

Review of *Mind in a Physical World* by Jaegwon Kim.

During the previous century philosophers of mind attempted to fashion a view of the relationship between the mental and the physical which is at once both physicalistic and non-reductive. Among the prominent advocates of various versions of non-reductive physicalism (NRP) were Donald Davidson, Jerry Fodor, and Jaegwon Kim. At one time (and for some time) Kim thought that the concept of supervenience could be harnessed to spell out the relationship between the mental and the physical to this end. The idea was that while the supervenience relation is tight enough to capture what is right about physicalism it is also loose enough to be compatible with the irreducibility of the mental to the physical. The main message of *Mind in a Physical World* is that this doesn't work. Kim argues that his and other versions of NRP inevitably run aground on the problem of mental causation. If he is right about this then philosophers true to their physicalism will have to swallow reductionism. Those who find reductionism impossible to swallow will have to find a way of living without physicalism.

Kim sees the problem of mental causation as arising from the incompatibility of the following four plausible propositions:

- 1. Many (or all) mental events cause physical events (alternatively may mental properties are causally relevant to some physical properties).**
- 2. Mental events are distinct from physical events (the constitutive properties of mental events are not physical properties).**
- 3) The physical is nomologically and causally complete and closed.**
- 4) Physical events are not pervasively causally and/or nomologically over determined.**

Each of these propositions taken singly is plausible but together are inconsistent. At least one of the four has to go. The question is which?

Kim's discussion of NRP involves a number of ontological assumptions. One is a sparse view of properties on which properties are mind independent features that cut reality at its joints. On this view not every predicate expresses a genuine property and it may be that not every property is expressed by a predicate of our language. That properties cut nature at its joints means that they are involved in laws and causal relations in an appropriate way. It follows, for example, there is no guarantee that a disjunction of predicates that express properties will also express a property.¹ If it turns out that a putative property isn't involved

¹In some places Kim suggests not only that genuine properties are always involved in causal relations but the stronger view that (some of) their causal relations are essential to

in a law and/or causal relations in the right way then it is not a genuine property. According to Kim an event is an instantiation of a property by an individual (or a relation by the appropriate number of individuals) at a time. A mental event is the instantiation of a mental property. For physicalism to have content something must be said about the issue of characterizing the physical. Kim's view seems to be that the micro-physical properties of ideal physics are physical.² He also counts as physical properties that are conjunctions and aggregates of micro-physical properties and higher level properties defined over lower-level physical properties. (P115).³ If reductionism is true then those mental predicates that express genuine properties express physical properties.

The claim that physics is casually and nomologically closed and complete means that to explain a physical event E as completely as possible one does not have to go outside of physical facts. That an explanation of E is as complete as possible means that it entails that E occurs or entails the objective chance of E's occurring. The way I understand it the causal/nomological completeness of physics is a contingent claim whose exact content depends on how 'physical event' is understood. I think most physicists would agree that there is strong evidence in its favor when 'physical event' is understood as 'event describable in the language of ideal micro-physics'.⁴

NRP is a family of views differing in their ontological frameworks (views about properties, events, laws etc.) and how they understand 'reduction' and 'physicalism'. Following Kim I understand the irreducibility of the mental to the physical as meaning that there exist mental events and properties that are distinct from any physical events and properties.⁵ Kim observes that a necessary condition for physicalism is that mental properties, events, and laws supervene on physical ones. He considers various understandings of 'supervenience' but I

them.

²I am not sure how one should characterize 'ideal physics' except that it is safe to assume that the language of ideal physics contains no intentional or phenomenal predicates. I have a bit more to say about this in 'From Physics to Physicalism'.

³Kim thinks that his characterization makes make and biological properties physical. But it doesn't. Being a water molecule is not an aggregate or conjunction of fundamental micro-physical properties but a vast disjunction since water molecules can occupy infinitely many quantum states.

⁴This is Steven Weinberg's view in *Dreams of a Final Theory*

⁵Irreducibility is often taken to also have an epistemic component. For examples, the connections between physical and mental facts (properties, events) is enormously complex, non-explanatory, epistemically inaccessible etc.

think that any kind of physicalism worthy of the name requires a supervenience condition I will call Jackson Physicalism (JP) formulated as:

JP) any minimal physical duplicate of the actual world is a duplicate *simpliciter*.⁶

⁶Jackson (1998) gives this necessary condition on physicalism. It captures the idea that all God has to do to create our world is to create its physical part; metaphysical connections take care of the rest. That is a necessary condition follows from the fact that if it failed then God would have more work to do after creating the physical facts and laws.

Some complications aside JP entails that true mental propositions, e.g. Jaegwon is thinking about sailing, are metaphysically entailed by true physical propositions (including propositions expressing physical laws). Kim thinks that supervenience relations are too weak to capture the idea that mental property instantiations depend on physical property instantiations so he adds that the mental *depends* on the physical.⁷ This requirement threatens to make the supervenience condition superfluous and leaves dependence to be explicated. Perhaps dependence can be captured by adding that the physical facts are the only natural class of facts that satisfies the JP scheme..

The conflict among 1-4 is obvious. If P occurs at t the physical state S (which may consist of a fusion of many micro-physical events) at t-k fully accounts for P. If M supervenes on S and is a cause of P then it appears that P is over determined by S and M. If there is no such over determination then either M doesn't cause P or is identical to some part of S. If the latter then it is a physical event and so 2 fails. Descartes' resolution of the problem of mental causation rejects the completeness of physics. But this is not an option for physicalists since it involves there being nomological or causal relations that do not metaphysically supervene on the physical. Epiphenomenalists reject 1. Given Kim's view about properties that is tantamount to the view that mental predicates fail to express genuine properties; i.e. to eliminativism. Reductive physicalists reject 2. But there are persuasive and widely accepted arguments that mental predicates do not express physical properties. Given Kim's view of events this means that mental events are not physical events. It looks like the only way out is to reject 4, but, as we will see Kim thinks that there are reasons against that as well. It's not for nothing that Schoepenhauer calls the mind body problem 'the world knot'. Kim's claim is that NRP is the latest failed attempt to untie it.

⁷Two of the reasons that Kim gives for holding that Supervenience is too weak to capture physicalism have to do with features of his formulation of Supervenience. One is that he formulates the doctrine as involving properties. That leaves the possibility that there are laws and other facts that don't supervene on the physical. Another is that he allows that notion of necessity involved in Supervenience is nomological necessity. That allows for the possibility of fundamental bridge laws linking physical and mental properties and the existence of such laws would surely violate physicalism.

In a nutshell Kim's argument against NRP is this: NRP is committed to 1-3. 1-3 imply the denial of 4. But 4 is more plausible than the conjunction of 1-3. So one of 1-3 is false. Before looking at the reasons Kim gives in support of 4 I want to briefly examine Davidson's version of NRP which, at first, seems to take another approach. Davidson's ontological framework is different from Kim's. First, Davidsonian events are more thickly individuated than Kimian events. Where Kim would consider pulling the trigger, shooting the prime minister, starting the war, as distinct events Davidson would see a single event described in three distinct ways.⁸ Where Kim takes properties very seriously Davidson either is skeptical or deflationary about them. Davidson's framework allows him to hold a position, anomalous monism (AM), that is reductivist with respect to events but non-reductivist with respect to mental properties or predicates. On AM every event (including those mentally described) is a physical event but there are no tight connections between mental and physical properties or predicates. In fact Davidson holds there are no connections between mental properties and physical properties that are as strong as laws. Whether AM is really a physicalist view depends on whether or not it endorses JP. It is not clear whether or not it does. The physicalist part of AM, the identity of mental events with physical events, is compatible with the failure of JP. Davidson does add a supervenience claim to AM but it seems weaker than JP.⁹ However, I will assume that JP is included in AM so that it counts as a version of physicalism.¹⁰

AM tries to handle the paradox spelled out in 1-4 by splitting the difference between events and properties. For events AM rejects 2 while maintaining 1,3, and 4. For properties AM accepts 2 and rejects 1. So at first it may seem to resolve the paradox without rejecting 4. However, few philosophers think that this by itself provides an adequate account of mental causation. The reason is, as Kim points out, that AM provides no causal or nomological role

⁸Exactly what Davidsonian events are is a bit puzzling. In some places he seems to adopt Quine's view that they are space-time regions (perhaps special ones) and in other places seems to think it possible that distinct events can share exactly the same space-time regions.

⁹Davidson's supervenience claims seem to versions of weak supervenience on which within any world no two events can differ with respect to mental properties without differing with respect to physical properties. This is much weaker than JP since it is clearly compatible with there being a minimal physical duplicate which is not a mental duplicate. On the other hand JP entails the existence of metaphysically necessary conditionals between physical and mental statements. Davidson's obscure arguments against the existence of strict psycho-physical laws would seem, if sound, to rule out these connections.

¹⁰If JP is added to AM there will be necessary truths connecting physical facts with mental facts and it may be that Davidson intends to deny the existence of such connections. If so then I think AM is either no form of physicalism or, as some suspect, a kind of eliminativism.

for mental properties. Davidson's response to this objection was to insist that causation applies only to Davidsonian events and that it makes no sense to require a causal role for properties. But this seems wrong. To use a well worn example we easily distinguish among the properties of the event of a soprano's singing those that are causally relevant to the glasses breaking and those that are not. Even if Davidson takes a deflationary or skeptical attitude toward properties his account should explain the usual intuitions about the causal relevance of properties. Some philosophers have tried to help Davidson out by adding a causal role for properties to his framework.¹¹ For example, Fodor suggests that mental properties may be causally relevant in virtue of their being involved in causal laws.¹² Whether or not this works adding a causal role for mental properties will inevitably together with the rest of AM's commitments lead to the violation of 4.

Kim thinks that escape from the problem of mental causation by rejecting 4 is not a reasonable option. In *Mind in a Physical World* he gives three reasons for this (p44,45): 1) it is implausible that every physical event that has a mental cause is causally over determined, 2) given the causal completeness and closure of physics mental causes are dispensable, 3) over determination may come into conflict with physical causal closure. None of these arguments, if successful, would show that 4 is a necessary or conceptual truth. Yet in some places Kim seems to suggest that it is.

A typical case of causal over is the example of two assassins each independently shooting at the victim. In this kind of example the causes are wholly distinct events *independent* of each other. Call this *independent over determination*.[@]The kind of case relevant to NRP is, in contrast, one in which the over determining causes are metaphysically connected to each other. An example of this kind is a neurophysiological event N realizing a mental event M (say a desire for a sip of beer) and where both cause E (say the subject's hand's moving). . Call this kind *dependent over determination*.[@] Note that in both cases the causes by themselves don't determine the effect but, at most, determine for the effect given the laws and further circumstances. Independent over determination is possible but rare. If our evidence is that the prime minister has been shot it will usually be more reasonable to posit a single assassin rather than two assassins acting independently. The reason that we think that the first kind of over determination is generally not plausible is that when we posit two *independent* causes C1 and C2 for E we raise the question of why both C1 and C2 and why the events that occurred led to the same effect. But in the case of causes that are metaphysically connected we don't face these questions.¹³ So Kim's remark that pervasive over

¹¹This was my motivation in *AMaking Mind Matter*@LePore and Loewer

¹²*AMaking Mind Matter More*@*The Journal of Philosophy* A similar approach is developed by Brian McLaughlin in *AToken and Type Epiphenomenalism*@

¹³Kim formulates an *Aexclusion principle*@ according to which no event has two *independent*

determination of certain physical events by mental and physical events is implausible carries no force against NRP.

Kim's suggestion that mental causes are dispensable fares no better. The only way M could be dispensed with is by dispensing with P and P may not be dispensable with respect to E; i.e. if P had failed to occur E would have failed to occur. What Kim may have in mind is not that M is dispensable but that its being a *cause* of E is dispensable. Kim may have something like the following argument in mind. There are two possible worlds w and w^* in which 2 and 3 hold and which are exactly alike physically and mental but differ only in that in w some mental events are over determining causes of certain physical events and in w^* mental events are epiphenomenal. Our evidence in both worlds would be exactly the same (i.e. we would make the same observations) and since w is more complex (has an additional feature that need not be posited to explain anything) than w^* it is more reasonable to believe that our world (where I am supposing we have evidence for 2 and 3) is w^* (where 1 is false and 4 is true) than the that it is w (where 1 is true and 4 is false).

This argument seems to be appealing to the principle *Don't multiply causes without necessity.* Whatever the merits of this principle in general it is not clear that it applies to this case since the two causes are necessarily connected.

Kim's final argument is this:

For consider a world in which the physical cause does not occur and which in other respects is as much like our world as possible. The overdetermination approach says that in such a world, the mental cause causes a physical event -namely that the principle of causal closure of the physical no longer holds. I do not think we can accept this consequence: that a minimal counterfactual supposition like that can lead to a major change in the world. (p.45) This is puzzling. Consider two worlds: in w_1 M occurs N doesn't but M is realized by another brain state N^* and both M and M^* are causes of E; in w_2 M occurs and causes E but E has no physical cause. Kim seems to be saying that w_2 is more similar to the actual world than w_1 . But why think this? In w_1 supervenience and the completeness of physics both hold while in w_2 they both fail. In fact it seems obvious that we accept *If M had occurred but had not been realized by N it would have been realized by another neural state* and reject the corresponding counterfactual with the consequent *...supervenience and the completeness of*

causal explanations and which he uses to argue against overdetermination. But it doesn't seem applicable to mental-physical causation in NRP since on it mental and physical events are not metaphysically independent.

physics would have failed.®

It becomes clear why Kim thinks that dependent over determination is ruled out when he describes what he thinks the right way to describe the situation if NRP holds.

However, if we understand the difference between genuine, productive and generative causal processes, on the one hand, and noncausal regularities that are observed because they are parasitic on *real (sic)* causal processes, we are in a position to understand the picture recommended by (viii) (i.e. by NRP). In the case of the supposed M-M* causation the situation is rather like a series of shadows cast by a moving car. The moving car represents a genuine causal process, but the series of shadows it casts, however regular and law-like it may be does not constitute a causal process®(p45)

Kim is thinking of causation as a relation in which the cause *generates* or *produces* the effect. I am not sure what these metaphors come to but they suggest that in some way E grows out of C. In any case, if we think of causation in this way then each of the reasons that Kim gives against over determination appears more convincing. 1) If both N and M each produce E then even if they are metaphysically connected they can do so independently of each other. 2) If we have reason to believe that N produces E then we have no need to also posit M as productive of E. That hypothesis is dispensable. 3) if M produces E then if we just take N away M would still produce E thereby violating the causal completeness of the physical. If we reject over determination then we will have to say that M doesn't produce M* (or anything else) but is like the shadow of the car. So if we think of causation in terms of one event generating or producing another then it looks like we may have good reason to hold onto 4. Finally, the metaphor of C producing E or E growing out of C suggests that it is impossible for E to grow out of any distinct E. In the case of independent over determining causes this would mean that the effect grows out of both, each contributing some aspects of the effect (e.g. two bullet wounds). But in the case of NRP it looks as though M contributes nothing more than N already contributes.¹⁴

But now Kim faces what appears to be a reductio of his argument. The worry is that the argument from 2-4 to mental epiphenomenalism looks like it *generalizes* to all special science properties.(P86) The only features of mental properties invoked in Kim's argument are their distinctness from the properties of micro-physics. If geological, meteorological, biological, and so on properties are distinct (as they seem to be) from properties of micro

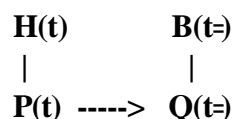
¹⁴As I mentioned it is clear whether Kim thinks that the non-existence of over determining causes is a plausible claim based on an evidentiary principle *Don't multiply causes beyond necessity*® or a conceptual/necessary truth. It looks like Kim's argument against NRP requires the latter since it is hard to see why this instance of the evidentiary principle is more plausible than the conjunction of 1-3.

physics then arguments analogous to Kim's will show that they and the events they constitute are epiphenomenal. Perhaps we can learn to live with the idea that mental properties and events are not part of the causal order but epiphenomenalism with regard to biological, meteorological, geological, etc. properties is absurd.

Kim responds to the generalization problem in this way. He argues that macroscopic entities (and events) possess *causal powers* that are not possessed by their micro-physical constituents. The expression *causal powers* is a technical term. Kim has something like this in mind. F is a causal power of an entity X if X has F and there are circumstances C such that in C X causes some E in virtue of F. Shoemaker, whose use of the term Kim seems to be following, gives the example of a knife having the causal power of cutting butter in virtue of being sharp. Kim observes that a macroscopic object, for example, a knife, may have a causal power that is not possessed by any of its micro-constituents. More generally macroscopic objects and their properties are constituted by microscopic entities (elementary particles and fields) and their properties and have causal powers that are not possessed by individual micro-constituents. In contrast, Kim thinks that mental properties add no new causal powers to the causal powers already contributed by neurophysiological properties. He concludes that if the physical is confined to the micro-physical, the properties and laws of fundamental physics, then it is not causally closed. He says *Physicalism need not be, and should not be, identified with micro-physicalism.*

What Kim seems to be doing is reconstruing the causal/nomological completeness premise to say saying that all causal powers are contributed by physical properties. He then notes that this version of causal/nomological completeness doesn't hold for micro physical properties (since there are causal powers that are possessed by macroscopic objects that don't instantiate micro-physical properties) but does hold if the physical includes certain properties of micro-objects and so these properties escape the argument for epiphenomenalism.

Kim's response to the generalization problem is puzzling. Given his characterization of causal powers it is true that there are causal powers in addition to the causal powers of micro properties. But this is irrelevant to the generalization problem. That problem arises not for *causal powers* but for nomological/causal completeness and the micro physical is causally and nomologically complete. And this means that every physical event has an as complete as is possible causal/nomological explanation. Consider, for example, the claim that a hurricane striking the coast at time t, H(t), caused the destruction of the beach at t, B(t). Let Q(t) be the smallest micro-physical condition on which B(t) supervenes given the laws of physics. Physicalism and the nomological completeness of physics entails that there is a micro-condition P(t) on which H(t) supervenes that is a complete (as complete as can be) cause of Q(t). And since Q(t) is sufficient for B(t), P(t) also a complete cause of B(t). The situation can be represent by the following diagram that Kim has made familiar.



If H(t) is not identical to P(t) then B(t=) has two causes H(t) and P(t) so we just the sort of case of causal over determination that Kim objects to. And this is so even though the causal powers of a hurricane are not identical to the causal powers of the individual air and water molecules that compose it. But of course, the causal powers of the hurricane are metaphysically determined by the micro-physical state P(t) and the laws. So, by analogy with the mental properties these causal powers are dispensable! There seem to be only two ways out of the problem for someone who thinks that H(t) is a cause of B(t=) but that over determination of B(t=) by H(t) and P(t) is not an option. One could hold that H(t) is reducible to, i.e. identical to, P(t) after all or one could deny that P(t) is really a causally complete explanation for B(t=) (by being a complete explanation of Q(t=) and B(t=) supervening on Q(t=) and the laws of physics). But H(t) is not identical to P(t). At most H(t) is identical to a vast disjunction of micro-physical states.¹⁵ The other alternative is to reject the causal/nomological completeness of micro physics as we have been understanding it. Kim's remark that *Physicalism should not be identified with micro physicalism* suggests that he may be thinking that this is the way to go. But this is not plausible and goes against the way physicalism is usually understood by its advocates. It would mean that the fundamental micro physical laws are gappy (they don't specify how the physical state or its chances evolve) and that these gaps are sometimes filled by laws and causal relations involving higher level properties and events that are constituted by micro physical entities. While this kind of emergentism is popular in certain quarters it has little scientific support.¹⁶ So I conclude that the generalization problem is a problem for Kim's argument. If we want to avoid it and still be physicalists we had better look at the remaining escape route from the paradox and see if we can provide an account of causation on which over determination is not problematic.

Under the heading *Free lunches* Kim discusses counterfactual accounts of causation as a way for NRP to satisfy 1-3 and motivate rejecting 4. The basic idea of the counterfactual account is that on a certain understanding of counterfactuals C causes E if C and E are

¹⁵ If it is equivalent to a disjunction of physical states the disjunction would contain infinitely (the size of the continuum) many disjuncts. It is likely that it would also have to contain disjuncts of states composed of alien properties since it seems that Hurricanes can be instantiated even if the fundamental physics is different from the physics of our world.

¹⁶Cartwright (1998) is an advocate of this view.

distinct events (or propositions stating their occurrence) and $-C \rightarrow -E$.¹⁷ Causal overdetermination is not a problem for the counterfactual account. On the most developed account of counterfactuals, David Lewis (1986), counterfactual overdetermination is compatible with distinctness and completeness. So why isn't this a way in which NRP can both have and eat its cake? Kim gives two reasons. One is that the counterfactual account of causation is inadequate as an account of causation. The other is that Lewis account of counterfactuals- which may solve some of problems he raises for the counterfactual account- involves heavy metaphysical assumptions. (P 130 fn19).

Kim's main objection is that the counterfactual account doesn't distinguish epiphenomenal relations from genuine causation. Let S_1 be the location of the car's shadow at t_1 and S_2 at t_2 and C_1 and C_2 the corresponding locations of the car. The counterfactuals $-S_1 \rightarrow -S_2$ and $-S_1 \rightarrow -C_2$ may strike us as true though there is no causal relation between S_1 and either S_2 or C_2 . Further, it seems to Kim that the supervenience of M on N is compatible with epiphenomenalism with respect to E (indeed Kim thinks this is the case if M is distinct from N) and yet in this situation $-M \rightarrow -E$. So the counterfactual account can't distinguish epiphenomenalism from mental causation. Kim also observe that $-E \rightarrow -E^*$ may be true when E doesn't cause E^* but both are effects of a common cause and that $-E \rightarrow -C$ may be true when C causes E . If these objections are correct than the counterfactual account fails.

I think these objections can be overcome by combining an improved version of Lewis' account of counterfactuals with a slightly more complicated account of causation. Roughly, on Lewis' account $A \rightarrow B$ is true iff at all the most similar to the actual world at which A holds B also holds. Two factors determine the ranking of worlds as more or less similar to the actual world; i) the size of the regions of match in occurrent fact and ii) the size of the regions of conformity to laws of the actual world. According to the account $A \rightarrow B$ if I had struck the match at t it would have lit at t' comes out as true (when its antecedent is false) since the most similar world to the actual world is one which matches the actual world exactly until a time a little before t when in a very small region there is a violation of the actual laws that leads to my striking the match. The laws then evolve that world so to entail that the match lights at t' .

¹⁷Lewis' proposes a condition that is necessary as well as sufficient. C causes E iff there is a chain of counterfactual dependencies from C to E . There are well known problems with the necessity of the account due to pre-emptive causes. Lewis has recently modified his account greatly to deal with them. But whether or not this is successful if the condition is sufficient and it could be shown that it permits mental causation that is compatible with NRP Kim's objections would be answered.

It is important to keep in mind that in evaluating Lewis= counterfactual account of causation one must employ counterfactuals characterized by Lewis=proposed similarity relation and not merely appeal to intuitions. It may be that we are inclined to affirm the counterfactual *A*if her mother had not had blue eyes then neither would she@ even though we know that it is not the mother's blue eyes but rather a gene factor that is a cause of the daughter's blue eyes. But this is irrelevant as an objection to the counterfactual account of causation since Lewis is characterizing a special class of counterfactuals and on his characterization this counterfactual (plausibly) comes out false.¹⁸ Lewis argues that his counterfactuals (and so the account of causation in terms of these counterfactuals) can handle the problem of the direction of causation and the problem of effects of a common cause.¹⁹ In order to handle the problem concerning epiphenomenalism for higher level events we need to complicate Lewis=account. Say that M causes E if $\neg M \supset \neg E$ and there is no lower level event that preempts this relation that is not itself preempted by M.²⁰ N preempts M with respect to E if $\neg N \supset \neg E$ and $N \& \neg M \supset E$. The intuitive idea is that M causes E if E counterfactually depends on N and but doesn't counterfactually depend on M as long as N occurs. This condition clearly makes the shadow epiphenomenal wrt the car's position and the future shadow. Both the mental epiphenomenalist and the interactionist dualist hold that mental events are (at most) connected by bridge laws to neurophysiological states.²¹ It follows that $N \& \neg M$ is metaphysically possible. Suppose that $\neg M \supset \neg E$ so M is a putative cause of E. The epiphenomenalist holds that it isn't a genuine cause since N preempts M while the interactionist dualist holds that M is not preempted and is a genuine cause. The non-reductive physicalist holds that there are mental events M that are putative causes that are not preempted by events that they themselves don't preempt. The existence of such mental events is compatible with non-reductive physicalism.

I am not sure what a heavy@metaphysical assumptions Kim thinks Lewis-like accounts of

¹⁸That is, Lewis thinks that the most similar world in which the mother doesn't have blue eyes is one in which she still has the gene factor for blue eyes but something goes wrong in the phenotypic expression of that factor in her and that factor is passed on to the daughter who then has blue eyes.

¹⁹In fact Lewis is wrong about this for reasons having to do with statistical mechanics. (Elga ms.; Albert and Loewer ms.). However, this is not relevant to my defense of the role of counterfactuals in mental causation since there are repairs that can be made in the Lewis account to avoid the problems.

²⁰We also need to include that the physical states that are the supervenience bases for M and E are connected by fundamental dynamical law. A proposal along these lines is found in LePore and Loewer (1987), (1990)

²¹Such bridge laws do not supervene on the physical laws and state.

counterfactuals are committed to. Perhaps he has in mind the widely held belief that Lewis= account depends on his version of possible world realism. But this is a mistake. For Lewis the truth makers of counterfactual statements are the actual facts and laws. Possible worlds are merely a device for spelling out their semantics and there is no commitment to any particular view of worlds. Any counterfactual account of causation is committed to claim that the truth makers of counterfactuals are not themselves causal relations. In Lewis= account this amounts to the assumption that causal relations are not basic but supervene on the laws and occurrent facts.²² This is a metaphysical assumption that some would not agree to but, as I will shortly argue, is quite plausible in light of contemporary physics.

²² Lewis assumes that fundamental properties are categorical (laws and causal relations are not essential to fundamental properties so his account of counterfactuals and causation is not circular. He further assumes that laws supervene on the categorical property instantiations. While I like this Humean view it is not part of my defense of the counterfactual account of causation.

I don't expect Kim to be persuaded by my counterfactual defense of causation. He is likely to consider it causation lite when compared to causation as production or generation. But the generation/production conception of causation fits ill with contemporary physics. Russell (1912) famously said that causation so understood is a relic of a bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm. What Russell had in mind is that the fundamental laws and facts of physics do not mention causality at all. If one is a physicalist then one holds that whatever causal relations there are supervene on the fundamental laws and facts of physics. But the fundamental laws (e.g. Schroedinger's law) relate the totality of the physical state at one instant to the totality at later instants.²³ The laws do not single out parts of states at different times as being causally related. If S is the micro physical state in a region R at time t and t is a time prior to t then nothing less than the state S of the region R* that fills the backward light cone of R can be said to produce S. We cannot say that one event (one part of the physical state) produces another part since the laws don't connect parts in this way. If we want an account of causation that selects among the parts of the state at t the parts that are responsible for a subsequent event we have to look elsewhere. One approach is to ask which events, given the laws, *make a difference* to whether or not the effect occurs or how much of a difference it makes to what occurs. This is the idea that counterfactual accounts attempt to capture. I am not confident that Lewis's particular counterfactual account (with my additions) quite captures this idea. But I do think that there must be some account on which causal relations, to the extent they are real, are determined by the fundamental laws and the non-causal fundamental facts. On the other hand, the production conception of causation seems to require causal relations that fail to supervene on the fundamental laws and facts. It seems to allow the existence of two universes that match perfectly in fundamental laws (of the sort posited by contemporary physics) and facts and yet differ in which events produce which others.²⁴ This indeed is a heavy metaphysical assumption.

The problem of mental causation seems insoluble to Kim because he thinks of causation in terms of metaphors of generation and production. This itself reason enough to follow Russell's suggestion and dispense with this conception of causation. I suggest that the difference making conception of causation suitably spelled out in terms of counterfactuals may be all we can get and all we need from causation.²⁵ In this case a free lunch is preferable to

²³Or a little more correctly a region of the state at time t is related by law to the states in its backward light. This point which is often neglected by philosophers is forcefully made in Latham (1987) and Field (ms.)

²⁴Tooley (19xx) who holds a production conception of causation argues for this very possibility.

²⁵There are still other problems involving mental causation. The non-supervenience of intentional mental states on brain states raises worries about whether the relevant counterfactuals that ground difference making causation are forthcoming. Also a satisfactory account of mental causation needs to

indigestible metaphysics.

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spell out the mechanisms by which mental states are causally related to each other and physical states. Kim mentions these problems but the book is almost entirely devoted to the problem presented by the incompatibility of 1-4.