



## BLOCKERS: A REPLY TO HAWTHORNE

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Physicalism is roughly the thesis that everything is physical. The two most popular ways of formulating physicalism rigorously are the ways given by Frank Jackson and David Chalmers. The best objections, in turn, include John Hawthorne's 'blocker' objections. Hawthorne argues that, if it is possible for there to be non-physical beings or properties that prevent certain mental phenomena from existing (i.e., non-physical blockers), Jackson's and Chalmers' formulations will be inadequate. Jackson's formulation will be inadequate by virtue of not capturing all of the right physical dependence principles. Chalmers' formulation will be inadequate in so far as, when modified to define 'restricted physicalisms', such as physicalism of the mental, the restricted formulations will not capture all of the right physical dependence principles. By contrast, I argue that Hawthorne's blocker arguments are misguided on the grounds that non-physical blockers are impossible; I argue that his critique of Chalmers' formulation is unsound by virtue of falsely presupposing that restricted physicalisms require restricted formulations of physicalism (I argue that it is only necessary to define physicalism of a world); and I argue that Jackson's and Chalmers' formulations capture all of the right physical dependence principles.

**Key words:** Blockers, Physicalism.

Physicalism is roughly the thesis that everything is physical. The two most popular ways of formulating physicalism rigorously are the ways given by Frank Jackson (1994, 1998) and David Chalmers (1996). The best objections, in turn, include John Hawthorne's (2002) 'blocker' objections. Hawthorne argues that, if it is possible for there to be non-physical beings or properties that prevent certain mental phenomena from existing (i.e., non-physical blockers), Jackson's formulation will be inadequate by virtue of not capturing all of the right physical dependence principles, and Chalmers' formulation will be inadequate in so far as, when modified to define 'restricted physicalisms' – such as *physicalism of the mental* – the restricted formulations will not capture all of the right physical dependence principles.

By contrast, I argue that Hawthorne's blocker arguments are misguided on the grounds that non-physical blockers are impossible; I argue that his critique of Chalmers' formulation is unsound by virtue of falsely presupposing that restricted physicalisms require restricted formulations of physicalism; and I argue that Jackson's and Chalmers' formulations capture all of the right physical dependence principles.

### Jackson's formulation

Jackson's formulation: Physicalism is true of our world iff "Any world which is a *minimal* physical duplicate of our world is a duplicate *simpliciter* of our world" [Jackson, 1994: 28; Jackson, 1998: 12]. Understanding this requires understanding the jargon: 'minimal physical duplicate', 'duplicate simpliciter', 'physical'.



First: for Jackson, *minimal physical duplicates* are physical duplicates in the sense of being “physical property and relation for physical property and relation identical” [Jackson, 1994: 27]. This requires identity of the physical *qualities*, but doesn’t require identity of the *individuals* that instantiate them. Physical duplicates need merely be *qualitatively* physically the same. Yet not all physical duplicates are *minimal* physical duplicates. Being a minimal physical duplicate of a given world *w* requires meeting the further condition of not having any ‘ingredients’ that are not required in order to be a physical duplicate of *w*. Jackson likens the qualification of ‘minimal’ to a ‘stop’ clause in food recipes. “Of necessity the writers of recipes rely on an intuitive understanding of an implicitly included ‘stop’ clause in their recipes” [Jackson, 1994: 28]; “otherwise they would face the impossible task of listing all the things you should *not* do” [Jackson, 1998: 12–13], such as “not to add dirt to the flour . . . don’t add bats wings” [Jackson, 1994: 28], etc. Thus: “A minimal physical duplicate of our world is what you would get if you – or God, as it is sometimes put – used the physical nature of our world (including of course its physical laws) as a recipe in this sense for making a world” [Jackson, 1994: 28].

Altogether, a minimal physical duplicate of a given world *w* would be a physical qualitative duplicate of *w* that doesn’t have any extra ‘ingredients’ that are not required in order to be a physical qualitative duplicate of *w*.<sup>1</sup>

Second: for Jackson, a given world is a *duplicate simpliciter* of *w* iff it is qualitatively identical to *w* in every way (physically and otherwise). Thus a duplicate simpliciter of *w* will have all of the same qualitative truths as *w*, and it will have no other positive qualitative truths – i.e., *that’s all* the positive qualitative truths it will have. Note: here there is another ‘that’s all’ or ‘stop’ clause. Thus there are two ‘stop’ clauses in Jackson’s formulation of physicalism: the first is implied by ‘minimal’; the second is implied by ‘simpliciter’.

Third: in Jackson’s 1982, 1986, 1994 papers, he makes clear that by ‘physical’ he has in mind truths from physics, chemistry, biology or neurophysiology, and anything that follows from these truths logically or causally. In those papers, he doesn’t take a stand on whether all physical truths follow from the *microphysics*; however, in his (2001) paper co-written with Chalmers, he does hold that all physical truths follow from the microphysics. So, if we apply Jackson’s 2001 commitments backwards to understand his earlier formulations of physicalism, we can read his earlier formulations as defining the physical in terms of the microphysical.

Altogether, we can read Jackson as defining ‘physicalism’ as follows: Physicalism is true of world *w* iff any minimal microphysical qualitative duplicate world would be a qualitative duplicate simpliciter of *w*. In other words: Physicalism is true iff, necessarily, having *w*’s positive microphysical qualitative truths and no other positive basic qualitative truths implies having *w*’s positive qualitative truths and no other positive qualitative truths:

<sup>1</sup> Henceforth I will tend to keep the qualification of ‘qualitative’ implicit.



$D_{jac}$  Physicalism is true of  $w$  iff  $\square [(w$ 's positive microphysical truths and *that's all* the positive basic truths)  $\supset$  ( $w$ 's positive truths and *that's all* the positive truths)]

Intuitively: Physicalism is true iff any world that has the same qualitative arrangement of basic ingredients (assuming they're microphysical) will have the same qualitative truths.

### Chalmers' formulation

"*Physicalism* . . . is true if . . . any world that is physically indiscernible from our world contains a copy of our world as a (proper or improper) part" [Chalmers, 1996: 41–42]. Here there are three implicit qualifications. First, by "physically" Chalmers means "microphysically." For he writes: "talk of physical properties is implicitly restricted to the class of fundamental properties unless otherwise indicated. I will sometimes speak of 'microphysical' or 'low-level physical' properties to be explicit" [Chalmers, 1996: 33]. Second, Chalmers means the 'if' to be read as an 'iff' so as to make it a definition, and not merely to indicate a sufficient condition. Third, by 'copy' Chalmers means qualitative copy; for, like Jackson, he is interested in qualitative properties, not the individuals or *haecceities* that have them.

Altogether, Chalmers defines 'physicalism' as follows: Physicalism is true of our world iff every microphysically qualitatively indiscernible world has a qualitative copy of our world as a part. Generalizing on our world: Physicalism is true of a given world  $w$  iff every world that is microphysically qualitatively indiscernible from  $w$  has a qualitative copy of  $w$  as a part, hence iff every world that is microphysically qualitatively indiscernible from  $w$  has *at least* the qualitative positive truths of  $w$ . That is:

$D_{cha}$  Physicalism is true of  $w$  iff  $\square [(w$ 's positive microphysical truths and *that's all* the positive microphysical truths)  $\supset$  ( $w$ 's positive truths)]

Intuitively: Physicalism is true iff any world that has the same qualitative arrangement of microphysical ingredients will have *at least* the same positive qualitative truths.

Note that, by contrast with  $D_{jac}$ ,  $D_{cha}$  only gives one 'stop' clause—and it is a different one. Namely, whereas  $D_{jac}$  says "*that's all* the positive basic truths" (microphysical or micro-nonphysical),  $D_{cha}$  says "*that's all* the positive microphysical truths." *Ceteris paribus*, this makes physicalism *prima facie* less likely to be true on  $D_{cha}$ ! For, on  $D_{cha}$ , physicalism's truth requires that our world's mental properties be instantiated in any microphysically indiscernible world, regardless of which basic nonphysical truths obtain. Hawthorne (2002) emphasizes this difference, as we will see next.



## Hawthorne's blocker arguments

Hawthorne (2002) gives 'blocker' arguments against  $D_{jac}$  and  $D_{cha}$ . Understanding them requires understanding what he means by a 'blocker'. A blocker would be any being or property<sup>2</sup> whose instantiation prevents ('blocks') the instantiation of certain mental properties. For instance, there might be some brain state  $S$ , a blocker  $B$ , and a mental state  $M$ , such that  $S \& \sim B$  entails  $M$ , but  $S \& B$  entails  $\sim M$ . In such a case,  $B$  is a blocker with respect to  $M$ .

Hawthorne is particularly interested in the possibility of *non-physical* blockers. A non-physical blocker would be a non-physical property whose instantiation prevents the instantiation of some mental property. Hawthorne doesn't profess to know whether non-physical blockers are possible; he is agnostic on this matter. Nevertheless, he argues that we should not define physicalism in such a way that *assumes* they are impossible; for, as he puts it: "when defining physicalism, one should not take a stand on controversial modal issues about which, intuitively, the materialist qua materialist has no commitments" [Hawthorne, 2002: 110].

Understanding Hawthorne's blocker arguments also requires grasping the physical dependence principle that he thinks any suitable definition of physicalism should capture. He keys us in on this physical dependence principle as follows: "Materialists about mentality will not tolerate the existence of mental facts, positive or negative, that have a robust explanation that appeals to immaterial entities" [Hawthorne, 2002: 109]. Given this, Hawthorne must endorse the following physical dependence principle:

PD Physicalism is true only if every truth (positive or negative) depends solely on physical truths (positive or negative), hence only if every (instantiated or non-instantiated) mental property depends solely on (instantiated or non-instantiated) physical properties.

According to PD, physicalism is false if any positive truths depend on the absence of any non-physical blockers. Thus physicalism is false if some positive mental truth obtains partly because some negative non-physical blocker truth obtains. That is, physicalism is false if some mental phenomenon depends on the absence of some non-physical blocker; physicalism would be false given this kind of *dependence on absence*. More precisely,

DA Physicalism is false if there is a positive mental truth  $M$  and a possible non-physical blocker  $B$  such that  $M$  obtains partly because  $B$  doesn't obtain.

DA gives a recipe for a counterexample to physicalism. In a counterexample of this sort, some positive truth would not depend solely on physical

<sup>2</sup> I say 'being or property', but for simplicity I will tend to speak of blockers as properties.



truths, but would depend at least partly on the non-existence of some non-physical blocker. (Hawthorne assumes the non-existence of a non-physical blocker would be a non-physical truth.)

Hawthorne judges that any suitable definition of physicalism should imply PD; so, since PD straightforwardly implies DA, he is committed to holding that physicalism should imply DA. Yet  $D_{jac}$  doesn't imply DA. For  $D_{jac}$ , taken as a 'physicalism algorithm' that 'checks' a given class of worlds for counterexamples to physicalism, doesn't 'check' the microphysically indiscernible worlds that might have non-physical blockers; recall: it only 'checks' the *minimal* microphysical duplicates. Thus, in so far as  $D_{jac}$  checks for necessities between various kinds of physicality and mentality, it only checks for necessities across certain worlds that lack non-physical blockers. So, as Hawthorne puts it:  $D_{jac}$  might be able to correctly assess whether a world's positive physical truths P "weakly necessitate" [Hawthorne, 2002: 103 and 111 fn. 1] its positive mental truths M in the sense that all of the P-worlds that don't have blockers are M-worlds; however, if non-physical blockers are possible,  $D_{jac}$  won't correctly assess whether P "metaphysically necessitate [s]" [Hawthorne, 2002: 103, 111 fn. 1] M in the sense that all the P-worlds (including those with non-physical blockers) are M-worlds.

Although  $D_{jac}$  does not imply DA,  $D_{cha}$  does imply DA. For  $D_{cha}$  does not require that any counterexample to physicalism's truth be a *minimal* microphysical duplicate of  $w$ ; it merely requires that it be *microphysically indiscernible* from  $w$  regardless of whether it is discernible from  $w$  in non-physical ways. Thus  $D_{cha}$  allows that worlds with non-physical blockers *may* function as counterexamples to physicalism's truth of  $w$ , as such worlds may be microphysically indiscernible from  $w$ . Hawthorne is happy with  $D_{cha}$  in this regard.

Yet Hawthorne nevertheless finds fault with  $D_{cha}$ . Namely,  $D_{cha}$ , like most definitions of physicalism, only formulates what it would take for physicalism to be true of a world, whereas many philosophers also want a formulation of what it would take for physicalism to be true of a 'proper part' of a world—say, the conscious beings. Thus he writes: "Philosophers are interested not merely in providing an account of physicalism *simpliciter*, but also an account of physicalism about a certain class of properties P (mental properties, for example) – call these 'restricted physicalisms'" [Hawthorne, 2002: 108].

Hawthorne's only gripe with  $D_{cha}$ , then, is that, if  $D_{cha}$  were to be suitably modified to say what it would take for physicalism to be true of some restricted class of properties—some 'proper part' of the world—the modified version would have a blocker problem. For the way Chalmers would modify  $D_{cha}$  to test for 'restricted physicalisms' is as follows: "It is clear how Chalmers thinks such a definition would go. Physicalism about, say, the mind, is true just in case every world physically indiscernible from the ac-



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tual worlds [sic] will have at least the positive mental facts that obtain at the actual world” [Hawthorne, 2002: 108].<sup>3</sup> That is:

$rD_{cha}$  Physicalism is true of the mental truths iff every physically indiscernible world has at least the positive mental facts that obtain in our world.

Moreover,  $rD_{cha}$  implies the following restricted version of PD:

$rPD$  Physicalism is true of the mental truths only if the mental truths (positive or negative) depend solely on physical truths (positive or negative), hence only if every (instantiated or non-instantiated) mental property depends solely on (instantiated or non-instantiated) physical properties.

Now Hawthorne finds fault with  $rD_{cha}$ . For suppose there is a non-physical blocker that blocks the instantiation of some mental truth. In that case,  $rPD$  will rightly judge physicalism to be false of the mental, since there is a negative mental truth that doesn't depend solely on positive or negative physical truths, but depends partly on the existence of the non-physical blocker. Yet, as we will see,  $rD_{cha}$  is not guaranteed to yield this same correct result.

To give an example of a case where  $rPD$  yields the correct result but  $rD_{cha}$  yields the incorrect result, suppose a given world  $w$  has some positive mental truths. Now consider the set of worlds that are microphysically indiscernible from  $w$ : say,  $\{w, w_1\}$ . Suppose that, of these worlds,  $w$  has exactly one non-physical blocker,  $B$ , and  $B$  blocks some mental property, whereas  $w_1$  doesn't have any non-physical blockers. That is, suppose the distribution is as follows:

$w$ 's non-physical blockers:  $B$

$w_1$ 's non-physical blockers: none

Is physicalism true of  $w$ 's mental properties?  $rPD$  and  $rD_{cha}$  disagree.  $rPD$  judges physicalism to be **false** of  $w$ 's mental properties, since  $w$  has a negative mental truth that depends partly on the existence of its non-physical blocker,  $B$ . Yet  $rD_{cha}$  judges physicalism to be **true** of  $w$ 's mental properties, since all of the worlds that are physically indiscernible from  $w$  (i.e.,  $w$  and  $w_1$ ) have *at least* the mental properties of  $w$ . So, given the possibility of non-physical blockers,  $rD_{cha}$  and  $rPD$  can yield contradictory results. Hawthorne takes this as a reason to reject  $rD_{cha}$ . Indeed, he goes further and takes this problem for  $rD_{cha}$  as an indirect problem for  $D_{cha}$  on the grounds that  $rD_{cha}$  is how  $D_{cha}$  would be 'suitably modified' to define physicalism of the mental.

<sup>3</sup> Analogous general schema: Physicalism is true of the  $X$  truths iff every physically indiscernible world has at least the positive  $X$  truths that obtain in our world.



In sum, there are two non-physical blocker cases Hawthorne is worried about. The first is a case where a positive mental truth obtains partly because of the non-existence of some non-physical blocker. This is the option that threatens  $D_{jac}$ . In such a case, PD implies that physicalism is false, since there is an instantiated mental property that depends partly on the non-instantiation of some non-physical blocker. The second is a case where a negative mental truth obtains partly because of the instantiation of a non-physical blocker. This is the option that threatens  ${}_rD_{cha}$ . In such a case,  ${}_rPD$  implies that physicalism is false, since there is a non-instantiated mental property whose non-instantiation depends partly on the instantiation of some non-physical blocker.

According to Stoljar's (2009) *Stanford Encyclopedia of Philosophy* entry for 'Physicalism', "[Hawthorne's] blockers problem... is an open question in the literature."

## Objections to Hawthorne's blocker arguments

I argue that Hawthorne's blocker arguments are misguided, and that the blocker argument that is supposed to threaten  $D_{cha}$  is unsound.

Hawthorne's blocker arguments are misguided. For non-physical blockers are incoherent, hence impossible, and their impossibility renders Hawthorne's blocker arguments misguided on the grounds that they criticize definitions of physicalism for not accommodating the possibility of things (non-physical blockers) that aren't even possible in the first place.

My argument that non-physical blockers are impossible requires that they be incoherent. Their incoherence is partly due to the nature of physics. I will not claim to give *the* definition of physics; I will simply stipulate a definition that is useful for my purposes. And I am not going to define physics as the fundamental science of everything; for on that definition physicalism would be trivially true. I want a definition of physics according to which the question of physicalism is non-trivial. Thus I will follow Chalmers' practice of avoiding this trivialization by defining physics as "the fundamental science developed to explain observations in the *external world*" [Chalmers, 1996: 118–119, italics added].<sup>4</sup> More precisely, I will define science as the science of the fundamental beings and processes in the external world. By defining physics as being about the external world, this leaves open the possibility that science might not adequately study the 'internal world' of conscious experience. This way, we can imagine physicalism being false: physicalism will be false if our world's conscious expe-

<sup>4</sup> Accordingly, we should read  $D_{jac}$  and  $D_{cha}$  as implicitly speaking, not simply of microphysical truths, but of microphysical truths in the external world; likewise, we should read  $D_{jac}$  as speaking, not simply of basic truths, but of basic truths in the external world.



riences are not entailed by the external world's fundamental beings and processes.

Given this definition of 'physics', consider an arbitrary blocker B. If B is a fundamental being or process in the external world, B will be physical and therefore won't be a non-physical blocker. Likewise, if B is a non-fundamental being in the external world but is entailed by the fundamental beings and processes in the external world (which are themselves physical on this definition of 'physics'), B will again be physical. By contrast, there are only two ways that B might be non-physical.

First, B might be a non-fundamental being in the external world that isn't entailed by the external world's fundamental beings and processes: in such a case B would be said to *strongly emerge* from those fundamental beings and processes. This is an incoherent option because of the kind of bruteness that it would involve. Not all bruteness is bad: presumably every possible world has a brute micro state—brute facts about which fundamental beings and processes exist and how they're arranged. We can call this a bruteness of the micro-world. Strong emergence, however, would be a bruteness of what *follows* from the micro-world. It would be a kind of bruteness where the micro-world *makes* the macro-world happen, but without entailing it. This is perhaps not flatly contradictory, as in theory we can at least entertain proposals such as that there are nomologically necessary connections that are not metaphysically necessary. Maneuvers like this, however, require assigning causal work to laws. The idea would be that different possible laws can serve to make different possible macro-worlds supervene on the same base micro-world. On this option, laws would be blockers. It is, however, incoherent to assign causal work to laws, as laws are descriptions of patterns, not reasons for patterns. Or, perhaps better: even if we were to assign causal work to the laws that bridge external micro-worlds with their corresponding external macro-worlds, the laws would nevertheless have to be part of the external micro-world in order to do that, in which case they would be trivially entailed by the external world's fundamental beings and processes, in which case they would be physical blockers, contrary to hypothesis. So, the option that B is a non-fundamental being in the external world that isn't entailed by the external world's fundamental beings and processes is inconsistent, as it requires either that impotent laws are potent, or that potent laws are both entailed and not entailed by the external world's fundamental beings and processes. Either way there is inconsistency; so this option is impossible.

Second, B might be no part of the external world. This would require that B only be part of an internal world; B would be entirely mental. Since the other option for how B might be non-physical is impossible, this is the only way left that B might be non-physical. But could a purely mental being or process function as a blocker? On the face of it, one might hold that ghosts or gods could be entirely mental blockers. Upon deeper reflection, however, it seems that neither ghosts nor gods could be entirely men-





tal. To be entirely mental, they would have to be absent in the external world—completely absent, not simply hidden relative to some epistemic agents. Yet ghosts are traditionally imagined as floating around, manipulating billiard balls when nobody is looking, haunting houses, and doing other things in the external world: this requires that ghosts be physical by our definition of ‘physics’. It doesn’t matter that ghost hypotheses are not currently postulated by scientists; for the *true physics* doesn’t have to agree with our educated guesses as to the true physics. Nor would it matter if ghost hypotheses are not falsifiable, as that wouldn’t preclude ghosts from being postulated by the true physics; at best, it would preclude ghosts from being postulated by responsible scientists. All that matters, for our purposes is that ghosts are in the external world and are therefore physical. If they are fundamental, the true physics postulates their existence. If they are non-fundamental, the fundamental beings and processes entail them. Either way, they are physical, in which case either way they are not *non-physical* blockers, contrary to hypothesis. So, the option that there are ghosts who serve as non-physical blockers is inconsistent and therefore impossible.

Gods, too, may be considered part of the external world. Gods have been conceived as residing in outer space, watching us from above and hurling down rain and lightning bolts. Likewise, some gods have been conceived as hiding in dimensions that mainstream physicists haven’t been able to find; they, too, would count as residing in the external world—namely, in its hidden folds. What, then, would it take for a god to not be in the external world? At a minimum, this would require the following: such a god either (a) *resides in* a conscious experience, or (b) *literally is* a conscious experience. Either way, the conscious experience must not be in the external world or be entailed by anything in the external world; otherwise it would be physical. Thus, for a god to be a non-physical blocker, it would have to either be in, or literally be, a conscious experience. The same would be true of any non-physical blocker.

More generally, then, for *anything* to be a non-physical blocker, it would have to either reside in, or else literally be, a conscious experience. Yet it is difficult to make sense of how such a being might do its job of blocking mental properties. Recall the way blocking would work: there would be some physical property P, some blocker B, and some mental property M, such that  $P \& \sim B$  entails M, but  $P \& B$  entails  $\sim M$ . Yet we have concluded that non-physical blockers must either reside in, or literally be, conscious experiences. Thus, for there to be a non-physical blocker, there must be some physical property P, some conscious experience C, some (proper or improper) part *c* of C, and some mental property M such that  $P \& \sim c$  entails M, but  $P \& c$  entails  $\sim M$ . In such a case, *c* serves as a blocker with respect to M. How might *c* do its blocking work? One option is that *c* is a conscious experience that is roughly a ‘blob’ that goes around interfering with other conscious (or otherwise conscious) beings or processes. For instance, Fred might be thinking about pancakes and all of a sudden he starts thinking



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about roller coasters due to the interference of a conscious experience that came ‘crashing in’ or that in some way interfered with his conscious experience. This option is not totally absurd on the face of it; however, the ‘blobbiness’ and interference implies that it would be part of an arena, hence part of the external world, which would render it physical. Thus *c* could not be a *non-physical* blocker. The alternative option is that *c* is a conscious experience, or something that resides in a conscious experience, but where *c*’s blockings happen in a way that doesn’t require that *c* or *c*’s conscious experience be physical. Here there are two options: (i) the blocking happens by magic, or (ii) the blockings consist simply in the trivial logical consequence that *c* precludes its own negation. Yet magic is incoherent; so we can dismiss that option as impossible. Meanwhile, the latter kind of blocking work—that *c* precludes its own negation—is irrelevant, as such a blocker would not thereby prevent a *positive* mental property *M* from arising from a physical property *P*; the only blocking work *c* could do would be to preclude  $\sim c$ , which would be to block a negative truth. Thus any such blocker would fail to block a positive mental truth. This kind of blocker is therefore not the kind of blocker we’re looking for; it’s not the kind of blocker that might, as Hawthorne puts it, serve as a “wedge”<sup>5</sup> between the physical and the mental.

Altogether, we need not worry about the possibility of *non-physical blockers* when formulating physicalism. For any such blocker, whether it be a ghost, a god, or anything else, it would either be part of the external world, in which case it would be physical (hence not non-physical, contrary to hypothesis), or else it would not be part of the external world, in which case its blocking work would either be magical (hence incoherent) or logically trivial (hence irrelevant). The first option is inconsistent: such blockers would be physical and non-physical. The second option is incoherent or irrelevant. The only option that is neither inconsistent nor irrelevant is incoherent: this is the option that non-physical blockers are parts of conscious experiences and do their blocking work by magic. I certainly don’t want to be rash in assuming that magic’s incoherence renders it impossible. Perhaps something that seems incoherent to me can be possible after all. Indeed, I am sympathetic with Hawthorne’s point that “when defining physicalism, one should not take a stand on controversial modal issues about which, intuitively, the materialist qua materialist has no commitments” [Hawthorne, 2002: 110]. By contrast with Hawthorne, however, I note that controversies come in degrees, and I further suppose that, the more incoherent an option is, the less controversial it should be to dismiss it as an impossibility. This leads me to judge that, since magic is *highly* incoherent, to that extent we should dismiss it as an impossibility. As such, non-physical blockers should be dismissed as impossible.

<sup>5</sup> Hawthorne, 2002: 105.



Since non-physical blockers are impossible, Hawthorne's blocker arguments have no—or exceedingly minimal—force unless, by coincidence, he is right that any tenable formulation of physicalism should incorporate PD. He is right that physicalism should imply a physical dependence principle of some sort. Yet, since non-physical blockers are impossible, PD is presumably overkill. In its place, I argue that the following physical dependence principle, which doesn't imply PD, is strong enough:

PD\* Physicalism is true only if every (instantiated) micro property is microphysical.

PD\* captures the physical dependence intuition that materialistic worlds cannot have truths that depend on the instantiation of micro-*non-physical* properties. I doubt a definition of physicalism should have to imply a stronger physical dependence principle than this. If I am right that any tenable formulation of physicalism should imply PD\*, then  $D_{jac}$  and  $D_{cha}$ , if they are tenable, should imply PD\*. I will now show they imply PD\*.

$D_{jac}$  implies PD\*. For PD\* is equivalent to the thesis that physicalism is false of any world that has micro-nonphysical properties. Yet  $D_{jac}$  implies this. After all, for any world that has micro-nonphysical properties, there will be a *minimal* microphysical duplicate world that lacks micro-nonphysical properties and thus isn't a duplicate simpliciter.

The only remaining question is whether PD\* is strong enough to capture *all* of the right physical dependence intuitions about physicalism. Yet, given the plausibility that non-physical blockers are impossible, it is difficult to see what other physical dependence intuitions should be captured. Thus PD\* seems sufficient; thus  $D_{jac}$  seems to imply all the right physical dependence principles. Thus  $D_{jac}$  seems safe from Hawthorne's blocker critique.

What about  $D_{cha}$  and  ${}_rD_{cha}$ ? Do they imply all the right physical dependence principles? Like  $D_{jac}$ ,  $D_{cha}$  implies PD\*. For PD\* is equivalent to the thesis that physicalism is false of any world that has micro-nonphysical properties. Yet  $D_{cha}$  implies this. After all, for any world  $w$  that has micro-nonphysical properties, there will be a microphysically indiscernible world that does not have all of  $w$ 's positive truths: at any rate, I just argued no *minimal* microphysical duplicate will have non-physical properties.

Meanwhile,  ${}_rD_{cha}$  does not imply PD\*, as  ${}_rD_{cha}$  restricts its claim to just the mental facts instead of all the facts. Yet  ${}_rD_{cha}$  does imply the following restricted version of PD\*:

${}_rPD^*$  Physicalism is true of the mental only if every basic property (upon which some mental property depends (wholly or partly)) is microphysical.

${}_rD_{cha}$  does not seem to need a physical dependence principle stronger than  ${}_rPD^*$ , and yet  ${}_rD_{cha}$  implies  ${}_rPD^*$ . For  ${}_rPD^*$  says that physicalism is false of the mental in any world where there are micro-nonphysical proper-



ties upon which some mental properties depend.  ${}_rD_{cha}$  implies this. After all, for any world  $w$  that has micro-nonphysical properties upon which some mental properties depend, there will be a microphysically indiscernible world that does not have all of  $w$ 's positive mental truths. For there will at least be a minimal microphysical duplicate of  $w$  that will be microphysically indiscernible from  $w$  but won't have  $M$ , since, if it did, it wouldn't be a *minimal* microphysical duplicate. Thus a minimal microphysical duplicate of  $w$  wouldn't have  $w$ 's positive mental truths that depend on its micro-nonphysical properties, since a minimal microphysical duplicate wouldn't have any micro-nonphysical properties.

Altogether,  ${}_rPD^*$  gives a necessary condition of physicalism of the mental; but any counterexample to physicalism of the mental on  ${}_rPD^*$  would be a counterexample to physicalism of the mental on  ${}_rD_{cha}$ ; thus  ${}_rPD^*$  is a necessary condition of  ${}_rD_{cha}$ ; i.e.,  ${}_rD_{cha}$  implies  ${}_rPD^*$ .

Alas, there is one further consideration to strengthen my critique of Hawthorne's blocker problem for  ${}_rD_{cha}$ . Namely, even if one is interested in restricted physicalisms, I argue that this doesn't require giving *restricted formulations* of physicalism. On the one hand, perhaps some conglomerations of properties can be instantiated in worlds where they are the only instantiated properties in the world. That is, perhaps there can be a world consisting of precisely that conglomeration of instantiated properties and nothing else. In such a case, since  $D_{cha}$  defines physicalism of a *world*, it thereby defines physicalism of that restricted class of instantiated properties, since it defines physicalism of a world consisting of just that conglomeration of instantiated properties. On the other hand, even if some conglomerations of properties cannot be instantiated in worlds that have no other instantiated properties, it is not clear that such conglomerations deserve a restricted formulation of physicalism that gives conditions for whether physicalism is true of them alone. For, in so far as they cannot exist in a world all by themselves, they are necessarily connected in some way to other properties. Thus, if we are going to ask whether physicalism is true of them, presumably we should instead ask whether physicalism is true of a minimal conglomeration that they are connected with. But, in so far as a minimal conglomeration is defined as needing to be able to be instantiated all by itself in a world of its own, then once again we don't need a restricted formulation of physicalism; all we need is a formulation of physicalism of a world.

Altogether,  $D_{cha}$  implies a physical dependence principle,  $PD^*$ , that seems strong enough to capture appropriate physical dependence intuitions with respect to physicalism's truth of a world. Meanwhile, restricted formulations of physicalism are unnecessary since any minimal conglomeration of properties could exist in a world of its own anyway and therefore be covered by a definition of physicalism of a world. Furthermore, even if restricted formulations of physicalism were necessary,  ${}_rD_{cha}$  implies  ${}_rPD^*$ , which seems to capture the right physical dependence intuitions with respect to physicalism's truth of the mental.



## Conclusion

Hawthorne's blocker arguments serve as problems for the two most popular ways of formulating physicalism rigorously: Frank Jackson's formulation,  $D_{jac}$ , and David Chalmers' formulation,  $D_{cha}$ . Yet his blocker arguments are misguided since non-physical blockers are impossible, and his blocker argument against  $D_{cha}$  is unsound since it falsely presupposes that restricted materialisms require restricted formulations of materialism. Finally, he is wrong to think  $D_{jac}$  and  $D_{cha}$  don't capture the right physical dependence principles. For  $D_{jac}$  and  $D_{cha}$  each imply the physical dependence principle,  $PD^*$ , which, given the impossibility of non-physical blockers, is a sensible replacement to  $PD$ ; likewise, even if restricted formulations of physicalism are required,  ${}_rD_{cha}$  implies the restricted physical dependence principle,  ${}_rPD^*$ , which, given the impossibility of non-physical blockers, is a sensible replacement to  ${}_rPD$ . In these ways, Hawthorne's blocker arguments have been blocked.

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