

Metaphysical necessity dualism

Ben White¹

Received: 25 March 2016 / Accepted: 22 December 2016
© Springer Science+Business Media Dordrecht 2017

Abstract A popular response to the Exclusion Argument for physicalism maintains that mental events depend on their physical bases in such a way that the causation of a physical effect by a mental event and its physical base needn't generate any problematic form of causal overdetermination, even if mental events are numerically distinct from and irreducible to their physical bases. This paper presents and defends a form of dualism that implements this response by using a dispositional essentialist view of properties to argue that the psychophysical laws linking mental events to their physical bases are metaphysically necessary. I show the advantages of such a position over an alternative form of dualism that merely places more “modal weight” on psychophysical laws than on physical laws. The position is then defended against the objection that it is inconsistent with dualism. Lastly, some suggestions are made as to how dualists might clarify the contribution that mental causes make to their physical effects.

Keywords Mental causation · Exclusion Argument · Dualism · Overdetermination · Dispositional essentialism

1 Introduction

The Exclusion Argument for physicalism maintains that since (1) every physical effect has a sufficient physical cause, and (2) the suggestion that the effects of mental causes have both a physical and non-physical cause leads to an unacceptable form of systematic causal overdetermination, it follows that if (3) mental events cause physical effects

✉ Ben White
tuc70007@temple.edu

¹ Temple University, Philadelphia, PA, USA

as frequently as they seem to, then (4) mental events must be physical in nature.¹ A popular response to the Exclusion Argument holds that the manner in which mental events depend on their physical bases makes it possible for both to cause a single physical effect without thereby generating any problematic form of overdetermination, even if mental events are numerically distinct from and irreducible to their physical bases. If this is correct, then premise (2) of the Exclusion Argument is false, and dualists can hence deny its conclusion without also having to reject either (3) or (1).

Those who advocate this type of response to the Exclusion Argument typically argue that the *prima facie* plausibility of (2) rests on a mistaken assimilation of the kind of overdetermination involved in instances of mental causation to forms of overdetermination (e.g. that exemplified by the death of a person shot by a firing squad) that are relatively rare. In contrast to such cases, instances of overdetermination wherein one of the overdetermining causes depends on the other in the way that mental causes depend on their physical bases are said to be as common and unproblematic as the overdetermination of effects caused by wholes and their parts.² This paper presents and defends a form of dualism that implements this type of response to the Exclusion Argument by using a dispositional essentialist view of properties to argue that the psychophysical laws linking mental events to their physical bases are metaphysically necessary.

The paper is organized as follows: Sect. 2 lays out the aforementioned response to the Exclusion Argument in greater detail. Section 3 motivates the dispositional essentialist view of properties, indicates how it can be incorporated into a form of dualism that ascribes metaphysical necessity to psychophysical laws, and shows how the resulting form of dualism gives dualists a non-ad hoc way of implementing the response to the Exclusion Argument outlined in Sect. 2. Section 4 highlights the advantages of such a position over one that merely places more “modal weight” on psychophysical laws than on physical laws. Section 5 responds to the objection that the resulting view is inconsistent with dualism. Section 6 then offers some suggestions as to how dualists might clarify the contribution that mental causes make to their effects.

2 Mental causation without overdetermination

The Exclusion Argument’s rejection of overdetermining mental causes has inspired a number of attempts to determine just what it is about overdetermination that could

¹ The primary proponent of the Exclusion Argument is Kim (1989a,b, 1993, 1998). Though originally intended as an argument against non-reductive forms of physicalism, the Exclusion Argument can also be formulated as an argument against dualism and for physicalism in general. The latter formulation of the Argument is the one that will be of interest for us, although it should be noted that many of the advocates of the response discussed below employ that response in defense of non-reductive physicalism, not dualism. One of the aims of this paper will be to show that dualists can make use of this response as well.

² Not everyone agrees that the latter sort of overdetermination is indeed unproblematic. Merricks (2001), e.g., takes it to be problematic enough to justify the elimination of mindless composites from our ontology. Sider (2003) responds (although he offers other reasons for adopting a position akin to Merricks’ in Sider 2013).

make its systematic occurrence so problematic.³ Such investigations have tended to support the conclusion (a) that there are different varieties of causal overdetermination, and (b) that while some forms of overdetermination exhibit certain features that might make their systematic occurrence problematic, not all forms of overdetermination exhibit such features. In regard to (a), one of the more significant distinctions that has been drawn between different forms of overdetermination is that which holds between those forms wherein the overdetermining causes are *modally distinct* (i.e., capable of occurring independently of one another, so that it is possible for each to occur without the other), and those wherein they are not (Funkhouser 2002, pp. 340–341; Schaffer 2003, pp. 28–29; Bernstein 2016, p. 29). This distinction is significant because one of the most common objections to the existence of widespread, systematic overdetermination is that such overdetermination would be excessively coincidental,⁴ and this objection applies only to instances of overdetermination wherein the overdetermining causes are modally distinct.

To illustrate this point, compare the overdetermined death of a person shot by a firing squad with the overdetermined shattering of a window caused by the impact of a baseball and the baseball's left half. Assuming that the baseball is at least numerically distinct from its proper parts (which seems warranted by the difference in their respective causal powers and persistence conditions), and that the window is fragile enough that it would have shattered if struck by the baseball's left half alone, both cases qualify as instances of overdetermination according to the standard definition of overdetermination as the causation of a single effect by numerically distinct, independently sufficient causes (i.e. causes such that each could have produced the effect on its own). However, whereas the overdetermining causes in the former case are modally distinct (for each member of the firing squad could have fired his/her shot without any of the other members firing theirs), the overdetermining causes in the latter case are *not*, for the baseball could not exist or strike the window without its proper parts doing so.

This difference in the modal distinctness of the overdetermining causes in these two cases corresponds to a difference in the relative oddity of supposing that either type of overdetermination is systematic and widespread. Imagine first that cases of the firing squad variety happened quite regularly, so that quite often when an effect occurred, a number of modally distinct causal processes sufficient to produce that effect could be found that were perfectly timed and coordinated so as to terminate at the very moment and location of the effect's occurrence. As Funkhouser (2002, p. 338) puts it, such a situation “would either be a coincidence on a cosmic scale or would

³ See Funkhouser (2002), Schaffer (2003, §2), and Bernstein (2016), as well as Sider (2003), whose discussion of overdetermination is motivated instead by the role it plays in Merricks' (2001) Exclusion-style argument for eliminativism.

⁴ Sider (2003, pp. 721, 723) identifies two further objections to overdetermination that do not depend on whether or not the overdetermining causes are modally distinct; viz., that “overdetermination is metaphysically incoherent”, and that “we have no reason to believe in overdetermining entities.” He argues convincingly, however, that these further objections are either unfounded or inconclusive. Bernstein (2016) raises another potential objection to overdetermination that does *not* apply to standard cases wherein the overdetermining causes are modally distinct, but which *may* apply to certain cases wherein they are not. This objection will be addressed in Sect. 6.

require a divinely arranged pre-established harmony.” Since the postulation of coincidences and pre-established harmonies is generally to be avoided in one’s theorizing, it seems reasonable to reject any theory that entails the systematic occurrence of such “independent” overdetermination [as Funkhouser (2002, p. 337) calls it], wherein the overdetermining causes are modally distinct.

The same objection does not seem to apply, however, to instances of overdetermination wherein the overdetermining causes are *not* modally distinct, e.g. the overdetermination of the window’s shattering by the impact of the baseball and its left half. Since one of the overdetermining causes in this case is incapable of occurring without the other, the resulting overdetermination is, in contrast to that found in firing squad type cases, “[n]either an odd coincidence [n]or a carefully orchestrated occurrence” (Funkhouser 2002, p. 338). For given the necessary dependence of wholes (and their causal powers) on their parts (and their causal powers), it should come as no surprise that the baseball and its left half were each involved in a causal process that terminated in the same effect (Sider 2003, pp. 722–723; Schaffer 2003, p. 28). Indeed, this is precisely what we should expect both in this and in any other case of overdetermination wherein the overdetermining causes are not modally distinct, for in such cases, at least one of the overdetermining causes couldn’t *but* occur in conjunction with the other. Thus, as Funkhouser (2002, p. 341) points out, if such “incorporating” overdetermination (as he calls it) “occurs at all, it is necessarily systematic.”⁵ The postulation of systematic overdetermination by causes that are *not* modally distinct hence does not seem as problematic as the postulation systematic overdetermination by causes that are, because we should *expect* the former type of overdetermination to be systematic, whereas the systematic occurrence of the latter type of overdetermination would be a coincidence that defies naturalistic explanation.⁶

Picking up on this point, a number of writers have sought to respond to the Exclusion Argument by suggesting that even if mental events are numerically distinct from and irreducible to their physical bases, both can nevertheless cause the same effect without thereby generating any problematic form of overdetermination, because mental causes and their physical bases are not modally distinct. In support of this claim, proponents of this type of response typically argue that mental events depend on physical events in such a way that it would be at least nomologically impossible for the actual physical base p of a given mental event m to occur without m .⁷ Advocates of

⁵ Funkhouser’s (2002, p. 340) category of “incorporating overdetermination” is actually a bit narrower than the class of all instances of overdetermination wherein the overdetermining causes are not modally distinct. For he defines incorporating overdetermining causes as those that “‘work through’ the same mechanism,” yet it seems that numerically distinct causes could “work through” different mechanisms to produce the same effect without being modally distinct.

⁶ Funkhouser (2002, pp. 344–346) later suggests that incorporating overdetermination may also require a kind of “Pre-established Harmony among Levels,” but I don’t see why this need be so. First, as Funkhouser (2002, pp. 340–341) himself notes, the co-occurrence of incorporating overdeterminers is not miraculous or coincidental; it follows from the fact that they cannot “come apart” like independent overdeterminers can. And second, the existence of “irreducible patterns at distinct levels” that tend towards the same effects may be explained naturalistically along the lines proposed by Block (1997).

⁷ See Mellor (1995), Bennett (2003), and Kallestrup (2006). While some (e.g. Bennett 2003) have taken this to show that the joint effects of mental events and their physical bases are not overdetermined *at all*, for simplicity’s sake, I’ll subsume such views under the position that the inability of physical bases to occur

the Exclusion Argument who grant this thesis (e.g. Kim 1998, pp. 38–47) are charged with failing to appreciate the resulting difference between firing squad type cases of overdetermination and the overdetermination of physical effects produced by both mental and physical causes. Whereas the systematic occurrence of the former type of case would seem miraculous due to the modal distinctness of the overdetermining causes it involves, the alleged fact that mental causes are not modally distinct from their physical bases is held to make the systematic occurrence of the latter type of case non-miraculous and hence unobjectionable, for the reasons discussed above. In any case, then, where e is a physical effect caused by both a mental event m and its physical base p , the proposed response to the Exclusion Argument maintains that due to the dependence of mental events on their physical bases, m and p are not modally distinct, because it is impossible for p to occur without m . This is then taken to show that the systematic overdetermination of effects by mental and physical causes is unproblematic, and that premise (2) of the Exclusion Argument is consequently false. While nothing has yet been said to address the further question of what causal contribution mental events make to their putative physical effects,⁸ the foregoing response at least shows that the assumption that some physical effects have non-physical, mental causes can be conjoined with premise (1) of the Exclusion Argument without generating any objectionable form of overdetermination.

3 Dispositional essentialism and metaphysical necessity dualism

This next section explores the option of combining the response to the Exclusion Argument just discussed with a form of dualism that uses a dispositional essentialist view of properties to ascribe metaphysical necessity to the psychophysical laws linking mental events to their physical bases. Dispositional essentialism is the view that “[a]t least some sparse, fundamental properties have dispositional essences,” meaning that they bestow the same dispositions on their instances in all possible worlds (Bird 2007, p. 45).⁹ If such a conception of properties is correct, then just as the property of *being water* is necessarily identical with the property of *being H₂O*, the property of *being negatively charged* may be necessarily related to the property of *being positively charged* in such a way that any object instantiating the former property is thereby disposed to attract and be attracted by objects instantiating the latter property (and vice versa).

The relevance of dispositional essentialism to the current discussion lies in the fact that it coincides quite naturally with the view that at least some laws of nature are metaphysically necessary.¹⁰ This is because if one thinks that certain properties

Footnote 7 continued

without the mental events they give rise to makes systematic overdetermination by mental and physical causes unproblematic.

⁸ This question will be taken up in Sect. 6.

⁹ Prominent advocates of dispositional essentialism include Swoyer (1982), Ellis and Lierse (1994), Molnar (2003), Mumford (2004), and Bird (2007).

¹⁰ The argument from dispositional essentialism to the metaphysical necessity of natural laws is discussed at length by Bird (2007, ch. 3). See, however, Corry (2011) and Mumford (2004).

bestow the same dispositions on their instances in all possible worlds, then any laws that are made true by the fact that instances of such properties are disposed to behave in certain ways will be true in all possible worlds as well (although they will only be *non-vacuously* true in those worlds wherein such instances exist). Thus, if it is essential to the properties of *being negatively charged* and *being positively charged* that any object instantiating the one is thereby disposed to attract and be attracted by any object instantiating the other, the law stating that oppositely charged objects attract one another will be true in all possible worlds. Adopting dispositional essentialism hence enables one to propose that a given event c_1 could not have occurred without another event c_2 because it is essential to the properties involved in c_1 that their instances be disposed to produce an occurrence of c_2 whenever they co-occur in the manner of c_1 . If this is so, then such events will be linked by a metaphysically necessary law, and any effects caused by both c_1 and c_2 will hence not be problematically overdetermined, since c_1 and c_2 are not modally distinct.

While dispositional essentialism is a controversial view,¹¹ there are, I think, a sufficient number of compelling arguments in its favor to render it at least independently plausible. Some of these arguments are positive arguments *for* dispositional essentialism, while others are negative arguments *against* the rival “quidditist” or categorialist view of properties, according to which properties have no essential relations to other properties besides non-identity. Of the positive arguments for dispositional essentialism, the strongest seems to me to be that the basic properties that current physics ascribes to subatomic particles (e.g. charge, mass, and spin) appear inherently dispositional, and assuming that such particles are simple, the dispositions ascribed to them cannot be grounded in any categorial properties at some more basic level, but must instead be treated as fundamental properties in their own right (Ellis and Lierse 1994, pp. 32, 42–43; Mumford 2006). If this is so, then it appears that at least some fundamental physical properties have dispositional essences.

A second positive argument, proposed by Wilson (2005, p. 440), notes that when an object exhibits certain causal powers that it did not previously possess, rather than thinking that the object has the exact same properties as it did before and that the causal powers bestowed by those properties have somehow changed, we typically take this instead as a sign that the object has simply undergone a change of properties. This method of deciding when an object has lost or acquired certain properties seems predicated on the assumption that the causal powers that a property bestows on its bearer are at least partly individuating and thus essential to that property. Those who deny this assumption must hence either maintain that our method of identifying such situations is fundamentally flawed, or else insist that our practice of correlating properties with distinctive sets of causal powers is instead premised on the assumption that a property’s causal relations to other properties are fixed entirely by certain metaphysically contingent laws that enable us to associate properties with causal powers, even though there are no necessary connections between them. The former option postulates error where none need be postulated, and the second option grounds our

¹¹ Some might object to dispositional essentialism on the grounds that it violates Hume’s dictum that there are no necessary connections between distinct existences. As Wilson (2010) shows, though, many of the reasons typically offered in support of Hume’s dictum fail to hold up under scrutiny.

practice of identifying losses and acquisitions of properties on assumptions that seem foreign to both ordinary and scientific discourse.

Against the alternative, “quidditist” view of properties, according to which the only metaphysically necessary relation between properties is non-identity, one might note that this position has the odd and arguably unacceptable consequence that there is a possible world indiscernible from the actual world in every respect save for the fact that “charge has all the causal or nomic roles associated with gravitational mass” and vice versa (Bird 2007, pp. 73–76; Black 2000, p. 94). Indeed, since the quidditist disavows the existence of any metaphysically necessary connections between properties (besides non-identity), it is for the quidditist metaphysically possible for *any* two properties to switch their causal/nomic roles. There would thus also be another possible world indiscernible from the actual world in every respect save for the fact that gravitational mass has switched causal/nomic roles with the property of red, or charge with the property of being an octopus. It is, however, hard to shake the impression that such alternate worlds are really just alternate descriptions of the actual world wherein the same properties have been labelled in different ways.¹²

Having offered some reasons for favoring dispositional essentialism over its quidditist rival, we may now see how adopting the position can help dualists implement the response to the Exclusion Argument discussed in the previous section. To see how this works, recall (a) that systematic overdetermination appears problematic only when the overdetermining causes are modally distinct, and (b) that dispositional essentialism gives grounds for denying that two events are modally distinct in cases where the properties they involve are related in such a way that the instances of one are essentially disposed to give rise to instances of the other. With these points in mind, the dualist might reason as follows: Insofar as the arguments in favor of dispositional essentialism support the idea that at least some physical properties have dispositional essences, there seems no reason to exclude from the set of dispositions that are essential to such properties the dispositions that their instances have to give rise to instances of certain mental properties whenever they are related in certain ways (Wilson 2005, p. 438, 2011, p. 142). In other words, if we are willing to allow that certain physical properties may bear certain essential relations to one another, why shouldn't we also consider the possibility that they may likewise be essentially related to non-physical, mental properties in such a way that certain physical properties are necessarily disposed to give rise to certain types of mental states whenever they are coinstantiated in the appropriate manner?

The significance of this possibility for us lies in the fact that by extending dispositional essentialism to the dispositions that instances of certain physical properties have to give rise to instances of certain mental properties, the psychophysical laws that render the physical bases of mental properties sufficient for the mental properties they give rise to are thereby made metaphysically necessary.¹³ For if it is essential to the phys-

¹² Further problems for quidditism regarding our epistemic access to properties and the question of just how many properties there are have been raised by Black (2000, pp. 96–99), Bird (2007, pp. 76–79), and Wilson (2010, pp. 630–632).

¹³ Assuming that mental properties are multiply realizable, these laws might be conceived as many-to-one functions from physical descriptions of world-states to psychological descriptions of world-states. In order

ical properties that are instantiated in the various physical conditions P_1, P_2, \dots, P_n that are sufficient for a given mental property M that their instances be disposed to generate instances of M when related in the manner of P_1 or P_2 or \dots, P_n , then the law stating that an instance of M occurs whenever P_1 or P_2 or \dots, P_n obtains will be true in all possible worlds. In this way, dispositional essentialism can be used by dualists to attribute metaphysical necessity to the psychophysical laws linking mental states to their physical bases, thereby ensuring that their joint of effects are not problematically overdetermined, since it will then be metaphysically impossible for the actual physical base of a given mental event to occur without the mental event it gives rise to. While this proposal still does not explain how, or even whether, mental events actually cause physical effects (as indicated by the fact that the proposed view is consistent with both epiphenomenalism and occasionalism),¹⁴ it at least shows that dispositional essentialism may provide dualists with grounds for arguing that physical effects *could* be systematically caused by both physical and non-physical, mental events without this leading to any objectionable form of overdetermination.

Support for the proposed extension of dispositional essentialism to the relations that physical properties bear to the mental properties they give rise to can be drawn from Wilson's (2005, pp. 445–446) observation that if the fundamental physical forces (viz. gravity, electromagnetism, and strong and weak nuclear forces) unify at high energies, as current physics suggests may be the case, then it would seem reasonable for those who accept a dispositional essentialist view of the properties governed by such forces to “take the [resulting] connection between the fundamental interactions, and hence between their associated laws, to hold with metaphysical necessity.” And “as it [also] seems reasonable to think that the assumption that the fundamental interactions are unified...extend[s] to any emergent interactions there might be,” the grounds that the potential unification of forces gives us for viewing the fundamental physical laws as necessarily connected to one another should lead us to postulate the same kind of necessary connection between the fundamental physical laws and “emergent” psychophysical laws (if such there be) linking non-physical, mental properties to their physical bases. If, however, *all* the actual laws of nature, both physical and “emergent,” are thus necessarily connected to one another, then we seem compelled to accept a form of “Holism about Natural Laws,” according to which “any world in which some of the actual laws hold is a world where all of them hold.” But this means that all of the actual laws are metaphysically necessary if one of them is. Assuming that all forces unify, dispositional essentialists thus seem unable to limit their ascription of metaphysical necessity to only some laws of nature. By treating certain physical laws as metaphysically necessary, on the grounds that certain nomic relations between physical properties are essential to the properties that are so related,

Footnote 13 continued

to ensure that the mental properties instantiated in a given world-state cannot be identified with, reduced to, or fully explained in terms of the physical properties instantiated in that world-state, the dualist must also insist that these psychophysical laws are distinctly non-physical, in that they are not included in or deducible from the totality of purely physical facts.

¹⁴ Thanks to an anonymous referee for pointing this out. The further question of the actual causal contribution that mental events make to their putative physical effects will again be addressed in Sect. 6.

one hence seems compelled to maintain that any psychophysical laws linking non-physical, mental properties to their physical bases are metaphysically necessary as well.

4 Kroedel's (2013) "super-nomological" dualism

Before moving on to discuss some objections to the proposed form of dualism and the response it seems to offer to the Exclusion Argument, it may be useful to first compare it to a similar position developed by Kroedel (2013, p. 4) under the title of "super-nomological" dualism (hereafter SN dualism). In contrast to the proposal advanced above, Kroedel stops short of attributing full-blown metaphysical necessity to psychophysical laws, and instead suggests that dualists should hold merely that psychophysical laws have a privileged modal status *vis-à-vis* physical laws such that "worlds where the psychophysical laws are violated are further from actuality than any worlds where only the ordinary [physical] laws are violated." Adopting this idea is said to enable dualists to give a more satisfactory account of mental causation in terms of the counterfactual dependence of physical effects on mental causes. In support of this point, Kroedel (2013, p. 3) offers the following schematic argument for the counterfactual dependence of a certain behavioral effect *b* on a mental event *m*:

- [i] If none of *m*'s physical bases had occurred, then *b* would not have occurred...
- [ii] If *m* had not occurred, then none of *m*'s physical bases would have occurred...
- [iii] If none of *m*'s physical bases had occurred, then *m* would not have occurred ...
- [iv] If *m* had not occurred, then *b* would not have occurred."¹⁵

The argument is clearly valid, so if the premises are true and "[c]ounterfactual dependence between distinct events is," as Kroedel (2013, p. 5) assumes, "sufficient for causation," then mental events cause behavioral effects. The advantage of Kroedel's SN dualism is then presumed to consist in the support it lends to premises [ii] and [iii], which are the more contentious premises of the argument.¹⁶

With regard to [ii], Kroedel points out that if worlds containing violations of the actual psychophysical laws are indeed less similar to the actual world than worlds wherein only the actual physical laws are violated (as his suggested brand of dualism maintains), then the closest possible world wherein *m* fails to occur will not be one wherein one of *m*'s physical bases occurs but fails to give rise to *m* due to a violation of the psychophysical laws linking the two, but rather one wherein the physical cause that produced *m*'s actual physical base fails to produce it or any other physical base

¹⁵ The premise numbers of Kroedel's argument have been changed to avoid confusion with those of the Exclusion Argument.

¹⁶ Premise [i] follows from the fact that the closest possible world wherein none of *m*'s physical bases occur is one wherein a violation of the actual physical laws renders the physical cause of *m*'s actual physical base insufficient to produce it or any other physical base of *m*. The "lawful evolution" of the world from this point on will then lead to the absence of *m* (which cannot "lawfully" occur without one of its physical bases) as well as the absence of *b*, since neither *m* nor any of *m*'s physical bases will be there to produce it (Kroedel 2013, p. 3).

of m due to a violation of the actual physical laws that render the former sufficient for the latter. In this way, Kroedel's SN dualism implies the truth of [ii].

Similar reasoning lends support to [iii]. For if worlds containing violations of the actual psychophysical laws are again less similar to the actual world than worlds wherein only the actual physical laws are violated, then worlds wherein a violation of the actual psychophysical laws enables m to occur without any of its physical bases will be further from the actual world than worlds wherein the absence of m 's physical bases leads to an absence of m . Kroedel's SN dualism thus also implies the truth of [iii].

While Kroedel's suggested brand of dualism hence makes available a compelling argument for the counterfactual dependence of behavioral effects on mental events, the same is equally true of the form of dualism proposed in Sect. 3, according to which there are *no* possible worlds in which either the actual physical or psychophysical laws are violated, because both sets of laws are metaphysically necessary. To distinguish the latter form of dualism from that advocated by Kroedel, and signal the greater modal strength it attributes to psychophysical (and indeed *all*) laws, let us henceforth refer to it as *metaphysical necessity dualism* (or "MN dualism" for short).¹⁷ Although the MN dualist must deny the SN dualist's contention that the physical base of a mental event is only contingently sufficient for the mental event it gives rise to, premises [i]–[iii] of the above argument come out just as true under the former position as they do under the latter; the only difference being that for the MN dualist, the truth of [i]–[iii] follows rather from the metaphysical necessity of the laws linking physical causes to their physical effects, and mental events to their physical bases.¹⁸ So far as Kroedel's argument for the counterfactual dependence of behavioral effects on mental events is concerned, SN dualism and MN dualism are thus on equal footing.

On the other hand, there is at least one advantage that MN dualism can claim over SN dualism, which is that whereas the metaphysical necessity that MN dualism ascribes to physical and psychophysical laws draws independent support from the arguments in favor of dispositional essentialism and Wilson's (2005) holism about natural laws, the modal asymmetry that the SN dualist postulates between such laws (such that worlds containing violations of the latter are farther from actuality than those containing violations of the former) seems rather *ad hoc*. Kroedel (2013, p. 15) responds to this criticism by arguing (a) that since "[d]ualists hold that the mind is special,...they may well hold that the mind is modally special," and (b) that "even if the assumption that the psychophysical laws have a special modal status is made without independent motivation, it may be worthwhile in order to save mental causation, at least for those independently convinced of the truth of dualism." In regard to (a), while Kroedel is, I think, correct to claim that the dualists' view that the mind is in certain significant respects *unlike* any physical thing entitles them to postulate certain

¹⁷ Thanks to an anonymous referee for suggesting this name for the view.

¹⁸ For reasons discussed in the following section, MN dualists may allow for possible worlds wherein b and/or m occurs without any of m 's physical bases. Given, however, the additional departures from actuality needed to replace m 's actual physical base with some other type of event that is not one of m 's other physical bases but is nevertheless sufficient for b and/or m , any such worlds will end up being farther from actuality than worlds wherein the absence of m 's physical bases leads to the absence of b and m . So premises [i] and [iii] will still come out true.

differences between mental and non-mental entities (e.g. physical and psychophysical laws), this prerogative is best used sparingly. For the more often that dualists appeal to the alleged “special status” of the mind in order to overcome certain difficulties facing their view, the more the credibility of their position will suffer in the eyes of those who are not already convinced that the mind is indeed “special” in the way that dualists aver. The fact that SN dualism must appeal to the mind’s “special status” in order to justify the modal asymmetry it postulates between physical and psychophysical laws consequently makes it, to that extent, a less attractive position than MN dualism, which postulates no such asymmetry and hence requires no such appeal. As for Kroedel’s (2013, p. 15) further suggestion that the modal asymmetry postulated by SN dualism has the “independent epistemological virtue” of explaining why certain violations of psychophysical laws are more difficult to imagine than certain violations of physical laws, in addition to relying on the contentious assumption that our powers of imagination track modal truths closely enough to justify the postulation of modal asymmetries to explain why we find certain things more easy to imagine than others, this suggestion also stands at odds with the fact that many people find it *very* easy to imagine violations of psychophysical laws such as those exemplified by zombies and qualia inverters, and may indeed find such psychophysical miracles easier to imagine than the violations of physical laws that would be needed to, say, enable an apple to absorb a poodle, or produce a living cell made entirely of gold.

Kroedel’s second point, (b), strikes me as giving dualists too great a license for dogmatism, for if dualists are entitled to introduce an otherwise unmotivated modal asymmetry between physical and psychophysical laws simply “in order to save mental causation,” then what’s to prohibit them from making any number of other claims that have no support whatsoever aside from the fact that they enable dualists to give a more satisfactory account of the mind’s causal efficacy? Such stipulations would perhaps be defensible if interactionist dualism were the only theory of mind on offer, but given that there are other options available, it seems that if the only way for dualists to “save mental causation” is indeed to postulate an otherwise unmotivated modal asymmetry between physical and psychophysical laws, the appropriate thing for dualists to do would not be to cling dogmatically to their view and postulate whatever is necessary to keep it afloat, but rather to reduce their credence in dualism (or the causal efficacy of the mind). The fact, therefore, that MN dualism does just as good a job of accounting for the counterfactual dependence of physical on mental events as SN dualism without having to postulate such modal asymmetries makes it again a more attractive position than the latter. This is good news for dualists, for if the arguments in favor of dispositional essentialism and Wilson’s (2005) holism about natural laws are sound, then MN dualism is really the only form of dualism available.

5 Dualism without zombies

The previous sections have shown that in comparison with forms of dualism that treat the actual physical bases of mental events as only contingently sufficient for them, MN dualism seems to have the advantage of enabling dualists to argue both that effects with mental and physical causes needn’t be problematically overdetermined and that

certain physical effects counterfactually depend on mental events, without having to postulate any unmotivated modal asymmetry between physical and psychophysical laws. These advantages, however, come at a price, for since MN dualism maintains that it is metaphysically impossible for the physical base of a given mental event to occur without it, those who accept MN dualism must deny the metaphysical possibility of “zombies” (i.e., beings that are physically and functionally indistinguishable from normal human beings, but lack consciousness) (Bennett 2003, p. 491). Many contemporary dualists are likely to balk at this result, seeing as one of the more well-known arguments for their view, viz. Chalmers’ (1996) Conceivability Argument, rests on the supposition that since zombies are conceivable, such beings must also be metaphysically possible, and some form of dualism must consequently be true. Despite its advantages, MN dualism hence also seems to require dualists who adopt it to give up on what many take to be the strongest reason for accepting dualism in the first place.

Further reflection, however, suggests that relinquishing the Conceivability Argument may not be so damaging to dualism after all. The job is made significantly easier by the fact that proponents of MN dualism needn’t (as some physicalists do)¹⁹ go so far as to deny that zombies are conceivable; all they need do is deny that such beings are metaphysically possible. They can hence confine their criticism of the Conceivability Argument to the inference from the conceivability of zombies to the conclusion that such creatures are metaphysically possible. This inference can be reasonably questioned by dualists and physicalists alike, for regardless of one’s stance on the mind-body problem, one might naturally be skeptical of the idea that conceivability is anything more than a defeasible guide to what is possible. Following Yablo (1993, pp. 33–36), one might, e.g., think that a scenario that is in fact impossible may nonetheless appear conceivable to those who lack knowledge of certain facts that demonstrate the impossibility of that scenario, so that certain scenarios may be conceivable, and hence seem possible, without their actually being so. In support of this point, Yablo (1993, pp. 30–32) notes that there are certain propositions (e.g. the denial of Goldbach’s conjecture) that are “undecidable” (meaning that they are neither conceivable nor inconceivable), but which are either necessarily true or necessarily false. In such cases, either the proposition or its negation is necessarily false, yet neither is inconceivable, thereby belying the notion that our modal intuitions always track modal truths. Independent of the issue of whether or not the mind is physical, there is thus at least *prima facie* reason to reject the idea that our modal intuitions are reliable enough to provide us with adequate justification for believing in the im/possibility of whatever seems to us to be clearly in/conceivable. Dualists are therefore perfectly entitled to deny that the conceivability of zombies is sufficient proof of their possible existence, and can hence reject the Conceivability Argument in favor of the response to the Exclusion Argument that MN dualism makes available.

Here it is also worth noting that the MN dualists’ rejection of zombies comes with at least one significant advantage, which is that it provides them with a straightforward solution to problem of other minds.²⁰ Since they insist that it is metaphysically

¹⁹ See Dennett (1995).

²⁰ Thanks to an anonymous referee for pointing this out.

impossible for the physical base of any given mental state to occur without that mental state, MN dualists can maintain that the physical similarities between oneself and other higher organisms are enough to justify the belief that such beings have minds like one's own. Dualists who allow that zombies are possible will, in contrast, be left with the problem of explaining how they can know that they don't have zombies for friends.

Granting, however, that MN dualism's incompatibility with the Conceivability Argument is unproblematic, some might still question whether MN dualism really warrants the title of dualism. The longstanding association of dualism with belief in the possibility of disembodied minds or (more recently) mindless bodies that are physically and functionally indistinguishable from those of normal, conscious humans might be taken to suggest that any view that does not allow for such possibilities by treating the dependence of mental on physical events as merely contingent must really be a form of physicalism in disguise. This may in fact be why Kroedel (2013) stops short of attributing metaphysical necessity to psychophysical laws, for there are points (e.g. p. 16) where he seems to suggest that doing so would be incompatible with dualism. Bennett (2008, pp. 296–299) is much more explicit in her endorsement of this claim, arguing that the response to the Exclusion Argument discussed in Sect. 2 is only available to physicalists, because dualists are committed to the view that mental events are only contingently related to their physical bases. If Bennett is right, then MN dualism's ascription of metaphysical necessity to the psychophysical laws linking mental events to their physical bases might mean that MN dualism isn't a form of dualism after all.

In response to this worry, it should first be noted that MN dualism's ascription of metaphysical necessity to the psychophysical laws under which the physical bases of mental events suffice for the mental events they give rise to is actually consistent with the view that mental events are only contingently related to their physical bases. For while MN dualism does disallow the possibility of zombies, there is nothing in the view that requires one to deny the metaphysical possibility of disembodied minds. One who accepts MN dualism might thus hold that while the actual physical bases of a given mental property M are all essentially disposed to generate instances of M , M is not likewise essentially disposed to be instantiated *only* whenever one of its actual physical bases is present. If this is so, then the metaphysically necessary psychophysical laws linking M to its physical bases will state that M 's actual physical bases are *sufficient*, but *not necessary* for M , thereby leaving it metaphysically possible for M to be instantiated without any of its actual physical bases, and perhaps without any physical base at all. The ascription of metaphysical necessity to the psychophysical laws rendering M 's actual physical bases sufficient for its instantiation thus does not place disembodied instances of M outside the realm of metaphysical possibility. MN dualism is therefore consistent with disembodied minds, and its ascription of metaphysical necessity to psychophysical laws is hence compatible with the assumption that mental events are only contingently related to their physical bases.²¹ This is, moreover, all that is needed in order for MN dualism to make available the response to the Exclusion

²¹ That said, the essentiality of biological origins may supply some grounds for thinking that disembodied minds are metaphysically impossible as well. See Kripke (1980, p. 155, fn77) and Yablo (1993, p. 37).

Argument discussed in Sect. 2, for to ensure that the joint effects of mental events and their physical bases are not problematically overdetermined, it is enough to maintain that the latter could not occur without the former. This leaves open the possibility that the converse is not also the case.

More importantly, though, even if MN dualism *was* inconsistent with the view that correlations between mental events and their physical bases are merely contingent, this still would not render it incompatible with dualism, for the claim that mind-body correlations are merely contingent is, I think, not something that dualists need endorse anyway. Dualism, as I understand it, is simply the view that mental properties (i.e., properties that things exemplify insofar as they are endowed with intentionality and/or consciousness) and their instances are numerically distinct from, irreducible to, and incapable of being fully explained in terms of physical properties and their instances. According to this definition of their position, the most that dualists seem committed to regarding the modal status of the mind-body relation is that it cannot be logically or epistemically necessary, as that would seem to imply the existence of a conceptual link between mental and physical properties that could allow for the exhaustive explanation of the former in terms of the latter. This leaves them perfectly free, however, to maintain that the nomological correlations between the two sorts of properties and their instances are a posteriori necessities, which are just as metaphysically “brute” as the fundamental laws that govern purely physical events, and which, like the latter, can only be discovered through experience. While some may deem any definition of dualism that gives dualists this option inadequate, it seems to me, rather, that dualism has too often been saddled with commitments that are not essential to its core thesis; viz. that the mind exists, but cannot be identified with or fully explained in terms of anything purely physical. As various familiar arguments from the multiple realizability, intentionality, and phenomenal features of mental states illustrate, this thesis can be defended without making any assumptions about the metaphysical necessity or contingency of the relation between mental states and their physical bases. Despite its traditional association with their position, the claim that correlations between mental and physical states are merely contingent thus strikes me as a thesis that dualists are entitled to reject. And considering the merits of the response to the Exclusion Argument that rejecting this thesis gives them access to, they would, perhaps, be wise to do so.

6 What do mental causes contribute to their effects?

This final section answers an objection that [Bernstein \(2016\)](#) raises to the response to the Exclusion Argument discussed in Sect. 2, which holds that since systematic overdetermination is problematic only in cases where the overdetermining causes are modally distinct, and the physical bases of mental events cannot occur without (and are hence not modally distinct from) the mental events they give rise to, it follows that premise (2) of the Exclusion Argument is false. Since one of the major putative advantages of MN dualism is its ability to give dualists a non-ad hoc way of implementing this type of response to the Exclusion Argument, Bernstein’s objection must

be answered if this supposed advantage is to give us any reason to favor MN dualism over its rivals.

Bernstein's (2016, pp. 30–34) basic criticism of the above response to the Exclusion Argument is that while it allays the worry that systematic overdetermination by physical and non-physical mental causes would be excessively coincidental, it does nothing to address the true “source of discomfort around mental/physical overdetermination,” which instead concerns “the metaphysical unclarity surrounding the contribution of the mental cause.” The failure to resolve this unclarity is seen by Bernstein as enough to render the above response inadequate, for if we are left without any hints as to what mental causes actually contribute to their putative effects, it becomes difficult to dispel the suspicion that such “causes” don't really do anything at all.

Whereas advocates of the above response often take great pains to show how the overdetermination generated by mental causation differs from that found in firing squad type cases, for Bernstein, the real difficulty with the former sort of overdetermination is rather that it “isn't enough” like the latter (Bernstein 2016, p. 32). For while the modal distinctness of the overdetermining causes in firing squad type cases would make the systematic occurrence of such cases seem excessively coincidental and thus problematic in a way that systematic overdetermination by non-modally distinct causes is not, in cases of the firing squad variety, it is at least clear what contribution each overdetermining cause makes to the overdetermined effect.²² By determining the mass, speed, and trajectory of each of the bullets fired by the members of a firing squad, one could, e.g., identify the damage that each of the shots individually inflicted upon the victim's body in causing his/her death. In this respect, the overdetermination generated by mental causation appears problematic in a way that firing squad type overdetermination is not, for while the contribution that the physical base of a mental event makes to a certain behavioral effect can presumably be determined by investigating the neurophysiological process leading from the former to the latter, it remains very *unclear*, at least as far as the above response to the Exclusion Argument shows, what contribution, if any, the mental event makes to that effect.

There are, I think, at least two ways in which dualists might satisfy Bernstein's request for clarification regarding the contribution that mental causes make to their effects. First, one might suggest that mental causes contribute to their effects through the action of non-physical, mental forces.²³ As such forces would constitute an independent addition to the contribution that any physical event makes to the effect of a mental cause, this proposal would provide a clear picture of what mental causes “bring to the table” that is not already supplied by their physical bases. By the same token, though, since the non-physical forces that overdetermining mental causes contributed towards their effects would be additional to or “over-and-above” the forces contributed

²² Bernstein (2016, pp. 32–33, 37) often attributes this to the fact that the overdetermining causes in such cases are additive. While it is of course much easier to identify the different contributions that overdetermining causes make to their common effect in cases where the former are additive, there are, I think, other ways in which a cause can contribute to its effect that do not rely on its being additive in the sense of contributing a separable, independent force to the vector sum of forces acting upon the object it affects. The second response to Bernstein discussed below exemplifies this point.

²³ Those, e.g. Kim (2007, p. 236), who view the vindication of our sense of agency as requiring that mental events somehow generate or produce their effects will likely see such an approach as the only viable option.

by their physical bases, in exerting such forces, mental causes would inevitably end up altering the physical properties of the objects they acted upon in ways that could not be accounted for in purely physical terms. Consequently, dualists who take this route will likely have to deny premise (1) of the Exclusion Argument—the claim that every physical effect has a sufficient physical cause.

While (1) is, to my mind, not as incontestable as it is sometimes made out to be,²⁴ the major attraction of the response to the Exclusion Argument discussed in Sect. 2 was supposed to be that it enables dualists to rebut that Argument without having to deny (1). If providing a satisfying answer to Bernstein's objection should require dualists to reject (1) anyway, then the attraction of such a response to the Exclusion Argument will no longer exist. In that case, the fact that MN dualism affords dualists a natural way of implementing that type of response to the Exclusion Argument will likewise give us no reason to favor it over other forms of dualism. Its standing with respect to other forms of dualism will then depend solely on the strength of the arguments for dispositional essentialism and Wilson's (2005) holism about natural laws.

A second way in which dualists might respond to Bernstein's objection is to make use of an idea proposed by Lowe (2000, pp. 579–581, 2009, p. 459) and suggest that mental causes contribute to their effects by making them “non-coincidental.” Here the idea is that even if (in accordance with (1)) the physical base p of any mental cause m is itself causally sufficient for whatever physical effects that m might produce, given the sheer number and complexity of the various physical processes that must be properly timed and coordinated in order for p to generate a bit of behavior of the sort we would normally attribute to m , the occurrence of that bit of behavior as the result of p would appear coincidental if m were removed from the picture.²⁵ With m in the picture, though, the occurrence of that bit of behavior is instead resolved into an expected consequence of m and the psychological laws describing how individuals typically behave when in that type of mental state.

On this view, mental events contribute to their effects not by affecting them with non-physical forces, but rather by endowing them with a certain modal stability or “robustness” that they would not otherwise have. Consider again the incredible complexity of the sequence of physical events needed to enable p to produce a certain bit of behavior. The intricacy of this chain of events makes it that much easier for something to go wrong and derail the causal process linking p to its behavioral effect e . In modal terms, this means that if p were the *only* cause of e , then one wouldn't have to go too far from actuality to find alternate worlds wherein p occurs but e doesn't, due to some interfering factor that disrupts the complicated process leading from the former to the latter. The resulting modal fragility of the causal process running from p to e accounts for why the former's causation of the latter strikes us as so fortuitous.

Now consider the causal process linking e to its mental cause m , where this process is understood to consist in a sequence of causally related mental and behavioral events (e.g. the formation of a desire, which leads to a series of judgments about the respective merits of the various ways of satisfying that desire, which leads to the formation of a

²⁴ See Gibb (2010) and White (forthcoming).

²⁵ This doesn't imply that it is actually possible for p to occur without m .

belief that one of these is the current best option, which then leads to certain bodily movements initiated with the intent of carrying out that course of action deemed best). While this process may itself be fairly complex, its complexity will no doubt pale in comparison to that of the sequence of physical events that realize it. This already gives us some reason to view e 's occurrence as less coincidental relative to m than it is relative to p . For given that simpler processes are (*ceteris paribus*) less easily derailed than more complex ones, the fact that the causal process linking e to m is simpler than that linking it to p suggests that the former process is (*ceteris paribus*) less likely to be disrupted before terminating in the occurrence of e .

More substantial support for this expectation can be drawn from the fact that the process linking e to m is likely to be multiply realizable at the physical level (Menzies 2003, pp. 218, 221; Lowe 2009, p. 456). If this is so, then there will be a number of alternate possible worlds wherein m still causes e , but the causal process linking m to e is realized differently than it is in the actual world. The availability of such alternate worlds means that one will have to go farther from actuality in order to find a world wherein m occurs but e does not than to find a world wherein p occurs but e does not. For there are more alternate ways that things could be without disrupting the process through which m causes e than there are alternate ways that things could be without disrupting the process through which p causes e . This lends further support to the claim that m gives e a certain modal stability or "robustness" that it would not have if were caused by p alone, thereby enabling us to identify m 's contribution to e with the fact that m makes e 's occurrence less coincidental than it would otherwise be.

The difference between the respective contributions that e 's mental and physical causes make to its modal stability may serve to distinguish the strategy just proposed from another tactic that has been used to address Exclusion-style worries about mental causation without denying (1) or identifying mental events with their physical bases. This alternative tactic [which has been advocated by Wilson (1999, 2011), Clapp (2001), and Shoemaker (2001, 2007)] holds that the causal powers of any mental event m constitute a proper subset of the causal powers of its physical base p .²⁶ The resulting token-identity of each of m 's causal powers with some causal power of p is thought to ensure that effects caused by both m and p are not problematically overdetermined, for in producing such effects, m does not exercise any additional causal powers besides those possessed by p . Given, however, that m 's causal powers constitute only a *proper* subset of p 's, m cannot, on this view, be identical with p , because p has certain causal powers that m lacks.

While both proposals seem to enable one to retain the causal efficacy of the mental without denying (1), identifying mental events with their physical bases, or admitting any objectionable form of overdetermination, the suggestion that mental causes endow their effects with a modal stability that they would not otherwise have differs from the view just described in that it can be understood to entail that mental events have causal powers that their physical bases do not possess. Interpreted in this way, the suggestion that m makes one of its physical effects e more modally robust than it would be if it were caused by p alone amounts to the claim that, in addition to the power to produce

²⁶ Thanks to an anonymous referee for encouraging me to address this view.

e (which m and p share in common), m also has the further power to endow e with certain modal properties that make e 's occurrence less coincidental than it would be if p were its only cause. Since this additional causal power of m is not also possessed by p (which does not have the same impact on e 's modal properties as m does), m 's causal powers cannot, on this view, constitute a subset of p 's, for p lacks at least one causal power that m has.

This treatment of mental events as having the power to alter their effects' modal properties in ways that the physical causes of those effects do not seem to me to afford a more satisfying response to Bernstein's objection than the "causal-subset" strategy described above. For it is difficult to see what further contribution mental causes could make to their effects beyond the contribution made by those effects' physical causes if every causal power of every mental event were token-identical with some power of its physical base.²⁷ If, in contrast, any mental event m has certain causal powers that its physical base p lacks, then any impact that m has on its effects through the use of such powers will constitute an additional contribution to those effects beyond that made by p . The additional impact that mental events would thereby have on their effects does not, however, render the present proposal inconsistent with (1). For the causal powers that mental events are suggested as having in addition to those also possessed by their physical bases would not enable the former to produce any physical effect that the latter could not cause on their own. These powers would instead merely enable mental events to endow their physical effects with certain modal properties that those effects do not derive from their physical causes. As the physical causes of such effects may nevertheless still be sufficient for their occurrence, one can consistently maintain that every physical effect has a sufficient physical cause while also holding that mental causes contribute to their effects by making them more modally stable than they would otherwise be.

Unlike the previous answer to Bernstein's objection, the present one is thus fully consistent with (1)—the claim that every physical effect has a sufficient physical cause. This shows that dualists can satisfy Bernstein's request for clarification regarding the contribution that mental causes make to their effects without undermining the main advantage of the response to the Exclusion Argument discussed in Sect. 2; viz. that it enables dualists to retain the immateriality and causal efficacy of the mind without having to deny (1). Given the availability of such an account of what the mind

²⁷ Some proponents of the "causal-subset" strategy (e.g. Shoemaker 2001, p. 81; Wilson 2011, pp. 129–30) suggest that in cases where a mental cause m and its physical base p both produce an effect e , and the causal powers that p has in addition to those that it shares with m make no difference to the production of e , m is more "proportional" to e than p is, inasmuch as it has fewer causal powers that play no role in the production of e than does p . The greater proportionality of m to e is then taken to show that m is distinctively, and perhaps even uniquely causally efficacious with respect to e . (Thanks to an anonymous referee for pointing this out.) If this proposal is to provide a satisfactory response to Bernstein's objection, though, it seems to me that the distinctive causal contribution that m 's greater proportionality enables it to make to e must be additional to that made by p . Otherwise the objection will remain that m contributes nothing to e that p does not already contribute on its own. To allow, however, that m does causally contribute something to e that p does not seems equivalent to saying that m has certain causal powers with respect to e that p lacks, in which case m 's causal powers cannot constitute a subset of p 's. As I see it, the appeal to proportionality thus only yields a satisfying answer to Bernstein's objection if the greater proportionality of m to e endows m with causal powers that e 's physical causes do not have. (See, however, Wilson 2011, p. 135.)

contributes to its effects, MN dualism's compatibility with (1) and its congruity with the above response to the Exclusion Argument can be reasonably counted as marks in its favor. For those dualists who wish to avoid both epiphenomenalism and conflict with (1), adopting MN dualism enables them to do so while also affording them a response to the Exclusion Argument that suits their needs. And as our discussion of Bernstein's objection has shown, dualists can help themselves to these benefits without thereby depriving themselves of the ability to say what mental causes contribute to their effects, since dualists who accept (1) can maintain that mental causes contribute to their effects by making them more modally robust and non-coincidental than they would otherwise be. In conclusion, I suggest that MN dualism boasts some significant advantages over other forms of dualism that make it worthy of further consideration than it has hitherto received.²⁸

References

- Bennett, K. (2003). Why the exclusion problem seems intractable, and how, just maybe, to tract it. *Noûs*, 37, 471–497.
- Bennett, K. (2008). Exclusion again. In J. Hohwy & J. Kallestrup (Eds.), *Being reduced: New essays on reduction, explanation, and causation*. Oxford: Oxford University Press.
- Bernstein, S. (2016). Overdetermination underdetermined. *Erkenntnis*, 81, 17–40.
- Bird, A. (2007). *Nature's metaphysics*. Oxford: Oxford University Press.
- Black, R. (2000). Against quidditism. *Australasian Journal of Philosophy*, 78, 87–104.
- Block, N. (1997). Anti-reductionism slaps back: Mental causation, reduction and supervenience. *Philosophical Perspectives*, 11, 107–132.
- Chalmers, D. (1996). *The conscious mind*. Oxford: Oxford University Press.
- Clapp, L. (2001). Disjunctive properties: Multiple realizations. *Journal of Philosophy*, 98, 111–136.
- Corry, R. (2011). Can dispositional essences ground the laws of nature? *Australasian Journal of Philosophy*, 89, 263–275.
- Dennett, D. (1995). The unimagined preposterousness of zombies. *Journal of Consciousness Studies*, 2, 322–326.
- Ellis, B., & Lierse, C. (1994). Dispositional essentialism. *Australasian Journal of Philosophy*, 72, 27–45.
- Funkhouser, E. (2002). Three varieties of causal overdetermination. *Pacific Philosophical Quarterly*, 83, 335–351.
- Gibb, S. (2010). Closure principles and the laws of conservation of energy and momentum. *Dialectica*, 64, 363–384.
- Kallestrup, J. (2006). The causal exclusion argument. *Philosophical Studies*, 131, 459–485.
- Kim, J. (1989a). Mechanism, purpose, and explanatory exclusion. *Philosophical Perspectives*, 3, 77–108.
- Kim, J. (1989b). The myth of non-reductive materialism. *Proceedings and Addresses of the American Philosophical Association*, 63, 31–47.
- Kim, J. (1993). The nonreductivist's trouble with mental causation. In J. Heil & A. Mele (Eds.), *Mental causation*. Oxford: Oxford University Press.
- Kim, J. (1998). *Mind in a physical world*. Cambridge: MIT Press.
- Kim, J. (2007). Causation and mental causation. In B. McLaughlin & J. Cohen (Eds.), *Contemporary debates in philosophy of mind* (pp. 227–242). Malden: Blackwell.
- Kripke, S. (1980). *Naming and necessity*. Harvard: Harvard University Press.
- Kroedel, T. (2013). Dualist mental causation and the exclusion problem. *Noûs*, 47, 1–19.
- Lowe, E. J. (2000). Causal closure principles and emergentism. *Philosophy*, 75, 571–585.
- Lowe, E. J. (2009). Substance dualism? A non-cartesian approach. In R. Koons & G. Bealer (Eds.), *The waning of materialism: New essays*. Oxford: Oxford University Press.
- Mellor, D. H. (1995). *The facts of causation*. London: Routledge.

²⁸ Many thanks to two anonymous referees for their helpful comments.

- Menzies, P. (2003). The causal efficacy of mental states. In S. Walter & H.-D. Heckmann (Eds.), *Physicalism and mental causation*. Exeter: Imprint Academic.
- Merricks, T. (2001). *Objects and persons*. Oxford: Clarendon Press.
- Molnar, G. (2003). *Powers: A study in metaphysics*. Oxford: Oxford University Press.
- Mumford, S. (2004). *Laws in nature*. London: Routledge.
- Mumford, S. (2006). The ungrounded argument. *Synthese*, 149, 471–489.
- Schaffer, J. (2003). Overdetermining causes. *Philosophical Studies*, 114, 23–45.
- Shoemaker, S. (2001). Realization and mental causation. In C. Gillett & B. Loewer (Eds.), *Physicalism and its discontents* (pp. 23–33). Cambridge: Cambridge University Press.
- Shoemaker, S. (2007). *Physical realization*. Oxford: Oxford University Press.
- Sider, T. (2003). What's so bad about overdetermination? *Philosophy and Phenomenological Research*, 67, 719–726.
- Sider, T. (2013). Against Parthood. In K. Bennett & D. W. Zimmerman (Eds.), *Oxford studies in metaphysics* (Vol. 8, pp. 237–293). Oxford: Oxford University Press.
- Swoyer, C. (1982). The nature of natural laws. *Australasian Journal of Philosophy*, 60, 203–223.
- White, B. (forthcoming). Conservation laws and interactionist dualism. *Philosophical Quarterly*. doi:10.1093/pq/pqw054.
- Wilson, J. (1999). How superduper does a physicalist supervenience need to be? *Philosophical Quarterly*, 50, 33–52.
- Wilson, J. (2005). Supervenience-based formulations of physicalism. *Noûs*, 39, 426–459.
- Wilson, J. (2010). What is hume's dictum, and why believe it? *Philosophy and Phenomenological Research*, 80, 595–637.
- Wilson, J. (2011). Non-reductive realization and the powers-based subset strategy. *The Monist*, 94, 121–154.
- Yablo, S. (1993). Is conceivability a guide to possibility? *Philosophy and Phenomenological Research*, 53, 1–42.