

Stoljar's Dilemma and Three Conceptions of the Physical: A Defence of the Via Negativa

Raphaël Fiorese¹

Received: 22 April 2014 / Accepted: 6 May 2015
© Springer Science+Business Media Dordrecht 2015

Abstract Physicalism is the thesis that everything is physical. But what does it mean to say that everything is *physical*? Daniel Stoljar has recently argued that no account of the physical is available which allows for a formulation of physicalism that is both possibly true and deserving of the name. As against this claim, I argue that a version of the *via negativa*—roughly, the view that the physical is to be characterised in terms of the nonmental—provides just such an account.

1 Introduction

Physicalism is the thesis that everything is physical; that the nature of our world is wholly exhausted by its physical nature; that there is nothing ‘over and above’ the physical. But what does it mean to say that everything is *physical*? If physicalism is to make for a controversial and nontrivial thesis, then a clear enough delineation of the physical ought to be provided which rules out some (possible if not actual) phenomena as nonphysical. For, as Montero puts it, “if we cannot even conceive of something being nonphysical, it is difficult to grasp what physicalists could be arguing for—to say nothing of what they could be arguing against” (2001: 62). Nor is the concern that of physicalists alone: dualists, idealists, and other parties to the debates over physicalism and the mind–body problem are no less required to make it clear what it is that they are arguing for.

✉ Raphaël Fiorese
raphael.fiorese@monash.edu; raphael.fiorese@gmail.com

¹ Philosophy Department, School of Philosophical, Historical and International Studies, Building 11, Monash University, Melbourne, VIC 3800, Australia

Daniel Stoljar has recently defended the view (2010)¹ that no account of the physical is available which allows for a formulation of physicalism that is both possibly true and deserving of the name. I build on Stoljar's argument to draw a more optimistic conclusion; namely, that a version of what has come to be known as the *via negativa* provides just such an account. The plan is as follows. I first introduce Stoljar's Dilemma (Sect. 2). The dilemma rests on the premise that in formulating physicalism, one ought to rely either on what Stoljar calls the "Starting Point" conception of the physical or some liberalisation of it, neither of which, Stoljar argues, will do. In Sects. 3 and 4, I review Stoljar's arguments against Starting Point Physicalism (SPP) and its liberalisations. I am largely in agreement with Stoljar here. Indeed, I shall strengthen the case against both SPP and its liberalisations. While Sects. 3 and 4 have a rather negative cast, they play an important role in my defence of the *via negativa*. For one thing, consideration of SPP and its liberalisations allows me to collect a number of data points regarding philosophers' judgements about the conditions under which physicalism holds. I then put forth (Sect. 5) the *via negativa* as a plausible explanation for those judgements. For another, the fact that SPP and its liberalisations, which are the main alternatives to the *via negativa*, prove unable to account for those judgements increases the plausibility of the *via negativa*. In Sect. 6, I reply to two objections. In Sect. 7, I focus at greater length on a third objection and in the process adduce further considerations in support of the *via negativa*.

2 Necessitation Physicalism and Stoljar's Dilemma

I start by spelling out two assumptions. First, I shall be assuming, following Stoljar, that physicalism is adequately construed in terms of (metaphysical) necessitation, where for any properties F and G , F necessitates G just in case, in all possible worlds, if F is instantiated, so is G . Second, I shall be assuming, again following Stoljar, that the physicalist thesis quantifies over instantiated properties. Putting these two points together, I shall thus be assuming, with Stoljar, that:²

[**Necessitation Physicalism**] Physicalism is true if and only if every instantiated property is either physical or else is necessitated by some instantiated physical property. (37)

While Necessitation Physicalism provides us with the "logical form of the thesis of physicalism" (39), it says nothing as to how "physical" is to be understood. Stoljar assesses various versions of Necessitation Physicalism, each differing from the other as regards the conception of the physical with which it operates. On that basis, he mounts the following argument for the bold claim that there is no version of physicalism that is both true and deserving of the name:

¹ All subsequent undated page references are to this book.

² None of the substantial points made in this paper rest on these assumptions. In effect then, the reader is free to treat references to the necessitation relation or to instantiated properties as placeholders for whatever relation (realisation, supervenience, grounding, etc.) or entities (objects, facts, etc.) she favours.

[Stoljar's Dilemma]

- (P1) In formulating physicalism, we must operate either with the Starting Point View or some liberalized version of the Starting Point View.
- (P2) If we operate with the Starting Point View, it is possible to articulate a version of physicalism that deserves the name, but that version is false.
- (P3) If we operate with a liberalized version of the Starting Point View, it is possible to articulate a version of physicalism that is true, but that version does not deserve the name, because either:
 - (a) it is true at possible worlds where no version of physicalism should be true; or
 - (b) it is false at possible worlds where no version of physicalism should be false.
- (C) There is no version of physicalism that is both true and deserving of the name. (90)

A word of clarification is in order. Stoljar's phrasing—of (C) in particular—might suggest that no reply to his challenge will be adequate which fails to show that some version of physicalism is both *true* and deserving of the name. But because our concern is with the formulation rather than the truth of physicalism, what matters for our purposes is only that we be able to provide a formulation of physicalism which is both *possibly* true and deserving of the name. The notion of possibility at issue here (“possibly true”) is an epistemic one. Even those who hold that physicalism is false don't hold that it is trivially or obviously false. Conversely, those who hold that physicalism is true don't hold that it is trivially or obviously true. Both sides of the debate take themselves to be making nontrivial claims; claims with respect to which reasonable people might, and typically do, disagree. Any adequate formulation of physicalism ought to be sensitive to that fact. What is needed, then, is a characterisation of physicalism according to which physicalism at least appears to be possibly true; a characterisation consistent with the fact that there seems to be a genuine or live question as to whether physicalism is true. But one need not in addition provide an argument that physicalism so defined in fact holds. The project of formulating physicalism isn't that of arguing for its truth.

Stoljar's Dilemma is a valid argument. In the next section, I examine (P2). I shall argue that Starting Point Physicalism is not only, as per (P2), false (or, rather, most likely false), but also, as against (P2), undeserving of the name.

3 Premise (P2): Starting Point Physicalism

(P2) states that if one operates with the starting point view, it is possible to articulate a version of physicalism that deserves the name, but that version is false. The starting point view holds that:

[Starting Point Physical Property] *F* is a physical property if and only if:

- (a) Object: *F* is one of the distinctive properties of intuitively physical objects; and
- (b) Theory: *F* is expressed by a predicate of a physical theory; and
- (c) Objectivity: *F* is objective or intersubjective; and
- (d) Method: *F* is a property we could come to know about through the methods distinctive of the natural sciences; and
- (e) Contrast: *F* is not one of the distinctive properties of souls, ectoplasm, ESP, etc. (adapted from pp. 56–57)

Accordingly, Starting Point Physicalism is the thesis that:

[Starting Point Physicalism (SPP)] Physicalism is true if and only if every instantiated property is necessitated by some instantiated starting point physical property. (57)

Does SPP make for an adequate characterisation of physicalism, a characterisation which is both possibly true and deserving of the name? Consider, first, whether SPP is deserving of the name. In order to address this question, Stoljar resorts to the method of cases: any proposed characterisation of physicalism will be deemed to be deserving of the name to the extent that our evaluation of whether it is true or false at a number of possible worlds accords with our intuitive judgements as to whether physicalism “as we [philosophers] normally understand it” (58) holds at those worlds. Consider, then, with Stoljar, the following worlds:

[Atomist World (Aw)] This is a possible world at which every instantiated property is necessitated by some property distinctive of classical atoms. The properties instantiated at this world duplicate whatever properties are instantiated at the actual world, insofar as this is possible.³ (58)

[Atomist World with Gravity (AGw)] This is a possible world at which every property is necessitated by some property distinctive of classical atoms, with this twist: at this world, atoms instantiate the further property of universal gravitation, a property that makes them behave in peculiar ways. (58)

[Modern Physics World (MPw)] This is a possible world at which every property is necessitated by properties distinctive of the things postulated by modern physics. (62)

It is virtually uncontroversial that physicalism as we normally understand it is true at Aw, AGw, and MPw. As Stoljar notes, Aw is “something like the paradigm case of a world in which physicalism is true” (60), and “contemporary physicalists hold that [MPw] is (near enough) the actual world” (66). Moreover, given that AGw

³ This last clause—that the properties instantiated at the possible world at issue duplicate whatever properties are instantiated at the actual world—applies to all the possible worlds we shall be encountering. I henceforth omit it for brevity’s sake.

is just like Aw save for the fact that it instantiates a property—gravitation—which is also recognised by modern physics, it is hard to see why anyone would deny that physicalism holds at AGw.

But does SPP hold at these worlds? Is it the case, in other words, that every instantiated property at Aw, AGw, and MPw, is necessitated by a starting point physical property? In addressing this question, I shall focus on Object [i.e., condition (a) of Starting Point Physical Property] and dispense with the question of whether conditions (b)–(e) are satisfied by the ‘necessitating properties’ at Aw, AGw, and MPw.^{4,5} Our concern, therefore, is whether every instantiated property at Aw, AGw, and MPw, is necessitated by a property distinctive of intuitively physical objects. But what exactly is it for a property to be distinctive of intuitively physical objects?

Intuitively physical objects, says Stoljar, are those entities—e.g., rocks or washing machines (52)—which possess (enough of) such properties as solidity, bulk, size, shape, spatial extension, the capacity to move and be moved, and the capacity to undergo various processes such as bending, breaking, and burning (52). And these properties in turn are the distinctive properties of intuitively physical objects. In other words, the distinctive properties of intuitively physical objects are the commonsensical properties of ordinary objects; the properties which one comes to ascribe to the intuitively physical objects on the basis of one’s everyday dealings with such objects rather than on the basis of any developed theoretical knowledge.

With these clarifications in place, let us return to the question of whether Aw, AGw, and MPw satisfy Object. According to Stoljar (59–60), Object is satisfied at Aw because classical atoms are to be conceived roughly as miniature rocks, i.e., as intuitively physical objects, and thus as instantiating the commonsensical properties of intuitively physical objects. By contrast, Object fails at MPw, for “the things that modern physics tells us about are not intuitively physical objects, and do not have the properties distinctive of intuitively physical objects” (65). Finally, Stoljar thinks it is unclear whether Object is satisfied at AGw, for it is unclear “whether universal gravitation counts as one of the distinctive properties of ordinary physical objects” (62).

Grant Stoljar’s assessment of whether Object is satisfied at Aw, AGw, and MPw. Does this assessment support the claim, as per (P2), that SPP is deserving of the name? No, for as we saw (and as Stoljar agrees), it is clear that MPw is a world at which physicalism as we normally conceive of it is true. Yet by Stoljar’s own admission, Object (hence SPP) fails at MPw. But surely no version of physicalism should be deemed to be deserving of the name which is false at a world at which physicalism as we normally understand it is *clearly* true. The assumption underpinning our use of the method of cases is—as it should be—that a proposed characterisation of physicalism will be confirmed (i.e., deemed to be deserving of

⁴ I shall often leave out the qualification “by the necessitating properties at world *w*”, and speak instead of condition (x) being satisfied at *w* [meaning that it is the necessitating properties at *w* which satisfy (x)]. Talk of necessitating properties should not be taken to imply a commitment to the idea of a fundamental or bottom level (see Sect. 5.1).

⁵ It is sufficient for my present purpose to focus on Object since, as we shall see, Object fails at MPw, and that is enough to show that SPP isn’t deserving of the name.

the name) to the extent that our judgements as to whether it holds at various possible worlds accord with our judgements as to whether physicalism as we normally understand it holds at these worlds (see p. 58). Indeed, this assumption clearly underlies premise (P3) of Stoljar's Dilemma. Because our judgements regarding the conditions under which SPP holds fail to accord with our judgements regarding the conditions under which physicalism as we normally understand it holds, SPP just isn't deserving of the name.⁶

In other words, because MPw is a world at which physicalism as we normally understand it clearly holds yet at which Object isn't satisfied, satisfaction of Object at a world isn't necessary in order for physicalism to be true at that world.⁷ It is not necessary, in order for a property to qualify as physical in the sense at issue in debates over physicalism, that it be a property distinctive of intuitively physical objects.

Does Object provide a sufficient condition? One will be hard-pressed, I think, to conjure up a scenario whereby every instantiated property is necessitated by a property distinctive of intuitively physical objects yet where physicalism does not hold. If this is right, then Object does indeed provide a sufficient condition for a property to be physical in the sense at issue in debates over physicalism. Yet because Object fails to provide a necessary condition, SPP fails as a characterisation of physicalism.

So much, then, for our assessment of whether SPP is deserving of the name. Is it possibly true? Not in the relevant epistemic sense. As Stoljar points out (65–66), the world as depicted by contemporary physics is not one whereby every instantiated property is necessitated by a property distinctive of intuitively physical objects—accordingly, there is no live question as to whether SPP holds at our world.

To take stock, if what I said in this section is correct, then matters are actually worse for SPP than Stoljar has it: SPP is not only, as per (P2), false (or, more cautiously, most likely false: our physics could be mistaken) at the actual world, but is also, contrary to (P2), undeserving of the name. While this conclusion is, in one sense, very much in keeping with the sceptical spirit of Stoljar's Dilemma, a more positive lesson is to be had here. For a proposed characterisation of physicalism to be deserving of the name is for it to be the thesis at issue in the central debates opposing physicalists and antiphysicalists. That there should be at most *one* such deservant is a presupposition of those debates: disagreements between physicalists and their opponents are disagreements over the truth of physicalism—this presupposes a shared conception of what physicalism amounts to. If, as Stoljar holds, SPP is both deserving of the name and false, then there is simply no live question of physicalism: if the thesis at issue in debates over physicalism has been shown to be false, there is no point debating the issue anymore. Correlatively, it is hard to see, if SPP is indeed deserving of the name, what the point of Stoljar's liberalisation project could be: the project seeks to spell out a version of physicalism which is deserving of the name and dispenses with Object. But if SPP is indeed the deservant of the name, then plainly that project is stillborn. By contrast, if, as I have argued, SPP is in fact undeserving of the name, then it matters little to the debate

⁶ Montero (2012) makes a similar point.

⁷ In addition, I would argue that Object also fails to be satisfied at both Aw and AGw. Space limitations prevent me from developing these points.

over physicalism that it be (most likely) false, and the prospect of finding an alternative characterisation of physicalism which is both possibly true and deserving of the name opens up once again: the liberalisation project makes good sense. It is to this project that I now turn.

4 Premise (P3): The Liberalisation Project

In assessing whether SPP provides an adequate characterisation of physicalism, our focus has been on Object, or condition (a) of Starting Point Physical Property. The liberalisation project is the project of assessing whether any of conditions (b)–(e) can succeed where (a) failed. In this section, I focus on condition (b), or Theory.⁸

4.1 The Theory View

As with the starting point view, there are two parts to the theory view. The first states what it is for a property to be physical:

[Theory-Based Physical Property] F is a physical property if and only if F is expressed by a predicate of a true physical theory. (75)

A physical theory, according to Stoljar, is “a theory that a scientist advances in the course of trying to explain or describe ordinary physical objects, their distinctive properties, their constitution and behavior, and so on” (73). As Stoljar notes, the properties expressed by such a theory need not be starting point physical properties since an explanation of the behaviour of ordinary physical objects might well require—indeed, typically requires—the postulation of properties which are not amongst the distinctive properties of intuitively physical objects. Note also that what is at issue here is a true physical theory, whether or not it has been formulated.

Stoljar distinguishes between two ways of spelling out the above definition of a physical property, depending on whether the theory in question is true at the actual world or at some possible world or other:

[Actualist Theory-Based Physical Property] F is a physical property if and only if F is expressed by a physical theory that is true at the actual world. (75)

[Possibilist Theory-Based Physical Property] F is a physical property if and only if F is expressed by a physical theory that is true at some possible world or other. (75)

The second part of the theory view plugs the concept of a theory-based physical property into Necessitation Physicalism. Corresponding to our two notions of a theory-based physical property, are two versions of Necessitation Physicalism:

⁸ Space limitations prevent me from examining conditions (c) and (d) in this paper. Let me simply note that, like Stoljar, I hold that neither is adequate. I briefly consider condition (e) in Sect. 5.1.

[Actualist Theory Physicalism (ATP)] Physicalism is true if and only if every instantiated property is necessitated by some instantiated actualist theory-based physical property.

[Possibilist Theory Physicalism (PTP)] Physicalism is true if and only if every instantiated property is necessitated by some instantiated possibilist theory-based physical property.⁹

4.2 Actualist Theory Physicalism

In order to assess these characterisations of physicalism, Stoljar once again resorts to the method of cases. Stoljar notes that ATP is true at MPw,¹⁰ and thus seems to fare better than SPP. However, according to Stoljar, ATP founders on the following possible world:

[Twin Physics World (TPw)] This is a possible world or twin-earth at which every property is necessitated by twin-mass, twin-charge, and twin-spin. (77)

Twin-mass, twin-spin, and twin-charge are, Stoljar writes, “of a quite different character to mass, spin, and charge”. Yet this is not to say, he adds, that they are “spiritual or mental or conform to any paradigm we have of a non-physical property” (77).

While the recourse to TPw is, I think, problematic for Stoljar, in that, as I explain in Sect. 5.2, he lacks the resources to substantiate the claim that physicalism is true at TPw, I am more than happy to grant that physicalism holds at TPw, for as we shall see, the *via negativa* provides a straightforward explanation for why this is so. No doubt some will want to deny that physicalism is true at TPw, but this, I think, would be a mistake. As Stoljar points out, “physicalism is supposed to be an abstract account of the world, not tied to details of any particular theory” (78). If there is a sense in which both Hobbes and Smart qualify as materialists/physicalists, as surely there is, it just won’t do to define physicalism in terms of some particular physics.

If this is right, then, and as per premise (P3b) of Stoljar’s Dilemma, ATP indeed fails to provide an adequate characterisation of physicalism. For while physicalism is true at TPw, it is not the case that every instantiated property at TPw is necessitated by some instantiated actualist theory-based physical property. In other words, and although Stoljar doesn’t put it this way, it is not necessary, for physicalism to be true at a world, that the necessitating properties at that world be expressed by a physical theory that is true at the actual world. (Alternatively: it is not necessary, for a property to count as physical in the sense at issue in debates over physicalism, that it be expressed by a physical theory that is true at the actual world).

Is it sufficient? While Stoljar doesn’t address this question, a good case can be made that here too the answer ought to be in the negative. For consider: for all we know, a full

⁹ Stoljar does not define ATP and PTP in quite those terms, but it is clear that these capture what he has in mind (see p. 76).

¹⁰ Rather, it would appear to be an open question whether ATP is true at MPw, for we do not know (as of yet, and possibly never will) what entities a true physics of our world need posit. In point of fact, one might argue that ATP is likely false at MPw (pessimistic meta-induction).

explanation of the behaviour of ordinary physical objects may require the postulation of fundamental mental properties (Fundamental Mental World). To see that such a possibility clashes with physicalism, one need only reflect on what is widely regarded as the strongest argument against physicalism: the zombie or conceivability argument (see, e.g., Chalmers 1996: 123). As is well known, the argument is to the effect that conscious properties fail to metaphysically supervene on physical ones, and therefore that conscious properties are fundamental properties (or supervene on so-called proto-phenomenal ones). That physicalists have devoted so much of their efforts to countering the conceivability argument is evidence that they have taken fundamental mentality to be antithetical to physicalism. But if so, then the actualist theory-based conception of a physical property fails as a sufficient condition, for it fails to exclude fundamental mental properties from the physical domain.

4.3 Possibilist Theory Physicalism

At first glance, PTP fares better than any of the contenders considered so far: it is true at Aw, AGw, MPw, and TPw. But this really should be no surprise, for PTP is very permissive indeed. Consider the following world:

[**Classical Dualist World (CDw)**] This is a possible world which is exactly like the classical atomist world, but with this modification: when atoms come together to form human bodies, such bodies are yoked together with a soul in such a way that the behavior of the body is explained only on the assumption that it is influenced by the soul and its distinctive properties. (80)

As Stoljar points out, PTP is true at CDw, for every instantiated property at CDw is necessitated by some possibilist theory-based physical property. In particular, any true physical theory at CDw will make reference to souls (conceived of as instantiating irreducible mental properties) in order to explain the behaviour of human bodies. Yet it is clear that physicalism as we normally understand it is false at CDw. Indeed, CDw is arguably the clearest paradigm we have of a world at which physicalism fails. Plainly then, and as per (P3a), PTP isn't deserving of the name. Although Stoljar doesn't put it this way, what consideration of CDw shows is that it is not sufficient, for physicalism to be true at a world, that every instantiated property at that world be necessitated by some instantiated possibilist theory-based physical property.

Stoljar doesn't consider whether the possibilist conception of the physical provides a necessary condition for physicalism to be true at a world. I already noted that PTP is very permissive. But this understates the matter. In fact, it is plausible to think that PTP will come out true at any possible world. For it is plausible to think that for any necessitating property F instantiated at some world w , there is a possible world (be it w or some other world) at which some physical theory (in the sense of "physical theory" at issue here¹¹) is true which makes reference to F . If this is right, then PTP is in fact trivially true. Sure enough then, it will be necessary, in order for

¹¹ Of course, one might suggest an alternative characterisation of "physical theory"; perhaps, *à la* Poland (2003) or Dowell (2006), in terms of the methodological/epistemological features of scientific theories rather than in terms of their subject matter. I won't consider such proposals here—let me simply note that I don't think they are adequate.

physicalism to be true at a world, that every instantiated property at that world be necessitated by some instantiated possibilist theory-based physical property. But quite uninterestingly so. For the same requirement will hold in order for dualism or idealism to hold at a world, or for any claim about anything to be true at any possible world: a necessary truth is, after all, entailed by any proposition whatsoever. In effect, then, PTP violates the constraint alluded to earlier (Sect. 2), that for any formulation of physicalism to be adequate, it ought to be consistent with the fact that there appears to be a genuine question as to whether physicalism is true.

To take stock, Stoljar argues that neither ATP nor PTP is deserving of the name, for ATP is false at worlds where physicalism is true (TPw), and PTP is true at worlds where physicalism is false (CDw). In addition, I have argued that ATP will come out true at worlds where physicalism is false (Fundamental Mental World) and that PTP can plausibly be regarded as trivial. So, as with Starting Point Physicalism, the situation is worse for the theory view than Stoljar has it. The question of whether the necessitating properties at a world are actualist theory-based or possibilist theory-based properties is simply irrelevant to the question of whether physicalism is true at that world.

5 The Physical as Nonmental: The Via Negativa

Our considerations so far have only strengthened Stoljar's Dilemma. Putting the points of the last two sections together, we are led to the conclusion that *no* version of physicalism is deserving of the name (and, moreover, that one version, SPP, is most likely false). I do not, however, believe this conclusion to be warranted. So where do I think the argument goes wrong? I deny (P1): it is not the case that in formulating physicalism one must operate either with the starting point view or some liberalised version of the starting point view. Indeed, there are a number of other ways one might go about characterising the physical which conditions (a)–(e) fail to capture.¹² In this section, I argue that one such way, the so-called via negativa, provides a version of physicalism which is both possibly true and deserving of the name.¹³

¹² Some of these include: defining the physical in terms of spatiotemporal location (e.g., Markosian 2000), in terms of accessibility to sensory perception (e.g., Feigl 1958), in terms of micro entities (e.g., Pettit 1993), or again in terms of a conception of a physical theory which differs from Stoljar's (e.g., Melnyk 2003; Poland 2003; Dowell 2006). I won't consider these proposals here (although see Sect. 7.3 regarding microphysicalism)—suffice it to say that I very much doubt they can be made to work.

¹³ A number of philosophers have endorsed some version or other of the via negativa, and I claim no originality for the view. What I do hope to be offering is both a clearer and less objectionable formulation of the via negativa, and a novel argument for it. Much of the credit for putting the via negativa on the philosophical agenda goes to Montero (1999, 2001, 2009), Spurrett and Papineau (1999), Spurrett (2001), and Papineau (2002:40–44). The version of the via negativa defended in this paper is close to Montero's, although she would resist, I think, the claim that the view provides a sufficient condition for physicality (see Sect. 6.3, where I explain why I think this is problematic). In her (2006), Wilson proposes an account of the physical in terms of two components: a version of the theory view and the requirement that physical entities not be fundamentally mental. But as I explain in Sect. 5.1, that requirement is inadequate, and the via negativa is better formulated in terms of the fundamentally nonmental. I also think that Wilson's first

5.1 Formulating the Via Negativa

At a first approximation, the version of the via negativa (VN) which I shall be defending operates with the following conception of a physical property: a property F is a physical property if and only if F is not a fundamentally mental property. But this requires clarification.

First, what exactly is it for a property to be fundamentally mental? At first pass, a fundamentally mental property is a property which is both mental and fundamental (where a fundamental property is a primitive property, a property which isn't metaphysically necessitated by any other property). But this won't do. For on that understanding, the via negativa will entail that any non-fundamental property (including any property which is necessitated exclusively by one or more mental properties) is a physical property; a result which, I take it, most will find objectionable.

Instead, one might suggest that a property F is fundamentally mental if and only if either (i) F is fundamental and mental, or (ii) there is some property G that is both fundamental and mental which necessitates F . But this might be thought to rule out too much. It is sometimes said that a world without a fundamental or bottom level, an indefinitely decomposable world, is possible (indeed, nomologically possible).¹⁴ A world, that is, where some chains of ontological dependence never terminate—they go on endlessly through an infinite series of lower levels. But now consider one such world: a world at which some property F is necessitated ad infinitum by further and further mental properties (and only mental properties). It seems reasonable to hold that F is fundamentally mental. But it isn't according to our proposed definition, for none of the properties which necessitate F at that world are both mental and fundamental.

I do not know if ad infinitum necessitation is a genuine possibility. But our account need not rule it out. The following can accommodate boundless chains of mental properties:

[Fundamentally Mental Property] A property F is fundamentally mental if and only if either (i) F is fundamental and mental, or (ii) there is some property G such that G is necessitated exclusively by some (one or more) mental property, and G necessitates F .

It is easy to see that (ii) will be satisfied in a world at which some property F is necessitated ad infinitum by further and further mental properties (and only mental properties). For in such a world, there is some property G (indeed, infinitely many) which necessitates F and is such that it is necessitated exclusively by some mental property. I should note here that I am assuming both that the necessitation relation is transitive and that properties necessitate themselves. So, consider a scenario

Footnote 13 continued

component is at best redundant, or worse, will exclude from the physical domain some phenomena which ought not to be excluded.

¹⁴ See Schaffer (2003), Montero (2006), Cameron (2008), Brown & Ladyman (2009), and Nagasawa (2012).

whereby some property F is necessitated by a nonmental property G , which in turn is necessitated by a fundamental mental property H . F surely ought to count as fundamentally mental—and indeed it does according to our proposal. For there is some property, namely H , which necessitates F (transitivity of the necessitation relation), and is such that it is necessitated exclusively by some mental property, namely itself.

It is also worth pointing out that, strictly speaking, condition (i) of Fundamentally Mental Property is redundant. This is due, again, to my assuming that properties necessitate themselves, so that if a property F is fundamental and mental then there is a G (namely F ; there is no requirement here that $G \neq F$) which is necessitated exclusively by some mental property, namely itself, and therefore such that it necessitates F . Accordingly, Fundamentally Mental Property may be replaced with the more economical: “A property F is fundamentally mental if and only if there is some property G such that G is necessitated exclusively by some mental property, and G necessitates F ”. But this latter formulation is, I think, less readily comprehended, and I shall stick with Fundamentally Mental Property here.

With this understanding of “fundamentally mental”, let us return to the VN conception of the physical. I said that, at a first approximation, the notion of a physical property at work in the *via negativa* is that of a property which is not fundamentally mental. In other words:

[Not Fundamentally Mental] A property F is a physical property if and only if it is not the case that either (i) F is fundamental and mental, or that (ii) there is some property G such that G is necessitated exclusively by some mental property, and G necessitates F .

But this won't do as a sufficient condition. There are two issues here. First, consider a scenario whereby some property F is jointly necessitated by two properties G and H , where G is a fundamental mental property and H a fundamental nonmental property. Here, both conditions of Not Fundamentally Mental are met: (i) is satisfied since F isn't fundamental, and so is (ii), for while G is necessitated exclusively by some mental property (namely itself), G does not *on its own* necessitate F . Hence, Not Fundamentally Mental would have us count F as a physical property. But this is problematic. For F is partly necessitated by a property, G , which is both mental and fundamental, i.e., and as per Not Fundamentally Mental itself, by a nonphysical property. And so Not Fundamentally Mental is in effect consistent with the possibility of physical properties being partly necessitated by nonphysical ones—a result which, I suspect, most will deem unacceptable.

Second, consider the possibility that some property F be necessitated ad infinitum by mental and nonmental properties in turn: the possibility, that is, that F be necessitated by an endless series of properties such that, for any member of that series, there is always some member further down that is mental, and some member further down that is nonmental. Again, both conditions of Not Fundamentally Mental will be met here, for F isn't fundamental, and there is no property G which both necessitates F and is necessitated exclusively by some mental property. Not Fundamentally Mental thus entails that F is a physical property. But this seems mistaken. For it would appear that there are two fundamental aspects to reality

here—not in the sense that there are both mental and nonmental primitives, for there aren't, but in the sense that neither the mental nor the nonmental properties ever bottom out in the other –, and therefore that any world at which endless mental/nonmental chains of necessitation occur is better regarded as a world at which some (peculiar) version of the dual aspect theory holds.

If this is right, then our definition of a physical property needs fixing. Notice that the joint necessitation case and the ad infinitum mental/nonmental scenario share a common feature: some at least of their chains of necessitation fail to reach a point where no mentality is to be found. In other words, a world at which either the joint necessitation case or the ad infinitum mental/nonmental scenario holds is a world which isn't fundamentally nonmental. This suggests that we define the physical, not, as initially suggested, in terms of the not fundamentally mental but, rather, in terms of the fundamentally nonmental. It will help, in order to do so, to put forth a number of definitions. First, I call N the possibly infinite set which includes all and only the properties that play a part in necessitating property F , where a property plays a part in the necessitation of F just in case it either necessitates F on its own or jointly (and nonredundantly) necessitates F together with some other property. Second, I define the notion of a chain of necessitation thus:

“ C is a chain of necessitation” =_{df} “ C is a possibly infinite ordered series of properties (G_1, G_2, G_3, \dots) such that G_2 plays a part in G_1 being necessitated, G_3 plays a part in G_2 being necessitated, and so on.”

The version of the via negativa which I shall be defending operates with the following conception of a physical property:

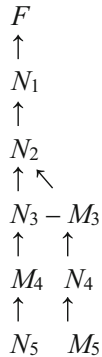
[VN Physical Property] A property F is a physical property if and only if either (i) F is fundamental and nonmental, or (ii) for every chain of necessitation whose members (G_1, G_2, G_3, \dots) belong to N , there is some G_i which is necessitated exclusively by some (one or more) nonmental property.¹⁵

Plugging VN Physical Property into Necessitation Physicalism yields the following formulation of physicalism:

[VN Physicalism] Physicalism is true if and only if every instantiated property is a VN physical property.

A number of comments are in order regarding VN Physical Property. I have defined the notion of a chain of necessitation (G_1, G_2, G_3, \dots) in terms of every G_{i+1} *playing a part* in every G_i being necessitated rather than in terms of every G_{i+1} *necessitating* every G_i . This allows for finer-grained individuations of both chains and properties. A visual representation will help. Consider the following (where the M s and N s denote, respectively, instantiations of mental and nonmental properties; “ $G \rightarrow F$ ” stands for “ G necessitates F ” or “ G plays a part in the necessitation of F ”; and “–” flanks co-necessitating properties):

¹⁵ As with Fundamentally Mental Property, and assuming that F belongs to N , condition (i) of VN Physical Property is, strictly speaking, redundant.



On my definition of a chain of necessitation, there are two partly overlapping chains here: one going from F to N_1, N_2, N_3, M_4 , and terminating in N_5 , and another going from F to N_1, N_2, M_3, N_4 , and terminating in M_5 . In contrast, defining the notion of a chain of necessitation (G_1, G_2, G_3, \dots) in terms of every G_{i+1} necessitating every G_i would entail that there is only one chain here, and would require a coarser criterion of property individuation. This is because neither N_3 nor M_3 are on their own sufficient to necessitate N_2 . Hence defining the notion of a chain of necessitation in terms of every G_{i+1} necessitating every G_i demands that we take the pair of properties (N_3, M_3) as a single property (or else that we think of the chain as ending in P_2 , which won't do for our purposes), and similarly for (M_4, N_4) and (N_5, M_5). It is to my formulation's advantage that it individuates both properties and chains of necessitation in a more intuitive fashion.

Because the notion of a VN physical property appeals to the notion of a mental property, a full account of VN Physicalism would require a clear enough characterisation of the mental: it will be no improvement on our initial quandary to define the physical in terms of the nonmental if no criterion of the mental is available which excludes at least some possible phenomena from the mental domain. I shall not, however, attempt to provide such a criterion in this paper. Rather, I will be assuming that we do possess a clear enough understanding of the mental as encompassing both intentional and phenomenal states.

It might be useful to bring out explicitly how the VN conception of the physical differs from Contrast [i.e., condition (e) of Starting Point Physical Property]. The important point for us is that not all of the distinctive properties of souls, ectoplasm, etc., are mental properties. Hence, souls also typically instantiate the properties of indestructibility¹⁶ and being indivisible; and ectoplasm is typically thought of as being vaporous and as having the capacity to pass through solid objects. Moreover, none of these nonmental distinctive properties of souls (etc.) need be thought of as peculiarly antithetical to physicalism. Classical atoms are indivisible and indestructible; gases are vaporous; and neutrinos can pass through solid objects. Yet neither classical atoms, gases, nor neutrinos, spell any trouble for physicalism. It appears, then, that whatever initial plausibility Contrast might be thought to have is

¹⁶ I am here assuming that indestructibility is what is left of immortality once one sets aside the mental attributes of souls.

due to the fact that souls (etc.) are typically conceived of as instantiating fundamentally mental properties. If this is right, resorting to Contrast only muddies the waters, for it brings in a host of properties that are irrelevant to the question of how “physical” is to be understood in debates over physicalism. Rather, it is the VN conception of the physical which is doing the work in Contrast. I now turn to a more thorough defence of the via negativa.

5.2 An Argument for the Via Negativa

Stoljar conjures up a number of possible worlds and asks whether physicalism as we normally understand it is true at these worlds. His approach is piecemeal: he considers each possible world in isolation, independently of the others. This is unfortunate for this thwarts any hope of identifying any underlying pattern which might account for our judgements regarding the conditions under which physicalism holds or fails to hold. Can any such pattern be identified?

Consider, first, the worlds at which physicalism holds: Aw, AGw, MPw, and TPw (henceforth, the “P-worlds”). Do the P-worlds share any feature the recognition of which underlies our judgement that physicalism holds at these worlds? By assumption, the set of necessitating properties at any one of the P-worlds differs from the set of necessitating properties at any other one of these worlds. It thus cannot be that our judgement that physicalism holds at the P-worlds is to be accounted for by virtue of the fact that they share the same set of necessitating properties—for they share no such set.¹⁷

Could our judgement be explained on account of the P-worlds sharing a subset of their necessitating properties? No. For one thing, it is unclear that TPw shares any of its necessitating properties with any of the other P-worlds. More generally, it would seem that for any subset of necessitating properties shared by a number of worlds at which physicalism holds, it is always possible to conceive of a world where physicalism holds yet where that subset is not instantiated. For another thing, physicalism as we normally conceive of it is an all-encompassing doctrine: physicalism is true at a world only if *all* of the necessitating properties instantiated at that world are physical. Assuming linguistic and conceptual competency, and barring inconsistency or performance errors, our judgement that physicalism is true at a world thus cannot be driven by the recognition that some only of the necessitating properties at that world are physical. It thus cannot be that our judgement that physicalism holds at the P-worlds is to be explained by their sharing a set of necessitating properties, be it all of their necessitating properties or a subset thereof.

Could it be that our judgement that physicalism holds at the P-worlds is instead elicited by a recognition that their distinct necessitating properties share some second-order property or feature which somehow guarantees their being physical? What might such a feature be? It will by now be clear where this discussion is heading. We have no *positive* characterisation available of twin-mass, twin-charge,

¹⁷ There is an assumption here to the effect that we are properly representing the P-worlds as comprising distinct necessitating properties. But I see no reason to suppose otherwise.

or twin-spin. It thus cannot be that our judgement that physicalism holds at TPw is triggered by a recognition of any positive feature or property of twin-mass, twin-charge, or twin-spin. There might be a temptation at this stage to deny either the conceivability of TPw or that physicalism holds at TPw. I have already presented disincentives against taking the latter route (see Sect. 4.2), and I see no non-ad hoc motivation to go down the former. But in any case, notice that the recourse to TPw, while it helps make the point more vivid, is by no means essential here. For it is far from clear that the necessitating properties at Aw, AGw, and MPw (and, for that matter, at any world at which physicalism as we normally understand it holds) share any more of a positive feature that will do the trick. What might be a common positive feature of, e.g., the properties of being non-divisible, of gravity, or spin, which would guarantee their all counting as physical (whilst ruling out nonphysical properties)? It would seem, therefore, that it cannot be that our judgement that physicalism holds at the P-worlds is elicited by a recognition that the necessitating properties at these worlds conform to a positive characterisation we have of the physical.

There is, however, one feature or property which the various necessitating properties at the P-worlds share in common, albeit not a positive one: they are all nonmental. Indeed, it is telling that in describing TPw, Stoljar should say: “I am not imagining here that [the fundamental properties at TPw] are spiritual or mental or conform to any paradigm we have of a non-physical property” (77). In order for TPw to provide a counterexample to ATP, Stoljar needs it to be the case that TPw is a world at which physicalism as we normally understand it *clearly* holds.¹⁸ The insistence that the fundamental properties at TPw are neither spiritual nor mental is intended to secure that fact. But notice that, mental properties aside, Stoljar provides no example of properties which “conform to any paradigm we have of a non-physical property”. If what I said in the previous paragraphs is correct, the reason is straightforward: non-mentality aside, there are simply no features to which Stoljar might appeal in order to elicit the judgement that TPw is a world at which physicalism as we normally understand it is true.

I have argued that the *via negativa* is the only way to account for our judgement that physicalism holds across the P-worlds. Further evidence for the *via negativa* can also be adduced from consideration of the worlds at which we deemed physicalism to be false, namely CDw and Fundamental Mental World. It is clear enough what makes these worlds worlds at which physicalism fails: the instantiation of fundamentally mental properties. Indeed, CDw is “exactly like the classical atomist world, but with this modification: when atoms come together to form human bodies, such bodies are yoked together with a soul [...]” (80). I have already argued (Sect. 5.1) that, mental properties aside, there need be nothing antithetical to physicalism about the distinctive properties of a soul. Plainly then, it is the fact that fundamentally mental properties are instantiated at CDw which accounts for our judgement that physicalism fails at that world.¹⁹

¹⁸ This point is also noted in Baltimore (2013).

¹⁹ Similar considerations hold for Fundamental Mental World (see Sect. 4.2).

Is VN Physicalism deserving of the name? I have just argued that it is: it successfully accounts for our various intuitions about the conditions under which physicalism as we normally understand it holds and fails to hold. Is VN Physicalism possibly true? Yes, it is an open question, I take it, whether all of the properties instantiated at the actual world are fundamentally nonmental (i.e., VN physical). I conclude, therefore, *pace* Stoljar, that it is not the case that no account of the physical is available which allows for a formulation of physicalism that is both possibly true and deserving of the name. The via negativa provides just such an account. I now turn to objections to the via negativa.

6 Objections and Replies

6.1 Dogs and Non-Cats

According to Stoljar, the via negativa fails to provide an explanation of what a physical property is:

Suppose you ask me what a dog is, and I say that it is something that is not a cat (this is the via negativa applied to the property of being a dog). You point out reasonably that according to my proposed definition a hamster is a dog [...] I reply by conceding the point but modifying my original definition: something is a dog if it is neither a cat nor a hamster. You reply by making the same point this time using the example of a donkey. We could of course continue in this vein for an indefinite amount of time, but it is quite unclear what the point of it would be. (87–88)

Reply. It is not the case that this is the via negativa—as I have defined it—applied to the property of being a dog. Not being a cat might well be a necessary condition for something to be a dog but it isn't a sufficient one. By contrast, VN Physical Property expresses a necessary and sufficient condition for a property to be physical. It is true that the VN conception affords us at best with an open-ended characterisation of the physical: save for the requirement that they be fundamentally nonmental, it imposes no constraints on what properties can count as physical. But this is hardly a shortcoming if, as our discussion strongly suggests, open-endedness is in effect a feature of the concept of the physical at issue in debates over physicalism. As a matter of fact, Stoljar himself acknowledges that much. Commenting on the worry that the conception of a physical theory at work in the theory view is open-ended, he writes: “[This] is not unexpected because it is reasonable to think that the notion of the physical that is in operation in contemporary philosophy *is* somewhat open-ended—indeed, the basic problem with the Starting Point View is precisely that it does not acknowledge this” (74). It is a point in favour of the via negativa that it can account for the open-endedness of philosophers' concept of the physical.

6.2 The Via Negativa and the Identity Theory

According to Stoljar (87), the *via negativa* entails that the identity theory is incoherent. If to be physical is to be nonmental, then to say, with the identity theorist, that mental properties are identical to physical properties, is to assert a contradiction, namely, that mental properties are both mental and nonmental. But while many philosophers hold that the identity theory is false, virtually no one regards it as obviously contradictory.

Reply. The *via negativa* as I have defined it does not state that F is a physical property if and only if it is nonmental. Rather, it states that F is a physical property if and only if it is *fundamentally* nonmental; that is, if and only if it is, if fundamental, nonmental, and if not fundamental, then such that for every chain of necessitation (G_1, G_2, G_3, \dots) whose members belong to N , there is some G_i which is necessitated exclusively by some (one or more) nonmental property. This is quite consistent with the identity theory. As I understand it, the identity theory claims that mental states are identical to—or, on Place's version (1956), constituted by—neurophysiological states. But these states are not taken to be primitive (no nomological danglers, enjoins Smart 1959: 142–143). Nor are they taken to be such that some of their chains of necessitation fail to meet condition (2) of VN Physical Property. Rather, they are taken to be necessitated by instantiations of lower-level, ultimately fundamental, nonmental properties. To be in pain is to be in a neurophysiological state which is necessitated by the fundamental nonmental properties of trillions of elementary particles. To be in pain, then, according to the identity theorist, is to instantiate a VN physical property.

6.3 Colour Primitivism, Vitalism, and Emergentism

Consider, with Stoljar, the following worlds, which are exactly like A_w , save in the following respects:

[Primitive Colour World (PCw)] When atoms come together to form objects roughly congruent in size with human bodies, these objects instantiate primitive colors, and the behavior and nature of these objects cannot be explained except on the assumption that they instantiate these properties. (82)

[Vitalist World (Vw)] When atoms come together to form objects which are the counterparts of our plants and animals, these objects instantiate *élan vital*, a property quite distinct from any associated with atomism, and the behavior and nature of these objects [...] cannot be explained except on the assumption that they instantiate these properties. (84)

[Emergent Chemistry World (ECw)] When combined together, atoms instantiate chemical properties which explain the observed behavior of molecules but which are themselves distinct from any property associated with atomism. (84)

Primitive colours, *élan vital*, and emergent chemical properties are fundamental properties. They are metaphysically basic, or primitive: they are not metaphysically

necessitated by any lower-level properties (or, for that matter, by any other properties). While PCw, Vw, and ECw do appear to countenance laws linking primitive colours, *élan vital*, and emergent chemical properties (henceforth, “F-properties”) with phenomena at the atomic level, these laws are contingent only: they hold with nomological rather than metaphysical necessity.

According to Stoljar, physicalism is false at PCw, Vw, and ECw (henceforth, the “F-worlds”). Hence, Stoljar takes vitalism to be “contrary to physicalism on anyone’s view” (84), and remarks (85) that emergentism “appears as one kind of anti-physicalism” in Broad’s (1925). Moreover, he observes that “it is quite standard [...] to treat [PCw] as inconsistent with physicalism”, a claim which he substantiates by quoting (83) Armstrong as stating that “the conception of secondary qualities as irreducible or unanalysable properties has led to the greatest problems” (i.e., the greatest problems for physicalism according to Stoljar).

Yet the F-properties are not, says Stoljar, mental properties; in particular, he insists that colours “are not in the mind” (83). The F-properties as Stoljar conceives of them are neither mental nor physical. But this is inconsistent with the *via negativa*, for VN Physical Property implies that if a fundamental property is not mental then it is physical. If physicalism is indeed false at the F-worlds, and if the F-properties are indeed nonmental, then the *via negativa* is false: it is not in fact a sufficient condition for physicalism to be true at a world that the necessitating properties at that world be both fundamental and nonmental.²⁰

How might a proponent of the *via negativa* reply? In her (2009), Montero suggests that “one can reformulate the [*via negativa*] so as to exclude numbers, norms, or *whatever else one is interested in excluding*: rather than the mental/nonmental contrast, we could employ the numerical/non-numerical, the normative/non-normative contrast, or a combination of these instead” (2009: 186; my emphasis). But this is problematic. For to claim that one may rephrase the *via negativa* so as to exclude “whatever [...] one is interested in excluding” is to concede that no criterion is available for deciding which entities ought to be excluded. In effect, then, the proposal ends up emptying physicalism of much of its content: it fails to provide a sufficient condition for physicality and hence falls prey to Stoljar’s “dogs and non-cats” objection.

Still, one might want to insist on a version of the *via negativa* according to which exclusion of a *limited* number of types of properties provides a necessary and sufficient condition for something to qualify as physical. In particular, one might suggest defining VN Physical Property in terms of the fundamentally nonmental, fundamentally noncoloured, fundamentally nonvital, and fundamentally non-chemical. But the problem with any such version of the *via negativa* is that it lends itself to the charge of unsystematicity. For one is apt to wonder what exactly it is about these various types of properties which makes them all antithetical to physicalism. If, on the one hand, there is some relevant feature which they all share, then it would seem that a more fundamental analysis—in terms of the shared feature in question—ought to be available. If, on the other hand, no such common feature is

²⁰ Judisch (2008) raises a similar objection to the *via negativa*.

to be found, then it would seem that the characterisation in question is ad hoc, i.e., that it is arbitrary which properties one chooses to exclude.

I believe that intuitions to the effect that physicalism fails at the F-worlds—to the extent that they arise at all—owe at least in part to conceiving of the F-worlds as involving fundamental mentality, and thus that the *via negativa* as I have defined it does afford us with a more fundamental analysis of the concept of the physical at work in debates over physicalism. I make a case for this claim in the next section.

7 Physicalism and the F-Worlds: Debunking Intuitions of Non-Physicality

7.1 Three Sources of Judgements of Non-Physicality

Physicalism, says Stoljar, is false at the F-worlds. But what exactly is it about these worlds which clashes with physicalism? It is noteworthy that colour primitivism, vitalism, and emergentism can all be thought to posit properties which fail to meet the conditions laid out in the three conceptions of the physical that have been our focus in this paper: Object, Theory (in its actualist instantiation), and VN Physical.

First, the F-properties are not, arguably, Object physical (henceforth, “O-physical”), for commonsense typically expects the properties of ordinary objects to be at least in principle explainable in terms of the properties of their parts. This expectation is frustrated at the F-worlds: while there might be systematic correlations between the F-properties and lower-level ones, no genuine explanation is to be had here, for these regularities lack the requisite modal force. Second, the F-properties are not Actualist Theory-Based physical (henceforth, “AT-physical”), both in the sense that they do not figure in current physics/biology/chemistry textbooks—not, at any rate, *qua* primitive properties –, and in the sense that they violate the reductionist picture of the world which many hold the natural sciences give us good reason to believe in (by “reductionist picture”, I mean the idea that properties of wholes are to be explained in terms of the properties of their parts, or, more generally, that higher-level properties are to be explained in terms of lower-level ones).²¹ Finally, some at least of the F-properties *can* be conceived of as non-VN physical. Hence, as we shall see, primitive colours are, *pace* Stoljar, often thought of as being ‘in the mind’ (irreducible qualia); *élan vital* is sometimes conceived of along animistic lines (i.e., as mental or proto-mental), and while emergent chemical properties are not usually thought of in mentalistic terms, it is nevertheless not implausible to think that judgements to the effect that ECw is antithetical to physicalism are tied to a tacit assumption that the *mental* emerges at ECw (I develop these points in Sect. 7.2).

Should it matter, from the point of view of whether physicalism holds at the F-worlds, that the F-properties be neither O-physical nor AT-physical? No, for we

²¹ It is debatable of course to what extent the natural sciences sanction reductionism. But it is not controversial that many philosophers (notably physicalists) have taken them to do so (in particular as regards chemical and biological properties). This belief, when conjoined with the theory view, is one possible source of the judgement that the F-properties aren’t physical.

saw that Object and Theory fail to capture what is at stake in debates over physicalism. In particular, I have argued that neither Object nor the theory view make for a *necessary* condition on physicalism being true.

By contrast, it matters very much indeed whether the F-worlds instantiate properties which fail to satisfy the VN conception of the physical: the via negativa entails that no world at which fundamentally mental properties are instantiated is a physicalist world. Recall, however, that Stoljar insists that the F-properties are not mental. But if so, it is unclear why one should think that the F-worlds are at all inconsistent with physicalism. One suspects that, in judging physicalism to be false at the F-worlds, Stoljar is in effect tacitly endorsing either Object or Theory, thereby reimporting a conception of the physical which we've already shown to be irrelevant to the debate.

Might Stoljar retort that I am merely begging the question here? After all, the conclusion that Object and Theory are inadequate for the purpose of defining physicalism is premised on intuitions as to whether physicalism as we normally understand it holds at certain scenarios. And similarly, the claim that the F-worlds are antiphysicalistic would appear to be premised on intuitions as to whether physicalism holds at these worlds. But why give preference to one set of intuitions over the other? Why not conclude instead, with Stoljar, that our various intuitions are simply irreconcilable? My reply is twofold: first, I argue that it is far from clear that philosophers do in fact possess robust intuitions to the effect that physicalism is false at the F-worlds *as Stoljar conceives of them*; second, I offer a number of considerations to motivate the claim that any such intuition ought to be disregarded.

7.2 Intuitions of Non-Physicality?

Do philosophers in fact possess intuitions that physicalism fails at the F-worlds (henceforth, “F-intuitions”)? It is noteworthy that whereas Stoljar does probe our intuitions as regards whether physicalism holds at Aw, AGw, MPw, TPw, and CDw, he merely asserts that PCw, Vw, and ECw are typically regarded as contrary to physicalism (83–85; see quotations in Sect. 6.3 above). But while it is true that many philosophers have regarded colour primitivism, vitalism, and emergentism as inconsistent with physicalism, it is not entirely clear that what they have meant by those doctrines is what Stoljar has in mind here.

Earlier, I mentioned that Stoljar (83) quotes Armstrong as remarking that “the conception of secondary qualities as irreducible or unanalysable properties has led to the greatest problems”. According to Stoljar, what Armstrong means here is that such a conception has led to the greatest problems for physicalism. But a closer look at Armstrong’s discussion suggests that one should draw a distinction between two conceptions of the secondary qualities as irreducible. On the one hand, there is the view according to which the secondary qualities are “irreducible properties of physical objects”, i.e., “‘emergent’ properties of the whole area or surface of the area ‘occupied’ by the particles” which make up ordinary objects (Armstrong 1993: 271). This is, note, the sense in which Stoljar takes primitive colours to be emergent at PCw. On the other hand, there is the conception according to which the secondary qualities are “irreducible *qualia* [which] cannot really qualify the physical objects

they appear to qualify”, but, rather, “qualify items in the mind of the perceiver” (Armstrong 1993: 271). Here, the secondary qualities are conceived, in contrast to Stoljar’s primitive colours, as fundamentally mental or non-VN physical.

As against the first conception, Armstrong writes: “perhaps this is a barely possible line to take, but it is not one that a physicist, or, I think, anyone else, could look upon with much enthusiasm”. And he adds: “if the secondary qualities are taken to be irreducible properties of physical objects, they can be fitted into the manifest, but not the scientific, image of the world” (Armstrong 1993: 271). Notice that Armstrong makes no explicit mention here of the secondary qualities violating physicalism. The worry, rather, is that such primitivism as that instantiated at PCw is at odds with how physicists tell us the world is organised. It clashes with reductionism (Armstrong 1993: 290: “reductionism accords with findings of physical science”). This might well be a good reason to reject the view that colours, and secondary qualities more generally, are irreducible properties of physical objects. But unless one endorses the actualist version of the theory view, it is hardly a good reason to hold that physicalism fails at PCw (in addition to the arguments already rehearsed against Theory, I substantiate the claim that physicalism need not imply reductionism in Sect. 7.3 below). The important thing for us is that there is nothing in what Armstrong says here that points to any intuition that PCw is contrary to physicalism which isn’t derivative on the theory view. Again, we see that alleged intuitions that physicalism fails at PCw plausibly rest on a tacit endorsement of Theory—and ought to be rejected along with it.

But what of the second, mentalistic, conception of the secondary qualities as irreducible? Here, Armstrong is much more vocal that it clashes with physicalism. The problem with such a view, says Armstrong, is that it puts us “back in that bifurcation of mental and physical reality which it is the object of a physicalist doctrine of man to overcome” (Armstrong 1993: 272). And indeed, it does. But needless to say, Armstrong’s secondary qualities as irreducible *qualia* aren’t Stoljar primitive colours; their clashing with physicalism is perfectly consistent with—indeed, supports—the *via negativa*.

Similarly, not all types of vitalism need be regarded as antithetical to physicalism. According to Weber (2011: Sect. 1), “[vitalist] positions covered a wide range from romantic anti-materialists, through chemists seeking a new type of Newtonian force (‘vital force’) in nature, to materialists who had an intuition of the importance of the organized whole”. Moreover, it is in particular when *élan vital* is conceived along mentalistic lines that philosophers tend to think of vitalism as antiphysicalistic. Hence, according to Wolfe (2011), the conception of vitalism as contrary to physicalism owes to a large extent to our associating the doctrine with the works of Georg Ernst Stahl and Hans Driesch, who held, respectively, that the body and its organs are instruments of an *anima* or soul, and that all living organisms comprise an entelechy (a soul-like entity).

Similar considerations hold in regards to emergentism. Stoljar notes (85) that ECw “appears as one kind of anti-physicalism” in Broad’s (1925). But it is noteworthy that the emergentist position which Broad is concerned to defend in the final chapter of that book is an emergentism of the mental. There, he offers a taxonomy of possible positions on the mind–body problem, with emergentism about

consciousness being presented as a rival to “mechanism”. By contrast, Broad regards it as an open empirical question whether chemical or biological properties are indeed emergent (see Gustavsson 2010: Sect. 5.2). This isn’t to say that Broad wouldn’t have regarded ECw as contrary to “mechanism” (but see next paragraph regarding Broad’s conception of “mechanism”). The point is rather that what has arguably been the most influential defence of emergentism is a defence of *mental* emergentism,²² and, correlatively, that it is not implausible to conjecture that many philosophers have as a result come to associate the doctrine of emergentism with a commitment to the claim that the mental emerges, so that there is a tendency, when considering the possibility that the chemical be emergent at some world *w*, to tacitly assume that the *mental* is emergent at *w*.²³

What’s more, it is unclear that Broad’s “mechanism” is rightly understood as just another name for physicalism as we normally understand it. For consider: the “ideal of Pure Mechanism”, according to Broad, is the view that:

[...] there is one and only one kind of material. [...] All the apparently different kinds of stuff are just differently arranged groups of different numbers of the one kind of elementary particle; and all the apparently peculiar laws of behaviour are simply special cases which could be deduced in theory from the structure of the whole under consideration, the one elementary law of behaviour for isolated particles, and the one universal law of composition. (1925: 76)

Physicalists, however, need not be committed to there being only one kind of material, one elementary law of behaviour, and one universal law of composition. The Atomist World (Modern Physics World) is a world at which physicalism clearly holds yet not typically a world containing one and only one type of atom (fundamental particle). As with Armstrong, what seems to be at stake here is not so much physicalism as a (rather extreme) form of reductionism. Granted, Pure Mechanism is only an ideal; a limit case of the “mechanistic theory”. Broad allows that mechanism might depart to some degree from this ideal: mechanism can accommodate a number of elementary particles as well as a number of fundamental forces and laws. Still, it is an essential characteristic of Broad’s mechanism that only elementary particles can possess fundamental force-generating properties: mechanism requires that any force-generating property of a whole be explainable in terms of the force-generating properties of its parts (see McLaughlin 1992: 77–79). But physicalists need not bow to even that much reductionism (again, I substantiate the claim that physicalism need not imply reductionism in Sect. 7.3 below). If this is right, then Broad’s classification of emergentism as contrary to mechanism does nothing to lend support to the claim that ECw is a world at which physicalism fails.

²² As McLaughlin remarks, “the main doctrines of British Emergentism receive their most mature and careful formulation [in Broad’s texts]. Moreover, it is Broad’s texts which have received the most attention from critics of emergentism” (1992:50).

²³ The tendency to associate emergentism with mental emergentism (at least insofar as the actual world is concerned) might also be exacerbated by the fact that many philosophers (notably physicalists) regard chemical and biological properties as having been successfully reduced to lower levels, so that from their perspective, only mental emergentism remains a possibility – if only remotely so – at the actual world.

I have tried to cast doubt on the claim that the F-worlds are clearly antiphysicalistic. One shouldn't expect a knockdown argument here.²⁴ But I hope to at least have shown that it is far from clear that philosophers possess robust intuitions to the effect that PCw, Vw, and ECw *as Stoljar conceives of them* are worlds at which physicalism fails.

7.3 Gravity, Reductionism, and the F-Properties

But suppose one insists on having robust intuitions to the effect that the F-worlds, even when conceived of as satisfying VN Physical Property, are worlds at which physicalism is false. Must we leave the debate hostage to conflicting intuitions? No, for a number of additional considerations can be brought to bear to support the idea that any such F-intuition ought to be disregarded.

First, one can argue that the F-intuitions are inconsistent with judgement patterns exemplified in the history of science. Consider Newton's introduction of universal gravitation and its disapproving reception by Newton's contemporaries. Huygens thought the principle of attraction to be absurd (Chomsky 2009: 170), Leibniz held that physics would never accept action at a distance (Poland 1994: 330), and indeed, Newton himself famously believed that it is "so great an Absurdity, that [...] no Man who has in philosophical matters a competent Faculty of thinking, can ever fall into it" (cited in Chomsky 2009: 171).

Why such mistrust towards gravity? It is noteworthy that, just as primitive colours, *élan vital*, and emergent chemical properties, gravity can be thought to fail to satisfy our three conceptions of the physical. It isn't O-physical, for it isn't distinctive of intuitively physical objects.²⁵ It isn't AT-physical, both in the sense that it does not figure in pre-Newtonian physics textbooks, and in the sense that it

²⁴ This is because the claim that the inclination to conceive of the F-worlds as contrary to physicalism is linked to either conceiving of these worlds as instantiating fundamentally mental properties, or to tacitly endorsing Object or Theory, is an empirical hypothesis. It is a claim about the source of philosophers' dispositions to classify certain possible cases as falling under certain concepts. In this section, I offered some empirical evidence for the claim. But the argument from the evidence to the truth of the hypothesis is an inductive one, and is therefore defeasible. Perhaps what is needed here is a survey of professional philosophers; although one would need to be careful of prompting their *considered* judgements. As Jackson notes, "the method of possible cases needs to be applied with some sophistication. A person's first-up response as to whether something counts as a *K* may well need to be discounted. One or more of: the theoretical role they give *K*-hood, evidence concerning other cases they count as instances of *K*, signs of confused thinking on their part, cases where their classification is, on examination, a derivative one (they say it's a *K* because it is very obviously a *J*, and they think, defeasibly, that any *J* is a *K*), their readiness to back off under questioning, and the like, can justify rejecting a subject's first-up classifications as revealing their concept of *K*-hood" (Jackson 1998:35). What is needed, then, is for one to take a representative sample of philosophers, have them reflect on the various worlds which figure in this paper (and possibly others), on the case of gravitation (see next section), on whether their classifying the F-worlds as antiphysicalistic (if they do) is derivative (e.g., they think of the F-properties as non-AT-physical, and think that actualist theory physicalism is an adequate characterisation of physicalism), on whether their classifying the F-worlds as antiphysicalistic (if they do) can be accounted for in terms of a performance error (see Sect. 7.3), and so on. Needless to say, this is not a task I can hope to carry out in this paper.

²⁵ While the folk sometimes ascribe gravitational properties to everyday objects, these ascriptions are arguably dependent on acquaintance with physical theory.

violates a deeply entrenched principle of the Modern mechanistic picture of the world (that no two particles of matter can influence one another in the absence of contact). Finally, gravity was sometimes conceived of along mentalistic lines, i.e., as non-VN physical. Hence, Leibniz, and the Cartesians more generally, complained that gravitation was akin to the sympathies and antipathies of the Scholastics which the new science of Galileo and Descartes were thought to have discarded for good (Chomsky 2009: 170).

Yet we do not regard Newton as having disproved physicalism. Rather, we regard him as having expanded the repertoire of physical entities. But why not? Not because we have shown that, despite appearances, gravity is in fact O-physical. It isn't. Not because we have shown that it is in fact AT-physical (where the theory at issue is seventeenth century mechanistic physics): eighteenth and nineteenth century materialists embraced Newtonian mechanics long before any mechanistic explanation of gravitation was on the table. Rather, it is plausible to think that we have come to accept gravitation as physical because we have come to accept that it need not be conceived of in mentalistic terms.

But if fundamental nonmental gravitational forces are no problem for physicalism, why should fundamental nonmental colour, vital, or chemical properties be any more troublesome? At this point, one will perhaps call attention to the following dissimilarity: whereas gravitational effects among higher-level objects can be explained in terms of lower-level properties, no such explanation is available of the instantiation of primitive colours, *élan vital*, and emergent chemical properties: these are brute facts whose emergence appears to be entirely unmotivated, utterly arbitrary. The worry here seems to be premised on the assumption that physicalism entails reductionism, hence on the idea that if reductionism fails at a world, so does physicalism. Is that assumption warranted?

I do not believe that it is. Notice, first, that physicalists are perfectly happy to countenance primitive entities. Granted, these are traditionally conceived of as lying at the fundamental or bottom level of reality. But why should the F-properties' emerging at higher levels of organisation bear any implication as regards the truth of physicalism? Suppose, contrary to fact, that our best physics told us that gravitational forces emerge at the molecular level, so that no explanation of their instantiation is available in terms of atomic or sub-atomic properties. Would we then judge that physicalism is false at our world? It seems to me that we would not. Indeed, Stoljar would, I think, be in agreement here, for he holds (88) that there need be nothing contrary to physicalism about a world at which every instantiated property is necessitated by a macro property (where, I assume, such a macro-property is taken to be fundamental). Or consider the following remark by Ned Block:

[...] it is conceivable that there are physical laws that 'come into play' in brains of a certain size and complexity, but that nonetheless these laws are [...] physical laws (though irreducible to other physical laws). Arguably, in this situation, physicalism could be true [...] (Block 1980: 296, footnote 4).

What Block seems to be saying here is that physicalism needn't be inconsistent with emergent laws (and hence with emergent properties). If these considerations are on

the right track, then the aforementioned dissimilarity between gravity and the F-properties is not in fact relevant here—again, the F-intuitions appear to be unmotivated.

I have presented the case against taking the F-intuitions at face value as hinging on the fact that these intuitions can be thought to be derivative upon either Object, Theory (in its actualist version), or the idea that physicalism entails reductionism. But let me point to another possible source of the F-intuitions—one which, interestingly, relies in part on the VN conception of the physical. It is plausible to think that the pull some might feel towards the judgement that physicalism fails at the F-worlds is linked, not to the idea that physicalism entails reductionism, but rather, to the idea that reductionism entails physicalism, i.e., that if reductionism holds at a world then so does physicalism. We have, after all, good inductive evidence for the belief that one is unlikely to find mental properties instantiated below certain levels of complexity. On that basis, one might hold that if reductionism holds at our world, i.e., if every property (save bottom level ones if such there be) is necessitated by a lower-level property, then it is unlikely that physicalism fails at our world. For, if reductionism holds at our world, and if we have good reasons to hold that mentality is unlikely to be found below certain levels of complexity, then we have good reasons to hold that the necessitating properties at our world are likely to be nonmental properties, hence, assuming VN Physicalism, that physicalism is likely to be true at our world. More generally, one might be tempted to hold on those grounds that any world at which reductionism holds is likely to be a world at which physicalism holds.²⁶ From this, it is a small step to the idea that a world at which reductionism does not hold—say, any one of the F-worlds—is a world at which physicalism is false or most likely false. Small, but nonetheless fallacious, for even assuming an entailment relation from reductionism to the likelihood of physicalism, nothing follows as regards the truth of physicalism at a world from the fact that reductionism does not hold at that world: to argue from the falsity of reductionism to the falsity of physicalism is in effect to deny the antecedent.

7.4 Disregarding the F-Intuitions

Let me round up the case for discounting the F-intuitions. The intuitions that have led us to discard Object and Theory, and to put forth the *via negativa*—intuitions regarding Aw, AGw, MPw, TPw, CDw, and Fundamental Mental World—, are the widely shared intuitions which structure the debate over physicalism. By contrast, alleged intuitions that physicalism fails at the F-worlds (as Stoljar conceives of them) appear to be far less robust: it is unclear that they are widely shared; indeed, they conflict with judgement patterns in the history of science. Moreover, I have argued that the F-intuitions—to the extent that they arise at all—can plausibly be explained away as resulting either from a conception of the physical which has been shown to be inadequate (Object or Theory), from the unfounded assumption that

²⁶ It is important to note that I am not endorsing the inference here. Rather, I am pointing to a possible psychological, largely unarticulated, source of the F-intuitions.

physicalism entails reductionism, or from a piece of fallacious reasoning. When, furthermore, one adds that the *via negativa* can help account, not just for our core intuitions regarding the conditions under which physicalism holds, but also for the case of gravitation (we have come to accept gravitation as physical because we have come to accept that it need not be conceived of in mentalistic terms), for the tendency to hold that colour primitivism, vitalism, and emergentism are incompatible with physicalism (it is in particular when the F-worlds are conceived of as instantiating non-VN physical properties that these worlds are deemed to conflict with physicalism), for the initial plausibility of Contrast (see Sect. 5.1), and for the fact that Object does provide a sufficient condition (see Sect. 3; I leave it to the reader to fill in the details here), then indeed the situation is ripe for discounting the F-intuitions. Hence, my argument can hardly be charged with begging the question: all things considered, there are compelling reasons to disregard any such intuition.

The case against the F-intuitions thus relies on two points. First, the claim that they are defective in some way or other (it is unclear that they are widely shared, they run counter to historical judgements, and plausibly stem from an inadequate conception of the physical, a commitment to the idea that physicalism entails reductionism, or from a performance error). Second, the claim that they are inconsistent with what is an otherwise useful way of grouping possible cases together (i.e., the *via negativa*). But one might well be warranted in discounting the F-intuitions on the basis of the second point alone. Assume, contrary to the claims defended in this section, that philosophers in fact widely agree that the F-worlds, even when conceived of as satisfying VN Physical Property, are worlds at which physicalism fails; that there is in fact some relevant dissimilarity between gravitation and the F-properties; that the F-intuitions aren't after all triggered by either a tacit commitment to Object, Theory, the idea that physicalism entails reductionism, or a piece of fallacious reasoning. Would we then have to conclude, with Stoljar, that there is no formulation of physicalism deserving of the name? Not necessarily, for one could make a more pragmatic case for discounting the F-intuitions. In the spirit of reflective equilibrium (Rawls 1971: 20ff; Goodman 1983: 63–64), one might be warranted in rejecting the F-intuitions on the grounds that they clash with a conception of the physical—VN Physical—which allows us to account for our core intuitions about the conditions under which physicalism holds, and thereby makes good sense of historical and contemporary debates over materialism/physicalism.²⁷ In so doing, one would in effect be putting forth a formulation of physicalism which is partly conservative and partly stipulative (although mainly conservative if the *via negativa* does indeed account for our core intuitions).

None of this is to deny that the F-worlds are to some extent eccentric or other-worldly. They are indeed, for they fail to conform to the way many of us believe the actual world is put together. We have good reasons to hold, in particular, that neither

²⁷ I haven't considered explicitly the question of whether the *via negativa* successfully captures the historical debates between materialists and their opponents. But see Wilson (2006: 85–88) and Ney (2008: 1042–1043) for a discussion.

chemical nor biological properties are primitive. Yet as odd as the F-worlds may be, they need not be inconsistent with physicalism—or so I have argued.

I conclude with the following dilemma for Stoljar: either the F-worlds are conceived of as instantiating fundamentally mental properties or they are not. If they are, then physicalism fails at the F-worlds, quite consistently with the *via negativa*. If they are not, then there are no compelling reasons to think of the F-worlds as worlds at which physicalism fails—again, quite consistently with the *via negativa*.

8 Conclusion

I have argued, *contra* Stoljar, that the *via negativa* allows for a formulation of physicalism which is both possibly true and deserving of the name. To be clear, I don't presume to have offered a knockdown argument for the *via negativa*. For one thing, the claim that VN Physicalism is deserving of the name is defeasible, for I haven't shown that there are *no* possible worlds at which physicalism as we normally understand it is clearly false but where VN Physicalism is true. For another, I haven't considered the matter of whether an account of the mental is available for the task at hand.

Be that as it may, the argument put forth in this paper, if sound, shows that the *via negativa* is the *only* conception of the physical which can possibly account for our various intuitions about the conditions under which physicalism holds. In other words, either the *via negativa* can be made to work, or there is indeed no version of physicalism deserving of the name.

Acknowledgments I am grateful to John Bigelow, Jakob Hohwy, Graham Oppy, and David Spurrett for helpful discussions. Special thanks to Daniel Stoljar, who provided extensive written feedback on an earlier draft, and to two anonymous reviewers for this journal, whose discerning comments much improved the final version of the paper.

References

- Armstrong, D. M. (1993). *A materialist theory of the mind (revised ed.)*. London: Routledge.
- Baltimore, J. A. (2013). Stoljar's twin-physics world. *Philosophia*, 41(1), 127–136.
- Block, N. (1980). Troubles with functionalism. In N. Block (Ed.), *Readings in philosophy of psychology* (Vol. 1). Cambridge, MA: Harvard University Press.
- Broad, C. D. (1925). *The mind and its place in nature*. London: Routledge & Kegan Paul.
- Brown, R., & Ladyman, J. (2009). Physicalism, supervenience and the fundamental level. *The Philosophical Quarterly*, 59(234), 20–38.
- Cameron, R. P. (2008). Turtles all the way down: regress, priority and fundamentality. *The Philosophical Quarterly*, 58(230), 1–14.
- Chalmers, D. (1996). *The conscious mind*. Oxford: Oxford University Press.
- Chomsky, N. (2009). The mysteries of nature: how deeply hidden? *The Journal of Philosophy*, 106(4), 167–200.
- Dowell, J. L. (2006). The physical: empirical, not metaphysical. *Philosophical Studies*, 131(1), 25–60.
- Feigl, H. (1958). The mental and the physical. In H. Feigl, M. Scriven, & G. Maxwell (Eds.), *Minnesota studies in the philosophy of science* (Vol. 2). Minneapolis: University of Minnesota Press.
- Goodman, N. (1983). *Fact, fiction, and forecast* (4th ed.). Cambridge, MA: Harvard University Press.
- Gustavsson, K. (2010). Charlie Dunbar Broad. In E. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (fall ed.). <http://plato.stanford.edu/archives/fall2010/entries/broad>.

- Jackson, F. (1998). *From metaphysics to ethics*. Oxford: Oxford University Press.
- Judisch, N. (2008). Why non-mental won't work: on Hempel's dilemma and the characterization of the physical. *Philosophical Studies*, 140(3), 299–318.
- Markosian, N. (2000). What are physical objects? *Philosophy and Phenomenological Research*, 61(2), 375–395.
- McLaughlin, B. P. (1992). The rise and fall of British emergentism. In A. Beckermann, H. Flohr, & J. Kim (Eds.), *Emergence or reduction?*. Berlin: Walter de Gruyter.
- Melnyk, A. (2003). *A physicalist manifesto*. Cambridge: Cambridge University Press.
- Montero, B. (1999). The body problem. *Noûs*, 33(2), 183–200.
- Montero, B. (2001). Post-physicalism. *Journal of Consciousness Studies*, 8(2), 61–80.
- Montero, B. (2006). Physicalism in an infinitely decomposable world. *Erkenntnis*, 64(2), 177–191.
- Montero, B. (2009). What is the physical? In B. McLaughlin, A. Beckermann, & S. Walter (Eds.), *The Oxford handbook of philosophy of mind*. Oxford: Oxford University Press.
- Montero, B. (2012). Review of Daniel Stoljar, *Physicalism*. *Notre Dame Philosophical Reviews*. <http://ndpr.nd.edu/news/31706-physicalism>.
- Nagasawa, Y. (2012). Infinite decomposability and the mind-body problem. *American Philosophical Quarterly*, 49(4), 357–368.
- Ney, A. (2008). Defining physicalism. *Philosophy Compass*, 3(5), 1033–1048.
- Papineau, D. (2002). *Thinking about consciousness*. Oxford: Oxford University Press.
- Pettit, P. (1993). A definition of physicalism. *Analysis*, 53(4), 213–223.
- Place, U. T. (1956). Is consciousness a brain process? *British Journal of Psychology*, 47, 44–50.
- Poland, J. (1994). *Physicalism: the philosophical foundations*. Oxford: Oxford University Press.
- Poland, J. (2003). Chomsky's challenge to physicalism. In L. Antony & N. Hornstein (Eds.), *Chomsky and his critics*. Oxford: Blackwell.
- Rawls, J. (1971). *A theory of justice*. Cambridge, MA: Harvard University Press.
- Schaffer, J. (2003). Is there a fundamental level? *Noûs*, 37(3), 498–517.
- Smart, J. J. C. (1959). Sensations and brain processes. *The Philosophical Review*, 68(2), 141–156.
- Spurrett, D. (2001). What physical properties are. *Pacific Philosophical Quarterly*, 82, 201–225.
- Spurrett, D., & Papineau, D. (1999). A note on the completeness of physics. *Analysis*, 59(1), 25–29.
- Stoljar, D. (2010). *Physicalism*. London: Routledge.
- Weber, B. (2011). Life. In E. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (winter ed.). <http://plato.stanford.edu/archives/win2011/entries/life>.
- Wilson, J. (2006). On characterizing the physical. *Philosophical Studies*, 131(1), 61–99.
- Wolfe, C. T. (2011). From substantialist to functional vitalism and beyond: animas, organisms and attitudes. *Eidos*, 14, 212–235.