Remaining Agnostic About Causal Closure

Abstract

Recent debates about physicalism display an increasing attention to the causal closure premise (CC). Advocates of the causal closure of the physical appear confident that the case for CC is pretty well closed. We here dispute this confidence. It is argued that the extant deductive arguments on behalf of CC beg the key question, while inductive and abductive arguments that do not presume CC are compatible with causal openness. I conclude that causal closure skeptics and agnostics are rationally justified in refraining from endorsing causal closure and offer an alternate explanation for the confidence of CC advocates.

Introduction

Recent debates about physicalism have given increasing attention to the causal closure premise (CC). As a rough first pass, CC states:

CC1: Every physical effect has a physical cause.[1]

Now, some physical effects – such as the Big Bang or a quantum fluctuation – might have no *physical cause* at all. So CC1 needs some modification. The proper modification, I think, is to reformulate causal closure as a modal claim about what must be true of physical effects if they have causes at all.[2]

CC2: "Every physical effect which has a cause has a sufficient physical cause."[3]

1. Compare Davidson: "… every physical event has a physical explanation." Papineau: "Anything having physical effects must itself be physical", David Papineau, *Thinking About Consciousness* (Clarendon Press, 2002). And Bishop: "All physical effects are fully determined by fundamental laws and prior physical events.", Robert Bishop, "The Hidden Premise in the Causal Argument for Physicalism," *Analysis* 66, no. 289 (2006): 44–52

2. I thank Louis Swingrover for challenging me to clarify this point.

3. E.J. Lowe, "Causal Closure Principles and Emergentism," *Philosophy* 75, no. 04 (2000): 575.

On this formulation, if causal closure is true, then even if non-physical gods, Platonic forms, or immaterial minds *exist*, they have no causal effect on the world. Thus, David Papineau:

> The causal closure of physics is solely a claim about how things go within physics itself. It does not assert that everything is physical, but only that those things that are physical have a physical cause. So it does not rule out realms of reality that are quite distinct from the physical realm.[4]

I agree with Papineau here, but there is still some legitimate dispute about the best way to formulate CC.[5] For my purposes, we can set some of these complications aside. I shall take CC to be the modest view that all physical events which have a cause at all have sufficient physical causes.

CC is an important claim with wide-reaching implications for philosophy of mind, philosophy of religion, and more. For example, Melynk appeals to CC when taking it upon himself to rebut the charge that that "there is just no evidence for physicalism."[6] He says:

> …contemporary physics has succeeded in finding sufficient physical causes for physical effects of very many kinds; and it has found no physical effects at all for which it is necessary (or even likely to turn out to be necessary) to invoke non-physical causes. But current physics' success to date in finding that many physical events have sufficient physical causes provides inductive evidence that all physical events, including both unexamined physical events and examined-but-as-yet-unexplained physical events, have sufficient physical causes.[7]

Melnyk is right that contemporary physics has made an impressive series of discoveries. And he is right that, while we have solved centuries-old mysteries about the true cause of some physical events, some other physical events remain mysteries. The moral he draws from this story, however, is a stronger claim: that we have good reason to infer that all physical events have physical causes.

I shall comment on the substance of Melnyk's appeal below. For now, consider how CC contributes to the argument for physicalism.[8] The argument for physicalism has three plausible premises. First, grant that mental events sometimes cause physical events. For example, my mental

4. David Papineau, "The Causal Closure of the Physical and Naturalism," in *The Oxford Handbook of Philosophy of Mind*, ed. Brian McLaughlin, Ansgar Beckermann, and Sven Walter (Oxford University Press, 2009), 54.

5. For a nice overview of possible formulations, confer Barbara Montero, "Varieties of Causal Closure." *Physicalism and Mental Causation: The Metaphysics of Mind and Action*, 2003, especially section 1.

6. Andrew Melnyk, "Some Evidence for Physicalism," in *Physicalism and Mental Causation: The Metaphysics of Mind and Action* (Imprint, 2003), 155–72.

7. Ibid.

8. For detailed arguments on behalf of physicalism, see David Papineau, "The Rise of Physicalism," in *Physicalism and Its Discontents*, ed. Carl Gillet and Barry Loewer (Cambridge University Press, 2007); Melnyk, "Some Evidence for Physicalism"; and Jaegwon Kim, *Physicalism, or Something Near Enough* (Princeton University Press, 2007).

picture of a relaxing beach side resort in Hawaii might cause me to go on an actual vacation to Hawaii. Secondly, grant that all physical events have physical causes (CC). In order to avoid the objection that some physical effects might have *both* physical and non-physical causes, we must state that physical effects cannot have two sufficient causes. It follows, then, that mental events *are* physical causes. Put systematically, the argument proceeds as follows:

1. Every physical effect has a physical cause. (CC)
2. There is no systematic causal overdetermination of physical effects. (Exclusion Principle)
3. Some mental events cause physical events.
4. Therefore, some mental causes are identical to physical causes.

It is for good reason that philosophers are giving the first premise in this argument increasing attention: the premise needs to be formulated much more precisely, and even if it is formulated it must be defended.[9] Regardless of CC's role in the argument for physicalism, my goal here is to to argue that there is no case for CC conclusive enough to persuade the undecided.

In the first and second sections, I explain the chief difficulty of deductive or *a priori* arguments for CC — namely, that they either beg the key question or else leave the cosmos vulnerable to mental or supernatural causes.

In the third and fourth sections, I examine inductive and abductive arguments for CC. Inductive arguments for causal closure are touted with more confidence by physicalists and rightly so: they explicitly avoid the problem of question-begging by deriving causal closure from premises an agnostic can accept. Nevertheless, I argue that such arguments are still inadequate to justify causal closure; some are fallacious, while others could equally be used to justify causal openness.

In the fifth section, I venture an alternative (and tendentious) explanation for why causal closure advocates find CC to be so obviously true. There are, I suggest, temperamental and attitudinal motives for accepting CC.

My primary purpose in this essay is to expose weaknesses in the extant arguments for causal closure so I would be glad if causal closure advocates were to generate new and better arguments on behalf of CC. In the meantime, my only positive claim is that one is rationally justified in remaining agnostic about causal closure.

I. Argument from Conservation

The first argument for causal closure derives from the conservation laws that play such an important role in modern physics. As David Papineau says:

> At first sight it might seem as if causal closure follows from the presence of conservation laws in physics: if there are laws specifying that important physical quantities

9. One of the bets recent attempts to "close in on causal closure" is Garcia (2014). See bibliography for others.

> stay constant over time, won't this show that the later values of physical quantities must be determined by earlier values?[10]

The argument from conservation laws proceeds like this: physicists take it for granted that the net quantity of matter and energy in the universe is fixed, in which case all apparent physical increases or decreases turn out to be mere *reconfigurations*. For *reductio*, assume that a nonphysical cause could have a physical effect. The resultant effect would not constitute a mere reconfiguration of the same total quantity of matter and energy that obtained in the prior moment. Rather, the new events would include matter and energy newly summoned *ex nihilo*. By the laws of conservation, such new influxes of matter or energy are impossible. Therefore, it is likewise impossible that a nonphysical cause could have a physical effect.

Why is this argument inadequate? Consider the following dilemma: On the one hand, vital and mental forces can be blocked by stipulation. If the argument from conservation laws simply presumes that 'physical effects' is a category that excludes vital, mental, supernatural forces etc., then it not just unlikely but *impossible* that such causes could have physical effects. But if the causal closure advocate stipulates, in advance, that vital and mental forces are incompatible with conservation laws, then the stipulation builds the conclusion of the argument into the first premise. (The apparently innocuous "conservation laws" cannot be used to argue for causal closure because they turn out to be clandestine re-statements thereof.) On this horn, the argument for causal closure becomes trivial and almost tautologous.

On the other hand, if the argument does not use the concept of 'physical effects' so as to define away counterexamples, then it becomes *a priori* possible that so-called vital or mental forces might turn out to belong in the category of vaguely defined 'physical effects.'

The point has been made several times: E.J. Lowe points out some that conservation laws do not rule out the views of "interactionist dualists, such as W. D. Hart, [who] have postulated the existence of 'psychic energy', which is convertible into physical energy in accordance with the conservation laws."[11] On Newtonian physics, a mind (a Cartesian mind, say) could affect its body by changing the *direction* of its motions rather than the *speed*. Furthermore, even on modern physics, the overall amount of kinetic energy can be reduced or increased in proportion to the inverse proportional increase or decrease in potential energy. Hence, perhaps supernatural or mental forces exist in the cosmos as latent potential energy. Lowe says that, "It won't do simply to object that energy is by definition a physical quantity, as this threatens to turn the dispute into a purely verbal one."[12] Robert Garcia makes a similar point when he argues that the conservation laws do not entail a "stringently pure version of closure"[13] according to which every physical effect has a physically-sufficient cause. It is at least conceivable that mental forces are in a class of basic, irreducible forces (with gravity and strong nuclear force).

I see no way around the dilemma. The physicalist must either allow that the physical science of, say, the year 3000 may countenance mental forces (so what would be the difference between physicalists and non-physicalists?) or else stipulate, in advance, that physical science will never

10. Papineau, "The Causal Closure of the Physical and Naturalism," 55.
11. Lowe, "Causal Closure Principles and Emergentism," 571.
12. Ibid., 571.
13. Garcia 101

countenance such forces (how could we know that?). In light of such reflections, Papineau concedes, "the Newtonian conservation of energy does not stop deterministic vital and mental forces affecting the physical realm."[14] It seems that merely citing conservation laws is not adequate to justify CC.

II. The Exclusion Principle

A second approach to CC depends on "The Exclusion Principle", which is the plausible notion that there is no systematic causal overdetermination of physical events. For example, if my taking a vacation to Hawaii was caused *both* by neural firings *and* by my mental picture of a relaxing beach side resort, then there are two sufficient causes for the same thing. The presence of two independent sufficient causes for the same event seems to be absurd in light of our deep seated intuitions about the nature of causation. Instead, physical events seem explicable in terms of one kind of cause – such as efficient-material causation.[15] Papineau says:

> According to the causal-closure thesis, this physical effect already has a sufficient physical cause. So, on pain of deeming this effect to have two independent causes, we need somehow to collapse the non-physical cause into the physical cause.[16]

Causal closure advocates accordingly work to show how the mental reduces to the physical, is identical to the physical, or supervenes on the physical in some non-objectionable way.

Some have challenged the exclusion principle on the bases that some physical events plausibly seem to have multiple sufficient causes: in a firing squad, multiple executioners pull the trigger and fire a gun at the same moment, each dealing an independent and sufficiently fatal blow to the prisoner. In response, we could deny the assumption that two bullets entering the prisoner's body at the same moment counts as two separate events; if someone falls from a great height and dies on impact with the ground, we do not separate out the impact of the legs, arms, shoulders, head, etc. as separate events but simply say that the impact was fatal.

The real flaw in the exclusion principle in the argument for physicalism is that it cannot successfully "exclude" non-physical causes *co-operating* alongside physical causes unless it begs the question. To see why, E.J. Lowe supposes that the physical world comes into being in a particular way because God chose to make it actual. He says, "God's choice, then, would have caused it to be the case that a world containing certain physical causal facts was actual–and this would be mental causation of physical causal facts."[17] In this example, divine choice (which is presumably

14. Papineau, "The Causal Closure of the Physical and Naturalism," 57.

15. I am tempted to equate this kind of causation with Aristotle's notions of material and efficient causes. However, Aristotle's own account of efficient causation is not reductively physicalistic. He allows that the hand and chisel of a sculpture are immediate, instrumental physical causes of a statute but also that "the art of the sculpture" can be the efficient cause of a statue. Still, contemporary philosophers commonly enough read efficient causation as purely mechanistic, or reducible to pure mechanism. My thanks to [omitted for blind review] for an illuminating discussion on this point.

16. Ibid.

17. Lowe, "Causal Closure Principles and Emergentism," 583.

non-physical) immediately brings about that the physical world is thus-and-so, providing a counterexample to CC. The only way to block the possibility of God so creating the physical world would be to stipulate, in advance, that there is no such person as God or that the world did not come from the mouth of God but from somewhere else. We might stipulate instead that the the whole cosmos is but one quark in the multi-verse.[18] But of course, if we are *stipulating* that causal closure is true, then have given up on the attempt to *argue* that it is true.

We can point out similar problems in other formulations of causal closure and cognate views. The upshot is that any statement of CC in the argument for physicalism is either compatible with the co-existence of "physical" vital, mental, supernatural etc. causes or else assumes CC as an axiomatic expression of physicalism itself.

In short, the deductive arguments just mentioned and any more that are likely to be put forward will either *assume* the truth of causal closure (and the falsity of causal pluralism) at the outset or they will define "causal closure" loosely enough that a causal pluralist could affirm the definition while affirming mental or supernatural causation. Deductive arguments cannot prove causal closure without stating causal closure in the premises any more than I can pick myself up by my bootstraps.

III. Argument from Physiology

We turn our attention to inductive arguments on behalf of causal closure. The premises in the first inductive argument appeal to modern physiology. In a very informative article on the rise of physicalism, David Papineau says this:

> A great deal became known about biochemical and neurophysiological processes, especially at the level of the cell, and none of it gave any evidence for the existence of special forces not found elsewhere in nature… Though it has not always been so, there is now good reason to believe the empirical thesis that all physical effects are due to physical causes.[19]

Papineau's lively tour through the paradigm shifts in physical sciences. Suffice it for our purposes that Papineau's argument here is historical: We moderns have new evidence from scientific research that was just not available before. The advance of scientific research in physiology has revealed that all hitherto hypothesized causes (like the soul and "vital forces") are not needed to explain the physical processes of life and consciousness and rationality. We can justifiably infer, from the sample of physiological effects that turn out to have physical causes, that all physiological effects whatsoever will turn out to have physical causes.

How exactly does this inference work? Robert Garcia says:

> This is also an inductive argument for a general conclusion. It begins with the claim that detailed physiological investigations have failed to discover anything but physical forces. The inference is then drawn that there are no 'special' — e.g. mental — forces at work.

18. Steven Weinberg, "Living in the Multiverse," *Universe or Multiverse*, 2007, 29–42.
19. Papineau, "The Causal Closure of the Physical and Naturalism," 31.

In order to critique this argument precisely, distinguish three sets referring to three types of physical effect.

> Set A: physical effects with a physical cause that is known and accepted without dispute.
> Set B: physical effects with a physical cause that *used to be* unsolved mysteries but are now known and accepted without dispute.
> Set C: physical effects that are as of yet unsolved mysteries, physical effects with *no currently known* physical cause.

Set A consists of all the physical facts and events about which we have scientific knowledge. Set B Set B is a subset of Set A. Set B consists of physical effects that *we formerly* ascribed to nonphysical causes *but now* ascribe to physical causes. Papineau's favored example is vitalism or vital forces. Sometime ago biological processes associated with life (such as metabolism and reproduction) were physical effects ascribed to a nonphysical vital force; now we know their physical causes and they've become members of A.

Set C consists of all the physical events for which we don't yet have a strongly justified scientific theory: the cause of cancer, the cause of putatively miraculous healings, the cause of paranormal reports, and so on. Papineau is not saying that we *already* have explanations of all phenomena; there are many unsolved mysteries that are members of set C. Papineau is drawing the inference that perhaps all physical effects in set C have physical causes after all – *we just don't know yet what the causes are.* If so many members of B turned out to be included in set A, perhaps everything in C will (one day) turn out to be included in B.

The structure of this argument is clear: the *general population* is C, all the other physical effect with as-of-yet-unknown causes. The *target property* is *having a physical cause*. The *sample* population is set B, those effects that have turned out to have physical causes even if we did not, at first, know them. If all members of B have physical causes, then (generalizing) all members of C have physical causes.

Melnyk makes a similar case. He is not saying that every physical effect has a *known* physical cause already. Rather, he is saying that physicists have gathered a sample of all physical effects and found them all to have physical causes, so perhaps we can justifiably infer that the unsolved mysteries are *likely to turn out* to have physical causes after all. The origin of the first eukaryotic cell in biology, or the emergence first-person consciousness in psychology are problems that we have not solved yet but can justifiably hope to without recourse to supernatural or non-natural causes.

The flaw with this argument is that the putative sample population is not actually representative. Papineau explicitly cites the new information acquired by *physical and physiological scientists while conducting empirical research* but scientists qua physical researchers do not bother studying possible non-physical causes. It is not part of empirical research to deny or affirm that minds, gods, ghosts, or forms might exist because even if they did they would, ipso facto, lie outside the scope of professional research. It does a neuroscientist no good to posit that the patient has a soul; even if the patient has an immaterial soul, this fact would not affect the scientist's professional skill. Astrophysicists who study galaxies will not, qua scientist, need to find out whether a god (and which god)

formed the galaxy any more than a mechanic who fixes cares will, qua mechanic, need to find out at which factory the car was made.

As a matter of fact, many brain scientists *do* believe in a non-physical soul and many scientists do believe in a God.[20] The point is that they are not concerned with non-physical causes at the moment of searching for a physical cause. But provisionally ignoring a phenomenon does not entail that it doesn't exist. Selective attention to X does not entail that Y does not exist. We might as well say that that many pieces of the Rube-Goldberg machine sitting in someone's garage all have prior physical causes, therefore perhaps everything does, including the light streaming through the windows and the oxygen seeping under the door.

My objection to Papineau's inductive argument is that he commits a sampling error. Set B is not even close to a representative sample of Set C. Or rather, the question of whether B is representative of C is simply the question of causal closure re-stated. Are physical effects whose physical causes were *discovered while ignoring possible non-physical causes* representative of physical effects which might, in the end, have non-physical causes?

Relatedly, a flaw with this inductive argument is that we can just as easily construct an equal and opposite inductive argument for *causal openness.* For example: suppose that Set C consists of physical effects that *might have* non-physical causes *or might have* physical causes that we discover some day. Set B consists of *former* members of C which have come to light as members of Set A. We can hypothesize that *if* all the members of Set C had physical causes, then such causes would be known after, say, 2000 years of scientific progress. And yet, Set C is not empty; there are still many physical effects which have as of yet no known physical causes. Therefore, we can infer that some of the physical effects *will never* be discovered to have physical causes.

I grant that the inference is hasty. But it is no less hasty than Papineau's. His assumes that B is representative of C; mine assumes that B is not representative of C. Whether or not it is representative is the question at hand and so cannot be settled by stipulation. How long will the hard problem of consciousness remain unsolved before we give up hope that a physicalist solution is coming?

As to Melnyk, a similar objection is warranted. The very heart of Melnyk's argument is a confident assertion tucked into parentheses: physicists "found no physical effects at all for which it is necessary (or even likely to turn out to be necessary) to invoke non-physical causes."[21] For the causal closure agnostic, this is a really disappointing dialectical move. Just where we hoped for an argument, we get the statement that "it is not likely to turn out to be necessary" to invoke nonphysical causes to explain physical phenomena. Whether it is true that it is not necessary to invoke nonphysical causes just *is the question of whether causal closure is true.* Melnyk clearly believes it is;

20. Stewart Goetz and Charles Taliaferro, *Naturalism* (Wm. B. Eerdmans Publishing, 2008).

21. One final token of circular reasoning occurs when Melnyk says: "The evidence for thinking that all physical events have sufficient physical causes may be found in physics textbooks…" Can the evidence that God is the creator of the cosmos in theology textbooks? I dare suppose textbooks have erred in the past, especially *non-philosophical* textbooks, especially non-philosophical textbooks espousing philosophy. What we need is not the domain-specific assumptions in a textbook but good arguments that the textbooks are actually *correct.*

he does not support his belief with any evidence. He reiterates the trust he has, and that his fellow advocates already share, that *someday* a physical cause for these effects will turn up.

Another complaint that might be brought against Papineau's inductive argument is that he helps himself to some incorrect historical generalizations. In a critical paragraph, he says that the argument for physicalism rests on empirical premises that have been available only recently:

> …during the late nineteenth and the twentieth centuries an increasing number of scientists have come to doubt the existence of vital and mental forces. The most significant evidence seems to have come directly from physiology and molecular biology, rather than from physics. Over the last hundred and fifty years a great deal has come to be known about the workings of biological systems (including brains), and there has been no indication that anything other than basic physical forces is needed to account for their operation. In particular, the twentieth century has seen an explosion of knowledge about processes occurring within cells, and here too there is no evidence of anything other than familiar physical chemistry. The result has been that the overwhelming majority of scientists now reject vital and mental forces, and accept the causal closure of the physical realm.[22]

The appeal to progress is one of the unique aspect's of Papineau's defense of causal closure, so it is worthwhile challenging it.

First, as a matter of fact most scientists are not physicalists; for example, 53% of American scientists believe in God or a higher power.[23] About 46% of philosophers are non-physicalists about the philosophy of mind.[24] Papineau would be on safer ground to assert that many modern *philosophers* are physicalists. The problem is that many ancient philosophers were physicalists in the relevant respects, even if they differed in the details. Democritus and Lucretius used strikingly similar arguments to deny a non-natural realm and non-natural causes – all without the benefit of data from modern physics and modern physiology. As Quentin Smith maintains, physicalism or something very like it was correct (and presumably justified) two millennia ago. He says:

> Leucippus, Democritus…etc… argued against the religion of their time and put a naturalist world-view in its place… The universe ("the All" or "the unlimited") is a causally deterministic, discrete, infinitely old sequence of atomic events [each of which] has its sufficient cause in the prior state of that size.[25]

If our present vantage point is superior to that of the ancients with respect to justifying causal closure, Papineau must explain whether and why ancient physicalists could affirm virtually the same thesis.

22. Papineau, "The Causal Closure of the Physical and Naturalism," 57.

23. See "Scientific Achievements Less Prominent Than a Decade Ago," (Chapter 4, Scientists, Politics and Religion), Pew Research Forum, July 2009.

24. David Bourget and David J Chalmers, "What Do Philosophers Believe?" *Philosophical Studies* 170, no. 3 (2014): 465–500.

25. Quentin Smith, "The Metaphilosophy of Naturalism," *Philo* 4, no. 2 (2001): 195–215.

Besides the problem with the appeal to progress, the above paragraph from Papineau is shocking in several other respects. First, it commits the same sort of sampling error noted above: It is true that physiologists and physicists have gathered an impressive set of detailed data that our medieval and ancient forbearers did not have, but from the fact that scientists (who are not even looking for nonphysical causes) have not found nonphysical causes we cannot infer that none such exist. Papineau simply asserts that "evidence… come(s) directly from physiology" and asserts that some scientists "now reject vital and mental forces."

Secondly, Papineau seems to contradict himself. By the time the above paragraph confronts the reader, we have already been treated to several pages of argument about why belief in vital and mental forces is in principle compatible with affirming Newtonian, Leibnizian, and modern physics. Why should we not adduce from the author's same arguments that vital and mental forces are compatible with modern physiology? Why, now, should we consent to the suggestion that "vital and mental forces" are incompatible with "accepting the causal closure of the physical realm"? I can understand why sympathetic readers would take the suggestion, but the mere conjunction of two facts ("scientists … reject vital and mental forces" and "[scientists]" accept the causal closure of the physical") does not establish a causal relation.

Thirdly, and relatedly, this paragraph seems to contain fallacious a appeal to authority. *Which* scientists reject vital and mental forces? I concede that the number of philosophers and scientists who endorse physicalism is not negligible and that a expert consensus should be taken seriously. But 'taking a view seriously' means examining the reasons experts hold that view, not resting content with an expert witness. I would suggest that one critical role a philosopher should play is being stubbornly unimpressed by consensus and demanding the argument.

Despite Papineau's confident tone, his argument has not yet demonstrated that the philosophical vantage from which we assess the merits of causal closure are relevantly different between Newton, Galileo, Aristotle, and ourselves. Failing some obvious benefit to be derived from the increased bulk of physiological data, I conclude that the plausibility of causal closure (or its opposite) remains almost untouched.

Some physicalists might encourage us to "wait and see" just how much contemporary and future scientists can explain. But the flaw with inductive arguments for CC is not likely to be solved by more time. For the physicalist will interpret every newly discovered physical cause as justifying her hope that nonphysical causes will never "turn out to be necessary", while the non-physicalist will interpret the persisting set of unknowns as justifying her belief in causal openness. How long shall we amass more evidence? A century? A millennium? How long will the hard problem of consciousness remain unsolved before we give up hope that a physicalist solution is coming? CC agnostics and skeptics will not be persuaded unless the hard sciences develop and unify enough to deliver on the physicalist's hope for a global reduction of all sciences to physics[26] and furthermore deliver detailed solutions of all heretofore unsolved mysteries. Not even the most zealous scientific enthusiast thinks that we are close to reaching such a lofty prize.

26. John Dupre argues the dream of a global reduction is a foolish one. See John Dupré, "The Miracle of Monism," in *Naturalism in Question*, ed. Mario De Caro and David Macarthur (Harvard University Press, 2004), 36–58

IV. Argument from Usefulness

A third and final type of argument for causal closure deserves examination. Stoljar calls this "The Argument from Methodological Naturalism", but I shall call it the "argument from usefulness." The argument from usefulness is "abductive" not inductive, for it acknowledges that whatever data is amassed *under* an assumption can never serve as evidence *for* that assumption. Just as the mathematician assuming that there are no physical solutions to her mathematical problems can never entail that nothing exists outside of mathematical domains, the scientist assuming that there are no nonphysical causes does not entail that none such exist.

Stoljar points out that the argument from usefulness "has received somewhat less attention in the literature than the Argument from Causal Closure. But it seems just as persuasive — in fact, rather more so."[27] And I agree. Causal closure is more persuasive when viewed as an *explanation* of the usefulness and success of certain scientific and philosophical methods. Indeed, I suspect something like the appeal to usefulness lies behind Papineau and Melnyk's putatively inductive arguments.

How does the argument from usefulness go? First, assume that the usefulness of an assumption in productive research is best explained by the the truth of that assumption. Second, grant that physicists, neuroscientists, and other researchers get along quite well in making scientific discoveries while assuming ex hypothesi that there are no nonphysical causes. These two premises license the conclusion that causal closure is actually *true*. Stoljar puts a similar argument in this way:

> The first premise of this argument is that it is rational to be guided in one's metaphysical commitments by the methods of natural science. Lying behind this premise are the arguments of Quine and others that metaphysics should not be approached in a way that is distinct from the sciences but should rather be thought of as continuous with it. The second premise of the argument is that, as a matter of fact, the metaphysical picture of the world that one is led to by the methods of natural science is physicalism. The conclusion is that it is rational to believe physicalism, or, more briefly that physicalism is true.[28]

Jaegwon Kim is one philosopher who appeals to usefulness when points out that ruling out possible nonphysical causes is not happenstance but a guiding presupposition of modern research. Kim says:

27. Daniel Stoljar, "Physicalism," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, Spring 2016 (`http://plato.stanford.edu/archives/spr2016/entries/physicalism/`, 2016), sec. 17.

28. Ibid. We should note, in passing, that the proposition "it is rational to believe p" is not identical to "p is true." It is rational to believe that my great, great, grandfather was from Prussia because we have some reliable records to that effect. It is also rational to believe he was a farmer, although we have no record to that effect, but simply because most Prussians in the early 1800s were farmers… even so, he might been a banker or an inmate. In other words, saying "it is rational to believe p" is ambiguous: it could mean *there is evidence for p* or that *p is a reasonable hypothesis for which there is no disconfirmation*.

> Surely the working neuroscientist does not believe that to have a complete understanding of these complex processes she needs to include in her account the workings of immaterial souls and how they influence the motion of a molecule… Most physicalists… accept the causal closure of the physical not only as a fundamental metaphysical doctrine but as an indispensable methodological presupposition of the physical sciences.[29]

In other words, since physical scientists assume causal closure while conducting their research *and their research gets along just fine*, that is at least *some* evidence for causal closure. I will happily grant that when an assumption underwrites the discovery of new data, such discovery counts in favor of the truth of that assumption. But the assumption could be approximately true, or false but coincidentally similar to some other truth. So the question is *how much* it counts.

I would suggest that it doesn't count for much, unless one already endorses physicalism. The success of causal closure as a methodological assumption can be explained, just as plausibly, by a different hypothesis: namely, that limiting one's focus on a single domain is useful for research. To use a fanciful illustration, imagine that a mathematician methodologically assumed that all problems have mathematical solutions. She thereby makes enormous strides in her field. It would be wrongheaded of her to conclude that she has discovered a great truth – that all problems of friendship and politics have mathematical solutions. All that has happened is that she has made great progress virtue by adopting a monolithic focus within a limited domain. Similarly, we might explain the rise of modern science as the success that results from disciplined limits on research. The physicist learns more about the physical causes and effects by choosing temporarily to ignore nonphysical causes (which might after all be there) because she is a physicist.

If this explanation is logically possible, so the physicalist is not justified in simply inferring that CC is true on the basis that CC underwrites good research. Kim cannot assume causal closure is the "best" explanation without showing that the other alternatives are not as good, which he cannot do except by giving independent reason to believe physicalism is likely to be true. And causal closure was supposed to give us reason to believe physicalism is true, not the other way around.

The common theme in my criticisms of the deductive, inductive, and abductive arguments is that the they are all *only compelling to those who are already physicalists* – which is to say, they are not compelling at all. They either beg the question in favor of causal closure or else establish conclusions that are compatible with causal openness. I can only conclude that there is, as of yet, no rational necessity to affirm that the cosmos is closed. I should be clear that I have *not* argued here that there is any good reason to believe non-physical causes *actually do* explain some of the physical events we observe. For my purposes here, I am content to commend a wholesome agnosticism.

V. Physicalism as Temperament

There may very well be better arguments for causal closure on the horizon. In the meantime, however, if the confidence which advocates feel is not rooted in the overwhelming cogency of the arguments, I believe it potentially useful to speculate as to other possible causes.

29. Jaegwon Kim, *Philosophy of Mind* (Westview Press, 1996), 131.

To begin, consider Richard Lewontin's eloquent praise of a priori materialism. He says:

> We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfill many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated.[30]

Extrapolating a bit, we can say that someone like Lewontin would affirm causal closure not because of the arguments on its behalf but rather as a kind of a priori axiom.

My alternate suggestion, then, is this: Perhaps causal closure is an axiom expressing a physicalist disposition. A physicalist disposition or temperament is when one "just sees" that the physical world is real, that natural sciences are effective, and that physicalism makes of the world.

Alyssa Ney's quite persuasively argues that physicalism is not a truth claim so much as an "attitude." She says it is an oath to "go in my ontology everywhere and only where physics leads me."[31] And this attitude is remarkably widespread. Stoljar is right to say that "we live in an overwhelmingly physicalist or materialist intellectual culture."[32] If physicalism is an attitude, then groups composed of individuals with a physicalist disposition, temperament, or attitude can be called physicalist groups. There is no official organizations called "the Physicalist Club,"[33] but there is a kind of informal affiliation that naturally arises when the like-minded gather in universities, departments, conferences, and so on.

Thomas Nagel contrasts the physicalist temperament with a "religious temperament." For Nagel, a religious temperament is both a "pure desire for understanding of the universe and one's place in it" as well as something more – "a question of attitude: Is there a way to live in harmony with the universe, and not just in it?"[34] He says that the clearest illustration is Plato, who had "a profoundly religious temperament, displayed not in what he said about religion, but in his philosophy."[35] By contrast, the physicalist "cannot take seriously the thought that something is missing if

30. "Billions and Billions of Demons", *New York Review of Books.* 9 Jan. 1997.

31. Alyssa Ney, "Physicalism as an Attitude," *Philosophical Studies* 138, no. 1 (2008): 1–15.

32. Stoljar, "Physicalism," sec. 17.

33. As a matter of some trivial interest, there did exist one actual "physicalist club." And it boasted the membership of German physicist Herman Helmholtz. They even followed something similar to Ney's oath: they promised to appeal to "no other forces than common physical-chemical ones… within the organism." Paul F. Ballantyne, "History and Theory of Psychology: An early 21st Century Student's Perspective" Accessed online. http://www.igs.net/~pballan/section3(210).htm.

34. Thomas Nagel, *Secular Philosophy and the Religious Temperament* (Oxford University Press, 2009), 5.

35. Ibid., 3.

it is impossible to make sense of things in that way."[36] Nagel mentions Hume, whose "serene naturalism is a deep expression of his temperament, and he obviously feels no yearning for harmony with the cosmos."[37]

Physicalism and its alternative are clearly rivals – but are they merely rival *arguments*? Plato speaks in the *Sophist* about the "ancient war" between idealists and materialists, "a battle like that of the gods and the giants [arising from] their disagreement about existence" (246a). Such a rivalry is not likely to be explicated in terms of a few contrasting syllogisms but more likely arises from deep, and perhaps even pre-rational dispositions that are hard to articulate. I do not mean to suggest that physicalism or non-physicalism are determined by one's disposition only, nor that it is impossible to be persuaded. People find arguments or experiences that can bring about a deep change of mind. I only mean to point out that if the "war" was already "ancient" in Plato's time, then (contra Papineau's suggestions) one's choice of sides has little or nothing to do with the achievements of modern science which we all celebrate.

Papineau disputes that physicalism is a club or an attitude. He rejects the view that "ontological naturalism rests, not on reasoned argument, but on some kind of unargued commitment, some ultimate decision to nail one's philosophical colours to the naturalist mast.[38] But his rebuttal depends on the inductive arguments critiqued above. He says:

> However, familiarity with the relevant scientific history casts the matter in a different light. It turns out that naturalist doctrines, far from varying with ephemeral fashion, are closely responsive to received scientific opinion about the range of causes that can have physical effects."[39]

If, as I have argued, the case for causal closure stands in need of serious re-thinking, then we are left with two options: either to remain agnosticism about causal closure or admit that one affirms it not on the basis of the extant arguments.

Causal closure advocates are sometimes tempted to use divisive rhetoric that insults their opponent's commitment to scientific reasoning or to rationality itself. One upshot of my argument is that physicalists ought not talk like that. Causal agnostics and pluralists who lack a physicalist disposition are waiting for more and better arguments.

Conclusion

I have argued that recent debates over physicalism which depend on the causal closure of the physical are only so strong as CC itself. And I have argued that none of the arguments from Papineau, Kim, Melnyk et al., are impressive to a skeptic or agnostic insofar as such arguments either beg the question in favor of causal closure or else establish conclusions that are compatible with causal

36. Ibid., 6–7.

37. Ibid., 7.

38. David Papineau, "Naturalism," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, 2015, sec. 1.2.

39. Ibid., sec. 1.2.

openness. Although further arguments may be forthcoming, I have suggested that considering physicalism as an attitude more accurately explains why some philosophers find it so overwhelmingly plausible to suppose that the cosmos is causally closed.

I conclude that there is, as of yet, no rational necessity to affirm that the cosmos is closed. I should re-iterate that I have *not* attempted to argue *for* any brand of non-physicalism. Rather, it seems that remaining agonstic – and hence open to causal openness – is a rational and even scientific attitude.

Acknowledgments

[Omitted for blind review]

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