

Article

Mental Causation for Dualists

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Russell (1919) attributed to James the view that 'the mental and the physical are not distinguished by the stuff of which they are made, but only by their causal laws'. (p. 289) Russell made 'great endeavours to believe' this, thinking James was 'right in making the distinction between the causal laws the essential thing'. On this view, physical and psychological particulars are, respectively, those governed by physical and psychological laws. Dualism follows, according to Russell, as there seem to be (1919, p. 289):

some particulars which obey only physical laws (namely, unperceived material things), some which obey only psychological laws (namely, images, at least), and some which obey both (namely, sensations). Thus sensations will be both physical and mental, while images will be purely mental.

This consequence is consistent with James' (1897) thesis of '*radical empiricism*', which (1897, pp. vii–viii)

treats the doctrine of monism itself as an hypothesis, and, unlike so much of the halfway empiricism that is current under the name of positivism or agnosticism or scientific naturalism, it does not dogmatically affirm monism as something with which all experience has got to square.

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Abstracting from Russell's examples, the idea is that physicists and psychologists try to state such laws as are warranted by the evidence, and one cannot know prior to investigation whether these laws cover the same things. I find this picture attractive, once we take the particulars covered by laws to be *events*. For simplicity, I sometimes speak of states as special cases of events; but following Davidson (1963), one can speak instead of the 'onslaught of a state or disposition'. In my view, there is ample reason for holding that mental events (MEs) and neural events (NEs) cause bodily motions—e.g. the raising of my right arm at a given time—but it remains an open question whether MEs are NEs. By making laws the essential thing, dualists can offer a positive account of mental causation: an ME causes a bodily motion, if the ME-motion pair instantiates an appropriate law. Covering law accounts are currently out of favor, and in any case, Davidson (1970) used one to argue *for* event monism. But the disfavor and Davidson's conclusion can be avoided, I argue, by rejecting the empirically implausible assumption that laws must be *strict*, in favor of the idea that *ceteris paribus* laws can back singular causal claims.

1. Characterizing Dualism

If a bodily motion can have MEs and NEs as causes, then either the mental causes of the bodily motion are distinct from its neural causes, or not. By 'dualism', I mean the thesis that (human) MEs are not NEs; and by 'monism', I mean the thesis that (human) MEs are NEs.¹ Unfortunately, the claim that MEs are NEs is less perspicuous than it might appear, and thus stands in need of elaboration. Here I think one should bear in mind the great attraction of monism: it renders the fact that MEs and NEs cause bodily motions completely unmysterious; whereas dualists, as we shall see, have more than a little explaining to do on this score. Of course, puzzles will remain even given monism. But one makes various choices about where to do the hard work on the mind-body problem. One important choice, both historically and theoretically, is the following: does one explain apparent differences between NEs and MEs by adopting dualism, thus inheriting (*inter alia*) the burden of saying how bodily motions can have NEs and distinct MEs as causes; or does one avoid this burden at the cost of saying that each ME has all and only the properties of some NE? I shall understand 'monism' and 'dualism' in the context of this question.

Let us assume that we have an adequate grasp of which predicates count as mental, and which as neural, and that this allows us to speak of

¹ As defined here, (mind-body) dualists may also be event pluralists; and (mind-body) monists need not be event unitarians, though the monist must take care not to undermine the *point* of her doctrine.

MEs and NEs without settling questions of identity a priori. For the sake of argument, assume also that NEs are physical events (PEs), where the latter can be described in the language of some physical science. If NEs are not PEs, dualism is much less worrying as an ontological thesis; and given that bodily motions have both PEs and NEs as causes, the kind of question the monist hopes to avoid would have to be answered anyway. So given monism, MEs are PEs. But the converse does not follow. If neuroscience and psychology count as physical sciences, then presumably (1) the language of some physical science includes neural predicates, and (2) the language of some physical science includes mental predicates. So it would be a triviality that at least some NEs are PEs, and at least some MEs are PEs. And even if *all* MEs are PEs in some less trivial sense, monism still does not follow. For the key question would remain: are the mental causes of bodily motions distinct from the neural causes of such motions? One cannot avoid this question, and the hard theoretical choice it calls for, simply by fixing the extension of 'physical' so as to include the mental.²

Let us grant that a mereological fusion of events of type Θ is itself an event of type Θ . Some monists may hold that the PEs include both (1) events that can be described in the language of fundamental physics, and (2) any mereological fusions of such events. Some of these monists may also hold that NEs are PEs by virtue of clause (2). So henceforth, I use 'physical' in the narrow sense of (1); and at least for purposes of argument, let us not challenge the claim NEs are fusions of PEs. The more important consequence of our concession is that monism is true, if MEs are fusions of NEs. This is to grant that if some part p of an event fusion EF has an effect e , then EF is not a cause of e distinct from (in addition to) p ; hence, there is nothing puzzling about the fact that a fusion *and* some part(s) of the fusion caused a given effect. But this seems right. So I think dualists must deny—as Hornsby (1981, 1985) does deny—that MEs stand to NEs as mereological wholes stand to their parts. Notice, however, what this argument is not. It is *not* that monism is true if MEs are constituted by NEs in some way or other, and talk of mereological fusions captures one way in which NEs might constitute MEs. The claim is rather that dualists must deny that MEs are fusions of NEs, because fusions of NEs are not causes distinct from the NEs that are their parts. Still, one might wonder whether this necessary condition for being a dualist is also sufficient. That is, should one allow for any non-mereological sense in which MEs can *be* NEs?

It is hard to distinguish terminological from substantive matters here. But comparison with persisting objects—what Hornsby calls

² So even if, as Crane and Mellor (1990) argue, there is 'no question of physicalism', there is a question of monism. Hornsby (1981) also holds that mental causes of bodily motions can be PEs but not NEs; cf. Searle, 1992, p. 26, who says that dualism is 'incoherent' since everything is 'physical or unintelligible'.

'continuants'—may be instructive, and it may help clarify the kind of dualism that interests me. Someone who claims that there is *nothing but* molecules is not refuted by the existence of statues, if each statue can be identified with a cluster of molecules. Indeed, various metaphysical arguments might be advanced in favor of the claim that a statue could not be anything but a cluster of molecules. On the other hand, in so far as we have reason to think statues have properties (e.g. persistence conditions) that clusters of molecules lack, we have reason to reject such proposed identifications, and hence any theses that entail such identifications.³ Similarly, a monist might say that MEs are nothing but (mereological fusions of) NEs. Dualists deny this, and others may want to leave the question open, on the grounds that MEs and NEs seem to have different features. Perhaps dualists must also deny a weaker thesis. But it will be useful to first note what they can, and in my view should, accept.

The physical *determines* all there is in the following sense: if two metaphysically possible worlds differ at all, they differ in some physical respect. While this 'global supervenience' thesis is typically expressed in terms of properties (see e.g. Kim, 1984), one can also say that events of one type supervene on events of another type; in particular, if some ME occurs in only one of two metaphysically possible worlds, these worlds differ with respect to the PEs that occur in them. The mere supervenience of the mental on the physical, however, is compatible with the claim that MEs are alterations of some immaterial Cartesian soul-stuff. But the dualist can grant global supervenience, holding that the physical determines some events that are not themselves PEs (and hence not NEs), without appealing to occult substances. Again, comparison with continuants is useful. If one possible world contains a statue of Caesar that another lacks, there must be a molecular difference between the worlds. No one believes in the existence of immaterial statue-stuff. But the question of whether statues are nothing but clusters of molecules remains. For one might well think that distributions of molecules determine some things that are not themselves clusters of molecules. One does, however, need to be a little careful here.

Someone might hold that (1) MEs supervene on PEs *because* they are fusions of PEs, and that (2) the dualist's supposition—viz., that MEs supervene on PEs without being fusions of PEs—is a merely *epistemic* (and not a metaphysical, or real) possibility; and similarly, *mutatis mutandis*, for statues. If monism is correct, it may well be a necessary truth. But the fact that dualism is necessarily false, if false at all, does not show that dualism is false; and it is hard to see how one could *argue*, without begging the question, for (2). Someone who holds (1) may be positioned

³ The comparison with statues is offered as an illustration, not an argument for dualism. So I won't discuss the view that continuants are temporal fusions of molecule-clusters-at-a-given-time. But note that anyone who says there is literally *nothing but* molecules owes an account of (*inter alia*) the real numbers.

to advance a thesis about what supervenience consists in; though even if the dualist cannot advance an alternative, she might deny that any such theoretical account of supervenience is required. Moreover, one might construe various supervenience theses as constraints on discourse that reflect our commitments with respect to what counts as metaphysical possibility. For global supervenience, the idea would be that we use predicates on the (tacit) understanding that it is metaphysically impossible to make distinctions that cannot be made with physical predicates, and hence that it will be metaphysically impossible to make such distinctions by using non-physical predicates. On this view, supervenience theses do not serve as descriptions of a metaphysical (not quite identity, one-way dependence) relation we have discovered; they represent our general intuitions about possibility, and thus what we are prepared to discover at any given time. I don't say this construal of supervenience is correct, or even that dualists are committed to it; though I find it attractive.⁴ My point is simply that, until such a construal is ruled out, one cannot assume that the supervenience of the mental on the physical is a fact that calls for *explanation*, in any ordinary sense of the term. For supervenience might be guaranteed by the very fact that we use mental discourse at all.

The dualist I am imagining can also grant the following ME/NE (or 'local') supervenience thesis: if an ME of some agent α occurs in only one of two metaphysically possible worlds, then these worlds differ with respect to the NEs of α . For NEs might determine some events that are not (fusions of) NEs. This is compatible with at least some reasons for taking dualism seriously—viz., those based on subjective features of qualitative mental states (see Kripke, 1971, and perhaps Jackson, 1982), and those based on spatiotemporal features of MEs and NEs (see Hornsby, 1981). As it happens, I remain agnostic on ME/NE supervenience. For the issue hangs on rather subtle questions concerning twin-earth cases, the essential properties of mental states, and how such properties bear on the individuation of MEs; and while I won't discuss these matters here, I regard them as far from settled. (See Burge, 1992, for an overview.) But the main point is that dualists need not reject supervenience theses, since these do not entail monism; although one might try to argue for dualism by arguing against ME/NE supervenience.

The current aim, recall, is to say explicitly what distinguishes (a plausible) dualism from monism, in order to get clearer about the question at hand: are MEs NEs? The proposal is that dualists must deny that MEs are mereological fusions of NEs. Monists must, of course, insist that MEs supervene on NEs. But I have claimed that dualists can grant super-

⁴ Moore (1903) noted that two persons could not be alike in all nonmoral respects, yet differ morally. Perhaps we know this, because of some special insight into the nature of moral properties and their relationship to nonmoral properties. But perhaps we simply take it as a constraint on acceptable moral discourse that moral differences must coincide with nonmoral differences.

venience. So an obvious remaining question is whether monists can deny that MEs are fusions of NEs. If they can, one might think the only dispute is between monists who think MEs are fusions of NEs, and monists who think MEs are NEs in some other (non-mereological) sense of 'are'. At just this point, some philosophers may appeal to the so-called 'is' of constitution. For even if statues are not identical to clusters of molecules, doesn't one want to say that statues are 'made of' molecules, and that statues are nothing 'over and above' these molecules?

Perhaps. But the expressions in scare-quotes have no clear pretheoretic sense. We may, in the course of investigation, *give* them a clear sense. Indeed, supervenience gives at least one perfectly good sense to the claim that entities of one type are nothing over and above entities of another type. In some domains, talk of parts and wholes gives another sense to these expressions. But it does not follow that statues are mere fusions of the molecules they are made of. Perhaps a statue is, at time *t*, made of the molecules whose fusion occupies the same space as the statue; and perhaps in giving this sense to 'made of', we thereby reject the metaphysical possibility of immaterial statue-stuff. The claim that MEs are made of NEs enjoys less intuitive support; though an enduring mental state might be realized by different neural states at different times. In any case, even given ME/NE supervenience, one cannot simply assume that MEs are constituted by NEs in a substantive way that goes beyond such supervenience (and the rejection of immaterial soul-stuff).

More importantly, any sense of constitution to which monists appeal must satisfy the following constraint: if some mental event ME_i is constituted by neural events (NE_1, NE_2, \dots, NE_n), then for any effect *e* of these neural events, ME_i is not a distinct (i.e. additional) cause of *e*; hence, there is nothing puzzling about the fact that ME_i and some of the neural events caused *e*. Intuitively, the neural events in question will be the parts of the event fusion that some monists might want to identify with ME_i . Let the 'constitutional' monist be one who denies that ME_i is the fusion of (NE_1, NE_2, \dots, NE_n), while holding that ME_i is still nothing over and above these neural events, in the sense that ME_i is not an additional cause of any of their effects. Monists are free to give this sense to 'over and above'. But then the question is whether MEs are nothing over and above NEs in this sense. It may be hard to argue against the claim that MEs bear a relation of the imagined sort to NEs. But monists cannot assume without argument that MEs do bear such a relation to NEs. They can stipulate that constituted events are not causes distinct from (or in addition to) the events that constitute them, but not that MEs are constituted events in this sense. The monist might try to fall back on the claim that the totality of an agent's NEs (at a given time *t*) constitutes the totality of her MEs (at *t*), counting states as events. But not only does this sound like mind-brain supervenience by another name, if particular mental causes of a bodily motion (say, the onslaught of some belief) are not constituted by the particular neural causes of the motion (say, a certain activation),

then the former are causes distinct from the latter. By my lights, that counts as dualism.

So if someone grants ME/NE supervenience, while rejecting the claim that MEs are fusions of NEs, the key question remains: are MEs constituted by NEs in such a way that MEs are not *causes* distinct from (in addition to, or over and above) the NEs that constitute them? But to know how someone will answer this question, one must know something about their views on causation, as well as their views about the metaphysical relation of MEs to NEs. In this sense, questions about causation itself can infect questions about whether MEs *are* NEs. My aim is to defend a position according to which MEs are causes of bodily motions distinct from the neural causes of such motions. The account of causation offered below is part of this defence; but it is also part of the characterization of dualism, in so far as it helps give sense to the claim that MEs can be causes over and above NEs.

Before concluding these preliminary remarks, however, the claim that MEs cause *bodily motions* calls for clarification. For we typically speak of MEs causing actions or behaviors; and in what follows, the relation between actions and bodily motions is potentially important. I take as given that all actions are behaviors, while some behaviors (e.g. reflexes) are not actions because they lack the appropriate etiology. (If the right etiology is that which makes a behavior *intentional*, we get Davidson's (1971, p. 26) thesis: 'a man is an agent of an act if what he does can be described under an aspect that makes it intentional'.) Not all bodily motions are behaviors, much less actions; and this is so, even if the bodily motion is intentionally caused by the agent whose bodily motion it is. Intentionally moving my left arm with my right hand can be a single action, even though there are two bodily motions. In such a case, the motion of my left arm is not an action of mine; although I moved my left arm, much as I might move a chair. (See e.g. Dretske, 1988, for further discussion.) So actions are at best a subclass of bodily motions. But it would certainly be convenient, if as Davidson (1971) suggests, all actions are bodily motions. For assuming that MEs cause actions, it would follow that MEs cause the bodily motions with which the actions are identical. Nonetheless, things may be inconvenient in several respects.

I am not worried about the possibility of action without bodily motion. For even if certain familiar cases establish this possibility (standing perfectly still, waiting in line, computing a sum in my head, etc.), all I need is the claim that MEs cause bodily motions, not the claim that bodily motions are all the actions there are. Nor am I bothered by cases in which we say that an agent, perhaps in the course of giving blood, flexed her arm muscles *by* clenching her first (cf. Hornsby, 1980). If (1) what we say is literally correct, and (2) the literal correctness of the claim in question requires that the clenching *cause* the relevant event in the agent's arm muscles, then the clenching is not any bodily motion of the agent. For the motion of the agent's hand is caused by the muscle-event; and the

clenching does not cause its own cause. This line of thinking will lead one to identify actions with agent-internal causes of muscle-events, perhaps what Hornsby calls 'tryings'. Now even if all actions are tryings, it is presumably still true that both MEs and NEs cause actions, and actions will themselves *cause* bodily motions. So assuming that causation is transitive, MEs still cause bodily motions. But one might well reject (1) in favor of the claim that, literally speaking, the agent flexed her arm muscles by trying to clench her fist; or one might grant that ' α Φ 'd by Ψ -ing' can be true, even if the relevant Ψ -ing was not a cause of the event referred to by saying ' α Φ 'd'. In my view, either option is better than saying that *all* actions are in the head.

If Hornsby worries that bodily motions may come too late to be actions, others have worried that bodily motions end too soon: if my killing of Bloggs is a motion of my trigger finger, the killing can occur long before Bloggs' death, which seems absurd. (See e.g. Thomson, 1977, for discussion.) Similarly, Dretske (1988) argues, the leg continues to move forward after the agent has done her bit with respect to kicking a ball; but the kicking isn't over until the leg makes contact with the ball. *Perhaps* we should conclude that actions have bodily motions as temporal parts, or that actions are events that supervene on (*inter alia*) bodily motions and their effects. But unless actions are in the head after all, it seems safe to assume that an agent often performs an action *by* moving her body. So descriptions of an action *A* can often serve as an indirect means of referring to those bodily movements such that the agent in question performed *A* via those movements. Maybe 'my killing of Bloggs' does not refer to my finger movement; but 'a movement of my body such that, by it, I killed Bloggs' does. (If I fired two guns, 'my killing of Bloggs' may not indirectly describe a unique movement; and 'my hiding from the cops' may indirectly describe a complex and temporally scattered movement.)

Like Hornsby, Dretske (1988) distinguishes two senses of bodily 'movement': a bodily motion *produced by* some internal cause; and a bodily motion's *being produced by* some internal cause. And perhaps we should conclude, with Dretske, that an action is the *process* of an internal cause (of the right sort) causing a bodily motion (and perhaps subsequent effects).⁵ But if the internal causes are MEs, then MEs cause bodily motions; and as long as action descriptions can be used to indirectly describe bodily movements, they can be used to indirectly describe bodily motions as

⁵ On this view, causes of the initiating event are causes of the action, and effects of the culminating event are effects of the action. Dretske goes on to argue that mental *explanations of* actions and neural explanations of bodily motions differ: to explain a bodily motion is to explain why some event occurred; but to explain an action is to explain why certain internal states cause certain bodily motions. While this maneuver is compatible with dualism, it lets monists say why appeal to mental states and properties is explanatorily important. But the details turn on Dretske's teleological account of mental content; and I have elsewhere (Pietroski, 1992) expressed my scepticism about such accounts.

well. For even if bodily movements are processes of the sort Dretske imagines, these processes culminate with bodily motions—e.g. the motion that is the culmination of the process that is the movement of my body such that, by it, I killed Bloggs. In what follows, I often say that bodily motions satisfy action descriptions. This should, however, be understood as shorthand for one of the kernels of truth in this claim: action descriptions can be used as indirect means of referring to bodily motions—bodily motions that are caused by MEs and NEs.

In the current philosophical climate, characterizing dualism may be the hardest part of the dualist's task, even though giving substance to the thesis of monism would require the same work. For without such a characterization, we lack a clear idea about what defenses of (and arguments for) dualism are defenses of (and arguments for). In this section, I have tried to describe a position that (1) deserves to be called 'dualism', (2) is not obviously wrong, and thus (3) merits further consideration. The dualists in question eschew immaterial soul-stuff, while maintaining that mental causes of bodily motions are distinct from neural causes. My present concern is to argue that this position is tenable, not to argue directly for dualism (or against monism). So for the remainder of this paper, the crucial point is that dualists owe some account of *how* bodily motions can have as *distinct causes* both NEs, and MEs that are not NEs.

2. *Dualism without Descartes*

Let a causal chain be an (ordered) n -tuple of events $\langle e_1, e_2, \dots, e_n \rangle$, such that for each e_k ($k < n$), e_k is a cause of e_{k+1} . This definition does not require that each e_k be a *proximal* cause of e_{k+1} , in the sense that there is no e_k such that e_k causes e_k which causes e_{k+1} ; but this case is not excluded. I assume that we can often isolate an event e as a cause of some other event f . In doing so, we take certain background conditions for granted, and perhaps the practice is interest relative in the following sense: given other explanatory interests, we could have isolated another event g (which is neither a cause nor an effect of e) as a cause of f , taking different background conditions as given (including, perhaps, the occurrence of e). But my claim is that, given the explanatory interests we have, we can correctly say things like: John noticed the burglar moving in the yard; noticing this caused John to yell; the yelling caused the onslaught of a certain state in the burglar's auditory system, which caused the burglar to run; and so on.

Abstracting away from various details, Descartes held that the causal chain leading from a stimulus to a bodily motion can include both NEs and distinct MEs, although MEs are always *distal* causes of motion. Let ' \rightarrow ' stand for 'is a cause of'. For simplicity, restrict attention to cases in which we can isolate a single external stimulus S as a cause, via the NEs and MEs of an agent, of a single bodily motion B that occurs not long

S → NE → NE → ... → NE* → ME → ME → ... → ME → NE** → NE → ... → NE → B

Figure 1

after S. And at least for now, ignore the fact that agent-internal events can have several *partial* causes, each of which is proximal. (You and I might together push a rock that neither of us could move on his own; in such a case, each of our pushings would be a partial cause of the rock motion.⁶) That said, Descartes' account of mental causation is essentially as in Figure 1. Unlike causal chains involving MEs, the chains from S to NE* and from NE** to B are said to be 'mechanical'. (The latter accounts for reflexes; and the former allows for at least one kind of error, including 'phantom limb' experiences: NE* can mislead the mind, if it occurs because one of its neural causes *c* was produced by something other than the cause *c* usually has; for the mind will infer from the sensation caused by NE* to the usual cause of NE*, which will be the usual cause of *c*.)

This picture is quite compelling: MEs seem different from NEs—at least from a subjective viewpoint, and perhaps from a third person viewpoint as well—because they *are* different; bodily motions can be caused by both MEs and NEs, in particular, the NEs in sensory and motor systems; yet such motions are still *voluntary*, since MEs are influenced-but-not-mechanically-determined-by the external stimulus (a thesis that Chomsky (1966) discusses approvingly). Descartes' views about substances may well render his version of dualistic interactionism incoherent. But even purged of soul-stuff, I think his abstract model of mental causation remains inhospitable to dualism. (Monists, however, can hold that MEs are restricted to a 'central processor' flanked by sensory and motor systems. Indeed, one might view Fodor (1983) as a monistic Cartesian.)

Descartes would say that an NE at one edge of the pineal gland could not be a cause of an NE at the other edge, except by virtue of causing an ME. For he held that a (free) human will bridges the gap. So from the mechanical point of view, the occurrence of NE* *and then* NE** would be inexplicable. Of course, the pineal gland need not be the site of NE/ME interactions, and there need not be a single site. But not only have we not discovered any locus of neural anomaly, a host of familiar puzzles attend the supposition that any such locus exists. (See Cornman et al., 1987, for a useful summary.) Indeed, the discovery of neural anomalies of

⁶ Perhaps this just shows that, relative to some explanatory interests, there can be cases in which we cannot isolate a cause—viz., cases in which it would be arbitrary to distinguish between two or more events, calling one the 'cause' and others 'background conditions'. But I won't try to settle such questions here. On interest relativity of causal explanation, see Van Fraassen, 1980, and Bromberger, 1966. Hart and Honoré, 1959, as always, provide useful cases and helpful discussion of complications.

'single causal chain' model it presupposes. In any case, I restrict attention to the model in which bodily motions have both MEs and NEs as proximal causes. (Of course, NEs are proximal causes of muscle-events that cause bodily motions; but nothing hangs on this.)

I will return to the overdetermination objections that this picture of mental causation must face. But for now, I want to show that a covering-law account of causation will let dualists grant that there is always a purely neural causal chain leading from stimulus to bodily motion, while holding that there is *another* causal chain that includes (non-neural) MEs. Ramsey (1929) provides a typically lucid first-pass statement of the view about causation I shall urge on the dualist's behalf (1929, p. 160):

The world, or rather that part of it with which we are acquainted, exhibits as we must all agree a good deal of regularity of succession. I contend that over and above that it exhibits no feature called causal necessity, but that we make sentences called causal laws . . . and [we] say that a fact asserted in a proposition which is an instance of causal law is a case of causal necessity.

I will not, however, defend Ramsey's further claim that causal laws do not express propositions. Notice that Ramsey's view does not entail that causal necessity is *nothing but* regularity of succession. Perhaps causal relations supervene on regularity of succession together with our practice(s) of making causal generalizations—which, as Ramsey notes, is something we regularly do.

If some such covering-law conception of causation can be defended, it is not hard to see how an action/motion can have both mental and neural causes, where these causes are parts of distinct causal chains. For suppose there are causal laws according to which (1) mental events of type M lead to actions of type A, and (2) neural events of type N lead to bodily motions of type B. Let e_1 be an event of type M (an 'M-event'); let e_2 be an N-event; and let e_3 be *both* an A-event and a B-event. Or more precisely, let e_3 be both a B-event and the bodily motion indirectly described by 'A' in the case at hand. Then e_3 would have e_1 and e_2 as causes, even if e_1 and e_2 are members of distinct causal chains. But to make use of Ramsey's proposal, we need some account of causal laws.

A traditional idea is that laws are true, finitely statable sentences of the form

$$(1) \quad \forall x[Fxt \rightarrow \exists y(Gyt + \epsilon)]$$

where x and y range over nomologically possible events, 'F' and 'G' are (perhaps complex) predicates, t is a time, and ϵ an interval. Instead of appealing to nonactual events, one might appeal to projectible predicates (see Goodman, 1979); but dualists are unlikely to be ontologically squeamish. Let us say that an ordered event pair $\langle e_i, e_j \rangle$ *instantiates* (1), just in

case e_i satisfies 'F' at t , and e_j satisfies 'G' at some time between t and $t + \epsilon$ (inclusive). Then (1) says that: whenever an event of type F occurs, an event of type G occurs within a specified time. But if we press this idea into service as our account of a *causal* law, Ramsey's proposal will deliver both too much and too little causation. Too much, because logical and analytic generalizations will count as causal laws. Too little, because (1) is the form of a *strict* law; and we have no reason to think that all causal laws are strict in form. This last point has been made repeatedly in recent literature (Joseph, 1980; Cartwright, 1983, 1989; Laymon, 1985, 1989; Hempel, 1988; Fodor, 1989; Dupré, 1993; Pietroski, 1993, forthcoming). So I mention just two examples to illustrate the general point; though one might, of course, object to any particular case.

It is not a strict law that *if* organisms possessing a heritable property P are better able to survive and reproduce than organisms possessing an alternative property P*, *then* the proportion of organisms in the population having P will increase. Genetic drift, pleiotropy, cataclysmic events, etc., can work against the fittest (see Sober, 1984). Joseph (1980) argues that, absent a unified field theory, the same point applies to physics: it is a law that a point charge produces (the relativistically invariant analog of) a spherically symmetric electromagnetic field; but given a dense mass M in the vicinity, the quanta of the electromagnetic field respond to the gravitational influence of M, thus distorting their spherical distribution. Cartwright (1983) offers many similar examples.⁷ An obvious response is that these laws are not strict; they have implicit *ceteris paribus* (henceforth, cp) clauses. In Section 3, I defend appeal to cp-laws from various objections. But in any case, we have good reason to think there are cp-laws; for while there are laws of nature, we have discovered few if any strict ones. (I consider below Cartwright's proposal that laws are strict in form, but false.) So at least for now, assume that there are laws of the form

$$(2) \text{ cp}\{\forall x[Fxt \rightarrow \exists y(Gyt+\epsilon)]\}$$

Call instances of (1) 'Normal' instances of (2). Instances of $[Fxt \& \neg \exists y(Gyt+\epsilon)]$ are inconsistent with (1); but call them 'Abnormal' instances of (2). Then the key feature of cp-laws is that they are not falsified by the mere fact that they face Abnormal instances; hence, it will

⁷ She also notes that 'All humans are mortal.' may be exceptionless. Perhaps the same is true of 'Copper conducts electricity.' and a few other dispositional laws. But at best, only a few actual events can be explained this way. Creary (1981) holds that fundamental physical laws describe fields that *cause* particle-behavior; and *composition* principles make true claims about events. But as Joseph (1980, pp. 779–80) notes, the 'parts of physics' do not form 'a single consistent theory demonstrably possessing a physical model'. Even if we develop a unified field theory, natural selection is not an *entity* that causes changes in gene pools. And it is Panglossian to expect Laws of Total Force in the special sciences. But without composition principles, 'force' talk cannot be translated into laws that cover events.

be important to say what does falsify a putative cp-law. But given this more relaxed notion of law, there can be laws that are not logical or analytic truths. Moreover, if there are *no* strict causal laws, perhaps the traditional account has it exactly backwards. Maybe causal laws are those for which Abnormal instances are nomologically possible—thus excluding logical and analytic generalizations. Given current knowledge, the best potential candidates for strict laws that would cover actual events are the equations of a (future) unified field theory; and it is far from clear that the law(s) of a unified theory (if we develop one) would be *causal* in any intuitive sense of the term. So I see little danger in adopting the motto, 'No causation without exceptions'. CP-laws that can face Abnormal instances are causal laws; but strict laws, if such there be, are not. This would allow us to render Ramsey's proposal as follows:

e_i causes e_j , if there is an ordered n -tuple of events
 $\langle e_1, e_2, \dots, e_n \rangle$, such that $e_i = e_1, e_j = e_n$,
 and for each $e_k, \langle e_k, e_{k+1} \rangle$ instantiates a (non-strict) cp-law.

This thesis, which is also suggested by some remarks of Hart and Honoré (1959, p. 46), will have to be modified. But it lets us account for an action/motion (e_3) having distinct mental and neural causes (e_1 and e_2 , respectively), given a psychological law of the form ' $\text{cp}\{\forall x[Mxt \rightarrow \exists y(Ayt + \epsilon)]\}$ ', and a neurophysiological law of the form ' $\text{cp}\{\forall x[Nxt \rightarrow \exists y(Byt + \epsilon)]\}$ '; where the event pair $\langle e_1, e_3 \rangle$ instantiates the former, and $\langle e_2, e_3 \rangle$ instantiates the latter. In a perfectly good sense, the mental event can be a cause of the bodily motion *in addition to* its neural causes. But this need not be mysterious. The idea is that, described (indirectly) as an action, e_3 can be seen to fall in a pattern of nomic regularity with e_1 ; described as a bodily motion, e_3 can be seen to fall in a pattern of nomic regularity with e_2 . The patterns would not be *constant* conjunction, but rather those of cp-laws. I have not yet said what the pattern of a cp-law is; but again, we have reason to think that constant conjunction is not the pattern described by laws of nature. (I consider below the view that laws do not describe patterns of regularity at all.)

It is worth comparing the current proposal with that of Davidson (1970). In addition to assuming mind-body interaction, Davidson held (a) that one event causes another, *only if* the event pair instantiates a strict law, and (b) that only physical laws are strict. So he concluded that MEs instantiate physical laws, and hence that MEs are themselves physical events. But we have no reason to believe proposition (a). On the contrary, if we accepted (a), we would have reason to think there was no causation. Thus, Davidson has offered no good argument for Anomalous Monism. On the other hand, if we assume that laws are not strict, there is nothing anomalous about the fact that psychological laws will need cp-clauses. But if there are cp-laws governing the relations between mental events and

actions, and if we say that instantiating a cp-law *suffices* for causation (instead of saying that strict laws are necessary), then we will conclude that mental causation does not require monism.

Critics of Davidson have charged him with epiphenomenalism, on the grounds that Anomalous Monism does not allow MEs to be causes *because* they have mental properties; and this, the critics say, makes the mental properties of MEs irrelevant to the causal relations MEs enter into. (For discussion, see the essays in Heil and Mele, 1993.) On the proposed account, it is clear that the mental properties of MEs make a difference to their causal relations. In general, it will be because an event *e* is (the onslaught of) a *belief*—not because *e* is Fred's favorite event, and certainly not because *e* has some neural property—that *e* causes an action; and this 'because' is easily cashed out: the mental property will be expressed by a predicate figuring in the relevant mental cp-law. (In this respect, the view proposed is like that of Fodor, 1989.) There is, however, no reason to reject Davidson's claim that an event causes what it causes, regardless of how it is described. Suppose a trigger-pulling (e4) causes Bloggs' death (e5). The sufficient condition for causation proposed here will apply, as long as (e4) and (e5) have descriptions in virtue of which $\langle e4, e5 \rangle$ instantiates *some* cp-law; or better: if there is an ordered n-tuple of events $\langle e_4, e_5, \dots, e_n \rangle$, such that for each e_k , $\langle e_k, e_{k+1} \rangle$ instantiates a cp-law. But 'trigger-pulling' and 'death' need not figure in *any* laws. So the proposed sufficient condition does not *entail* that mental causation requires cp-laws with mental predicates. But such laws will be required, on the dualistic assumption that MEs lack descriptions in virtue of which they instantiate non-mental laws.

I shall call the current proposal 'Nomic Pluralism' to remind us of its differences from, but also its significant debts to, Anomalous Monism. Nomic Pluralism is consistent with monism. For it does not rule out the possibility of discovering that all MEs (or perhaps all their mereological parts) instantiate neural laws. So we can remain suitably Jamesian in our attitude. Indeed, if it turns out that MEs are NEs, and that there are *no* mental cp-laws, then Nomic Pluralism differs from Anomalous Monism only in its account of causation. Or it might turn out that there are mental cp-laws, but that these are somehow peculiar, perhaps for the kinds of reasons Davidson discusses at the end of (1970). By itself, this is perfectly compatible with dualism. But a monist might characterize some such notion of peculiarity and argue that peculiar cp-laws cannot back singular causal claims, thus preserving the gist (if not the details) of Davidson's own position. This strikes me as a good way to argue that the kind of dualism I want to defend is not a real possibility. It would, however, take an argument. And for present purposes, I will assume that Nomic Pluralists are (mind-body) dualists.

I leave for other occasions, discussion of whether Nomic Pluralism might be useful in defending a more general ontological pluralism; although see Dupré (1993) for a discussion of why aspects of biology should make

empiricists take such pluralism seriously. I turn now to a defence of Nomic Pluralism's key assumptions—viz., that there are cp-laws, and that instantiating such laws suffices for causation. Much of this next section is a summary of other work (Pietroski and Rey, forthcoming; Pietroski, forthcoming). And it only represents a way in which one might try to defend Nomic Pluralism. In this sense, Section three is not essential to the abstract dualistic model of mental causation proposed here. Still, *some* account of cp-laws that can back singular causal claims is owed. So it would be disingenuous to advance Nomic Pluralism without at least sketching some such account.

3. Covering with CP-laws

If we could say under what conditions a putative cp-law is false, we could see that cp-laws are not: tautologies, trivially true, analytically true, vacuous, or meaningless (cf. Schiffer, 1991). And as long as the falsification conditions are as confirmable as other conditions appealed to in the course of theorizing, putative cp-laws will be disconfirmable. It would be convenient if cp-laws were simply laws of the form

$$(3) \quad \forall x\{Fxt \rightarrow \{\text{with probability } N[\exists y(Gyt + \epsilon)]\}\}$$

for some $N < 1$. But I assume that the need for cp-laws stems from the need to idealize in a complex world, not the need to describe an indeterministic world. In stating the point charge law mentioned above, one ignores the possibility of nearby dense masses; hence, the law faces Abnormal instances given nearby dense masses. But we cannot determine the probability of there being a nearby dense mass; and there is no reason to think there even *is* a single (or an average) probability across nomologically possible worlds. Similarly, we ignore pleiotropy and drift in stating the principle of natural selection. Laws of free fall fail to account for friction; the ideal gas law idealizes away from electromagnetism, and the fact that gas molecules take up space; etc. So I take a cp-clause to be an acknowledgement that, in stating some law, we have idealized away from (i.e., ignored) various facts—or, if you like, *factors*—that may be relevant to the outcomes in question. Thus, the task is to say when an idealized claim is false.

Joseph (1980) considers interpreting laws as holding '*ceteris absentibus*'. Perhaps the point-charge law *would* (probabilistically) describe the trajectories of relevant quanta if all non-electromagnetic forces were absent. But as Joseph notes, such subjunctives will often be contralegals of a radical sort. Given objects with mass *and* charge, counterfactual situations in which gravitational forces are *absent* will be situations in which massive objects either lack mass or fail to exert gravitational force. And our faith in physical laws hardly depends on what we think would happen in such

scenarios. On the contrary, intuitions about contralegals seem to depend on a prior grasp of relevant laws. So it is at best useless to say that a law is false, if its associated contralegal is false. To see this clearly, consider a more dramatic case. Dicke et al. (1965) argued that temperatures in excess of 10^{100} (K) in the early stages of the universe could be detected as temperatures about 3.5° higher than expected, given known sources of radiation. Independently, Penzias and Wilson (1965) discovered just this. Some local radiation is residue from the Big Bang. So to adopt *ceteris absentibus* interpretations of the generalizations that led Penzias and Wilson to expect a temperature lower (by 3.5°) than the one they found, would be to interpret these generalizations as claims about how much radiation there would be had the Big Bang not occurred.

Cartwright (1983) considers interpreting laws as *indicative* conditionals of the form

$$(4) \quad \forall x\{\text{IA} \rightarrow [\text{Fxt} \rightarrow \exists y(\text{Gyt}+\epsilon)]\}$$

where 'IA' is a statement of relevant idealizing assumptions. But we are typically unable to formulate all our idealizing assumptions as a finitely statable extra antecedent. Too many things can go wrong. More importantly, Cartwright notes that idealizing assumptions are *false*: planes are *not* frictionless; gas molecules *do* take up space and attract one another; etc. So even if IA is finitely statable, (4) will be only vacuously true (in nomologically possible worlds). If we interpret the point-charge law this way, IA will include a condition like, 'No objects with mass are present'. Few if any events will instantiate the law thus interpreted. And as Laymon (1985) notes, given (4), an instance of $[\text{Fxt} \& \neg \exists y(\text{Gyt}+\epsilon)]$ tells us only what we already knew: IA is false. So we still have not said when a putative cp-law is itself false.

If we need cp clauses because we *idealize*, Abnormal instances of a cp-law should at least be *explicable* by citing the fact(or)s we have idealized away from. Bodies affected by friction (wind resistance, etc.) present Abnormal instances of, 'cp, falling bodies near earth accelerate at a rate of 32 ft/sec²'. But we can cite the fact that such bodies are affected by friction (wind resistance, etc.) in explaining *why* they do not accelerate at exactly 32 ft/sec². This suggests that:

'cp{ $\forall x[\text{Fxt} \rightarrow \exists y(\text{Gyt}+\epsilon)]$ }' is true, only if

$$\forall x\{\text{Fxt} \rightarrow [\exists y(\text{Gyt}+\epsilon) \vee \exists H \exists z([\text{Hzt}^*] \text{ explains } \neg \exists y(\text{Gyt}+\epsilon))]\}$$

That is, whenever the initial conditions obtain, *either* (1) the consequent condition obtains, *or* (2) some Hzt^* (i.e. the fact that z has property H at t^*) explains why the consequent condition does not obtain—that is, the presence of (the factor) H explains the Abnormal instance. Far from being tautologous, cp-laws would have substantive empirical consequences

when their initial conditions are met. But these consequences will be disjunctive, and thus weaker than the consequents of putative strict laws.

For present purposes, I take the notion of explanation more or less as given. This is not because I think it easy to say what explanation is, but because we have a better pretheoretic grip on the notion of explanation than on that of a cp-law. More tentatively, I also think our pretheoretic grip on explanation is better than our pretheoretic grip on causation. One does not go too far wrong, in my view, by thinking of 'cause' as an extensional and transitive version of 'explains'. But I have no reductionistic ambitions. For I doubt that a theory of explanation can avoid appeal to the notions of law and causation (or that a theory of causation can avoid appeal to the other notions). Still, one can try to make claims that illuminate one or more of the notions in this family—law, cause, explains, counterfactual, etc.—by taking others for granted. And I will try to clarify the relevant sense of 'explains' in several respects.

First, we are concerned with the *truth* conditions of putative cp-laws. So only *correct* explanations are germane. Second, Hzt^* explains [$\neg \exists y(Gyt+\epsilon)$] (or not) regardless of whether anyone ever offers this explanation. Third, what calls for explanation is the fact that [$\neg \exists y(Gyt+\epsilon)$], as opposed to [$\exists y(Gyt+\epsilon)$], *despite* the fact that Fxt and the (provisional) assumption that the putative cp-law is true. An Abnormal instance of a cp-law thus presents a somewhat complex why-question; and an answer must presuppose the cp-law.⁸ One cannot explain away an Abnormal instance of 'cp, swans are white.' *just* by saying that the black swan in question has a gene that (in its environment) makes it black. Even if this is a correct explanation of the swan's blackness, it is no explanation of how a true cp-law comes to face an Abnormal instance; for it does not accept, even if does not overtly deny, the presumption that swans are white. But an elaboration along the following lines might explain the Abnormal instance. Gene g is found in all (except mutant) swans, white or black; having g , together with other swannish traits, usually leads to white feathering because of the effect g has on pigmentation; but some Australian swans have *another* gene that, in combination with g and other swannish traits, usually leads to black feathering. Or to take a well known case, while there is *an* explanation of Mercury's perihelion, this does not explain the Abnormal instance of Newton's laws; but Newtonians could explain the anomaly presented by the orbit of Uranus by citing the presence of another massive body—viz., Neptune. (For further discussion, see Pietroski and Rey, forthcoming; we also require that explanations be non-vacuous, and suggest that this condition is met, if the putative interfering factor explains something other than the Abnormal instance in question.)

⁸ But I do not stipulate that we have an explanation only if the putative cp-law is true. That would make the proposal viciously circular. See, e.g., Bromberger, 1966, and Van Fraassen, 1980, for discussion of the role of contrast classes and presuppositions in explanation.

Perhaps the most important constraint on explanation is that if the presence of H explains an Abnormal instance of a cp-law, then Normal instances of the cp-law in the presence of H call for explanation. Having explained the anomaly of Uranus' orbit by citing Neptune, the Newtonian owes an explanation if some other planet with a massive neighbor is discovered to have a perfectly elliptical orbit. Similarly, since friction can explain Abnormal instances of a free-fall law, we will be surprised if a body affected by friction accelerates at exactly 32 ft/sec². So we will be committed to saying that the presence of a further factor explains why the effects of friction were cancelled out in such a case. Moreover, I intend this constraint to be iterative: if the presence of H* explains the occurrence of a Normal instance of a cp-law despite the presence of a factor H that can itself explain Abnormal instances of the cp-law, then Abnormal instances of the cp-law in the presence of H and H* call for explanation; etc.

There is, however, a difference between Normal and Abnormal instances here. Explanations of why Normal instances occur in the presence of interfering factors need not assume (though they must not deny) the cp-law in question. If Bruce has painted his pet Australian swan white, this explains the Normal instance of 'cp, swans are white'; and such an explanation of the swan's whiteness can be agnostic with regard to the Normal color of swans. If Bruce had painted a white swan white, its whiteness would be overdetermined. But a painted Australian swan is an *accidentally* Normal instance of 'cp, swans are white'; for intuitively, being a swan is causally irrelevant to its whiteness (assuming white paint was chosen at random). Let $\langle e_i, e_j \rangle$ be a *nonaccidentally* Normal instance of 'cp{ $\forall x[Fxt \rightarrow \exists y(Gyt + \epsilon)]$ }', just in case e_i satisfies 'F' at t , e_j satisfies 'G' at some time between t and $t + \epsilon$, and: if there is any factor H present, such that if e_i were followed by $\neg \exists y(Gyt + \epsilon)$ then the presence of H could explain the Abnormal instance, *then* the presence of some other factor H* explains why $\exists y(Gyt + \epsilon)$ actually obtains despite the presence of H. (I worry about such definitions, but one will be needed.) And I intend this constraint to be iterative, just as in the last paragraph. Intuitively, a nonaccidentally normal instance is one that occurs when any potentially interfering factors are themselves interfered with; for in the presence of 'undefeated' interference, we expect Abnormal instances of cp-laws. But as with Bruce's swan, both the antecedent and consequent of a cp-law can be satisfied, even if the former does not *explain* the latter.

The task for the covering (cp) law theorist, as I see it, is to make explicit the kinds of constraints on explanation I have been gesturing at. Given enough constraints, it may be that the necessary condition on cp-laws proposed above can also serve as a sufficient condition. Following Ramsey, the idea would be that events exhibit a good deal of regularity of succession, though not *so* much regularity that we can state strict laws. A putative cp-law would serve to set a standard for what counts as a Normal case; and the standard would be correct, if every Abnormal case can be

handled—where there are constraints on what counts as handling an Abnormal instance. But the present task is to show how there can be false putative cp-laws; so (substantial) necessary conditions are more important than sufficient conditions. And the crucial claim is that we *quantify over* Abnormal instances of a putative cp-law, holding that each must be explicable, instead of trying to state in advance a condition (in the form of an extra antecedent) that covers every possible Abnormal case. If this is correct, events can instantiate cp-laws even when other things are not perfectly equal. Differential fitness can lead to evolution in the direction of the fitter traits in the presence of *some* counteracting drift, pleiotropy, etc. So many Normal instances of a cp-modified principle of natural selection would not instantiate an indicative conditional with the antecedent, 'If there is *no* drift or pleiotropy or . . .'.⁹ CP-laws will be qualitative. But generality is often more important than precision; and we settle for qualitative laws when they are all we are likely to get.

More importantly, while it may be a tautology that A leads to B unless it doesn't, it is not a tautology that A leads to B unless there is an explanation for why it doesn't. In particular,

- (5) cp, if a barometer B rises, and B* is a barometer near B, then B* will rise.

is false. For suppose Bruce manually applies pressure to the relevant mechanism in his barometer on a fair day, with the result that his barometer rises, while his neighbor's remains constant. This Abnormal instance of (5) will, I submit, be inexplicable in the sense characterized here. For the fact that Bruce, as opposed to the atmosphere, applied the pressure does not explain why (5)—a generalization stated in terms of a relation between *barometers*—faces an Abnormal instance. In general, (5) will be free from inexplicable Abnormal instances, only if we restrict attention to possible situations in which atmospheric pressure is rising; and building this condition into the antecedent would make reference to barometer B otiose. I take it to be a plausible condition on causal laws that their antecedents not be otiose. And if (5) is false, a cp-covering-law account of causation need not have the consequence that the rising of Bruce's barometer will cause the rising of his neighbor's barometer. I think other cases of common cause can be handled analogously. For it does not

⁹ Cartwright thinks cp-laws figure in *explanations* only if other things are equal. But we can *partially* explain why a thermometer registered '73°', by citing the fact that (1) it is 72°, and (2) cp, the thermometer registers the ambient temperature. For having cited the cp-law and initial conditions, what needs explaining is not that the thermometer registered '73°' as opposed to all the other things it might have done (registered '12°', exploded, etc.), but that it registered '73°' as opposed to '72°'. This transformation of the explanatory task can be an important part of saying why the thermometer registered '73°'.

follow from cp(if F then G) and cp(if F then K) that cp(if G then K). To see this, it will usually suffice to consider cases in which G-events occur in the *absence* of an F-event, and the causes of the G-events are not also causes of K-events. I submit that, in at least some such cases, the putative law 'cp(if G then K)' will face inexplicable Abnormal instances. Perhaps there will be counterexamples involving cases in which G-events occur only if F-events occur. But such cases are rare; and I think (hope?) they will involve special features that covering-law theorists can exploit.

Similarly, it will not turn out that a flagpole's height is caused by the length of some nearby pattern of illumination on the ground. For the latter will not determine the former, given the position of the sun, even cp. One can paint a shadow-like streak on the ground in the absence of any pole at all. But in no intuitive sense will the painting *explain* the absence of the pole. Even assuming that there is a pole, one can use black paint to extend the relevant pattern of illumination, or place a huge lens between the pole and the ground. In no intuitive sense will citing the presence of the paint or the lens explain the Abnormal instances of a putative shadow-to-flagpole law (cf. a putative flagpole-to-shadow law). Again, my goal is not to say *why* such appeals would not explain why the flagpole was too short, much less to say this without appealing to relationships that are (according to Nomic Pluralism) causal. The goal is to show how there can be non-trivial cp-laws by *using* our intuitions about what can(not) explain what. I also claim that cp-laws can back singular causal claims. And I like to think this makes the account plausibly holistic and non-reductive; though perhaps my construal of 'explains' renders the proposed sufficient condition for causation viciously circular. But I don't see how to develop an objection along these lines, as opposed to just *saying* that the account is circular, short of defending an alternative account of causation.

With all that said, I suggest this (final) rendition of Ramsey's proposal:

e_i causes e_j , if there is an ordered n -tuple of events
 $\langle e_1, e_2, \dots, e_n \rangle$, such that: $e_i = e_1$, $e_j = e_n$, and for each e_k ,
 $\langle e_k, e_{k+1} \rangle$ is a nonaccidentally Normal instance of a cp-law.

So if there are nonaccidentally Normal instances of mental cp-laws (of the sort discussed above), there is mental causation. This proposal says nothing about events covered by no law. But given the relaxed notion of law, there may be enough laws to go around—especially if (as I argue, in forthcoming) laws that are idealized *and* probabilized can back singular causal claims; though it may turn out that many laws are scientifically uninteresting. Moreover, I don't exclude the possibility of other sufficient conditions for causation. But neither do I assume a priori that every event has a cause. Perhaps 'no uncaused events' slogans express an ideal: strive to find laws that cover all events. Maybe some events just happen; where this just means that they cannot be located in a pattern of nomic regularity.

This is far from a definitive defense of cp-laws, or the covering law

account of causation based on them. But I suspect that the immediate objections to Nomic Pluralism will not be objections to the details of any particular cp-covering-law account of causation, or even to the idea that some such account can be provided; although these are serious matters. The main concern is likely to be that the *real* problem of mental causation has been sidestepped, because the resulting conception of causation is too 'thin'.

4. Overdetermination and Causal Pictures

Worries about mental causation are often worries about overdetermination that are motivated by a picture of causation other than Ramsey's. Consider a paradigm case of overdetermination: one assassin poisons Bloggs, another assassin shoots him. And recall the picture associated with Nomic Pluralism (Figure 2 on p. 316). Overdetermined events like Bloggs' death are not everyday occurrences. But given Nomic Pluralism, it seems that every bodily motion with a mental cause is an overdetermined event. For intuitively, *e* is overdetermined, if *e* has two (sufficient) causes that are themselves members of distinct causal chains culminating with *e*. Moreover, if one asks *why* two distinct chains culminate with Bloggs' death, there seem to be only two possible answers: coincidence—e.g. the assassins were hired separately, but they happened to arrive at the same time; or conspiracy—e.g. both assassins were hired by an action theorist who wanted a real-life example. Dualism would be unattractive, if it preserved mental causation only at the cost of saying that persons live in a state of continual coincidence, in which their minds and brains just happen to cause the same behaviors; and appeals to *Dei ex machina* are deeply unsatisfying. Monists, on the other hand, can allow that MEs and NEs both cause behavior, just as Twain and Clemens wrote *Huckleberry Finn*—such 'co-authorship' being neither coincidental nor conspiratorial.

Dualists can, however, grant that only rarely are events overdetermined by causes of *the same type*. Or what comes to the same thing: they can hold that an event is overdetermined, only if it has two sufficient causes of the same type. Whether two causes are of the same type can be a vague matter, at least as vague as our intuitions concerning whether an event is overdetermined. But suppose that, due to the work of nefarious neurosurgeons, there are two distinct purely neural causal chains leading to Bloggs' arm going up; just as there are two distinct causal chains leading to Bloggs' death, both of which we take to be physiological, once the assassins have initiated them. Or suppose that Bloggs applies for a new job, because he strongly desires *both* the higher salary *and* the more flexible hours that go with the new job. The dualist can grant that this sort of overdetermination is relatively rare. But dualism just *is* the position that mental and neural causes of behavior are of importantly different types.

So to say without qualification that overdetermined events are rare is to beg the question against the Nomic Pluralist.

Moreover, the fact that neural and mental causes of a bodily motion occur at (roughly) the same time is hardly coincidental given Nomic Pluralism. For the relevant NEs and MEs themselves have a common cause—viz., a distal stimulus. Neither is it a coincidence that MEs have effects that turn out to have neural causes as well. For we posit MEs as causes of behavior, and thus causes of bodily motions; and it is no coincidence that every bodily motion has a neural cause, though we discovered that NEs cause such motions. Still, without *Dei ex machina*, one might think it a coincidence that an ME and a distinct NE have their effect at the same *time*. Why do I not find myself pushing the power button on my stereo (as the result of a desire to turn on the stereo), and then pushing the button again a moment later (as the result of some neural event in my finger)?

There are several concerns lurking here; and I will try to deal with each in turn. But the thought that Nomic Pluralists face a timing problem is, in my view, a chimera due to a bad analogy. Suppose two people run, by different routes, from point P to a nearby bell; and suppose each runner strikes the bell with a hammer when she arrives. We would expect a conspiracy of some sort, if the runners always struck the bell at the same time, thus overdetermining many effects of the peal. But we need not assume that distinct causes of behavior are like the distinct runners; for we need not assume that events are little agents. According to Nomic Pluralism, a behavior is twice caused (by neural and mental events) because it can be twice *explained*. The claim is that a single bodily motion, which is not struck by anything, can be located in two distinct patterns of regularity—viz., the regularities expressed by neurophysiological and psychophysical cp-laws. And it is hardly mysterious that a bodily motion always occurs at the same time as itself, regardless of how it is being described for explanatory purposes. If the world does not exhibit the required regularities, then Nomic Pluralism is false. But if motions can be twice explained in this sense, I don't think this is any more miraculous than the fact that events can be explained at all.

We do, however, typically expect that an overdetermined effect would still have occurred, if one of its actual causes had not occurred. And it can seem absurd to suggest that agents would have behaved as they did in the absence of the NEs that caused their behaviors. Some cases of overdetermination may be otherwise: the gunman may have had orders to shoot Bloggs if and only if the first assassin administered the poison. But MEs do not somehow wait to see if the relevant neurons fire, only then getting into the act. Here the dualist has two possible (nonexclusive) replies. Consider an arm-raising that has both a neural and mental cause, N1 and M1, respectively. And let us analyze counterfactuals in terms of possible worlds and similarity. Among the worlds in which N1 does not occur, there might be a world *w* in which some neural event N2 causes

the arm-raising, such that *w* is more similar (along the contextually relevant dimension) to the actual world than any world in which the arm-raising does not occur. For if the arm-raising does not occur, then either M1 does not occur, or M1 occurs but fails to cause the arm-raising. So the conditional 'if N1 had not occurred, the arm-raising would not have occurred' is not obviously true. Moreover, we have seen that dualists can grant that *all* events have a common supervenience base. Given global supervenience, it may be that had N1 (and hence N1's supervenience base) not occurred, M1 would not have occurred either. If neither N1 nor M1 had occurred, it is unlikely that the arm-raising would have occurred. So the truth of 'if N1 had not occurred, the arm-raising would not have occurred' implies neither the identity of N1 and M1, nor a conspiracy.

Consider an analogy. Those who deny that statues are molecule-fusions need not say that pedestals are overoccupied by statues *and* molecule-fusions. Claims like, 'If the fusion had not been there, the pedestal would have gone unoccupied' are false in some contexts: as when a vandal just missed a chance to chip the statue, and 'the fusion' is being used precisely. And when such claims are true, they imply neither identity nor conspiracy; for in moving the fusion, one thereby moves the statue.

Nonetheless, even if overdetermination *per se* does not provide reason to reject Nomic Pluralism, monists can mount a related attack. The leading idea of conservation arguments is that (1) the causation of a physical event (PE) requires the transfer of energy, and (2) bodily motions are PEs. So if (3) MEs and NEs cause bodily motions, even though (4) MEs are not NEs, then (5) we would discover a net imbalance in the total amount of physical energy, if we compared the moments just before and after the motion occurs. But (6) such imbalances are precluded by conservation of energy principles. Nomic Pluralists, however, can hold that either (1) is false, or the inference to (5) is fallacious, depending on what 'the causation of a physical event' means. Unlike Cartesian dualists, Nomic Pluralists can grant that every PE (and hence, every PE caused by an ME) has a PE as a proximal cause; and let us grant that PE-PE causation always involves—or perhaps just *is*—a transfer of energy. Then the causation of a bodily motion is always *accompanied by* an energy transfer. But it does not follow that all causation is, or even involves, energy transfer in any further sense. Nomic Pluralists can hold that ME-PE causation is unlike PE-PE causation in just this respect. But a substantive consequence has emerged.

While Nomic Pluralists can grant that some laws are stated in terms of energy transfer, they must deny that causation *is* the transfer of energy. Causation is multiply realizable given Nomic Pluralism. But there is a compelling picture of causation that bears a natural affinity to the idea of energy-transfer:

Every event has a certain amount of 'oomph'. One event *makes another event happen* by exerting its oomph. And to cause an event is to make it happen. (Sometimes an event does not itself have

enough oomph to make an effect happen; but a 'team of partial causes' may *together* exert enough oomph to make an effect occur.) If each of two events exerts enough oomph to make an effect happen, then the effect is overdetermined—i.e. made to happen twice over.

I think this Metaphysical Oomph Picture of causation ('MOP', for short) is at the bottom of many objections to dualism. Given MOP, causal laws would be claims about the oomph properties of events; and attempts to illuminate the notion of causation by appeal to covering-laws would be at best misleading. MOP maybe a vague picture, rather than a philosophical thesis. But vague pictures can be powerful. So Nomic Pluralists should take MOP seriously, if only to undercut its attractiveness.

Many homey analogies can be used to motivate MOP. For example: a person makes a rock move by exerting her strength on it; sometimes a team of people can move a rock that no one person can move; and sometimes two people, each of whom is strong enough to move the rock, exert all their strength on the rock. But given MOP, an overdetermined event can always be redescribed—perhaps as one of several events—to make it clear that the extra cause had some extra effect. Perhaps the rock moved farther than it would have, given just one pusher. The poison administered to Bloggs may have led to respiratory failure, while the assassin's bullet struck Bloggs' heart. The side effects of an extra cause may go unnoticed. But even if dispersed, extra oomph will have effects that are in principle detectable. Thus MOP turns overdetermination into a puzzle. For suppose MEs cause bodily motions by exerting their oomph. NEs already exert enough oomph to make the motions happen. So either MEs are NEs, *or* behaviors are 'overoomphed'; and the latter is implausible, since no extra effect is observed.

Burge (1992) discusses a more sophisticated variant of this last argument: Unless mental causation was physical causation, the former would 'yield departures from the approximately deterministic patterns described by physical laws'. That is, (nonphysical) mental causes would somehow 'interfere with, disrupt, or otherwise "make a difference" in the physical outcomes'. But this doesn't happen. As Burge says (p. 36), the idea that there is a problem here 'surely depends heavily on thinking of mental causes on a physical model—as providing an extra "bump" or transfer of energy on the physical effect'. For on such a model, 'instances of "overdetermination"—two causes having the same effect—must seem to be aberrations. But whether the physical model of causation is appropriate is part of what is at issue.' (p. 37) It would be unsatisfying, though, to rest content with the claim that MOP is question-begging from the Nomic Pluralist's perspective. There is also a potential defense of MOP to be considered.

As depicted, MOP has it that events have causal powers, and causes make their effects happen by exercising these powers. It makes sense to

say that an *agent* made an event e_2 occur, if the agent performed an action a such that: ' a ' describes (perhaps indirectly) a bodily motion e_1 , and e_1 caused e_2 . But ' e_1 made e_2 occur' makes little sense, unless it is a stylistic variant on ' e_1 caused e_2 '. So one might hope to reformulate MOP in terms of claims about the causal capacities of objects. To say that a mental or neural state/event caused a behavior would be to say that some object—e.g. a brain—manifested a causal capacity. Put this way, one might think that MOP (and the argument for monism it suggests) derives support from the recent resurgence of appeals to capacities in the philosophy of science. So I think Nomic Pluralists should strongly resist the suggestion that friends-of-capacities are friends-of-MOP.

Cartwright (1983, 1989) argues that: (1) explanation in physics takes the form of ascribing causal capacities to objects; (2) our fundamental lawlike sentences, being strict in form, are false; but (3) their theoretical function is to express our commitments to particular capacities; and (4) the behavior of physical objects is to be explained by causal composition, not by deductive-nomological inferences. On this conception, Newton told us that the sun has the *capacity* to make the earth move in a manner described by the equations $F = Gmm'/d^2$ and $F = ma$; although the behavior of actual objects is (almost?) never a pure manifestation of a single capacity. Despite Cartwright's assertions to the contrary, I do not think her claims are in conflict with the idea there are (nonvacuously) true cp-laws. Cartwright holds (2), because she thinks that cp-laws would have to be analyzed as indicative conditionals, a proposal considered and rejected above. Moreover, she must distinguish false lawlike generalizations—e.g., $F = Gmm'/d^2$ from $F = Gm'/3m$. For some lawlike statements will be false but *explanatory* (because they express a commitment to a real capacity), while others will be just false. If we label the former generalizations 'FE', then some nomic generalizations will be of the form: $FE\{\forall x[Fxt \rightarrow \exists y(Gyt + \epsilon)]\}$. So in the end, Cartwright's proposal and appeal to cp-laws may differ only notationally.

It is not entirely clear how to extend Cartwright's conception of causal explanation to the special sciences. But a Cartwright-esque reading of intentional psychology would, I take it, go something like this: Minds—or even better, *agents*—have various causal capacities; and the behavior of an agent is to be explained by citing such capacities (and causal composition). Then instead of asking whether MEs are NEs, our question will be whether mental capacities are neural capacities. But I know of no argument to the effect that the exercise of a nonphysical capacity would (in Burge's terms) 'disrupt, or otherwise "make a difference" in the physical outcomes'. And unless appeal to capacities shares this crucial feature with MOP, such appeal does not lead to monism. For the dualist can simply allow that a bodily motion is a manifestation of *both* a physical and a nonphysical capacity, thus adopting 'Capacity Pluralism'.

The only way I can see to get from a Cartwright-esque reading of intentional psychology to monism is to assume that all capacities or dispo-

sitions are to be identified with their physical bases, and thus that all dispositions have physical bases. Once the Nomic Pluralist rejects this assumption, he owes an alternative account of what it is to have a disposition. But such an account is ready to hand: something has a disposition, if it is covered by a cp-law. To say that salt is soluble, for example, is to say that cp, it dissolves in water. (And to say that cp, salt dissolves in water is *not* to make a claim that is trivial, vacuous, etc). The fact that salt has a certain physical structure may explain *why* salt is soluble; that is, having the structure may explain *why* (cp) it dissolves in water. But being soluble is not identical with having a certain kind of structure (*a fortiori*, it is not the same as having a certain physical structure). Otherwise, nothing that lacked the structure could be soluble, even if (cp) it dissolved in water. Similarly, to have a behavioral disposition is to instantiate an appropriate cp-law. But it does not follow that all behavioral dispositions can be identified with neural states. Nor can the monist get any relief by insisting that an agent must have *some* state in virtue of which she is covered by the relevant cp-law. For even granting the dubious assumption that states must be prior to laws in explanation, Nomic Pluralists can say that agents are covered by mental cp-laws in virtue of having *mental* states.

One might think that I have argued to a standoff here: monists can explain mental causation via MOP, while dualists can be Nomic (or Capacity) Pluralists. But my goal, qua Jamesian, was to argue that dualism is defensible, *not* that it is the only game in town. Moreover, while dualists should reject MOP, they are not alone. I mentioned earlier that critics of Davidson have worried that, on his view, mental properties do no causal work. I suspect that MOP is at least partially responsible for such worries; since given MOP, one event causes another in virtue of having a certain property—viz., its oomph, or *power* to cause the effect. So token monists, who hold that mental properties are not physical properties, will get more than they bargained for, if they accept MOP. Given MOP and monism, if a mental event *e* causes a bodily motion, then *e* has: mental properties, physical properties, and an oomph property *O*; and it is by virtue of having *O* that *e* causes the motion. If *O* is neither mental nor physical, causal properties are a metaphysical mystery. (I won't say this is impossible; for I follow Ramsey (1929, p. 160), who would not deny the existence of 'real connections of universals', since he could 'understand nothing by such a phrase'.) I assume that no one thinks *O* is mental but not physical. And if no mental property of *e* is identical to *O*, then mental properties do indeed seem to be epiphenomenal. But if *O* is some physical property *P*, and some mental property *M* of *e* is also identical to *O*, then *M* is identical to *P*; and thus a type identity claim is true. So if MOP is required to defend monism, then I think the theoretical choice is between dualism and type monism.¹⁰

¹⁰ Kim (1984) argues that we can distinguish type monism from reductionism, thus avoiding multiple realizability objections to the latter. But he assumes that properties are identical if they have the same extension in all metaphysically possible worlds.

The point of this section, recall, has been to argue that Nomic Pluralists do not sidestep the problem of mental causation by adopting an overly thin conception of causation. If friends-of-MOP say that this charge has not been rebutted, I think the only reply is to demand a clear formulation of the problem. Nomic Pluralism offers an account according to which MEs can cause behavior, and the mental properties of MEs can be causally relevant to their effects. There are no obvious overdetermination objections to Nomic Pluralism. And the possibility of explanatory exclusion does not even arise on this view: the more causal explanations, the merrier. There may be an unspoken intuition that the *real* problem of mental causation is to show how we can (1) accept MOP, (2) reject type identity theses, but (3) still have mental causation. But I submit that *this* problem is insoluble. The demand is, in effect, that the mental 'disrupt or otherwise "make a difference" to' physical outcomes, without being a part of the (presumably closed) physical system. (Compare sceptical demands for evidence excluding the possibility of error about an evidence-transcendent world.) We should reject such formulations of the problem, and instead try to provide an account that shows how mental causation is possible.

5. Concluding Remarks

In saying that *e* causes *f*, we commit ourselves to saying *something* about events similar to *e* and *f*. Strict laws represent too strong a commitment. But this is because causal laws are not strict, not because appeal to covering laws cannot help us give substance to the slogan, 'Same cause, same effect'. CP-laws represent more plausible commitments that are easier to satisfy, without being vacuous. Nomic Pluralism may not offer the rigorous and tidy picture of the world's causal order that some philosophers have hoped for. But I don't think we need the rigor. And I see *no* reason to think the world is tidy.

The appeal to James and Ramsey has not been accidental. Nomic Pluralism is a pragmatic (and empiricist) account of mental causation; and the idea that pragmatism leads to ontological pluralism is neither new nor surprising. Physical scientists explain phenomena by positing events with physical properties. We all explain behavior by positing events with intentional properties. Both types of explanation *work*. And pragmatists do not impose metaphysical constraints on what can count as a working explanation. So it will be an open question as to whether the posits of intentional psychology are posits of physical science, or fusions of physical

And the physical property that Kim would identify with the mental property of *e* could not plausibly be identified with *O*. Kim speaks of 'epiphenomenal causation' when dealing with properties that supervene on causally efficacious micro properties. But I think this amounts to a friend-of-MOP just *calling* mental properties 'causal' by courtesy.

posits—or even whether the particulars of psychology are constituted by physical particulars, such that the former are not causes over and above the latter. Sellars (1963) spoke of ‘scientific’ and ‘manifest’ images. But why shouldn’t we discover a plurality of scientific images? Given this possibility, I think we should also adopt a pragmatic attitude towards causation itself: instead of taking causation as a given that delimits the problem of mental causation, let us take ‘causation’ as one of the variables in the equation we are trying to solve. We can ask what causation is and what mental states are, such that mental causation is possible. Instead of judging theories of causation by how well they conform to metaphysical pictures, we can judge them according to how well they help us account for puzzling facts—e.g., that bodily motions have both MEs and NEs as causes. Indeed, what other method of judging theories of causation could we *justify*? As with monism, claims about causation are hypotheses that have to earn their keep, not dogmas with which all experience has got to square.

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