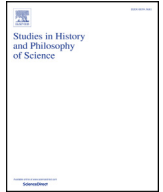




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journal homepage: www.elsevier.com/locate/shpsaIn defense of interventionist solutions to exclusion[☆]Thomas W. Polger^{a,*}, Lawrence A. Shapiro^b, Reuben Stern^c^a University of Cincinnati, United States^b University of Wisconsin – Madison, United States^c LMU Munich – Munich Center for Mathematical Philosophy, Germany

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A legitimate causal claim should have an intelligible interpretation in terms of counterfactuals the antecedents of which are coherent or make sense.

—James Woodward

1. Introduction

Big things depend for their existence on little things. But just imagine if, because this is true, only little things are causes. The hot summer sun couldn't soften the asphalt but bouncing hydrogen and helium atoms could; sledge hammers couldn't break through plastered lath but iron and wood could (better – their molecules could); desires for chocolate couldn't induce you to ransack your child's Halloween bag, but neural activity could.

This world where macroproperties abdicate all causal responsibility to microproperties sounds nothing like our world. But according to an influential line of reasoning, this world *is* our world.

Jaegwon Kim (1993, 1998, 2005) is the principal proponent of the causal exclusion argument, which purports to establish this conclusion in the special case of the mental and the physical. But many worry that the conclusion generalizes to undermine all special sciences (e.g., Bontly, 2002). And the responding literature is extensive.¹ Most promising among these responses is a strategy that makes use of an interventionist theory of causal explanation, such as that advanced by James Woodward in his book *Making Things Happen* and other works.² Lawrence Shapiro, Elliott Sober, and Woodward himself have argued that the interventionist framework allows us to escape what Kim calls “Descartes's Revenge” (Shapiro & Sober, 2007; Shapiro 2010; Woodward, 2000, 2008, 2014, 2017). Although the interventionist solutions to the exclusion problem vary in their details, they share a common thread: From the interventionist perspective, macro- or higher-level properties and the micro- or lower-level properties on which they depend do not causally compete—both the hot August sun *and* hydrogen and helium atoms cause the asphalt to soften. The interventionist solution thus restores sense to a world roiled by Kim's reasoning.³

Too bad, then, that Michael Baumgartner finds fault with the solution. According to Baumgartner (2009, 2010, 2013), the conclusion to draw from the deployment of interventionism to the exclusion problem is just the opposite—if interventionism is the correct account of causal explanation, then macroproperties do indeed cede their causal potency to the microproperties on which they supervene. He argues that not only does interventionism not

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* Corresponding author.

E-mail addresses: thomas.polger@uc.edu (T.W. Polger), lshapiro@wisc.edu (L. A. Shapiro), Reuben.Stern@lrz.uni-muenchen.de (R. Stern).

¹ For example: Yablo, 1992; Bontly, 2002; Bennett, 2003, 2008; Block, 2003; Kallestrup, 2006; Walter, 2008; List & Menzies, 2009; Ney, 2009; Shapiro, 2011; Sober, 1999.

² Woodward (2000, 2002, 2003, 2006, 2008), and Hausman and Woodward (1999). See also Hitchcock and Woodward (2003) and Woodward and Hitchcock (2003).

³ This is not to say that one *must* adopt an interventionism to respond to Kim. Sober (1999) defends a probabilistic conception of physicalism according to which macro- and microproperties needn't be in competition with each other.

help with the causal exclusion argument, but that attempting to apply the framework to exclusion reveals severe problems with the whole interventionist framework. According to Baumgartner, interventionism cannot account for *any* cases of macroscopic or cross-level causation. If correct, this would be a devastating critique of the interventionist approach to causal explanation. So an evaluation of Baumgartner's arguments is urgently needed.

Though we acknowledge that Baumgartner's critique may have some pull against Woodward's canonical treatment of interventionism in *Making Things Happen*, we argue that a broadly interventionist framework can be easily rescued. The details will come later, but the basic suggestion is that interventionists can immunize themselves from Baumgartner's objections by specifying the crucial notion of *intervention* such that interventions on a mental state can be correlated with the mental state's physical supervenience base. The account of interventions that we prefer is motivated by the requirements of conducting real-world experiments. Contrary to what Baumgartner would conclude, the impossibility of controlling for every off-path variable does not automatically make it impossible to perform experimental interventions. If our argument is correct, we believe that it obviates Baumgartner's concerns about micro-macro relations (indeed, all non-causal relations) when it comes to evaluating the interventionist solution to the exclusion problem.⁴ More generally, we defend the adequacy of the interventionist approach for justifying multi-level causal explanations.

2. The causal exclusion problem

The causal exclusion argument challenges the non-reductive physicalist to explain how mental states or properties can be causally efficacious. Kim (e.g., 1998), in particular, has made use of the argument to pressure non-reductive physicalists to abandon their antireductionist scruples in order to save mental causation from the epiphenomenalist threat. Kim does not deny mental causation. Indeed, *pace* Baumgartner (as we will frequently remind the reader), the causal exclusion argument assumes that there is mental causation. The argument challenges us to explain how such causation can be made consistent with other commitments of non-reductive physicalism.

Karen Bennett's explication of the exclusion problem makes this plain. As she presents it, the threat of exclusion arises from five independently plausible but mutually inconsistent theses (2008: 281):

⁴ Woodward (2014) addresses some of the problems with Baumgartner's approach, and we agree with much of what he says. But we can improve upon Woodward's response in several ways: First, Woodward accepts Baumgartner's construction of the exclusion problem, but that itself is confused. Second, Woodward allows Baumgartner to put special pressure on the inclusion of variables that stand in non-causal relations in causal graphs. But we show that Baumgartner's analysis delivers the wrong results even when only ordinary causal relations are included. Third, and relatedly, Woodward admits that he did not previously make special allowances for variables that stand in non-causal relations to one another; he simply assumed that the variables under consideration stood only in causal relations to one another. In response to Baumgartner, then, he considers how interventionist principles could be revised to handle such relations. But we argue that interventionists have the resources to exclude such connections without any special pleading on behalf of non-causal relations or any adjustments to the interventionist principles that constitute the formal approach to causal modeling on which Woodward grounds his theory. That said, we ultimately do think that Woodward must revise his account insofar as he breaks from his earlier self (Hausman & Woodward, 1999) and the causal modeling framework that provides the grounds for the interventionist approach to causation (e.g., Pearl, 2009; Spirtes, Glymour, & Scheines, 2000).

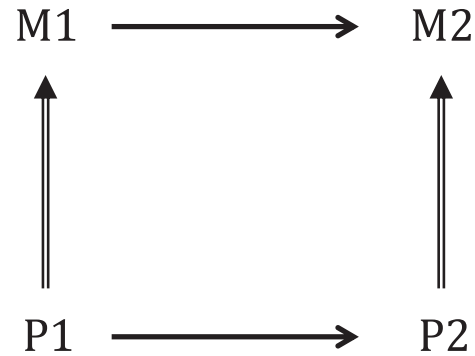


Fig. 1. Kim's Model. Horizontal solid arrows represent causal relations. Vertical hollow arrows represent non-causal dependence relations, e.g., supervenience or realization.

Distinctness: Mental properties (and perhaps events) are distinct from physical properties (or events).⁵

Completeness: Every physical occurrence has a sufficient physical cause.⁶

Efficacy: Mental events sometimes cause physical ones, and sometimes do so in virtue of their mental properties.

Non-overdetermination: The effects of mental causes are not systematically overdetermined; they are not on a par with the deaths of firing squad victims.

Exclusion: No effect has more than one sufficient cause unless it is overdetermined.⁷

In this schema, Kim advocates abandoning Distinctness—the key non-reductive claim—in order to preserve Efficacy. Others have proposed giving up Non-overdetermination (Morris, 2011; Sider, 2003), or giving up Exclusion (Bennett, 2003, 2008; Bontly, 2005; Yablo, 1992). But it is important that the exclusion argument is not intended to show the impossibility of mental causation. On the contrary, Efficacy is assumed. The question, rather, is how the causal efficacy of mental properties and events can be made consistent with the other commitments of non-reductive physicalism.

“Solving” the exclusion problem requires either showing that the above five theses are compatible after all, or making a choice about which otherwise plausible thesis should be abandoned. For the interventionist account of causal explanation to solve the exclusion problem, it must either provide resources that render the theses compatible or ground a principled choice about which thesis to reject. We favor the second option. As we show below, the interventionist can reject Exclusion while retaining Efficacy and Distinctness.⁸

To begin, consider the familiar picture of mental and physical causation presented by Jaegwon Kim (Fig. 1).

⁵ Bennett does not specify precisely the sense of distinctness she intends. Because mental properties supervene on physical properties, distinctness cannot mean “wholly distinct”. We take it that distinctness at least implies the non-identity of properties. But Distinctness should not rule out supervenience.

⁶ If one wishes to avoid a commitment to determinism, one can interpret completeness as saying that for every event E, a prior physical cause C at t1 screens off all other causes at t1 from E (Sober, 1999). We'll simply adopt Bennett's characterization of completeness in what follows.

⁷ Exclusion must be interpreted as a claim about what Woodward (2003) calls *direct* causes, which are always relative to a given graph. Graphs almost never represent every cause, direct or otherwise.

⁸ Of course some interventionists may think there are independent reasons for rejecting Efficacy or Distinctness. Some of the authors are inclined to reject both Exclusion and Distinctness, for example.

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