical* properties, including non-modal circumstances like spatial relations. That leaves only non-categorical features to distinguish their causal activities, and commensuration concerns just such features. In case 1, e.g., the slamming caused you to awake because it was *essentially* speedy.

Now, to say that the slamming is essentially speedy is not to describe the property of being speedy, but to say how the slamming has the property of being speedy. The coincident events do not differ in which property they have (one being speedy-essentially, one being speedy-contingently, only one of which is fit to cause a certain kind of waking). They differ only in how they have the one property of being speedy.[16] So according to CCC, it is not *what* properties an event has that determines what it causes, but rather *how* it has them.

Perhaps it is misleading to say that having a property essentially is a way of having a property, as though there are different instantiation relations at work depending on whether a thing has a property essentially or contingently. On

---

[15] It may sound strange to speak of an object *undergoing* an event. But if events are changes, this should not be odd, since we are happy to speak of an object undergoing a *change*.

[16] According to the 2-instance view, the slamming has instance 1 essentially, and the closing has instance 2 contingently. Nothing has instance 2 essentially and nothing has instance 1 contingently.

Yablo's view, an event has a property essentially just in case it could not have existed without having that property; otherwise, it has the property contingently. This slamming would not have existed had the door not been closed *speedily*, and so the slamming is speedy essentially. Now my question is this: How could that matter to what it causes? How could an event like your waking up be sensitive to whether or not the slamming (or closing) would have existed had it not been fast?

Consider what this means. Again, it is not merely the speediness of the closing (or slamming) that is responsible for causing you to awake, but in addition, the fact that one event would not have existed unless it had been speedy. If this is a general requirement on causation, it is surely a recondite one, and one that does not seem plausible on its own, pulled out of the theory of commensuration. Suppose it is fully general, so that:

(21)   An event, *e*, does not have an effect in virtue of having property *F*, unless *e* would not have existed had it not been *F*.

If this is true, it raises a serious problem for mental causation all its own. Assuming the kind of view that CCC is intended to support, it is very plausible to think that mental events do not have any particular physical properties essentially, or demand any particular physical properties for their instantiation. Now, what causes a human arm to move? The specific biochemical mechanisms involved in human arm movement are no doubt most commensurate with certain biochemical antecedents whose essences are more demanding than those of any coincident mental events. By (21), then, mental events *cannot* cause human arm movement. Now, we can distinguish arm-movement, construed as a certain biomechanical process, from *arm-waving*. Perhaps the mental event causes arm-waving, even though it does not cause any biomechanical process. But even arm-waving seems to have at least some physical properties essentially, and so it stands to reason that only an event that has certain physical properties essentially could count as a cause of it. A worry arises, then, whether there are any act-types that are commensurate with mental events. Maybe the raw notion of *signaling* has a thoroughly non-physical essence, but to be any more specific about how signaling is done (by waving, say, rather than nodding) seems to require bringing in physical properties as part of the essence of the relevant act-type. And then the question arises again how any mental event could be commensurate with such an act-type.

One might seek to answer that we need only hold that the *token* mental events that cause human arm movement are essentially physically realized. But

this answer threatens one of the chief aims of CCC, namely, to reconcile mental causation with the non-identity of mental and physical events. If a mental event token has essentially exactly the same categorical properties that some physical event token has essentially, then the mental event token is numerically identical with the physical event token. Now, it might still be that while some physical properties number among the essential properties of the mental event token, this guarantees only overlap with some physical event, but not identity (since the mental or physical event might have other essential properties besides). Even so, it is an unexpected—and it seems to me not very plausible—consequence of (21) that any mental event token that causes a physical event has an indefinite number of essential physical properties. Furthermore, even if it is defensible to hold that certain token mental events have essential physical properties, we are left with the mystery of how those same properties, when they are had only contingently, could not possibly dispose the event to cause what they dispose it to cause otherwise. These problems are all generated by (21). Since the 2-instance view requires (21), it is implausible.

So CCC faces serious difficulties no matter how coincidence is understood. On the 1-instance view, it is hard to see how coincident events could differ in any causal relation. Their shared property instances appear to guarantee shared causal significance. On the 2-instance view, the ensuing ontology of events becomes implausible. Coincident items have different instances of the properties they "share," which, for one thing, seems false, and for another, requires (implausibly) that a property contributes to what a particular causes only if the particular has the property essentially.

7   Relocating the Exclusion Worry

I turn now to the final worry that I will discuss. As I interpret Yablo, his way out of the exclusion problem crucially involves the idea that determinates and determinables do not compete for causal *sufficiency.* That allows him to defuse the exclusion problem by denying

(1)   Every event has a physical cause

while at the same time replacing it with

(1*)   For every event, there is a physical event causally sufficient for it,

which stays true to the spirit of causal completeness.

It seems to me that the exclusionist is well placed to say that this merely pushes the problem back. For we can formulate a new exclusion argument based on a new exclusion principle:

(2*)   For any event, e, if there are events c_1 and c_2, where each is causally sufficient for e and $c_1 \neq c_2$, then e is overdetermined.

(1*) and (2*), together with

(3)   Mental events are not physical events, and
(4)   Some events have mental causes.[17]

entail that

(5)   Every effect of a mental cause is overdetermined.

And the original problem resurfaces. Now, one might think that it does not matter if causal sufficiency yields overdetermination, provided that causation proper affords us an account of how mental events (and realized events generally) are specially relevant to their effects, and that has been provided in the form of commensuration. But whether or not causation proper saves the day depends in part on whether or not intuitive cases of overdetermination involve causal sufficiency rather than causation proper (and I will give an example below of overdetermination stemming from two causally sufficient antecedents rather than two causes). If (2*) is plausible, then, we have some reason to doubt that Yablo's distinction between causal sufficiency and causation proper will bear the weight his superstructure places upon it. I will give two reasons to accept (2*).

One reason to accept (2*) is that (2) alone might not suffice to capture our full notion of overdetermination. The difference between (2) and (2*) lies in the difference between causal sufficiency and causation proper. Yablo never says exactly what causal sufficiency is, but it is clear that for one event to be properly speaking the cause of another requires that the one be commensurate with the other. (2) says that overdetermination requires two *causes*. So an event, e, is overdetermined, according to (2), only if there are two events each of which is

---

[17] 'Causes' in (4) must be understood in the sense that entails causal sufficiency for the argument to go through. That is, the mental causes are not merely causally contributing factors, but independently sufficient causes. This is a common assumption of exclusion arguments.

commensurate to *e*. It seems to me, however, that there may be cases in which an event is intuitively overdetermined, even though Yablo's account forces us to deny that either overdeterminer is, properly speaking, a cause of the overdetermined event.

For example, suppose I wake you up by yelling your name. You tend to be attuned to utterances of your name, and even if I had said your name quietly, that would have sufficed to wake you up. But you are not such a light sleeper that something else said quietly would have sufficed to wake you up. Neither are you such a heavy sleeper, however, that you would have slept through my yelling even if I had yelled something other than your name. It seems to me, in this case, that your waking up was overdetermined. The yell alone would have sufficed to wake you up, as would the quiet (but audible) uttering of your name.

The question now is whether (2) can deliver the result that this is a case of overdetermination. Do we have two causes of your awaking, by Yablo's lights? It seems to me we do not. Neither the yelling nor the uttering of your name was required to wake you up. Thus, neither is a cause since commensuration provides that causes are required for their effects. (2), then, does not rule this case a case of overdetermination. So if one accepts this as a case of overdetermination, one has reason to think that something like (2*) is true. Since both the yelling and the uttering of your name are causally sufficient to wake you, by (2*) this is a case of overdetermination.

One might think the yelling and the uttering of your name do not stand in the way of each other's being required for your awaking because they might seem not to be related as determinate to determinable. First, if they are not, so much the worse for Yablo's account of coincidence, since the yelling and the uttering of your name are coincident events if any events are coincident. Presumably, one would deny that they are coincident only if they appropriately come apart—say, that it would not have been the same *yelling* had it not been of your name, or that it would not have been the same *utterance* had it not been so loud. But these counterfactuals seem false. Second, even if they are not appropriately related to stand in the way of each other's being *required* for your awaking, in Yablo's sense, they still do not pass his test for commensuration, since neither meets the first condition,

(8)   If *c* had not occurred, *e* would not have occurred.

So, as far as I can see, neither the yelling nor the uttering of your name is commensurate to your awaking. So if CCC is correct, neither is a cause, and your

awaking is not overdetermined according to the original understanding of overdetermination.[18] To the extent that it is plausible that this really is a case of overdetermination, then, it is plausible to accept (2*) as one correct principle (perhaps not the only one) about when overdetermination occurs.

A second reason to accept (2*) is rooted in what CCC is committed to saying about causal sufficiency. CCC is intended to solve the exclusion problem. The way it promises to do so hinges on offering (1*) to appease physicalist intuitions. The mere denial of causal completeness as stated in (1) courts a reasonably strong antiphysicalism.[19] CCC is supposed to avoid antiphysicalism by saying that the sum total of physical events is at least causally sufficient for everything that happens. But whether this successfully staves off antiphysicalism depends on the nature of causal sufficiency.

Consider why physicalism requires something along the lines of causal completeness. First, physicalism involves the conviction that in principle some appropriate descendent of current physics could account for everything that ever happens. Second, the kind of account in question will be a *causal* account. Here is one possible understanding of causal sufficiency: being causally sufficient for, but not a cause of, some event is like being an inactive backup cause. A causally sufficient factor, on this understanding, is utterly inactive vis-à-vis the event in question; it contributes no *oomph* to it. It merely stands ready to do so should *the cause* fail. For example, suppose my alarm system has a primary trigger in the front door, and a backup motion sensor that will trigger the alarm should the primary trigger be bypassed. The motion sensor is causally sufficient to trigger the alarm, but in cases in which the primary trigger does so, the motion sensor—

---

[18] One defensive strategy for Yablo would be to hold that, after all, both events are commensurate—and so both are causes, and this is overdetermination in terms of causes—because each is essentially a *yelling or uttering of your name*, and that is the commensurate essence. This raises two difficult questions. First, will all overdetermination in terms of causes require such disjunctive essences? Second, should we allow such disjunctive essences? I for one am opposed to disjunctive essences. I am grateful to an anonymous referee for this point.

[19] Yablo himself says "I find no fault with dualism or with the associated picture of mental phenomena as necessitated by physical phenomena which they are possible without" (1992, p. 250). But as I read him, 'dualism' refers only to the non-identity of mental and physical events. Furthermore, the asymmetrical necessitation of mental events by physical ones is compatible with holding that while a given mental event necessitates no particular physical event, one or another physical event is required for the occurrence of the mental event. Perhaps, however, he would reject that last clause.

though causally sufficient—is completely inert with respect to triggering the alarm.

If that is all causal sufficiency is, then (1*) is not enough to insure robust physical explanations of everything. When a causally sufficient backup does not cause *e*, it is not part of the explanation of *e*, at least, not in anything like the way a cause of *e* is, because the backup does not actually contribute to bringing about *e*. (It is clear, in any case, that one way to explain the occurrence of an event is to say what brought it about; and it seems clear that this is an awfully important kind of explanation, and one very common in science.)

So *c*'s causal sufficiency for *e* must consist in more than *c*'s standing ready to exert causal influence on *e*, while in fact exerting none. It requires that *c* actually exert some influence on *e*, that *c* contribute to bringing *e* about. This way, causally sufficient factors can count as explaining (at least in part) the events for which they are sufficient. But on this understanding of causal sufficiency, there is good reason to accept (2*). For it seems that when two things exert this same kind of influence on an event, each to the extent of being sufficient for it, that event will be overdetermined. Its past contains double what is required for its occurrence.

So I think that (2*) is a plausible principle, and as a result, CCC ultimately pushes back the problem of overdetermination. That problem arises in the domain of causally sufficient factors, just as it did in the domain of causes. This by no means shows CCC to be false, but it does impugn its ability to provide an adequate solution to the exclusion problem.

8   Concluding Remarks

Where are we now? Is CCC false? Must we abandon hope of articulating a version of it that solves the exclusion problem? I do not pretend to have shown either of these things. As much as anything, I am making an appeal for a fuller account of certain issues about the nature of causation, coincidence, and events. I will conclude by putting forth three questions about causation whose answers bear on whether CCC is ultimately plausible, and of course also underscore what is required to solve the exclusion problem. I will briefly recap what I have shown to be necessary for answering these questions.

Categoricity and Causation

(Q1)   Can two things differ in what they are capable of causing if they do not differ in any categorical respect?

A number of the worries I have raised about CCC turn on this question. If we answer negatively, then Yablo's account of commensuration fails. If we answer affirmatively, we incur the task of explaining how the modal features of events determine what they are capable of causing. We will also face the question of how events that are categorically indiscernible manage to differ modally. Why, doesn't *e* rather than *e'* have its speed essentially? Why is *e'* the slamming while *e* is a mere closing that happens to be speedy? CCC requires denying that the modal features of events are determined by their categorical properties, and so if any account of events' modal features is compatible with CCC, it cannot be an account in terms of categorical properties.

Coincidence and the Nature of Events

(Q2)   How do coincident events stand to each other and to the particulars that undergo them?

In particular, do coincident events literally share instances of the properties they have? That is, for each property *F* they share, do they share the same *token* instance of *F*-ness? If so, it seems hopeless to deny that they differ in any causal feature attributable to the possession of *F*. If they do not share property instances, then why—despite occurring in precisely the same circumstances—does only one of these property-instances play a part in certain causal relations? The metaphysical background of CCC suggests answering that only one property-instance is causally active because only it belongs to its host event essentially. That leaves us with another mystery. How can causation (as opposed to explanation) be sensitive to essence in this way? And if it is, does that entail that mental events never cause bodily movements, or that that they do only if they have certain physical properties essentially?

Causation and Causal Sufficiency

(Q3)   What precisely is causal sufficiency and how does it differ from causation proper?

21

Is a causally sufficient antecedent of some event, when it is not the cause of that event, merely a *backup*, i.e., a would-be cause that in fact does nothing to bring about the event in question? If so, the fact that every event has a causally sufficient physical antecedent does not insure that there is a robust scientific explanation of every event in terms of physical events. The spirit of causal completeness is in that case lost. If causal sufficiency is something like the exertion of causal *oomph*, then we ought to accept that events are overdetermined when they have two causally sufficient antecedents. In this case, a causal exclusion problem arises for causal influence, and CCC provides no means of solution.

For all these questions about it, CCC is elegant and ingenious. The questions that remain unanswered about causation, coincidence, and essence are questions that metaphysics must address in any case. Even if this account is not ultimately successful, it is the kind of nuanced theory that cannot fail to bring us closer to an understanding of mental causation and a number of fundamental issues in ontology. Yablo is to be praised for giving us this account. [20]

REFERENCES

Audi, Paul (forthcoming). "Properties, Powers, and the Subset Account of Realization." Forthcoming in *Philosophy and Phenomenological Research*.

Block, Ned (1997). "Antireductionism Slaps Back." *Philosophical Perspectives* 11, pp. 107-32.

Davidson, Donald (1970). "Mental Events." Reprinted in Davidson 1980, pp. 207-27.

_____ (1980). *Essays on Actions and Events*. Oxford: Clarendon.

_____ (1993). "Thinking Causes." In Heil and Mele 1993.

Gillett, Carl and Barry Loewer eds. (2001). *Physicalism and its Discontents*. Cambridge: Cambridge University Press.

Heil, John and Alfred Mele (1993). *Mental Causation.* Oxford: Oxford University Press.

Kim, Jaegwon (1998). *Mind in a Physical World*. Cambridge, Mass.: The MIT Press.

Shoemaker, Sydney (2001). "Realization and Mental Causation." In Gillett and Loewer 2001, pp. 74-98.

_____ (2007). *Physical Realization*. Oxford: Oxford University Press.

Yablo, Stephen (1987). "Identity, Essence, and Indiscernibility." *The Journal of Philosophy* 84, pp. 293-314.

_____ (1992). "Mental Causation." *The Philosophical Review* 101, pp. 245-80.