

HOW TO GET RID OF CLOSURE¹


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Abstract. Sophie Gibb has recently invented a very interesting strategy against Kim’s causal exclusion argument. This strategy adopts the powers theory of causation and an interpretation of mental causation in terms of double prevention. Gibb’s strategy results both in invalidating the principle of the causal closure of the physical domain in most of its formulations and in disarming the argument in question. In my paper, I present a general procedure for the opponents of reductive physicalism which enables them to grapple successfully with the mentioned principle. I also argue that although it could be possible to adopt Gibb’s strategy as a part of this procedure, there is a simpler one to obtain a similar outcome. This strategy is mainly based on Uwe Meixner’s causal argument against physicalism and it leads to the conclusion that if one accepts the principle of sufficient cause (*i.e.* the principle of sufficient reason in its causal variant), then one should reject the principle of causal closure in the light of some empirical data. This alternative proposal is more attractive than Gibb’s solution, since it is independent of any conception of causation, does not make any distinction between causal relevance and causal efficacy, and does not refer to the notion of *double prevention*.

Keywords: causal closure, causation, sufficient cause, events, physicalism, exclusion argument, overdetermination.

*Die menschliche Vernunft hat das besondere Schicksal in einer Gattung ihrer Erkenntnisse:
daß sie durch Fragen belästigt wird, die sie nicht abweisen kann; denn sie sind ihr
durch die Natur der Vernunft selbst aufgegeben, die sie aber auch nicht beantworten kann;
denn sie übersteigen alles Vermögen der menschlichen Vernunft.*

Immanuel Kant, *Kritik der reinen Vernunft*, 1781

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Introduction

The exclusion argument, which has enjoyed an outstanding career in the philosophy of mind,² is based on the principle of causal closure of the physical domain, widely accepted by physicalists. This principle has been variously spelled out, and in many versions, differing both in the used terminology and in modal strength. Philosophers have put a lot of effort into developing a version of it which would be acceptable to both physicalists and their opponents.³ The overall idea behind this principle is the belief that physical reality is causally closed, in other words, a relation of causation will never lead us out of the physical realm. Put a little more technically, the belief comes down to the following assertion: At every time at which a physical event has a cause, it also has a sufficient physical cause (if we take any physical event at any time t , there is always a physical event in a different time t' such that it is a sufficient cause of the former).

The causal exclusion argument, which is also referred to as 'the causal closure argument' or, alternatively, 'the argument from causal overdetermination', can be formulated as follows:⁴

- (1) Some mental events have physical effects (*mental causation*).
- (2) All physical effects that have a cause have a sufficient physical cause (*the principle of causal closure*).
- (3) There is no systematic causal overdetermination (*the principle of non-overdetermination*).
- (4) Therefore, some mental events that have any physical effects are identical with physical events.

In order to reject the conclusion, one has to deny at least one of the mentioned premises. Both dualists and non-reductive physicalists predominantly reject either the second premise or the third one. Sophie Gibb has recently proposed a very interesting way to disarm the causal exclusion argument in accordance with the latter possibility.⁵

Gibb's strategy has several steps. Firstly, she has adopted the notion of causation in Martin and Heil's sense (i.e. *the powers theory of causation*), according to which the relation of causation is the mutual manifestation of reciprocal disposition partners, i.e. dispositional properties of its relata.⁶ Secondly, among events

² Cf. Kim [1993, 1998, 2009]; Papineau [2000, 2002].

³ Cf. e.g. Montero [2003]; Lowe [2000]; Papineau [2009]; Gibb [2015a].

⁴ Cf. e.g. Kim [2005] p. 13–22.

⁵ See Gibb [2013, 2015a].

⁶ Cf. Heil [2003] p. 75–84; Martin [2008] p. 46–53.

involved in the causal relations she has distinguished between events that cause other events and events that enable other events to be caused (the causal role of mental events in the physical domain is not to cause physical events, but rather to *enable* certain physical events to be caused), which consequently allows her to distinguish between causal efficacy and causal relevance.⁷ Thirdly, she has interpreted mental events in terms of *double preventers*.⁸ Although mental events equipped with such features are not direct causes of physical events, they have causal relevance, nevertheless. At the same time, according to this approach, the causal exclusion argument loses its power: no matter how strong the principle of causal closure we accept, we fail to obtain the conclusion that mental events are identical with physical events. Furthermore, the very principle of causal closure seems to be invalidated in the light of Gibb's interpretation.⁹

In what follows, I shall, first, sketch a general procedure for the opponents of reductive physicalism which enables them to grapple successfully with the mentioned principle; second, I shall integrate Gibb's strategy as a potential part of the proposed procedure; and, third, I shall offer an alternative solution in invalidating the principle of causal closure. This solution seems to be, to some extent, more attractive than Gibb's one, since it is independent of any conception of causation, it does not make any distinction between causal relevance and efficacy, and does not refer to the notion of *double prevention*.

Two main versions of the principle of causal closure

The principle of the causal closure of the physical domain (hereafter – CCP) has many non-equivalent formulations, differing from each other in terms of their extension and strength. It can easily be noticed that the formulations called upon in the literature use different technical terms.¹⁰ Some of these formulas refer to

⁷ See Gibb [2015a] p. 636–638.

⁸ See Gibb [2013] p. 203–210. According to her, “[a] double preventer event enables an event to be caused by preventing an event from preventing it from being caused. Given the distinction between causes and enabling events, one event does not have to cause another to be causally relevant to it. Enabling events are causally relevant to the events that they enable to be caused – and not just in a merely explanatory sense. In causal situations involving enabling events, for the effect to be brought about, in addition to its complete cause, a further event must occur whose role is to enable the causal relation to take place. The fact that a further event is required to enable the causal relation to take place is quite independent of our attitudes and interests.” See Gibb [2015b] p. 142.

⁹ It is incumbent upon me to add that Gibb's strategy is in fact far more sophisticated than it might be suggested by the rough description presented above. For a critical analysis of her attempts, see Davies [2016].

¹⁰ Making use of Gibb's findings, the following formulations of the principle of causal closure of the physical domain may serve as representative examples here: “All physical effects have sufficient physical causes.” Papineau [1998] p. 375; “All physical effects are due to physical causes.”

a *sufficient physical cause*, others do not. Still others use the concept of *sufficient cause*. Some formulas appeal to a probabilistic interpretation, whereas the other ones avoid this. Some of the listed formulas involve the concept of the *laws of physics*, while the other ones resign from this. In some formulas we come across time indexes, while in the other ones they turn out to be irrelevant.

Nevertheless, I am convinced that all those formulations are eventually reducible to two basic versions: a weak one and a strong one. The weak principle of causal closure (hereafter – WCCP) would take the following form:

$$(WCCP) \forall x [P(x) \wedge \exists z C(z,x) \rightarrow \exists y (P(y) \wedge C(y,x))]$$

(in other words: for every x : if x is a physical event and is caused by some event, then there is a physical event y that is a cause of x).¹¹

The strong principle of causal closure (hereafter – SCCP) can be depicted by the following general formula:

$$(SCCP) \forall x \forall y \{ [P(y) \wedge C(x,y)] \rightarrow P(x) \}$$

(in other words: for every x and y : if y is a physical event and x causes y , then x is a physical event).¹²

One can easily observe that (SCCP) logically implies (WCCP), therefore, every possible objection to (WCCP) will automatically affect (SCCP): if (WCCP) proved to be false, then (SCCP) would also prove to be false.

Spurrett, Papineau [1999] p. 25; “Every physical event has a physical cause which is enough to bring it about, given the laws of physics.” Crane [2001] p. 45; “All physical effects have complete physical causes (‘complete’ in the sense that those causes on their own suffice by physical law to fix the chances of those effects).” Papineau [1993] p. 22; “All physical effects are determined or have their chances determined by prior physical causes according to physical law.” Crane [1995] p. 6; “If a physical event has a cause at t , then it has a physical cause at t .” Kim [2005] p. 15; “Every physical event contains only other physical events in its transitive causal closure.” Lowe [2000] p. 581; “Every physical effect has its chance fully determined by physical events alone.” Lowe [2000] p. 574; “Physical events do not have non-physical causes.” Smith, Jones [1986] p. 66; “Any cause of a physical event is itself a physical event – that is, no non-physical event can be a cause of a physical event.” Kim [2005] p. 50; “Any physical event which has a sufficient cause of any sort has a physical sufficient cause.” Mills [1996] p. 105; “Every physical event that has a sufficient cause has a sufficient physical cause.” Montero [2003] p. 174; “At every time at which a physical event has a sufficient cause, it has a sufficient physical cause.” Yates [2009] p. 115.

¹¹ Some thinkers are inclined to use “is sufficiently caused by” and “is a sufficient cause of” instead of “is caused by” and “is a cause of”, e.g.: *If a physical event has a sufficient cause, then it also has a physical sufficient cause.*

¹² Or alternatively: *Every cause of a given physical event is completely physical.*

An outline of the procedure

Setting aside, for the time being, potential objections to (WCCP), one can ask the question: What reasons might be there for a possible rejection of (SCCP)? Well, the first thing which should be stressed in connection with the argument called upon above is the simple fact that (SCCP) appears to beg the question against the interactive dualist and the non-reductive physicalist. Indeed, the negation of mental-to-physical interaction, dualistically or non-reductively conceived, seems to follow analytically from (SCCP) alone. In such a situation the very exclusion argument would be completely redundant and unnecessary. However, this situation may be uncomfortable only for a proponent of the exclusion argument, but not necessarily for the reductive physicalist in general, who is inclined to think that (SCCP) is logically implied by the laws of the conservation of energy and momentum. The reductive physicalist may well be convinced that dualism or non-reductive physicalism is false because (SCCP) is true – regardless of whether the exclusion argument works or not. Nevertheless, despite its initial appeal, this manoeuvre seems to be rather too quick. First, as has been clearly shown by Gibb, Papineau’s argument, invented to reconstruct the logical link between the laws of the conservation of energy and (SCCP),¹³ is not conclusive – at least without accepting additional controversial premises.¹⁴ Second, many thinkers doubt¹⁵

¹³ Papineau offers two detailed arguments for the exclusion of the existence of mental energy: (1) “The argument from fundamental forces” which claims that, in the light of recent evidence from theoretical physics and physiological research, it could be inductively reasoned that all special forces eventually reduce to a small stock of fundamental physical forces which conserve energy; and (2) “The argument from physiology” which boils down to the conclusion that there is no direct evidence for mental forces – detailed physiological investigation reveals no phenomena in living bodies that manifest such forces. See Papineau [2000] p. 197-202.

¹⁴ For an exhaustive critical analysis, see Gibb [2010]. Gibb argues that, according to Papineau, from the claim that every physical system is conservative or is part of a larger system that is conservative and the claim that there is no non-physical energy, it logically follows that no physical effect has a non-physical cause. However, it is rather obvious that there is no logical inference here. In order to obtain the conclusion, the above argument has to be supplemented by two additional premises: (a) The only way that something non-physical could affect a physical system is by *affecting* the amount of energy or momentum within it, or by *redistributing* the energy and momentum within it; (b) the redistribution of energy and momentum cannot be brought about without supplying energy or momentum. However, the acceptance of these premises depends upon the acceptance of the theory of causation as energy transfer. Setting aside some reasons against the identification of the causal relation as the transfer of physical energy, it must be stressed that the acceptance of (a) and (b) would be very strange in this context because causal closure follows directly from the theory of energy transfer. For a more recent critical analysis, see also Gibb [2015c]. For more on scepticism with regard to the laws of the conservation of energy and momentum as a possible support for physicalism, see Montero [2006]. On an alleged conflict between interactionism and the laws of the conservation of energy see *e.g.* Averill, Keating [1981].

¹⁵ Cf. *e.g.* Collins [2011].

whether the laws of the conservation of energy are so ubiquitous in physics; they even argue that energy is not conserved in general relativity, in quantum theory, or in the universe taken as a whole. Third, some argue¹⁶ that the laws in question appeal to the notion of a causally isolated physical system and this notion, being a useful idealisation, suggests that the universal application of the conservation laws is an assumption of the physical sciences, not a result of empirical research as it is normally presented.¹⁷ This being so, (SCCP) would have a postulative character as well.¹⁸ Fourth, the laws of the conservation of energy and momentum, as they stand, have actually nothing to do with any potential events which would be non-physical: from the very fact that physical causation is always accompanied by the transfer of physical energy/momentum, it could not be logically inferred that mental-to-physical causation would also be accompanied by the transfer in question. Furthermore, from this it could not be legitimately inferred that any case of mental-to-physical causation would automatically introduce additional physical energy into a closed physical system.¹⁹

¹⁶ Cf. *e.g.* Larmer [1986].

¹⁷ Indeed, according to this principle, the total amount of physical energy remains constant at all times in a closed system—that is in a system that is isolated from the environment. In the case of mental causation, however, the question immediately arises which isolated system physicalists have in mind while questioning the dualistic interpretation. For obvious reasons, it cannot be a human body or a human brain. The only sensible interpretation would be the claim that mental causation of the dualist kind would change the total amount of energy in the whole physical world. So, the physical world as a whole is a proper candidate for an isolated system here. But although the notion of an isolated system is an important element of classical thermodynamics and can serve as a useful model approximating many real-world situations, in fact no experience has been reported of an ideally isolated system. In this sense the notion of an isolated system seems to be a useful idealisation. If this is so, then the claim that the (expanding) universe as a whole is an isolated system should rather be interpreted as a physicalist postulate and not as an empirically justified claim.

¹⁸ Lawrence Bonjour has commented on this in the following words: “For these reasons, the argument from the principle of causal closure to the truth of materialism is quite strong, even if not fully conclusive. But why is the principle of causal closure itself supposed to be so obviously correct? Clearly this ‘principle’ is not and could not be an empirical result: no empirical investigation that is at all feasible (practically or morally) could ever establish that human bodies, the most likely locus of such external influence, are in fact never affected, even in small and subtle ways, by non-material causes. We are told that scientists accept this principle, and often that most philosophers accept it as well. But do they have any compelling reasons for such acceptance? Or is this vaunted principle nothing more than an unargued and undefended assumption—a kind of intellectual prejudice, in the literal meaning of the word? [...] If a materialist account of conscious states is correct, then the principle of causal closure seems likely to be true. But if no such account is correct, then the principle is almost certainly false. Thus to argue for the truth of materialism or for a strong presumption in favor of materialism by appeal to the principle of causal closure is putting the cart in quite a flagrant way before the horse.” See Bonjour [2010] p. 6.

¹⁹ For more on this line of thought, see Meixner [2004] p. 301–302.

All of this clearly shows that (SCCP) does not have the status which is routinely expected by reductive physicalists: it is at best postulative in character, and at worst—it does not directly follow from the laws of the conservation of energy and momentum. In any event, (SCCP) seems to be a metaphysical claim—by no means is it a generally accepted theorem of empirical science.²⁰ What is even more, its possible rejection would not make any difference to the theoretical and experimental practice of science. The reasons listed above are, in my opinion, completely sufficient to reject (SCCP). Another reason for rejecting (SCCP) would be, of course, a potential rejection of (WCCP). In this case, however, the matter is a little bit more complicated.

Thus, the first element of the overall procedure for dualists and non-reductive physicalist is the rejection of (CCP) in the form of (SCCP): (SCCP) seems to be a postulative metaphysical principle which is not logically inferred from the laws of physics.

As far as (WCCP) is concerned, dualists and non-reductive physicalists have two different choices at their disposal here: they can either accept it and try somehow to reconcile it with the fundamental claims of their doctrine, or simply reject it. In the former case, they can try to integrate (WCCP) with interactive dualism or non-reductive physicalism in such a way that would enable them either to deny the non-overdetermination rule, or to argue that mental causation is not, in principle, a case of typical overdetermination. They may also appeal to a specific counterfactual theory of causation or interpret mental causation in terms of facts instead of events. Another possibility is to refer to different modes of exemplification of mental properties or to argue that mental events are *causally relevant* to behaviour but are not *causally efficacious* in bringing about physical effects. In the case of the rejection of (WCCP), the proponents of dualism may try to appeal to specific philosophical reasons or to refer to some of the motives used in the rejection of (SCCP).

This presents the second element of the overall procedure proposed here. It consists either in adopting (CCP) in the form of (WCCP), or in denying that this principle is true. Since (SCCP) logically implies (WCCP), the third possible step within the proposed procedure is the rejection of the former by means of the rejection of the latter.

²⁰ Cf. e.g. Göcke [2012] p. 3. See also Göcke [2008].

Gibb's strategy

In the context of the exclusion argument it is standardly expected, on the one hand, that (CCP) should be formulated strongly enough in order to obtain the desired conclusion of the argument, but on the other hand, that it should not be too strong, since a version of it that would be too strong would beg the question against interactive dualism, as (SCCP) does.²¹ The second expectation is related to one more point: an appropriate version of (CCP) should not be strong enough to call into question possible empirical as well as metaphysical support. In any case, (CCP) is expected to be adequate both in terms of intellectual demands of the physicalists and in terms of specific argumentative needs. However, obtaining the aforementioned balance is not an easy matter.²²

According to Gibb, one of the reasons why some versions of (CCP) should plausibly be rejected, is the following circumstance. In her opinion, what unites different formulations of (CCP) is the belief that every physical event that has a cause has a sufficient cause, or, that every physical event that has a cause has a cause that is sufficient to fix its chances. According to her, this belief is either logically implied by the given formulation of (CCP), or is the hidden premise accompanying (CCP). Meanwhile, in her opinion, this belief is plainly false in the light of some empirical data.²³ Therefore, if (SCCP) or (WCCP) implied the belief that physical events must have a sufficient cause, then a given version of (CCP) would automatically be false as well. Such a situation, of course, does not occur when the belief in the existence of sufficient cause is not implied by a given version of (CCP), but merely accompanies it as a hidden premise. As for the other formulations of (CCP), they are too weak, by Gibb's lights, to obtain the physicalist's conclusion on the basis of the mentioned argument. In the end, to reach the physicalist's conclusion, the physicalist is forced to supplement the causal exclusion argument with an additional premise, *e.g.* the assertion that if some event x is not a cause of some other event y , then x is causally irrelevant to the latter. Such a manoeuvre, however, is highly controversial and bears the marks of an *ad hoc* strategy.²⁴

As a result, Gibb rejects the majority of the versions of (CCP), because almost none of them encompasses the model of *double prevention* as a model describ-

²¹ Cf. Lowe [2000] p. 572.

²² Cf. *ibidem*, p. 575–576.

²³ For an example of this, see *e.g.* Lowe [2013] p. 168.

²⁴ Gibb claims that this premise would be implausible given the distinction between causes and enabling events – see Gibb [2015a] p. 643.

ing mental causation. Furthermore, some formulations of (CCP), as they logically imply, in Gibb's lights, the principle of sufficient cause, stand in conflict with some empirical data, which allegedly undermine its validity (e.g. spontaneous radioactive decay, the origin of the universe).²⁵ The only version of (CCP) eventually accepted by Gibb is her own formulation:

(GCCP) Every physical event contains only other physical events in its causal history. (Where the 'causal history' of event *Y* is defined as including not only every event which stands in the ancestral of the 'immediate cause' relation to *Y*, but also every event that enables *Y* to be caused.)²⁶

The above formulation, according to Gibb, neither entails that every physical effect has a sufficient cause (or a cause that is sufficient to fix its chances), nor leads to the rejection of the claim that mental events could be enabling events in the physical domain, unless they are physical. With the help of (GCCP), Gibb eventually rejects the causal exclusion argument with its physicalist conclusion. But the main problem of (GCCP) is the fact that it sanctions, as it were, the risky idea that certain causal roles that mental events might play in the physical domain are inevitably invisible to science. This is because mental events which enable physical events to cause other physical events by double prevention seem to fall beyond the scope of empirical research.²⁷

An alternative strategy

It is not my intention to undermine her strategy here, as I basically agree with its results. Instead, I would suggest an alternative manoeuvre with a similar impact, which involves neither the concept of causation preferred by Gibb, nor the model of mental causation as *double prevention*. It seems to me that a refutation of the causal exclusion argument can be carried out by the use of simpler means, though they also lead to the rejection of (WCCP), and, consequently, to the rejection of (SCCP). My manoeuvre differs from Gibb's diagnosis in two important respects. First, Gibb seems to overlook the difference between a sufficient cause and a physical sufficient cause. Indeed, there seems to be a difference in saying that

²⁵ David Papineau, as if sensing the difficulties of (CCP) because of these events, formulates another version of it: "Every physical effect has an immediate sufficient physical cause, in so far as it has a sufficient physical cause at all" – see Papineau [2009] p. 59.

²⁶ See Gibb [2015a] p. 644.

²⁷ For an appropriate argumentation supporting such a reservation, though aimed at Lowe's views, see Robb [2016].

this or that formulation of (CCP) implies the principle of sufficient cause and in saying that a given version of (CCP) implies the principle of physical sufficient cause. Of course, from the claim that for every physical event, there is a physical sufficient cause it would easily follow that for every physical event, there is a sufficient cause. But still these are different claims. The difference between them is very important because it enables an alternative interpretation of Gibb's findings. Second, Gibb argues to the effect that many formulations of (CCP) are false because the principle of sufficient cause, implied by the former, is false. Note however, that, first, we can speak of logical inference only in the case of some formulations of (CCP), and, second, in accordance with what has been said above, it is generally logically possible that events have some sufficient causes, although those causes are not necessarily physical ones. In the latter case, the principle of sufficient cause would still have its value, even if a given formulation of (CCP) as well as the principle of physical sufficient cause were false.²⁸

The above mentioned manoeuvre is not by and large my own idea. It is based, as it were, on the causal argument against physicalism, which is the brain-child of Uwe Meixner.²⁹ This argument – in a nutshell – is as follows:

- (1) Some completely physical events have no completely physical sufficient cause.
- (2) Every event has a sufficient cause.
- (3) Therefore, some completely physical events have a sufficient cause that is not completely physical.

If we assumed that every cause is a non-abstract individual (*e.g.* an event), we would obtain a further conclusion that some non-abstract individuals are not completely physical, which is a direct negation of the thesis of physicalism. It is worth noting that this argument does not involve any specific concept of causation. However, it requires the acceptance of the principle of sufficient cause and an empirical observation that some events (*e.g.* spontaneous radioactive decay) have no sufficient cause in the form of physical event.

At first blush it would seem that premises (1) and (2) are mutually logically incompatible. However, upon careful reflection, it appears that they are only conditionally incompatible, *i.e.* that one of these claims could prove to be false if some other third claim were true. However, because (1) is true in the light of empirical

²⁸ Indeed, instead of arguing that many formulations of (CCP) are false because the principle of sufficient cause, implied by the former, is false, Gibb had better argue that the mentioned formulations are false because the principle of *physical* sufficient cause is false.

²⁹ Cf. Meixner [2014] p. 26–30.

data, only the principle of sufficient cause remains on the battlefield. So, what claim would be incompatible with (2)? Well, this claim is a specific version of (WCCP). For the purpose of argument one can accept its relatively weak formulation (assuming that the weaker formulations are implied by the stronger ones), e.g. the claim that *if some completely physical event has a sufficient cause, then it also has a completely physical sufficient cause*.

The whole argumentative situation is as follows: in the light of premise (1) we have two possibilities here: either we accept the principle of sufficient cause, or (WCCP); *tertium non datur* (surely, one cannot accept both in this case). Of course, it is always possible to reject both principles, but this would be rather an unprofitable agnostic option, which is the least desirable here.

Two separate reasons appeal for the rejection of (WCCP) and the acceptance of the principle of sufficient cause. Firstly, the principle of sufficient cause is metaphysically neutral, *i.e.* its status is in principle independent of the philosophical debate between dualism and physicalism. In the case of (WCCP) we have to do with quite an opposite situation. Secondly, accepting (WCCP) rather than the principle of sufficient cause boils down to the approval of the existence of entities without any sufficient cause—according to (WCCP), an event without any sufficient physical cause does not have any sufficient cause at all, which automatically locates it beyond the scope of any rational explanation. Indeed, if (WCCP) were a well-confirmed empirical hypothesis, then the principle of sufficient cause could be regarded as an empirical hypothesis as well. On this score, both principles seem to be on a par. On the other hand, if these theses were treated as *a priori* regulative principles, then there would not be any special reason to favour (WCCP) over the principle of sufficient cause, either, *i.e.* there would not be any reason, for instance, why the thesis that *some physical events have no cause at all* should be more preferable to the thesis that *some physical events have a non-physical cause*. Rather, the opposite seems to be the case.³⁰

Are there any additional reasons that may help in rejecting (CCP) rather than the principle of sufficient cause? Well, accepting (CCP) instead of the principle in question, as many thinkers have convincingly pointed out, might cause some serious theoretical difficulties. As has already been pointed out, they have shown, among other things, that:

- 1) (CCP) is a part of a bigger metaphysical picture which at first generates the problem of mental causation and then makes it intractable, so if one wanted

³⁰ This line of argument can also be found in Meixner [2008] p. 35–40.

- to take our explanatory and predictive practices in the special sciences seriously and, consequently, to dismantle the problem of mental causation, (CCP) would have to be given up;³¹
- 2) contemporary science reveals some empirical data which seem to contradict (CCP) (in contrast with the principle of sufficient cause); in particular, (CCP) seems to fail at the microphysical level within quantum theory;³²
 - 3) contrary to the widespread opinion of some physicalists, (CCP) is neither a scientific theorem, nor directly logically follows from any scientific theory or law (in particular it does not follow from the laws of the conservation of energy and momentum—at least without assuming some additional philosophical claims, *e.g.* that causation always takes the form of a transfer of energy);³³
 - 4) (CCP) seems to follow from the very doctrine of physicalism: if physicalism were true, (CCP) would be true as well; concurrently, if physicalism were false, (CCP) would almost certainly also prove to be false (if this diagnosis were right, it would clearly demonstrate that the exclusion argument simply begs the question against dualism and non-reductive physicalism);³⁴
 - 5) The arguments supporting (CCP), offered *e.g.* by Papineau, are not fully compelling.³⁵

It is noteworthy that these reasons do not generally threaten the principle of sufficient cause—all the more so if we are prepared to differentiate it clearly from

³¹ Cf. Baker [1993] p. 90–94.

³² Cf. Stapp [2009] p. 248–249; [2011], p. 9–10, 24–25, 44–45, 48, 106, 121, 127. Stapp [2007] p. 3–4 has frankly commented on this as follows: “Quantum mechanics violates the causal closure of the physical in two separate ways. The first is the injection of statistical variations into the outcomes of certain experiments. This introduction of randomness into the dynamics provides no opening for mental causation, for the statistical variations are asserted to be truly random, hence independent of our conscious intentions. The second violation of physical closure enters through what is variously called the *free choice* on the part of the experimenter, or the *choice of basis*, or the *process 1* action specified by von Neumann’s rigorous mathematical formulation of quantum theory. Von Neumann describes in detail the causal *effects* of this process 1 action upon the physically described world, but he calls this action an “intervention”, undoubtedly because: (1) the principles of orthodox quantum theory, although requiring the occurrence of such an action in association with each observation, specify no physical cause for it, and place no statistical conditions upon it; and (2) in actual scientific practice the *effective* cause of each such action is an experimenter’s *reason* for acting in the way he or she chooses to act, rather than in some other way that the basic quantum principles would equally allow.”

³³ Cf. Göcke [2008, 2011], p. 3–4; Gibb [2010, 2015c].

³⁴ Cf. BonJour [2010] p. 5–6. The same opinion could also be found in Di Francesco, Tomasetta [2015] p. 185 and in Tiehen [2015] p. 2407–2409.

³⁵ Cf. Garcia [2014] p. 102–103; Di Francesco, Tomasetta [2015] p. 182–184.

its physicalist version, stating that every physical event has a sufficient physical cause.³⁶

Ultimately, therefore, it is better to maintain the principle of sufficient cause and to reject (CCP). The rejection of (CCP), however – if this principle were really implied by physicalism – would be equivalent to the rejection of physicalism. The difference between Gibb's strategy and the strategy undertaken here is actually tantamount to the difference in assessing the status of the principle of sufficient cause. It seems to me, namely, that Gibb too hastily has accepted the conclusion that some empirical data undermine this principle.³⁷ Gibb, however, has rightly noticed that the principle of sufficient cause is either implied or accompanied by (CCP) as a hidden premise. A precise identification of both principles is crucial to the whole discussion. The acceptance of the mentioned data along with the acceptance of the principle of sufficient cause leads to the rejection of (CCP). Similarly, too, the acceptance of the data along with (CCP) leads to the rejection of the principle of sufficient cause. Gibb has rejected the principle of sufficient cause, has invalidated (CCP) in almost all formulations as a principle which does not encompass "enabling events", and then has offered a fairly complex conception of causation instead, which intends to undermine Kim's line of argument. This challenge can, however, be constructed more economically as I have been trying to sketch above.

Conclusion

It looks as though no formulation of (CCP) can fully satisfy both sides of the debate. On the one hand, (SCCP) simply begs the question against dualism and non-reductive physicalism and for this reason should not be used as a premise in the exclusion argument. On the other hand, although (WCCP) can be accepted both by physicalists and dualists, the principle in question does not suffice to reach the physicalist conclusion; in order to obtain it, physicalists have to adopt the principle of non-overdetermination. However, this manoeuvre may reasonably be challenged, since in the case of mental causation mental and physical causes are not mutually independent causes. What is more, from the anti-physicalist

³⁶ This is exactly the point omitted by Gibb.

³⁷ At the same time, I entirely agree, as has already been mentioned earlier, that those data may undermine the physicalist version of the principle of sufficient cause.

point of view, there are some additional reasons to question the plausibility of (CCP).³⁸

In this paper, I have tried to show that (CCP) as well as the causal exclusion argument can be reasonably rejected. This can be elegantly achieved both by the overall procedure outlined above and by the more detailed strategies: either the one proposed by Gibb, or another based on Meixner's argument. Irrespective of this, even if one maintained some version of (CCP) acceptable for physicalists, the soundness of the causal exclusion argument, as has already been indicated above, could still be called into question for quite different reasons.³⁹ All of these strategies are aimed in various ways at undermining the ontological doctrine of physicalism,⁴⁰ at least in its reductive version.

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³⁸ For more on different critical analyses of (CCP), see e.g. Bishop [2006]; von Wachter [2006]; Vincente [2006, 2011]; Hasker [2009]; BonJour [2010] p. 5–6; Jones [2008]; Gabbani [2013]; Hüttemann [2013]; Garcia [2014]; Tiehen [2015].

³⁹ For the possibility of the acceptance of (CCP) within interactive dualism, cf. e.g. Meixner [2004] p. 301–305; Lowe [2008] p. 177–182.

⁴⁰ For more on strategies of this type, see e.g. Grygianiec [2016].

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