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## Stoljar's Twin-Physics World

### Introduction

In his recent book *Physicalism*, Daniel Stoljar argues that there is no version of physicalism that is both true and deserving of the name (Stoljar 2010, Ch. 3-4). Central to Stoljar's argument is his method of cases:

[A]s I will understand it here, the method of cases is a method whereby we test various proposed analyses of concepts or theses. In particular, what the method of cases asks us to do is consider a variety or range of possibilities and then ask a pair of questions concerning each of them: 'Would the concept *on the proposed analysis* apply in this case?' and 'Would the concept *as we normally understand it* apply in this case?' To the extent that our answers to these questions coincide across the range of cases at issue, we have confirmation of the proposed analysis (Stoljar 2010, pp. 57-58).

Stoljar applies this methodology to various formulations of physicalism, all of which involve the following claim: Physicalism is true if and only if every instantiated property is necessitated by some instantiated physical property. The formulations of physicalism differ solely in what they take to be a physical property.<sup>1</sup>

Beginning with what Stoljar calls "the Starting Point View," a physical property is defined thusly:

- (*Starting Point Physical Property*) *F* is a physical property if and only if:
- (a) *F* is one of the distinctive properties of physical objects; and
  - (b) *F* is expressed by a predicate of a physical theory; and
  - (c) *F* is objective; and
  - (d) *F* is a property we could come to know about through the methods of science; and
  - (e) *F* is not one of the distinctive properties of souls, ectoplasm, ESP, etc. (2010, p. 57)

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<sup>1</sup> Throughout this paper, then, the presentations of different versions of physicalism will focus on their distinctive characterizations of a physical property.

Stoljar allows that the Starting Point View might be a version of physicalism deserving of the name, since the cases for which the Starting Point View holds are cases for which physicalism, as we normally understand it, holds as well. However, argues Stoljar, the Starting Point View is rendered false by modern physics, which posits properties that do not satisfy condition (a) and are not necessitated by any properties that satisfy condition (a).<sup>2</sup> Whether it be, for example, the distinctive properties of fields, or of quantum wave-function states, or of super-strings, the empirical data pushes contemporary physicists to posit properties that are clearly not identical with (nor even necessitated by) any of the distinctive properties of ordinary physical objects (e.g., rocks, tables, and washing machines).

Stoljar also considers formulations of physicalism belonging to what he calls “the liberalization project.” The liberalization project provides characterizations of a physical property that are less restrictive than the one found in the Starting Point View. Those less restrictive accounts of a physical property in turn yield more liberal formulations of physicalism, which are not so easily falsified by the findings of physics. However, argues Stoljar, his method of cases reveals such formulations of physicalism to be undeserving of the name. (A case central to this part of Stoljar’s argument will be addressed below.)

Assuming that, in formulating physicalism, one must adopt either the Starting Point View or a formulation belonging to the liberalization project, Stoljar concludes that there is no version of physicalism that is both true and deserving of the name. He summarizes his argument thusly:

P<sub>1</sub>     In formulating physicalism, we must operate either with the Starting Point View or some liberalized version of the Starting Point View.

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<sup>2</sup> Stoljar assumes that we do know (and can even roughly define) what a physical *object* is on the basis of exemplars, e.g. a washing machine and a rock. Yet, according to Stoljar, physicalism is formulated in terms of physical *properties*, and “it is not a trivial matter to extend the idea of physicality from objects to properties” (2010, pp. 52-54).

- P<sub>2</sub> 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.
- P<sub>3</sub> 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. (2010, p. 90)

In this paper, I will challenge the success of Stoljar's argument by bringing into question P<sub>3</sub>. That is, I will argue that Stoljar fails (using his method of cases) to show that the liberalization project offers no version of physicalism deserving of the name. The significance of this challenge is made evident in the paper's final section, where the importance of Stoljar's argument for our understanding of physicalism is highlighted.

### **The Theory View**

Among the more liberal formulations of physicalism, Stoljar considers "the Theory View," which defines a physical property thusly:

*(Theory-Based Physical Property)*  $F$  is a physical property if and only if  $F$  is expressed by a predicate of a physical theory. (2010, p. 71)

Stoljar takes a physical theory to be "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" (2010, p. 73). He notes that this rather open-ended account of a physical theory results in the Theory View being rather open-ended as well—a result he takes to be in keeping with the aims of the liberalization project.

There are, though, many different physical theories. So which one is intended by the proponent of the Theory View? Stoljar insists that the wrong way to answer this question is by

appeal to some specific formulated theory, for “physicalism is supposed to be a thesis that abstracts away from the scientific detail” (2010, p. 74). The better answer, claims Stoljar, is that “what is intended is simply the *true* physical theory whether or not it has been formulated” (2010, p. 75). Stoljar then distinguishes between two versions of the Theory View: actual theory physicalism and possible theory physicalism. Actual theory physicalism employs the following definition of a physical property:

*(Theory-Based Physical Property: Actualist Version)*  $F$  is a physical property if and only if  $F$  is expressed by a physical theory that is true at the actual world. (2010, p. 75)

And possible theory physicalism adopts the following definition of a physical property:

*(Theory-Based Physical Property: Possibilist Version)*  $F$  is a physical property if and only if  $F$  is expressed by a physical theory that is true at some possible world or other (i.e. not necessarily the actual world). (2010, p. 75)

Neither version of the Theory View, argues Stoljar, deserves the name *physicalism*.

Concerning actual theory physicalism, Stoljar (applying his method of cases) rests his argument against the position on a particular case. Since the case is so central to his argument, I will quote in full his development of it:

Suppose we agree that contemporary physics tells us that various properties, e.g. mass, spin, and charge, are the fundamental properties, in Lewis’s sense. Now imagine a twin-earth or twin-world at which the fundamental properties are some other properties, assumed to be of a quite different character to mass, spin, and charge. I am not imagining here that the properties in question are spiritual or mental or conform to any paradigm we have of a non-physical property. I am simply imagining a world that is similar to our own from an evidential point of view except that the fundamental properties are different. In other words, imagine:

THE TWIN-PHYSICS WORLD: this is a possible world or twin-earth at which every property is necessitated by twin-mass, twin-charge, and twin-spin. The properties instantiated at this world duplicate whatever properties are instantiated at the actual world, insofar as this is possible.

The possible world described here is a variation of a famous story in philosophy due to Hilary Putnam, the twin-earth story... In Putnam’s original case, we are asked to imagine that we are back in 1750 before the development of modern chemistry. In our world, the

stuff that we call water, the stuff that fills up the bathtub and falls from the sky as rain (or fails to fall from the sky as rain, if you live in a drought-affected part of the earth) is the chemical compound H<sub>2</sub>O. On twin-earth, however, it is a quite different compound that, from the point of view of eighteenth-century science, is indistinguishable. Putnam used the example to argue that the reference of various terms like ‘water’ is determined not by factors internal to individual speakers (or the bodies of individual speakers) but by the way in which speakers are related to their environment; here we will adopt the basic idea of the example to a different topic, the interpretation of physicalism. (2010, p. 77)<sup>3</sup>

Stoljar claims that physicalism, as we normally understand it, is clearly true at the twin-physics world, while actual theory physicalism is not. So, by Stoljar’s method of cases, actual theory physicalism is disconfirmed by the case of the twin-physics world—it is not a formulation of physicalism deserving of the name.

To his credit, Stoljar (2010, p. 79) considers whether this conclusion could be reached by employing cases other than the twin-physics world, such as the world of the classical atomist. He is skeptical of that option. Stoljar observes that one might develop the Theory View so that a physical property is defined not in terms of simply those properties expressed in the *true* statements of a physical theory, but in terms of those properties that can be expressed in the theory’s language more broadly construed. With such an adjustment to the Theory View, it becomes unclear that actual theory physicalism fails to hold at the atomist world: “For it is unclear that properties distinctive of atomism cannot be expressed in the language of actual physics, even if atomism is not true in the actual world” (2010, p. 79). This sort of move on behalf of the Theory View prompts Stoljar to conclude that “we are obliged to use cases like the twin-physics world, and not simply cases like the atomist world, to argue that physicalism is not actual theory physicalism” (2010, p. 79).

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<sup>3</sup> For Putnam’s twin-earth story, see Putnam (1975).

## **Challenging Stoljar's use of the twin-physics world**

In what follows, I will argue that there are serious difficulties with Stoljar's use of the twin-physics world. Towards drawing out the difficulties, recall the thought experiment on which the twin-physics world is based: Putnam's twin-earth story. Notice that Putnam's original use of the thought experiment can afford to be extremely liberal regarding the nature of twin-water. With respect to Putnam's aim of arguing for semantic externalism, all that is required of the constitution of twin-water is that it is not H<sub>2</sub>O and, when viewed from the perspective of eighteenth-century science, indistinguishable from water. Twin-water could, then, involve a conscious constituent of the sort posited by panpsychists! Now, I am not suggesting that Putnam actually took the constitution of twin-water to involve a conscious constituent or to be in anyway incompatible with physicalism. Rather, I am merely pointing out that, with respect to arguing for semantic externalism, the effectiveness of Putnam's original thought experiment does not require the constitution of twin-water to be compatible with physicalism. In short, even if Putnam himself assumed that the constitution of twin-water was compatible with physicalism, that assumption is not essential to the effectiveness of his thought experiment in arguing for semantic externalism.

Plainly, Stoljar's twin-physics world cannot be so liberal regarding the character of twin-mass, twin-charge, and twin-spin. For instance, if twin-charge is a conscious property, then the twin-physics world is not a possible world at which physicalism, as we normally understand it, is true. But Stoljar needs the twin-physics world to be a world at which physicalism intuitively holds in order to use it to disconfirm actual theory physicalism. Therefore, it cannot be the case that, for the twin-physics world, one is "simply imagining a world that is similar to our own from an evidential point of view except that the fundamental properties are different" (Stoljar 2010, p.

77). If one were using the twin-physics world to argue for semantic externalism, this might very well provide a sufficient characterization of the fundamental properties of the twin-physics world. But given Stoljar's aim of disconfirming actual theory physicalism, one needs to provide a more robust characterization of the fundamental properties of the twin-physics world. When, for example, certain panpsychists picture our world, they do so by imagining a world similar to our own from an evidential point of view except that (assuming panpsychism is false) the fundamental properties are different. Yet the twin-physics world *they* imagine is not a world at which physicalism intuitively holds.

One might, on Stoljar's behalf, attempt to resist this pressure to provide a more robust characterization of the fundamental properties of the twin-physics world. Of course, Stoljar's case would be more convincing were he more specific as to what those properties are. But, one might contend, he need not be: Stoljar requires only that the twin-physics world illicit the intuitive judgment that physicalism holds there despite its fundamental properties being not the actual ones (e.g., mass, charge, and spin) but something different (whatever that may be).

Stoljar's twin-physics world cannot serve this purpose effectively, however, without further restrictions on its fundamental properties. With twin-mass, twin-charge, and twin-spin characterized in so open a fashion, panpsychism is not clearly false at the twin-physics world and, so, physicalism is not clearly true at that world. Moreover, Stoljar's method of cases is effective only insofar as a given world generates *clear* intuitions about whether or not physicalism holds at that world. Therefore, Stoljar needs the content of the twin-physics world to elicit the judgment that it is a world where physicalism *clearly* holds. Again, though, the twin-

physics world fails in this regard, as its fundamental properties are characterized in too open a fashion.<sup>4</sup>

### **Appealing to further restrictions on the fundamental properties of the twin-physics world**

In response to the above challenge, one might recall that Stoljar adds the following qualification: “I am not imagining here that the properties in question are spiritual or mental or conform to any paradigm we have of a non-physical property” (2010, p. 77). But this restriction, call it “Stoljar’s Requirement,” ensures only that the fundamental properties of the twin-physics world are not non-physical properties of a *paradigmatic* sort. It is consistent with Stoljar’s Requirement that the fundamental properties of the twin-physics world are non-physical properties of a *non-paradigmatic* sort. Therefore, more still needs to be said about the nature of the fundamental properties of the twin-physics world in order to ensure that the twin-physics world is one at which physicalism intuitively holds.

Towards meeting this need, it is tempting to appeal to the following requirement:

*(Dissimilarity Requirement)* The fundamental properties of the twin-physics world are not similar to any paradigm we have of a non-physical property.

This move, though, is not one to which Stoljar can help himself. The problem, as we will see below, is rooted in Stoljar’s response to the actual theory physicalist’s appeal to similarity.

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<sup>4</sup> Note as well that it cannot be that the twin-physics world serves Stoljar’s purposes so long as it provides a world at which physicalism intuitively holds despite its fundamental properties being different than those posited by actual physics. The atomist world is such a world. Yet, as previously indicated, Stoljar confesses that the atomist world is unlikely to disconfirm actual theory physicalism, since actual theory physicalism need not be limited to counting as physical properties those properties expressed in the *true* statements of actual physics. More, then, is expected of Stoljar’s twin-physics world, namely, that twin-mass, twin-charge, and twin-spin cannot be expressed in the language of actual physics *more broadly construed*. The primary contention at the present, though, is that Stoljar cannot even get the initial step of having physicalism intuitively hold for his twin-physics world.



In order to ensure that their version of physicalism holds at Stoljar's twin-physics world, actual theory physicalists might expand their account of a physical property with a similarity condition:

*(Theory-Based Physical Property: Expanded Actualist Version)*  $F$  is a physical property if and only if

- (a)  $F$  is expressed by a predicate of a physical theory that is true in the actual world; or
- (b)  $F$  is similar to the sort of property that is expressed by a predicate of a physical theory that is true in the actual world. (2010, p. 85)

Stoljar gives two replies to this modification of actual theory physicalism. First, Stoljar points out, "One problem with the proposal, of course, is that it is plausible only because it is very coy about what the dimensions of similarity are. A priori, anything is similar to any thing else" (2010, p. 85). Yet a parallel concern arises for the Dissimilarity Requirement. One could equally charge that the Dissimilarity Requirement plausibly ensures that physicalism intuitively holds at the twin-physics world only because it is very coy about what the dimensions of dissimilarity are.

Second, Stoljar argues that, even putting aside the general problem about similarity, the appeal to similarity cannot save actual theory physicalism:

For consider the twin-physics world again. Are the properties instantiated at this world similar in the relevant respects to those instantiated in the actual world or not? Either answer to this question leads to trouble. On the one hand, if they are similar, it is unclear that the properties instantiated at the classical dualist world (or perhaps other non-physicalist worlds) are not similar in those respects too. But then a version of physicalism that employs [Theory-Based Physical Property: Expanded Actualist Version] will be true at the dualist world. On the other hand, if they are not similar, the version of physicalism that employs [Theory-Based Physical Property: Expanded Actualist Version] will not be true at the twin-physics world. (2010, p. 85)

Thus, according to Stoljar, the appeal to similarity fails because it renders actual theory physicalism either true at a world where no version of physicalism should be true (i.e. the

classical [Cartesian substance] dualist world) or false at a world where no version of physicalism should be false (i.e. the twin-physics world).

As with Stoljar's first reply to the actual theory physicalist's appeal to similarity, this second reply also conflicts with using the Dissimilarity Requirement to ensure that physicalism intuitively holds at the twin-physics world. To see why, consider (from the quote above) Stoljar's concern that the appeal to similarity fails to clearly make actual theory physicalism true at the twin-physics world without also making it true at a non-physicalist world. Were Stoljar correct, a parallel concern would arise for the Dissimilarity Requirement. If the fundamental properties of the twin-physics world are dissimilar in the relevant respects to any paradigm we have of a non-physical property, then—the concern would go—it is unclear that they are not also dissimilar in those respects to any paradigm we have of a physical property. But then the twin-physics world would still fail to be a world at which physicalism, as we normally understand it, clearly holds.

So, both of Stoljar's replies to the actual theory physicalist's appeal to similarity prevent him from appealing to the Dissimilarity Requirement. And Stoljar cannot simply abandon those replies to the actual theory physicalist in order to help himself to the Dissimilarity Requirement, for then the actual theory physicalist has an unanswered move for getting their account to be true at the twin-physics world. The difficulty here can be put in the form of a dilemma: Either Stoljar's replies to the actual theory physicalist's appeal to similarity are successful or they are not. If they are successful, then Stoljar cannot appeal to the Dissimilarity Requirement in order to ensure that physicalism intuitively holds at the twin-physics world. If they are not successful, then Stoljar is in need of a response to the actual theory physicalist's appeal to similarity. Either way, it remains the case that Stoljar fails to show that the twin-physics world disconfirms actual theory physicalism.

Recall that the Dissimilarity Requirement was initially considered as a way of supplementing Stoljar's Requirement (i.e. the requirement that the fundamental properties of the twin-physics world are not non-physical properties of a paradigmatic sort). Stoljar's Requirement, we observed, was insufficient because it was consistent with the fundamental properties of the twin-physics world being non-physical properties of a *non-paradigmatic* sort. But there is another problem with Stoljar's Requirement, one that takes the form of a dilemma as well. In this case, though, the relevant conflict is between Stoljar's Requirement and Stoljar's reply to the *via negativa*, which is another move belonging to the liberalization project.

The *via negativa* is "the idea that one may define what a physical property is negatively, as not something else." (Stoljar 2010, p. 87). A proponent of the *via negativa* might say that something is a physical property if and only if it is not one of the distinctive properties of souls, ectoplasm, etc. Stoljar acknowledges that one could add to this list indefinitely in order to avoid having one's account of physicalism turn out true at worlds at which no version of physicalism should be true. Nonetheless, Stoljar contends that the *via negativa* is not a good way of telling us what a physical property is: "It is perfectly true in principle that one can say what a thing is by listing all the possible things it is not, but by the same token this is not a good way of explaining what a thing is" (2010, p. 87). Yet notice that Stoljar's Requirement attempts to tell us what the fundamental properties of the twin-physics world are by telling us what they are not (i.e. that they are not non-physical properties of a paradigmatic sort). If Stoljar's reply to the *via negativa* is correct, then Stoljar's Requirement is not a good way of explaining what the fundamental properties of the twin-physics world are. Thus, Stoljar's reply to the *via negativa* conflicts with using Stoljar's Requirement to make clear that the twin-physics world is one at which physicalism intuitively holds.

Now, the dilemma that results from this conflict is not one that necessarily helps actual theory physicalism. Instead, the immediate beneficiary is the larger liberalization project, which can offer either actual theory physicalism or a version of physicalism employing the *via negativa*. Here is the dilemma: Either Stoljar's reply to the *via negativa* is successful or it is not. If it is successful, then Stoljar's Requirement cannot help ensure that physicalism intuitively holds at the twin-physics world, leaving the twin-physics world unable to disconfirm actual theory physicalism. If it is not successful, then Stoljar is in need of a response to the liberalization project's appeal to the *via negativa*. Either way, Stoljar fails to show that the liberalization project provides no formulation of physicalism deserving of the name.

These dilemmas suggest a general worry about any other conditions Stoljar might appeal to in order to ensure that physicalism intuitively holds at the twin-physics world. The worry is that such appeals would similarly provide the liberalization project with resources to handle Stoljar's method of cases. After all, Stoljar's project of ensuring that physicalism intuitively holds at the twin-physics world has a good deal in common with the liberalization project, for both projects need to provide restrictions on the fundamental properties of a world so as to ensure that physicalism intuitively holds at that world. There is, of course, the following difference between the two projects: Stoljar's project needs to provide the relevant restrictions for only the twin-physics world, while the liberalization project needs to do so for any world at which physicalism intuitively holds. Still, additional contributions on behalf of Stoljar's project face the *threat* of saving his claim that physicalism intuitively holds at the twin-physics world only to undermine some other component of his method-of-cases argument against the liberalization project. And as we have seen with the Dissimilarity Requirement and Stoljar's Requirement, this is a legitimate threat.

Let us summarize the argument of this paper. Putman's use of his original version of the twin-earth story can afford to be rather liberal concerning the details of twin-water's constitution. Stoljar, however, has more specific commitments regarding the character of twin-mass, twin-charge, and twin-spin: he needs those fundamental properties to be such that physicalism intuitively holds at the twin-physics world. Therefore, concerning Stoljar's use of the twin-physics world to disconfirm actual theory physicalism, the devil is in the details. Yet Stoljar fails to successfully attend to those details, rendering the twin-physics world unable to disconfirm actual theory physicalism. Furthermore, even if Stoljar were to elaborate on the details of the twin-physics world in a way that enabled the world to disconfirm actual theory physicalism, there is the threat that such success would come with a price, namely, allowing the liberalization project to regain a foothold elsewhere in handling Stoljar's method of cases. In any event, Stoljar has failed to show that the liberalization project offers no version of physicalism deserving of the name.

### **The importance of Stoljar's Argument**

In bringing this paper to a close, it is worth appreciating the importance of Stoljar's argument. When it comes to formulating physicalism, the standard dilemma is not Stoljar's argument but, rather, what has come to be known as Hempel's dilemma.<sup>5</sup> According to Hempel's dilemma (or one standard formulation of it), the physicalist must characterize a physical property by reference to either current physics or some future (ideal) physics. If a physical property is defined by reference to current physics, then physicalism is false, since there are surely fundamental properties that physics has not yet discovered. If a physical property is defined by reference to future (ideal) physics, then it is unclear what physicalism claims, since it is unclear

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<sup>5</sup> For Carl Hempel's presentation of the dilemma, see Hempel (1969).

what sort of properties future physics might end up positing. Therefore, physicalism is either false or indeterminate in content.

Stoljar notes some interesting points of contrast between his dilemma and Hempel's. The main difference stems from how the dilemmas are framed. Hempel's dilemma is generated within a temporal or historical framework. It has the relevant physical theories distinguished in terms of when they appear in our timeline of scientific investigation, i.e. *current* physics vs. *future* (ideal) physics, which in turn helps to generate the charge of physicalism being either false or indeterminate in content. In contrast, Stoljar's dilemma:

tries to generate a problem for the formulation of physicalism from within a modal framework, a framework that involves reflection on possible cases. The key idea of our dilemma is that we have various intuitions about the conditions under which physicalism is true, and it is impossible (or so the argument claims) to produce a formulation of physicalism that respects those intuitions. (2010, p. 107)

Furthermore, argues Stoljar, this difference provides some advantages for his dilemma over Hempel's dilemma. First, there is the advantage of being able to avoid getting too involved in questions about the history of science, such as how far it has come, and how far it might still have to go. Stoljar indicates how these sorts of questions afflict Hempel's dilemma (due to its temporal/historical framework) and ultimately terminate in stalemates between optimistic and pessimistic positions on the status of current physics (2010, pp. 101-103, p. 107). Second, Stoljar claims that his dilemma, with its modal framework, better serves the purpose of conceptual analysis. Were one primarily interested in whether or not physicalism is *true*, then perhaps it would not be so odd to employ the temporal/historical framework associated with Hempel's dilemma. But conceptual analysis of physicalism concerns what physicalism *is*, which is more naturally pursued with Stoljar's method of cases (2010, pp. 107-108).

Stoljar acknowledges that, in light of these points, one might take his dilemma to better capture the real intention behind Hempel's dilemma. If so, then Stoljar's dilemma (and evaluation of it) would inherit much of the importance associated with Hempel's dilemma. In any case, Stoljar's dilemma provides a fresh entry into the issue of how to characterize a physical property in formulating physicalism. Indeed, Stoljar's book is one of the more extensive contributions to the topic in recent years, warranting careful consideration in its own right.

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