

The Downward Causation Argument against Emergentism: A Problematic Objection

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Abstract This paper addresses the main problems of the concept of emergence as it is applied to the problem of the mind. Its aim is to present an argument against one of its biggest challenges, namely the argument of downward causation. I call the soundness of this argument into question by exposing problems in two of its premises, thereby demonstrating that it cannot be coherently formulated. In brief, the argument's three premises are the causal closure of the physical, the causal efficacy of the mental, and the premise of non-overdetermination, which is the claim that the physical effects of mental causes are not, in general, causally overdetermined. I direct the main thrust of my objection at the causal closure premise, exposing the difficulties in developing an accurate definition of 'physical.' In addition, I challenge the third premise, that is, the claim that systematic causal overdetermination ought to be excluded where psychophysical causation is concerned.

Resumo Este artigo considera os principais problemas do conceito de emergência enquanto aplicado ao problema da mente. O seu objectivo é apresentar um argumento contra um dos seus maiores desafios, nomeadamente o argumento da *downward causation*. Contesto o rigor deste argumento expondo os seus problemas em duas premissas, demonstrando assim que não pode ser formulado coerentemente. Em suma, as três premissas são a clausura causal do físico, a eficácia causal do mental e a não-sobredeterminação, que defende que os efeitos físicos das causas mentais não são, em geral, causalmente sobredeterminados. O foco da minha objecção é a premissa da clausura causal, expondo as dificuldades de desenvolver uma definição rigorosa de 'físico'. Além disso, contesto a terceira premissa, isto é, a afirmação segundo a qual a sobredeterminação sistemática causal deve ser excluída quando está em jogo a causação psicofísica.

1. Introduction

This paper is a part of an ongoing project which addresses what I consider to be the main problems of the concept of emergence as it is applied to the problem of the mind. The aim of this paper is to present an argument against one of its biggest challenges, namely the argument of downward causation. I call the soundness of this argument into question by exposing problems in two of its premises, thereby demonstrating that it cannot be coherently formulated. In brief, the argument's three premises are the causal closure of the physical, the causal efficacy of the mental, and the premise of non-overdetermination, which is the claim that the physical effects of mental causes are not, in general, causally overdetermined. I direct the main thrust of my objection at the causal closure premise, exposing the difficulties in developing an accurate definition of 'physical.' In addition, I challenge the third premise, that is, the claim that systematic causal overdetermination ought to be excluded where psychophysical causation is concerned.

2. The Argument

Let us begin by presenting the argument under discussion. Given that in the past couple of decades, Jaegwon Kim has thoroughly explored the topics of non-reductive materialism and its challenges, I chose to examine here one of his recent formulations of the argument.¹ Let us first see what is meant by downward causation in this context. Fairly straightforward, this concept refers to the causal influence of higher-level properties on the constituents of the lower

¹ Kim, 2006a.

level. In the case of emergence and the mind-brain relations, it manifests the idea that emergent properties can exert their causal influence downward to affect processes and constituents at the lower basal level.

For the purposes of this paper I will assume, together with Kim, that emergentists welcome the idea of downward causation. Hence I will ignore the epiphenomenal alternative.² Now, let us examine the difficulties that any proponent of downward causation must face, according to Kim. Kim writes:

An emergent property, M, is a cause of another emergent property, M* ... M* is instantiated only because, its basal condition, call it P*, is present. *It is clear* that if M is to cause M*, then it must cause P*. The only way to cause an emergent property is to bring about an appropriate basal condition. So the M---M* causation implies a downward causal relation, M to P*. But M itself is an emergent property and its presence on this occasion is due to the presence of its basal condition, call it P. When one considers this picture, one sees that P has an excellent claim to be a cause of P*, displacing M as a cause of P*. The deep problem for emergent causal powers arises from the closed character of the physical domain.³

The causal closure principle is stated by Kim as follows: "If a physical event has a cause, it has a physical cause." Another principle stated by Kim⁴ is the *Principle of Causal Exclusion*: If an event, *e*, has a sufficient cause, *c*, at time *t*, no event at *t* distinct from *c* can be a cause of *e* (unless this is a genuine case of causal overdetermination). We can now formulate an argument against the causal powers of emergent mental properties, which seems to be, at first glance, an

² My main reasons for doing so are: (1) It goes against some of our most basic intuitions regarding the influence that our beliefs, desires, intentions etc. have on the physical world; (2) Lacking causal powers would disqualify them from passing Alexander's dictum, "to exist/be real is to have causal powers," thereby raising questions regarding their evolutionistic justification.

³ Kim, 2006a, 199.

⁴ Kim, 2001.

objection against Emergentism. This objection is sometimes referred to as the Downward Causation Argument (henceforth, DCA):

1. The physical is causally closed.
2. Downward causation of emergent mental properties: many (or all) emergent mental properties are causally relevant to some physical properties.
3. Causal Exclusion: physical events are not pervasively causally overdetermined.

Conclusion: mental causally-potent properties are identical with physical properties or are reducible to them. Therefore, irreducibility and causal powers cannot both be preserved. In other words, the downward causal powers of irreducible higher-level mental properties cannot be maintained. The available options are thus epiphenomenalism (the outright rejection of the idea of downward causation) or physicalism.

3. Disputing the soundness of premise three (the rejection of causal overdetermination)

In what follows, I intend to briefly present two counterarguments that call into question the soundness of premise three, namely, the premise that physical events are not pervasively causally overdetermined. The first counterargument clarifies a common conceptual mistake: it argues that not all of the relations in question are causal relations. The second counterargument suggests that overdetermination in the case of Non-Reductive Physicalism (NRP) is acceptable and pervasive.⁵

⁵ See for example Loewer, 2007; Pereboom, 2002; Schaffer, 2003; Sider, 2003; and Woodward, 2003, Ch. 2.

Thomasson⁶, following Aristotle, distinguishes between different types of relations, which may be “indifferently referred to as ‘causal’.” One such relation is ‘determination,’ characterized by Thomasson as “a synchronic relation between higher-level entities and the lower-level entities that contribute to their being the way that they are.” She goes on to say: “Concrete higher-level entities that are materially constituted by physical entities, for example, are largely determined by their physical bases”⁷ – an idea she deems close to Aristotle’s material cause. Another relation which is referred to as ‘causal’ is our own modern concept of causation, “a diachronic relation between an earlier event and a later one.” The distinction between these relations, together with the claim that there cannot be a case of inter-level causation⁸, allow Thomasson to claim that only one of the relations involved in our alleged example of overdetermination is causal. Hence, these relations do not exclude one another and do not compete to create a case of causal overdetermination.

This preliminary distinction allows Thomasson to argue against Kim’s two cases of alleged overdetermination. According to Kim:

The presence of P* by itself guarantees that M* will be instantiated at that time, no matter what has preceded this occurrence of M*. That is, as long as P* is there at the time, M* will be there at the same time whether or not M*’s purported cause, M, had been there at all—unless, that is, M had something to do with P*’s presence at that time. In fact, the only way to save the claim that M caused M* appears to be to say that M caused M* by causing P*.⁹

⁶ Thomasson, 1998.

⁷ Thomasson, 1998, 184.

⁸ Thomasson’s solution is based on what she refers to as “a ‘layered’ view of the world,” the very view that Kim argues against: “One common tenet of such layered views is that causation occurs only within a level; there is no upward or downward causation. Layers are not connected by causal relations but by relations of determination, dependence and material constitution.” (Thomasson, 1998, 191).

⁹ Kim, 2006b, 557.

Let us examine the two cases referred to by Kim, according to Thomasson's view: P^* 's instantiation of M^* is actually a case of determination or material constitution, while M 's same-level causation of M^* is a case of causation. According to Thomasson, we should not mistake this case for a case of causal overdetermination, since it is not true that the two relations in question are both causal relations. Moreover, there is no downward causation of P^* by M , since there can be only same-level causation, and hence no competition between M and P over causing P^* . *This means that the causal closure of the physical is not violated.* In conclusion, in the two cases suspected of causal overdetermination and of a breach of causal closure—namely the case of P^* 's overdetermination by P and M , and the case of M^* overdetermination by M and P^* – we can see that there is in fact no room for such an accusation.

Another totally different approach for dealing with the soundness of premise three is to accept overdetermination in cases of NRP. This approach examines the counterfactual-based causal claims of the different cases – namely the regular paradigmatic case and the NRP case – only to conclude that the two are different, and that overdetermination in the latter case is completely acceptable.

A paradigmatic common example of overdetermination is that of two assassins, each *independently* trying and succeeding in killing the same victim. In this case, overdetermination seems to contradict the counterfactual theory of causation, since the victim would have been killed even if assassin 1 (or 2) would not have killed him. Hence, assassin 1 (or 2) could not be the cause of his death (according to a counterfactual theory of causation). But this paradigm of overdetermination does not seem to fit the general case of non-reductive physicalism, since the alleged mental and physical causes involved in it are not independent. Recall that in Kim's description of the NRP case, M and P cause P^* , by downward causation and physical

causation respectively. However, M is determined by its physical base P and so this case is essentially different from any regular case of overdetermination where two independent causes overdetermine an outcome.

In addition, to further illustrate the distinction between the paradigmatic and the NRP cases, let us recall one of the points Kim raises for such cases of causal overdetermination: “in making a physical cause available to substitute for every mental cause, it appears to make mental causes dispensable in any case.”¹⁰ But mental causes cannot be dispensed with on the NRP account, since the only way M could be dispensed with is by dispensing with P, and P may not be dispensable with respect to P*.

4. Disputing the soundness of premise one (the causal closure of the physical)

The downward causation argument suffers from a multitude of problems. At this point I wish to concentrate on the causal closure premise. The following are what I take to be its principal problems.

First problem: It might be very difficult to coherently formulate the principle of the causal closure of the physical world. As Lowe argues, if one wants the causal closure argument against emergentism to work, “[the] principle appealed to should be neither too strong nor too weak.”¹¹ An example for a too strong closure principle would be the claim that “no physical effect has a non-physical cause.” According to Lowe, such formulation of the principle together with premise DCA2 (as stated at the end of Section two), which can be accepted by both sides, already entail the conclusion without the help of premise DCA3.

¹⁰ Kim, 1998, 44-45.

¹¹ Lowe, 2000, 572.

As Lowe states, “[this formulation of the principle of the causal closure of the physical] can fairly be dismissed by the interactionist dualist as question-begging.”¹² Thus, continues Lowe, the physicalist argument would practically consist of one premise, namely the causal closure principle, and a conclusion derived from this one premise, namely that mental events are physical events, or that mental events have no causal powers (epiphenomenalism).

An example for a too weak closure principle would be the claim that “every physical event which has a cause has a sufficient physical cause.”¹³ It is too weak because it fails to take into account the transitivity of causation, and consequently leaves ‘holes’ through which mental causes can ‘penetrate’, so to speak. In a nutshell, think of an emergentist of some kind, who endorses the above (“too weak”) formulation of the causal closure principle. Such an emergentist may consistently maintain that the universe has evolved from a totally physical universe (in which only physical events exist) to a physical-mental one (in which both physical and mental events exist) while still maintaining that causal determinism holds. According to this view, when we go back down the causal chain of events of each mental event, we reach a physical event, because according to this view, the physical has ultimately brought the mental into being.

To be sure, these examples by themselves may not be enough to reject premise 1, but I present them here in order to expose the vulnerabilities and difficulties of even properly formulating the principle of the causal closure of the physical world.

Second problem: Arguments supporting the causal closure principle, and which employ the conservation of energy law, seem to be invalid. For example, Larmer (1986) undermines the validity of such

¹² Lowe, 2000, 574.

¹³ Lowe understands ‘sufficient cause’ as “a non-empty set of physical events, each of which is a cause of the given event and all of which jointly causally necessitate the occurrence of the given event.” (Lowe, 2000, 575)

arguments by distinguishing between two formulations of the conservation principle:

- (1) Energy can neither be created nor destroyed.
- (2) In a causally isolated system the total amount of energy remains constant.

Formulation (1) is considered by Larmer to be “considerably stronger” than (2). He also claims that “the experimental data which are taken to ground belief in the Principle of the Conservation of Energy more directly support what I have called the ‘weak’ form of the Principle.”¹⁴

Larmer’s point is that a proponent of mental causation need not deny formulation (2) of the Principle, but only that the human body is an isolated system:

The interactionist rejects, therefore, not the well-evidenced claim that in an isolated system energy remains constant, but the considerably weaker claim that the human body is an isolated system in the sense that it is uninfluenced by an immaterial mind.¹⁵

Our proponent of mental causation denies the stronger form of the Principle, but not the experimental evidence upon which the Principle of the Conservation of Energy is based. He simply resists the move from the weaker form to the stronger form of the Principle, which requires the justification of an extra premise, namely that there exists nothing capable of either creating or destroying energy. Thus, the problematic objection that mental causation is incompatible with

¹⁴ According to Larmer, in order to arrive at the stronger form of the Principle, one needs a further premise, namely that “there exists nothing capable of either creating or destroying energy.” By stating this, Larmer is pointing out that one *might* accept the ‘weak’ form of the Principle, yet reject the extra premise. (Larmer, 1986, 282)

¹⁵ Larmer, 1986, 282.

the Principle of Conservation of Energy becomes a controversy regarding the justification of the abovementioned extra premise.¹⁶

Third problem: There seems to be no clear cut, unambiguous criterion for 'physical.' Such a criterion must underlie any causal closure principle, for otherwise the principle is vacuous. In the remainder of this paper, I shall focus on the third problem.

One might claim that if we cannot provide a clear account of the border between the physical and the non-physical, we might not be able to explain what the principle of the causal closure of the physical means. The lack of such a border can be illustrated simply by posing the question: Can we name something that would count as non-physical? We obviously cannot use the term "mental" in this context, since the causal closure principle is used as a premise in an argument that is supposed to show that mental things are actually physical things. As Bas van Fraassen phrases it:

The precise truth conditions for these various claims [the materialist's claim that "matter is all there is," and its negation by the dualist] require at least that there is a genuine, and not just a verbal, distinction between what is material and what is not material.¹⁷

And as Jeffrey Poland puts it:

Any adequate formulation of physicalist doctrine requires an antecedent characterization of *the physical*.¹⁸

Let us review some of the attempts for tracing the border of the physical realm.

¹⁶ However, as Larmer points out, "the interactionist must produce some body of evidence which justifies him in postulating the existence of immaterial minds; otherwise he leaves himself vulnerable to the charge that he has cluttered up the ontological landscape by needlessly postulating entities for which there exists no evidence." (Larmer, 1986, 285).

¹⁷ van Fraassen, 2000, 51.

¹⁸ Poland, 1994, 110.

First, it should be noted that characterizations of the physical in terms of space-time, mass, impenetrability or other non-ghostly characteristics are obsolete. Neutrinos can pass through matter, which means matter is not impenetrable; Photons are assumed to have zero mass, and some versions of M-Theory include entities (zero-branes), which have no spatial extent. Some versions even postulate that these entities are the basic ingredients of everything, including space-time.¹⁹

We should also note the distinction between a-priori and a-posteriori approaches when approaching the task of defining the border of the physical. By an a-posteriori approach I hereby mean an appeal to the empirical study of nature for defining this border. On the other hand, an a-priori approach, as Poland puts it,

depends upon some form of conceptual or linguistic analysis or upon some other form of a priori argument purporting to provide definitive grounds for drawing the distinction between physical and non-physical.²⁰

In the remainder of this section, I will deal with a-posteriori approaches to the task of defining the border of the physical, which seem to be more intuitive among physicalists. Followers of this approach take the physical to be whatever is in the domain of physics. To begin with, this might become a self-defeating strategy, since physics seems to have no definitive boundaries. To counter such a claim, some thinkers, Chomsky for example, claim that physics will be extended to incorporate any new discovery exactly as was done in the

¹⁹ See Greene 2005: 488-9. It can be argued that this example rests on speculative and vague parts of a physical theory, which has no empirical confirmation and which is just one of many candidates for a ToE. In reply, I refer the reader to a lecture by Professor Hawking, in which he claims that given the 'no-boundary proposal', quantum cosmology and M-Theory can be thought of as "real science", and "can be falsified by observation." See <http://www.hawking.org.uk/quantum-cosmology-m-theory-and-the-anthropic-principle.html>.

²⁰ Poland, 1994, 112.

past, regardless of what common sense dictated. For example, the failure to reduce electromagnetic theory to mechanics was a sufficient reason for expanding the scope of physics so as to include that theory. If physics is indeed an evolving scientific branch, it cannot have firm boundaries. It follows that future stages of physics may include the mental as well. This was labeled by Poland *the problem of downward incorporation*:

The sense in which our conception of the physical is evolving is based in part upon the idea that, at higher levels of organization and complexity, new phenomena and principles concerning them 'emerge'. And if the antecedent physical principles concerned with less complex phenomena prove not to be sufficient for accounting for the emergent phenomena, then, in order to preserve the fundamental and comprehensive character of physics, such phenomena and principles must be conceived of as physical. But if this happens ... it leaves open the possibility that phenomena and principles originally conceived of as mental ... must be re-conceived as part of the physical bases.²¹

Such incorporation of the mental, argues Poland, would amount to the trivialization of the demands the physicalist program must satisfy. However, as opposed to past physicalists, who took it as a fixed a priori fact that the mental was not part of the physical domain, it is now widely acknowledged that substantive constraints upon physical theories are ill advised. Poland bites the bullet and admits that "it is conceivable that physics might be revised to incorporate mental ... into the physical basis."²² If this will indeed be the case, then the causal closure argument can no longer be utilized against emergent mental properties.

Let us put this problem aside and move on to the next one. This problem can be stated using the following question: Are physicalist principles based on current physics, in which case, as history teaches us, they are almost surely inaccurate and incomplete; or are they

²¹ Poland, 1994, 147.

²² Poland, 1994, 331.

based on some version of future physics, in which case they are vague, since this version does not yet exist. Regarding the status of current physics, there is no need to elaborate. The ongoing attempt to find a theory of everything, together with our knowledge of the history of science, suggests that our current physical theories are incomplete at best. In this case, a notion of the 'physical' based on current physics will be, at least partially, misguided.

What about a version of future physics? Philosophers such as J. J. C. Smart²³, David Armstrong²⁴, Franck Jackson²⁵, Terry Horgan²⁶ and Barry Loewer²⁷ all speak of an ideal completed version of physics when they speak of physicalism or physical properties. So let us examine this alternative, wherein the physical is formulated in terms of a true and complete future physics.

The first problem with this alternative is evident and straightforward: Since we have no idea what this future complete physics is, we cannot, at this present point in time, determine the truth or falsity of physicalism or that of the causal closure principle. This might not pose a problem, if one regards physicalism as a hypothesis that is pending scientific confirmation or refutation. This, however, leads us to the second problem.

²³ "By 'materialism' I mean the theory that there is nothing in the world over and above those entities which are postulated by physics (or, of course, those entities which will be postulated by future and more adequate physical theories)." (Smart, 1987, Ch. 16)

²⁴ According to Armstrong, 'physical properties' are "whatever set of properties the physicist in the end will appeal to." (Armstrong, 1991, 186)

²⁵ According to Jackson, physical facts cover "everything in a completed physics." (Jackson, 1991, 392)

²⁶ "Humans are, or are fully constituted by, entities of the kind posited in (an ideally completed) physics." (Horgan, 1994, 472)

²⁷ "What many have on their minds when they speak of fundamental physical properties is that they are the properties expressed by simple predicates of the true comprehensive fundamental physical theory." (Loewer, 1996, 103)

Using the notion of a ‘true and complete physics’ opens the possibility of such a physics also including the mind, thereby making physicalism trivially true. As Barbara Montero puts it:

For what is a true and complete physics, save for one that accounts for the fundamental nature of everything? If mentality is a real feature of the world, a completed physics will, by definition, account for the most fundamental nature of the mental as well.²⁸

However, it seems to me that both physicalists and their critics do not believe that their debate is simply a matter of definition: recall the first problem. On the other hand, if future complete physics is not a theory of everything and does not contain the mental, there seems to be nothing that justifies the ontological authority of physical science over, say, mental science – namely the physicalist claim that everything is physical; that what there is what physics says there is.

What is it that entitles the physicalist to exclude certain sciences, and to grant others authority by including them among the physical sciences? In their paper *There is no Question of Physicalism*, Crane and Mellor examine and reject a number of popular alternatives for such inclusion-exclusion. The first alternative the authors examine is the reduction to physics. According to Crane and Mellor, even the most enthusiastic supporters of reduction to physics, “for whom reduction to physics is the touchstone of the physical, do not propose to do it in practice. They simply insist that it can be done ‘in principle’.”²⁹ But what exactly is that principle? Moreover, is the reduction in question a reduction to a version of present physics or to a future one? Crane and

²⁸ Montero, 2005, 179. To clarify, if a complete physics that accounts for the fundamental nature of everything is assumed, physicalism is true by definition whether mentality is a real feature of the world or not. If it is assumed to be a real feature of the world, then we have a case of ‘the mental is the physical’, if it is not, then we have some sort of eliminativism.

²⁹ Crane and Mellor, 1990, 188.

Mellor argue that both options lead to a dead end.³⁰ They suggest that the appeal of the idea of “Reduction in Principle” stems from two other principles: the unity of science and micro-reduction, both of which cannot be sustained.³¹ Nor can Causation and Intentionality serve as an exclusion principle.³² Other attempts to distinguish physical science as ontologically superior, which are discussed and rejected by Crane and Mellor, are the discovery of laws and supervenience, namely the claim that the mental is excluded since it supervenes on the physical.³³

Thus, if a true and complete future physics does not have a complete ontological authority, then the physical is not all that there

³⁰ “For applying the principle to present physics entails that any future extensions of it would not be physical: that physics, the paradigm physical science, is already complete. But no one believes this. And if we apply the principle to an otherwise unspecified future physics, we shall not be able to say which sciences are physical until we know which of them *that* physics must cover – which is just what the principle was supposed to tell us.” (Crane and Mellor, 1990, 188)

³¹ “No one could think astrophysics and genetics unified even in their methods, except under the most abstract descriptions of scientific methodology. And in their contents, they display no more unity than that of a conjunction...but then why cannot psychology supply another conjunct? ... even physics proper is not unified. Maybe it will be some day; but even if it is not, physicalists will still accept gravity, quantum and electromagnetic phenomena as physical, to be identified and described in their own terms by independent physical sciences. Similarly for the sciences of chemical, biological, and neurophysiological phenomena. So why not for psychology, the science of mental phenomena?” (Crane and Mellor, 1990, 188) Regarding the Micro Reduction principle, the authors say: “even the *physics* of the relatively large does not reduce to microphysics. So even if all sciences were reducible in principle to physics, this would not entail that the smallest particles are all there is: MR would be false, even if the RIP principle were true. So the RIP principle cannot be used to support MR.” (Crane and Mellor, 1990, 190)

³² “All the supposedly problematic features of intentional states are as endemic to physics, and in particular to non-mental causation, as they are to psychology. The notion of causation will thus not serve to define the physical (and hence ontologically authoritative) sciences in such a way as to exclude psychology. Defining the physical as the causal will not make physicalism a non-vacuous doctrine about the mind.” (Crane and Mellor, 1990, 196)

³³ “Modern [non-deterministic] physics suggests that even the weakest serious form of supervenience ...is false.” (Crane and Mellor, 1990, 206)

is, and physicalism is false. But even in that case, we might still possess a clear-cut notion of ‘physical,’ thereby saving the causal closure principle. To achieve that, one should be able to distinguish the phenomena covered by a true and complete physics and those covered by the theory of everything. It seems that we are back where we started, namely, in need of a distinction between the physical and the non-physical.

One view, suggested in the literature, supports the idea that causally isolated realms can be considered as nonphysical. It argues that if these realms were not isolated from the physical, then physical science would aim at subsuming them.³⁴ However, this view cannot provide the solution. There are causally isolated things that a physicalist would not usually want to consider as nonphysical, e.g. black holes.³⁵ In any case, even if we allow such causally isolated realms, beyond the reach of a true and complete physics and science, physicalism would still be necessarily true of our own causally connected world as we are able to explore and comprehend it. Thus, it would still be, in effect, a trivial view. Even in case one is not convinced by the aforementioned arguments and insists on granting the complete future version of physics an ontological authority, one is still left with the problem of being unable to determine the truth value of the causal closure principle (recall that this complete future version of physics may, in theory, include the mental – the problem of downward incorporation).

Realizing that a positive answer to the question ‘what is the physical’ is elusive, a number of philosophers have tried to provide a negative one. David Papineau, which advocates this approach, refers to it as a “*via negativa*,” and suggests the following:

³⁴ As discussed previously with respect to downward incorporation.

³⁵ One characteristic of a black hole is that it is a region in spacetime that is not in the causal past of the infinite future. In other words, it is causally isolated from other regions of spacetime.

one way of understanding 'physical' would simply be as 'non-mentally identifiable' – that is, as standing for properties which can be identified independently of this specifically mental conceptual apparatus.³⁶

This suggestion appears to be a historical regression for physicalists, who granted physics ontological authority in the move from materialism to physicalism; namely from the view that matter is solid, inert, impenetrable, conserved, and interacts deterministically through contact, to the view that what exists is whatever physics says the world contains. But furthermore, this suggestion raises the unbearable problem of physicalism being unable to define its central notion. The absurdity increases when this central notion is defined in terms of the mental, the very thing physicalism declares to be non-fundamental, since realized by the physical.

5. Conclusion

In summary, in this paper I have examined the soundness of the downward causation argument. I argued that two of its premises, namely the causal closure of the physical, and the claim that physical events are not pervasively causally overdetermined, are questionable, to say the least, and cannot be accepted as they stand, and that consequently its conclusion is not sound. If that is indeed the case, we can conclude that the downward causation argument cannot be considered a real problem for emergentism.

³⁶ Papineau, 2004, 41.

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