This dissertation has two primary aims. First, it introduces and clarifies The Principle of the Identity of Causal Indiscernibles:

ICI If A and B are causally indiscernible, then A = B.

A and B are causally indiscernible if and only if they have all the same causes and effects. Chapter 1 identifies a wide variety of philosophical debates in which ICI is assumed without apparent recognition. This work is valuable first for ferreting out such a widely-held but seldom acknowledged principle and bringing it to light. I argue that ICI is assumed in formulations of The Problem of Causal Exclusion, The Overdetermination Argument, The Causal Argument, The Problem of Qua Causation, and The Argument from the Identity of Causal Roles.

But second, and more substantially, this dissertation is dedicated to refuting ICI and a number of considerations that might be thought to motivate it. Chapter 2 argues against ICI straightforwardly. Chapter 3 raises and refutes objections against the conclusion of chapter 2 that may be found explicitly in the literatures referenced in chapter 1: that if A and B were to bring about a common effect E, then either (i) E would be overdetermined, (ii) A and B would be joint causes of E, or (iii) contrary to appearances, either A or B is only an ersatz cause of E. In chapter 4, I raise two more objections that have been referenced only obliquely in the literature. I clarify and refute each.
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DEDICATION

Dedicated, along with everything I have done since August 2007 and will do henceforth, to Madeleine Janine Engelhardt.
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Chapter 1

The Principle of the Identity of Causal Indiscernibles

1.1 Introduction

Do all the metaphysical features of a situation depend on its causal features? Is a given entity’s identity fully determined by its causal features? Historically, philosophers have answered these questions in the negative. Even the Stoics, who believed that ‘all is body’ and that all bodies are either causes or effects believed there is more to an entity and to a situation than its causal features.¹

And yet, the recent philosophical literature disagrees. One finds therein myriad arguments that assume the following proposition. Call it the Principle of the Identity of Causal Indiscernibles:

ICI If A and B are causally indiscernible, then A = B.²³

¹See, for instance, [Sellars, 2006]: 83.
²If it turns out that events are the causal relata, A and B are events: the principle says that the causal indiscernibility of events entails indiscernibility of events; if facts are the causal relata, then A and B are facts. And so on. In this dissertation, I focus primarily on events, and I assume that events are causally related. I do not assume, however, that only events are causally related. In some places, I talk of objects or tropes or facts as though they’re causally related.
³The antecedent of ICI states that A and B are causally indiscernible in actuality. The modal operator embedded in “indiscernibility” of course implies that this relation between A and B is not limited to the actual world. It holds, rather, by some force of necessity. Chapter 2 clarifies the weakest force sufficient for causal indiscernibility; this, however, varies depending on the nature of causation, of which we are presently
Although this principle has 20th century orthodoxy behind it, it deserves closer inspection. If there is more than one entity that stands in no causal relations, then it is patently false. Though 7 and 9 plausibly play the same causal role, 7 is obviously not 9. So we must restrict ICI’s application to entities that are ‘causally embedded’. Further, given Leibniz’s Law, ICI claims that all differences are determined by actual causal differences.

This dissertation is dedicated to refuting ICI and a number of considerations that might be thought to motivate it. Chapter 1 identifies several instances in which ICI is assumed without apparent recognition. Chapter 2 argues against ICI straightforwardly. Chapter 3 raises and refutes objections against the conclusion of chapter 2 that may be found explicitly in the literatures referenced here: that if A and B were to bring about a common effect E, then either (i) E would be overdetermined, (ii) A and B would be joint causes of E, or (iii) contrary to appearances, either A or B is only an ersatz cause of E. In chapter 4, I raise two more objections that have been referenced only obliquely in the literature. I clarify and refute each.

1.2 The Causal/Overdetermination Argument

ICI is a hidden premise in the argument known variously as the Causal Argument and the Overdetermination Argument. (Let us abbreviate it the C/OA.) This is obvious in David Papineau’s explication.4

---

4See [Papineau, 1993], [Papineau, 2001]. See [Hopkins, 1978], [McGinn, 1982], [Schiffer, 1987], [Loewer, 1995], [Jackson, 1996], [Kim, 1996], [Lowe, 2000] for arguments sufficiently similar to what follows. [Sturgeon, 1998] and [Sturgeon, 1999] make a similar argument under the heading “the Overdetermination Argument”, but instead of assuming that all physical occurrences have a physical cause, it is assumed that all physical occurrences have only a physical cause. This stronger premise forbids non-physical occurrences from having physical effects whether ICI is true or not. It thus ‘puts the pressure’ on mental occurrences to be indiscernible from physical occurrences not via causal indiscernibility but because they can’t have physical effects otherwise, and it is thereby little affected by the results of our inquiry.
Many effects that we attribute to conscious causes have full physical causes. But it would be absurd to suppose that these effects are caused twice over. So the conscious causes must be identical to some part of those physical causes. ([Papineau, 2002]: 17)

Papineau [Papineau, 2002]: 17-8 glosses his argument as follows:

1. Conscious mental occurrences have physical effects (17)

2. All physical effects are fully caused by purely physical prior histories. (Papineau is not here denying quantum indeterminacy. He notes that we may reformulate the argument to accommodate it; in this case, (2) says that the chances of physical effects are fully fixed by prior physical histories, and (1) says that mental occurrences affect the chances of physical effects.) (17, Papineau’s emphasis)

3. The physical effects of conscious causes aren’t always over-determined by distinct causes. (18)

(C) At least some conscious mental occurrences are identical to physical occurrences. (18)

Notice two things. First, note that premise (2) in the gloss might be read so as to be stronger than the first sentence of the previous quotation. In the quotation, it is assumed only that the effects of conscious causes have ‘full’ physical causes; it is left open whether these effects have any other causes. One might read premise (2), however, as claiming that the effects in question have ‘purely’ physical histories—-that is, nothing non-physical is to be found in their causal histories. But this claim would beg the question, and it’s not plausibly what Papineau had in mind. If he had, he could have left premise (3) out; for (1) and the reading of (2) under consideration entail (C).

Second, notice that Papineau assimilates being overdetermined and being caused twice over or, at least, being absurdly caused twice over. Does having more than one cause suffice
to be overdetermined or to be absurdly caused twice over? I address the issue in chapter 3, but for now, let us take Papineau’s terminology for granted.

As applied to a case of singular causation, then, the argument is as follows:

(1) Conscious cause A is a sufficient cause of E
(2) Physical cause B is a sufficient cause of E
(4) E is not overdetermined

Hence:

(C) A = B

Papineau claims it would be absurd to suppose that the effects of conscious causes are brought about ‘twice over’. If a conscious cause, A, and a co-occurrent physical cause, B, play the same token causal role, then all of their effects would seem to have more than one cause. Plausibly, then, it’s a crucial but unmentioned premise of Papineau’s formulation that non-identical entities do not play the same token causal role. This is the contrapositive of ICI.

ICI. If A ≠ B, then A and B are causally discernible.⁵

Without ICI, we may conclude from this argument only that between mental occurrences and certain physical occurrences, there is not the “absurd”, “twice over” causing of mental effects. Suppose this is just the same as “overdetermination”. If mental and physical causes are identical, then, it is true, the effects of mental causes shall not be overdetermined. But it is not clear that mental-physical identity is necessary to avoid overdetermining mental effects. Rather, it seems at least logically possible that there are non-absurd ways for mental and physical causes to bring about common effects. I spell out one such way in chapter 3, “Coupled Causes”. For now, let us refer to all such ways as cases in which the two (or more)

---

⁵For Cxy: x is causally discernible from y, Dxy: x is discernible from y, ICl says “(x)(y)(Dxy → Cxy)” and ICI says “(x)(y)(¬Cxy → ¬Dxy)”. 

4
causes “act as a single cause”. Where A and B act as a single cause, it does not follow that
A = B; or, at the very least, we should not accept as much without argument.

1.3 Causal Exclusion

Discussions of “The Problem of Causal Exclusion” also presuppose ICI’s contrapositive. In
brief, the problem of causal exclusion adopts the same premises as the C/OA but denies that
argument’s identity conclusion. Rather, it takes the purported non-identity of mental and
physical causes, A ≠ B here, as an assumption and argues by *reductio ad absurdum* either
that one of the purported causes is in fact an epiphenomenon or even that one of the entities
in question does not ‘really’ exist. It’s always the purported mental cause, A, that’s alleged
to be epiphenomenal or non-existent of course.

(2) Physical cause B is a sufficient cause of E

(4) E is not overdetermined

(5) A ≠ B

Hence:

(C) A is not a sufficient cause of E

Here, for instance, is Karen Bennett’s helpful mock-up. Those who think exclusion is a
problem take 1 - 5 to be inconsistent.

(1) Distinctness Mental properties (and perhaps events) are distinct from physical prop-
erties (or events).

---

6 Many credit/debit [Malcolm, 1968] with first raising the problem and [Kim, 1989] with cementing its
notoriety. But Kim also cites [Edwards, 1758] as raising an exclusion problem; furthermore, see [Patterson,
2005]: 250 for a discussion of “The Divine Exclusion Argument” in medieval philosophy and [Ott, 2010] for the
proposal that John Locke gave an exclusion argument as well. [Merricks, 2001] argues on these grounds for the
elimination of non-living macroscopic objects. The problem is also discussed in, inter multos alios, [Malcolm,
2008, Harbecke, 2009, Wilson, 2009]. Karen Bennett’s formulation in [Bennett, 2003] and noted below is
especially perspicuous, and Kim sets out alternative formulations in [Kim, 2003].

7 For similar sketches of purportedly inconsistent sets, see [Ritchie, 2005], [Stueber, 2005].
(2) **Completeness**  Every physical occurrence has a sufficient physical cause.

(3) **Efficacy**  Mental events sometimes cause physical ones, and sometimes do so in virtue of their mental properties.

(4) **Nonoverdetermination**  The effects of mental causes are not systematically overdetermined; they are not on a par with the deaths of firing squad victims.

(5) **Exclusion**  No effect has more than one sufficient cause unless it is overdetermined. ([Bennett, 2008]: 280-1) (I have added the numbering for convenient reference.)

The last two propositions establish that the effects of mental occurrences do not systematically have more than one sufficient cause. Propositions (2) and (3) establish that the effects of mental occurrences are also effects of physical occurrences. Given the result of propositions (4) and (5), we must conclude that mental and physical occurrences must act as a single cause.\(^8\) That is, they are causally indiscernible. So far, so consistent.

As in Papineau, though, psycho-physical discernibility is presumed to contradict psycho-physical causal indiscernibility. But the proposition that mental properties (and perhaps events) are discernible from physical properties (and perhaps events) does not straightforwardly entail that mental properties (and perhaps events) are *causally* discernible from physical properties (and perhaps events). Moreover, if this entailment is blocked, then these five propositions are consistent: mental and physical occurrences are causally indiscernible (as per (2) - (5)) but not indiscernible across the board (as per (1)). If we are to make the set inconsistent, we must append another proposition, namely: if two occurrences are discernible, then they are causally discernible, i.e. IC\(_c\).

### 1.4 Qua-Causation

The problem of qua-causation arises in many contexts, but it is most famous as an objection to Donald Davidson’s Anomalous Monism. According to Davidson’s view, the mental entities

\(^8\) Though, again, the modal force of ‘must’ is left unspecified.
that are causally efficacious are event-tokens, and these are identical to physical event-tokens. Their causal indiscernibility follows from their identity, of course, so ICI is irrelevant as concerns Davidson’s mental and physical event-tokens. The problem of qua-causation arises, however, for mental and physical properties, which Davidson claims to be discernible.

Ernest Sosa raises the issue by analogy:

I have drawn an analogy between the relevance of mental properties to the causal efficacy that AM [Anomalous Monism] grants to mental events and the relevance of loudness to the causal efficacy of a loud shot. Neither the mentality of mental events nor the loudness of the loud shot is causally relevant to the respective relevant effects. ([Sosa, 1995]: 41)

There are three ideas here. (A) the causal efficacy of at least some events is rightly attributed to at least one of each of those events’ properties, (B) the causal efficacy of at least some events is not rightly attributed to at least one of each of those events’ properties, and (C) the causal efficacy of Davidson’s mental events is rightly attributed to their physical properties and not their mental properties. The conclusion is that Davidson’s mental events are causally inert qua mental; they are causally potent by dint of their physical properties, not their mental properties. Sosa gives his example in order to establish the first two claims. Intuitively, the shot is lethal (A) because of the force with which it propels the bullet toward the victim’s frontal lobe and not (B) because of the shot’s loudness. (C), I take it, is meant to follow from the analogy’s aptness.

The analogy, however, is inapt, and this for at least two reasons. First, mental and physical occurrences are widely supposed to be necessarily correlated for some strength of necessity, and most contemporary philosophers would agree that one, probably the mental, depends on the other. The shot and its loudness, however, are surely correlated only contingently. If one accepts points (A) and (B), it is plausible on its face that properties correlated

---

9For endorsements of this analogy (or others sufficiently similar) and the moral Sosa draws as a problematic, see [Dretske, 1989], [Lepore and Loewer, 1987]
only contingently can diverge in the contributions they make to an event’s causal efficacy, but it is not so immediately plausible that properties necessarily correlated can thus diverge.

Second, and relatedly, it is unclear why mental and physical properties should diverge in their contributions to an event’s causal efficacy at all. And this, of course, reveals the role of ICI in the problem of qua-causation. For it is apparently assumed that since mental and physical properties are discernible, they must make discernible contributions to an event’s causal efficacy. If this is not so, then there should be no question of a mental property’s causal contribution, and thus no problem of qua-causation. Once again, we have uncovered a hidden premise equivalent to ICI.

1.5 The Argument from the Identity of Causal Role

In Dispositions, Stephen Mumford gives the following argument for the identity of dispositional and (their physical, base-) categorical properties:

...the numerically identical causal roles of any two tokens, \( p_1 \) and \( p_2 \), entails the identity of \( p_1 \) and \( p_2 \). These two tokens could be a disposition and its base where two predicates pick out states, or instantiations of properties, of an object that make exactly the same causal contribution to the behaviour of that object. From this assumption, the argument directs us towards the conclusion that there can only be one state involved which the two predicates pick out in their different ways. ([Mumford, 1998]: 145)

You will recognize the first sentence as the rough equivalent of ICI. It is stated as a general principle here, but rather than justify it as such, Mumford builds it into the premises of his arguments. That is to say, he proposes that it is a fact about dispositions that they are exhausted by their causal roles:

1. disposition \( d_1 \) = the occupant of causal role R

2. categorical base \( c_1 \) = the occupant of causal role R
3. *Therefore*: disposition $d_1 = \text{categorical base } c_1$ ([Mumford, 1998]: 146)\(^{10}\)

Notice that the definite description on the right hand side of the ‘$=$’ in these arguments is doing all the work. If we take it out, all we have is an argument for the causal indiscernibility of $d_1$ and $c_1$, for they occupy the same causal roles. If we do not assume, in addition, that each causal role has a unique occupant, the argument is invalid.

Moreover, notice that if A and B are causally indiscernible if and only if A and B occupy the same causal role, then to assume that causal roles have only one occupant is to assume that causal indiscernibility entails indiscernibility across the board. ICI is the hidden premise.

1.6 Conclusion

We have shown that (a) several arguments involving problems of mental (or other ‘higher-level’) causation are enthymemes, and (b) ICI or its equivalent is the hidden premise in each case. Not all of the arguments are thereby on an equal footing, however. Let us take a brief look at the upshot if ICI turns out to be false.

As it stands, the C/OA is invalid. ICI is the hidden, validating premise. If it turns out that ICI is false, then in its valid form with ICI added, the C/OA is a nonstarter. Unless it can be reformulated without taking ICI as an assumption, it must be abandoned.

So too, mutatis mutandis, for the argument from the identity of causal role. Presumably, however, an argument with the same conclusion but reformulated so as to eschew ICI could not be called an “argument from the identity of causal role”. So there seems to be no hope for it if ICI is false.

The problem of causal exclusion, on the other hand, may yet remain if ICI is false. For, the thrust of the Distinctness proposition may not be to discern mental and physical

\(^{10}\)Notice that one might wish to bolster Mumford’s argument by adding that $d_1$ is *essentially* the occupant of $R$ and $c_1$ is *essentially* the occupant of $R$ as well. Still, however, 3 would not follow. Non-identical entities may both have a feature essentially without both having *all* the same essential features. It’s plausible that both 5 and 6 are essentially greater than 0, but $5 \neq 6$. 
occurrences at all, but only causally. In this case, it is no matter whether ICI is false: causal discernibility is assumed, and yet apparently precluded by the other premises. Sturgeon (1998) and Sturgeon (1999) might be read so as to endorse this reading of Distinctness, and the solution proposed there is compatible with it. It is rather dubious, however, that all of the contributors to the debates over causal exclusion understand the proposition in this way. Many “Compatibilists” in the discussion take it that mental and physical occurrences are causally indiscernible. This suffices for psycho-physical causal indiscernibility, and so it is straightforwardly contradictory with the causal discernibility reading of Distinctness. Presumably, then, Compatibilists read Distinctness as proposing non-causal discernibility. On this reading, if ICI is false, then the purport of inconsistency falls away from the set of propositions used to characterize the problem of causal exclusion, and the problem falls away as well.

As regards the problem of qua-causation, ICI is in some cases immaterial. As we remarked above, this problem arises in many contexts. We may now add: the ICI is not a necessary premise in some of them. In many of these cases, it is implausible that mental and physical occurrences are causally indiscernible, and so the problem is akin to that noted above, in which Distinctness proposes causal discernibility. The varieties of Externalism about mental content are plausibly in this camp, Davidson’s Anomalous Monism may not be, and it seems on the face of things that syntactic theories of mental content are safely outside of it—they plausibly advocate mental-physical causal indiscernibility. Let us take these in turn.

---

Anomalous Monists deny that mental occurrences bear systematic relations to physical occurrences. This seems to preclude psycho-physical causal indiscernibility. If one holds, though, that the failures of systematicity occur only outside of situations (or worlds) that bear on the causal profiles of mental and physical occurrences, then one may affirm causal indiscernibility and Anomalous Monism without contradiction. In this case, if ICI is false, then the problem of qua-causation does not arise for Anomalous Monism. The discernibility of mental and physical causes casts no doubt on the causal potency of mental entities.

Advocates of the syntactic theory of mental content propose that each mental occurrence instantiates the same causal profile as a certain symbol in a mental system. That symbol, in turn, instantiates the same causal profile as a physical occurrence. Assuming that this sense of sharing a causal profile is transitive, mental occurrences thus share their causal profiles with certain physical occurrences on this view. If one proposes that these relations hold by necessity, then mental-physical causal indiscernibility is affirmed; and, if the ICI is false, then the problem of qua-causation does not cut against syntactic theories of mental content.
Chapter 2

Married Causes

2.1 Introduction

Chapter 1 reviewed broad swaths of the contemporary philosophical literature in which ICI is assumed; in this chapter, I argue against ICI directly by showing that there are non-identical causal indiscernibles. I call them “Married Causes”. (The name is inspired by the assumption that causes and effects are related by nomic necessity, given background conditions. If so, then married causes are, like married persons, bound together by law, though each retains its individuality.) Consider an event: I cut myself shaving this morning. When I cut myself with the razor, I also cut myself with its blades, and I cut myself quickly. Perhaps these are three distinct events with all the same causal features.

I pursue two broad strategies in arguing that there are married causes. First, whatever the causal relata are, it’s dubious that every one of them is individuated by its causal role. Although we might individuate some of them by their causal roles, there shall remain others generated by “vertical” determination relations. Individuals compose into composites; second-order events may be abstracted from classes of first-order events; etc. Each of these gross entities plays the same causal role as some more basic entity or entities, but is identical to none of them.1 I exemplify this point in terms of Jaegwon Kim’s account of events.

---

1The causally individuated entities may well be more fundamental or ontologically basic than the vertically determined ones—and they may also be less fundamental—but the point remains: our ontology isn’t fully
Second, I argue that the facts about causation do not entail the facts about identities. That is, whatever causal relations reduce to, the conditions sufficient to make it the case that A and B play the same token causal role fall short of the conditions necessary to establish that A = B. Suppose, for example, that causal relations reduce to patterns of occurrence in actual and possible circumstances. The received view is that the causal possibilities do not exhaust the metaphysical possibilities. A and B may then occur in all the same causal possibilities without co-occurring in all the metaphysical possibilities. Their causal roles will then be the same, but their metaphysical/ontological roles needn’t be. Their causal indiscernibility does not entail their complete indiscernibility.

After giving these arguments in §§2 and 3, respectively, §4 sketches a few philosophical puzzles for which married causes may be helpful.

2.2 Kimian Events

A deductive argument against ICI would face a number of obstacles: (1) We don’t know if causation is irreducible or, if it is reducible, what causation reduces to: counterfactual dependence, nomic necessitation, etc. Ignorant of this, we can’t say with certainty what follows from two entities’ causal indiscernibility. (2) We don’t know the category of the causal relata: facts, events, tropes, etc., and so we don’t know their identity conditions either. (3) Even if we did know the category of the causal relata, we don’t know their nature: Kimian or Davidsonian, etc. And once these have been settled, it still remains unclear (4) how to compare sufficient conditions on causal indiscernibility with sufficient conditions for identity: whether A and B are causally indiscernible may depend on the laws that subsume A and

determined by the causal roles, and the causal roles are not single-occupancy.

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2 [Carroll, 2008]: §8.
3 [Kim, 1993]
4 [Davidson, 1980b, Davidson, 1980a, Davidson, 1980c, Davidson, 1985]
5 See also [Lewis, 1986a], [Bennett, 1988].
B while their ontological (in)discernibility may turn on all of the properties each possesses. How do we compare the two?

These difficulties may seem insurmountable. We cannot hope to decide the nature of causation or of the causal relata, nor can we hope to survey all viable views and show that ICI is false for all of them. But all is not lost for an argument against ICI. On the contrary, although ICI may have some intuitive appeal, very shortly after we attend to some of the pertinent details, ICI's implausibility reveals itself.

Consider Kimian events. I take the far dominant view to be that event tokens are the causal relata\(^6\); Kimian events, as we shall see presently, are relatively coarse-grained, so far as causal relata are concerned. In Jonathan Schaffer’s survey of the approaches to individuating causal relata, only Quine and Davidson propose to individuate causal relata more coarsely. (\cite{Schaffer, 2008a} See §4.2 for a discussion of Davidson’s view.) ICI proposes a remarkably coarse individuation of causal relata. Although, for example, the “layered” model of the sciences (as taken on its face) suggests a permissive stance on causal indiscernibles, ICI rejects it. That is, ICI says that the apparent differences between “levels” of analysis or between a composite and its parts are illusory. Rather, given that, say, a composite and its parts are causally indiscernible, it follows from ICI that a composite and its parts are identical.\(^7\) If we wish to test ICI, then, we should appeal to a relatively coarse-grained account of the causal relata; I propose that we take Kimian events as our test case.

Let’s assume for now, then, that if ICI is true, then it’s true for Kimian events. That’s to say, for all Kimian events A and B, if A and B are causally indiscernible, then A = B. In short, if A and B have all the same token causes and effects, then A = B. If it helps to have it in symbols, let \(C_{xy} = \text{‘x is a cause of y’}\):

\(^6\)See, inter alios, \cite{Davidson, 1980b, Davidson, 1980a, Davidson, 1980c, Davidson, 1985}, \cite{Kim, 1993}, \cite{Lewis, 1986a}, \cite{Bennett, 1988}, \cite{Paul and Hall, 2003}; \cite{Varzi and Casati, 1996} is a useful anthology.

\(^7\)Contrary to the consensus view on “Composition as Identity”. See \cite{Lewis, 1991}, \cite{Yi, 1999}, \cite{Merricks, 2001}, \cite{Sider, 2007}; see \cite{Baxter, 1988a, Baxter, 1988b} for the best known defenses of the minority view that composition is identity.
ICI \((x)(y)\{[(e)(Cxe \leftrightarrow Cye) \& (c)(Ccx \leftrightarrow Ccy)] \rightarrow x = y}\)

We shall see that ICI is false for Kimian events thanks to their “fineness of grain”.\(^8\) Further, if the causal relata are not Kimian events, the arguments given here may militate against ICI. So long as the causal relata are distinguished as finely as or finer than Kimian events, then so long shall there be entities that are both discernible and causally indiscernible. But as we’ve said, of the proposed causal relata, most are distinguished more finely than are Kimian events. And so ICI is false for all such accounts of the causal relata.\(^9\)

Kimian events are triples of an \(n\)-tuple of constitutive individuals, an \(m\)-tuple of constitutive properties instantiated by the individual(s), and an \(l\)-tuple of times at which this instantiation occurs, the constitutive time(s). In the simplest cases, where each constituent is a one-tuple, we symbolize a Kimian event as follows: \(⟨i, P, t⟩\); and event1 \(⟨i₁, P₁, t₁⟩ = \) event2 \(⟨i₂, P₂, t₂⟩\) iff \(i₁ = i₂, P₁ = P₂, \) and \(t₁ = t₂.\(^{10}\) (Let us identify one-tuples with their members so we can speak normally about an event as an individual instantiating a property at a time.)

Though Kimian events are individuated partly by their constitutive properties, it is not the case that each Kimian event has no properties besides those constituting it. Kim accepts that “the bolt’s giving way and the bolt’s giving way suddenly are different events.”\(^{11}\) And Kim accepts this even though the bolt’s giving way suddenly necessitates its giving way, such that in both events, the bolt instantiates the property giving way at some time. Kim tells us that one of these events is “included” in the other, but he declines to elaborate on the inclusion relation.\(^{12}\) I take it that the same goes for part-whole relations among constitutive properties.

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\(^8\) In short: differences in “constituent individual”, “constituent property”, or “constituent time” suffice to distinguish Kimian events. So far as any of these three things—individuals, properties, or times—may be distinguished in the absence of causal differences, so far may causally indiscernible Kimian events be nonetheless discernible.

\(^9\) Again, the notable exception, Davidsonian events, are discussed in §4.2.

\(^{10}\) [Kim, 1993]

\(^{11}\) [Kim, 1993]: 42

\(^{12}\) Kim tells us, “I will not try to give a characterization of ‘inclusion’ for events here; a completely general characterization gets, as far as I know, to be very complicated without being philosophically interesting…”
individuals and times. Distinct events may involve the same individual, the same property, or the same time, so long as no two events are constituted by the same individual(s), the same property/ies, and the same time(s).

Kim’s structure for events permits us to give a general schema for ‘finding’ events that are causally indiscernible but not identical. While every event is causally indiscernible with itself, let me reserve the name “married causes” for the non-identical causal indiscernibles. If there are married causes, then ICI is false. Intuitively, married causes differ from one another in manners that “matter” to ontological individuation but not to causal relations. In terms of Kimian events, these differences may arise from any of the pertinent events’ constitutive elements: the individual(s), the property/ies, or the time(s). Let’s survey the possibilities.

**Individuals.** Consider my chair’s falling over: my chair, c, falling over, F, just now, t: \(\langle c, F, t \rangle\). Call it event A. A may be married to an event with a different individual, a different constitutive property, or a different time. Take, for example, an event which consists of all and only my chair’s parts, \(p - p_n\), collectively falling over at t: \(\langle (p - p_n), F', t \rangle\). Given that these events are causally indiscernible, they are married causes if \(c \neq p - p_n\), i.e. if “strong composition as identity” is false so that a composite individual like a chair is not strictly identical to its parts.\(^{13}\)

But even if strong composition as identity holds, there are still married causes that differ in their constitutive individual(s). Consider a pair of tweezers, w, and the Swiss army knife, k, of which it is a part. Earlier, I had a splinter, s, in my hand, and I went to the medicine cabinet to get the knife; then I tweezed the splinter out. Let \(D = \text{tweezing}\). The tweezers tweezed the splinter at t, \(\langle (w,s), D, t \rangle\); and since the pair of tweezers is part of the knife, I used the knife to tweeze the splinter out as well, \(\langle (k,s), D, t \rangle\). Since \(k \neq w\), these are distinct

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\(^{13}\)Again, see [Lewis, 1991], [Yi, 1999], [Merricks, 2001], [Sider, 2007] for the consensus view that it is false; see [Baxter, 1988a, Baxter, 1988b] for the minority view.
events, but they plausibly have all the same causes and effects, and so I propose that they are married causes. Indeed, since the knife has the ability to tweeze by virtue of having the tweezers as a part, any event consisting of the knife’s tweezing at a time shall be causally indiscernible with an event consisting of the tweezer’s tweezing at the same time. And this generalizes. Wherever a composite, c, has a property, F, if and only if c’s part, p, is F, then \( \langle c, F, t \rangle \) shall be married to \( \langle p, F, t \rangle \) for all values of t.\(^{14}\) A razor cuts my face at a time if and only if its blades do; a pen writes at a time if and only if its point does; a mockingbird sings iff its singing parts do; a diamond ring shines iff its surface does; and so on.

There is also a third possibility here, one which exploits the alleged difference between a material entity and the matter constituting it. The familiar example involves Lumpl and Goliath.\(^{15}\) Suppose that Lumpl, a lump of clay, sits on a shelf in the artist’s studio; Goliath, the statue, does not yet exist. One day, Lumpl is formed into a statue of Goliath; now it seems that Lumpl and Goliath occupy the very same space. Nonetheless, they are distinct: Lumpl existed before Goliath, and if Goliath were to be flattened, Lumpl would exist after Goliath had perished. So long as they occupy the same space, however, the events they constitute are plausibly married.\(^{16}\) Specifically, for all those properties that they instantiate at the same time, the resulting events shall be married. If Lumpl, l, reflects sunlight, S, onto the floor, f, at t, then so does Goliath, g. And so \( \langle (l,f), S, t \rangle \) is causally indiscernible from \( \langle (g,f), S, t \rangle \). I take it that this generalizes. Wherever a material entity and the matter

\(^{14}\)(1) Add “so long as p is a part of c”, if you think part-whole relations may be temporary. (2) I have no proof that this schema succeeds in every case, but its success stands wheresoever differences in properties are “causally relevant” to causal relations and differences in constitutive individuals are not.

\(^{15}\)See [Gibbard, 1975, Rea, 1997]

\(^{16}\)Since events are dated, it’s unnecessary to motivate the relation between Lumpl and Goliath in the usual way. As the example stands in the main text, it’s not true that every event that Lumpl partly constitutes is married to an event that Goliath partly constitutes; it’s true only for the non-modal properties that Lumpl and Goliath instantiate while they occupy the same space. If we motivate their relation in the usual way—say, two lumps are formed into a torso and trunk on Monday and stacked to make Lumpl/Goliath on Tuesday, but then the statue is shattered on Wednesday—then if it is still granted that Lumpl and Goliath are not identical, since they have distinct modal properties, we may say that the objects Lumpl and Goliath are married (granted that objects may stand in causal relations) and so are pairs of the events they partly constitute.
constituting it are not identical, when they instantiate the same property at the same time, the resulting events shall be married.

**Properties.** Alternatively, married causes may differ in their constitutive properties. The differences may be any that do not make a difference to causal relations. So long as properties are not individuated solely by their causal features, as some propose\(^{17}\), there should be married causes of this sort. For any properties that do not differ in their causal features, an event constituted by an individual instantiating one at a time shall be married to an event constituted by the same individual instantiating the other(s) at the same time. Analogous to the above events whose individuals were related as part-to-whole, properties related as determinate-to-determinable plausibly make for married causes. An example should help.

When I cut my face shaving, I did it quickly. According to Kim’s criteria, these are distinct events. Let \( C = \text{cutting} \) and \( Q = \text{cutting quickly} \); let \( r \) be my razor, and let \( m \) be this morning. \( \langle r, C, m \rangle \) is married to \( \langle r, Q, m \rangle \) as long as \( C \neq Q \). In general, we may say that where an instantiation of a determinate is causally relevant if and only if the instantiation of its determinable is, then the event constituted by an individual \( i \) instantiating the determinate at a time shall be married to \( i \)’s instantiating the determinable at that time. Given that this morning’s cutting was a quick, my \textit{cutting quickly} draws blood if and only if my \textit{cutting} does, and my movements cause quick cutting if and only if they cause my cutting.

In general, where one property, \( F \), is causally relevant iff another property, \( G \), is, then every event constituted by an individual’s instantiating \( F \) at a time shall be married to an event constituted by that individual’s instantiating \( G \) at the same time. Thus, Edward’s \textit{shooting} at \( t \) is likely married to his \textit{pulling the trigger and shooting} at \( t \), his \textit{shooting or squaring a circle} at \( t \), his \textit{firing his gun} at \( t \), and so on.

\(^{17}\)Most notably, Shoemaker defends this claim ([Shoemaker, 1998, Shoemaker, 2004a]), but see also Alice Drewery ([Drewery, 2005]) and Chris Swoyer ([Swoyer, 1982]).
Times. Finally, a similar symmetric relation between times may underwrite another variety of married causes. Consider the sun’s rising this morning and today. We have at least two Kimian events: let s be the sun, and let R be rising—or, more explicitly, let R denote a relationship that obtains between an individual x and a time interval y iff x first appears over the eastern horizon at some time \( t_1 \) in y; \( t_2 \) is today and \( t_3 \) is this morning. \( \langle s, R, t_2 \rangle \) is married to \( \langle s, R, t_3 \rangle \). Just as with the earlier examples, the relation between the times here is symmetric: the sun rises today if and only if it rises in the morning—that is, the sun’s standing in R to this morning is married to its standing in R to today.\(^{18}\) And once again, this generalizes. Wherever an individual i has a property, P, for a duration D if and only if i is P for a slice of D, t, then events involving i’s being P during D shall be married to events involving i’s being P at t.

For such cases to obtain, it need only be the case that, for whatever reason, an event may occur only during a duration, \( t_1 \), if and only if it is part of another duration D. Suppose, for instance, that Tim plays in a basketball league with games on Saturday only. For any given week, Tim can instantiate the property *scoring in the league* only on Saturday. Tim’s scoring in the first week of the season occurs iff Tim’s scoring in the first game of the season does, and the two have all the same causes and effects. \( \langle t, S, g \rangle \) is married to \( \langle t, S, w \rangle \). Similarly, it’s true for most of us that one’s death occurs iff it occurs in the time before the Stoic ‘great conflagration’, duration D. When his time is up, Tim’s death at t shall be married to his death during D.

### 2.2.1 Causal Relatum Pluralism

The argument just delineated may be extended in another direction. First, it’s unclear why we should accept that all causal relata are of the same ontological category. That is, the

\(^{18}\)I assume there is no nearby world in which the sun rises after noon today. If you’re wondering how to figure out which possibilities are pertinent here, be patient. It’s addressed explicitly in the next section.
received view is that the causal relata are events, or facts, or tropes, or individuals, with an exclusive ‘or’. But why shouldn’t the ‘or’ be inclusive? I shall not here defend the claim that not all causal relata are of the same ontological category, but suppose it is granted. Suppose, that is, that more than one of events, tropes, facts, or objects are the causal relata. Then in addition to the ‘intra-ontological category’ married causes we’ve just sketched among events, there may be inter-category married causes. The event of the ball’s flying through the window is married to the fact that it flew through the window and the causally relevant trope instantiated at the time the window broke. If one is skeptical about intra-category married causes, inter-category married causes may still be granted.

2.3 Causation

In the 2006 German film Das Leben der Anderen (The Lives of Others), an interrogator for the Stasi shares a trade heuristic: (according to the subtitles) “People who tell the truth can re-formulate things, and they do. A liar has prepared sentences which he falls back on when under pressure.” An analog for philosophers might focus on the metaphors that sometimes overshadow or replace a theory: if there’s only one way to say it, it’s likely false.\(^{19}\) It speaks in favor of married causes, then, that we can also clarify them by considering theories of causation.

The general idea involves three steps. We begin with a particular theory of causation, and we ask what it demands of the cause and effect relation. This may be nomic necessitation, counterfactual dependence, mark-transmission, etc. Second, given these demands, we ask under what conditions two individuals, A and B, may meet them for all the same token causes and effects. A and B may necessitate and be necessitated by all the same things,

\(^{19}\)Without addressing the content of the associated views whatsoever, let me say that the following metaphors come to mind: “the norms go all the way out/down”, “the sideways-on view”, “light dawns gradually over the whole”. There are doubtless many others. I first heard the philosophical version from Chauncey Maher, and he later pointed me toward the film as the source of his inspiration.
they may depend counterfactually on and counterfactually determine all the same things, etc. These shall be sufficient conditions for A’s causal indiscernibility from B. Third, we compare these conditions to some necessary condition on identity. A fairly anodyne choice is as follows: A = B only if for all properties P, it holds by metaphysical necessity that A is P iff B is P. If the conditions in the second step are at least as strong as those in step three, then ICI may be true. Otherwise, ICI is false.

As I hope this brief overview suggests, ICI doesn’t stand much of a chance. For, on all theories of causation I know of, the conditions discerned in step two require nothing stronger than nomic necessitation. But identity requires at least metaphysical necessitation. As long as nomic necessity is weaker than metaphysical necessity, then, ICI fails.20

Let me rehearse all this more deliberately. We must start with a theory of causation; so suppose that it suffices for C’s being a cause of E that E causally depends on C. And let’s use the account of causal dependence found in [Lewis, 1973]. Roughly, Lewis proposes that E causally depends on C iff (1) E occurs in the nearest world where C occurs, and (2) E fails to occur in the nearest world where C fails to occur.

That’s step one: deciding what the given theory of causation demands of a cause and effect pair. Now we need to decide what are the sufficient conditions for A and B to have all the same causes and effects on this account of causation. Fortunately, it’s fairly simple. It must be that for all effects E, E is causally dependent on A iff it is causally dependent on

20 Whether nomic necessity is in fact weaker than metaphysical necessity is of course contested. I address this concern directly in §2.3.1. But I would also like to make a speculative note on which I will not elaborate in the main text. The claim that the two forces of necessity are equivalent rests on the proposal that physical laws are necessary. We might, however, divorce that discussion from the present discussion of causal possibility as follows. (i) The laws for which Necessitarianism is most plausible are not causal laws, i.e. they do not connect entities’ causal properties. Rather, they connect entities’ spacetime positions according to the particle-wave function; they connect fields, they connect strings. (ii) The metaphysical necessity of causal laws is not established by the metaphysical necessity of these laws. (iii) The causal laws are metaphysically contingent even though the fundamental physical laws are metaphysically necessary. Hence, (iv) causal necessity remains weaker than metaphysical necessity, even if there is no difference in force between nomic and metaphysical necessity. Finally, John T. Roberts [Roberts, 2009] has an interesting discussion in which he defends the claim proposed in the title: “Some Laws of Nature are Metaphysically Contingent.”
B; and for all causes C, A is causally dependent on C iff B is.

Let’s take the first part first: for all effects E, E is causally dependent on A iff it is causally dependent on B. Recall that E is causally dependent on A iff E occurs in the nearest world with A and E fails to occur in the nearest world without A. And so, all the events that causally depend on A shall occur in the nearest A-world and fail to occur in the nearest non-A-world. And the same holds for all the events that are causally dependent on B. If A and B are causally indiscernible, then these are all the same events. We can assure this is the case, then, if the nearest A-world is also the nearest B-world and the nearest world without A is also the nearest world without B. This way, since the worlds at issue are the same, the causal dependencies shall be the same.

Thus, suppose A and B both occur in actuality; then they have all the same effects if the nearest world without one is also the nearest world without the other. This suffices for A and B to have all the same effects. Now we need to discern the conditions sufficient for A and B to have all the same causes.

We move on, then, to the second part: for all causes C, A is causally dependent on C iff B is. This is the case if, for all C, (i) the nearest world without C is also without A iff it is without B, and (ii) the nearest world with C also has A iff it has B. Suppose, for example, that C, A, and B occur in actuality. In order for it to be the case that C causes A iff it causes B, then, it would have to be that A is absent from the nearest non-C-world if and only if B is absent from that world. And this has to be true for all actual causes of A or B. This no doubt demands that A and B co-occur in more than just two worlds. In order to have all the same causes, then, A and B must co-vary (that is, by both being absent) in all the nearest worlds from which an actual cause is absent. This is a great many worlds.

But it is not all the metaphysically possible worlds; it’s not even all the nomically possible worlds. For many nomically possible worlds are irrelevant to A’s having all and only the same causes as B. Suppose again that C, A, and B all occur in actuality. If it’s true that
C causes A iff it causes B, then both must either occur or fail to occur in the nearest world without C. This much we know. But think of all the non-actual worlds in which C occurs (or the more distant ones in which it doesn’t). These are immaterial to C’s causing A iff it causes B. And, as long as these worlds aren’t relevant to A’s and B’s causal relations for other reasons (e.g. for being the nearest in which another cause, D, fails to occur) they are irrelevant to the causal indiscernibility of A and B. And thus, A and B needn’t co-occur in these worlds. Finally, it’s plausible that some of these worlds are nomically possible, and so A and B needn’t co-occur in all the nomically possible worlds.

Let’s take an example, the razor’s and the blades’ cutting me this morning. If these two are married, then whatever causes one causes the other. On the account of causation presently under consideration, then, since both are actual, they should either both occur or both fail to occur in the nearest world where some other actual event fails to occur. Consider, then, that I also stubbed my toe when I got out of bed this morning. Call it event D. D is of course not a cause of either my razor’s cutting me or of the blades’ cutting; and so, appropriately, I still cut my face with the razor and its blades in the nearest world where I do not stub my toe. That is, the cutting events are not counterfactually dependent on the stubbing event.

Since this suffices for the cutting events to be indiscernible with respect to potential cause D, the cutting events are otherwise unencumbered when it comes to D. Aside from actuality, they are free to act as they please in all the worlds where I stub my toe. Assuming that some of these are nomically possible and otherwise irrelevant to the causal indiscernibility of A and B, it follows that A and B may be married without co-occurring in all the nomically possible worlds. For instance, where I do not stub my toe and I take the blades from the razor before

\footnote{Or, let’s assume that the cutting events aren’t dependent on the stubbing event. If, in actuality, a bullet whizzed just over me as I doubled-over in pain from the stubbing, and I wouldn’t have been alive to shave had I not stubbed my toe, then we should pick some event other than the stubbing. My assumption is that not all events depend on all of their temporal antecedents in this way.}
shaving, I can cut myself with the blades but not the razor. Although the cutting events
don’t depend causally on my not disassembling the razor, their causal indiscernibility does.
It is nomically possible for me to act so as to causally discern the event-types at issue here,
but the tokens at issue are causally indiscernible.

Now the third step: consider some necessary condition on the identity of A and B. Here,
we may assume a rather weak condition: if A = B, then A and B co-vary in all the nomically
possible worlds. Since the sufficient conditions for the causal indiscernibility of A and B
are weaker, ICI fails. Indiscernibility of causal dependencies does not suffice for complete
indiscernibility.

Things turn out much the same for other theories of causation: sufficient conditions for
causal indiscernibility fall short of necessary conditions for identity. Consider a nomological
regularity account. Say that C is a cause of E if (1) in all the nomically possible worlds
where some background conditions are satisfied, C’s occurrence guarantees E’s occurrence,
and (2) in some nomically possible worlds, neither C nor E occurs. So, where background
conditions are met, C’s occurrence is sufficient for E’s by nomic necessity, but E may have
other causes as well, and neither C nor E is nomically necessary.

Events A and B are causally indiscernible on this view if they co-vary in all the nomically
possible worlds. Thus, for all E, if A causes E, E occurs in every nomically possible world that
has A and the requisite background conditions. And if B co-varies with A in all the nomically
possible worlds, then B shall be a cause of any given E iff A is. Similarly and straightforwardly
for every cause of A. Events involving the relata of a wide variety of ontological dependence
relations plausibly exemplify this class of married causes. As we noted in §2, depending
on one’s view of composition, it may be that a composite co-varies with its parts in all
the nomically possible worlds, and so every actual event involving one co-occurs by nomic
necessity with an event involving the other. Such events are then causally indiscernible.
The dominant view in the literature on mereology, however, is that a composite’s relation
to its parts is “like” identity but is not identity, strictly speaking.\textsuperscript{22} Similarly for material entities and their constitutive matter, second-order properties and their first-order realizers, and perhaps others as well.

In general, on a nomological regularity account of causation, A and B are causally indiscernible if A and B co-occur by nomic necessity. We now compare this sufficient condition for causal indiscernibility with a necessary condition on identity. I take it that if A = B, then A and B co-occur in all the metaphysically possible worlds. If there are metaphysically possible, nomically impossible worlds, then causal indiscernibles A and B need not co-occur in such worlds. Some have rejected this last claim\textsuperscript{23}, but the received view is that there are metaphysical possibilities that are nomically impossible. Even if there are not, ICI remains dubious for nomological regularity accounts of causation so long as co-occurrence in all possible worlds does not suffice for identity. Indeed, though a composite and one of its parts may co-occur by necessity, it remains dubious that they are identical. I hope that §1 has helped to make this plausible. Moreover, as mentioned above, the dominant view is that composition is not identity, and the identity claims are similarly dubious for the other ontological dependence relations mentioned in the previous paragraph. In all theses cases, ICI fails again.

### 2.3.1 Nomic and Metaphysical Necessity

In arguing that the facts about causation do not determine the facts about identities, I have assumed that there are nomically impossible metaphysical possibilities—that the metaphysical possibilities outstrip the nomic possibilities. Given that A and B are causally indis-

\textsuperscript{22}See [Lewis, 1991] and [Sider, 2007] for discussions.

\textsuperscript{23}See Sydney Shoemaker ([Shoemaker, 1998, Shoemaker, 2004a]), Alice Drewery ([Drewery, 2005]), Chris Swoyer ([Swoyer, 1982]) My response, in brief, is that where Shoemaker argues that properties are individuated by their causal features because they have their causal features essentially, we may concede that properties have their causal features essentially while denying that properties are causally individuated. Properties may, and plausibly do, have some non-causal essential features as well.
cernible if they’re indiscernible in the nomically possible worlds but that \( A = B \) only if they’re indiscernible in all the worlds, this assumption played a decisive role in establishing my conclusion. Here, I bolster my conclusion in light of doubts that have been raised about the alleged differences between metaphysical and nomic necessity.

The resistance to the received view comes from “Necessitarians”. They say that physical laws are metaphysically necessary. If so, it would seem to follow that the two alleged forces of necessity collapse into one. There is no metaphysically possible world in which the laws fail; and a world is nomically impossible only if it’s a world in which a law fails. The most common arguments in favor of Necessitarianism, however, are inconclusive. They propose that the properties laws “connect” are had essentially, such that it is impossible for any actual entity to exist without its actual law-abiding properties. ([Swoyer, 1982] [Shoemaker, 1998, Shoemaker, 2004a] [Drewery, 2005]) These Necessitarians construe the dialectic as follows. One proposes that it’s prima facie possible for massive bodies to attract one another by, say, an inverse \( c \)ube law rather than by the inverse square law—so much, anyway, is \textit{conceivable}.\textsuperscript{24} But this is hasty, replies the Necessitarian. Although it’s possible that there’s \textit{some} bodies that attract one another by an inverse cube law, there’s no reason to grant that these bodies have mass. The Necessitarian thinks that massive bodies attract one another by the inverse square law \textit{essentially}, and so she denies it’s possible that the bodies imagined to attract one another by the inverse cube law have mass. They must have something else that’s similar to mass; call it “\textit{schmass}”.\textsuperscript{25} And this generalizes. For any case in which it is proposed to be possible that some actual entity, \( X \), abide by non-actual laws, the Necessitarian denies that the entity in the possible situation is (or is the counterpart of) the actual entity, \( X \). Rather, it is something resembling \( X \) in one’s conception of the possibility, but it is not \( X \)

\textsuperscript{24}I take this example from [Fine, 2002], and like Fine there, I take an oversimplified view of the physical laws for expository purposes. For reasons noted in FN 21, I take it that the Necessitarian benefits from this simplification.

\textsuperscript{25}This is undoubtedly very familiar from Kripke [Kripke, 1980], though, notably, Kripke himself does not adopt Necessitarianism.
itself. Rather, X abides by the actual laws essentially.

This line, however, does not establish that there are no nomically impossible metaphysical possibilities. It is possible that there are non-actual entities; they instantiate law-abiding properties in non-actual worlds, but the laws aren’t actual. Indeed, the Necessitarian herself has posited such a possibility: the case in which there is schmass!\textsuperscript{26} Faced with the purported counter-example, then, the Necessitarian faces a dilemma. If she accepts the counter-example, then of course there are metaphysically possible nomic impossibilities—wherein, for example, bodies with mass attract one another according to the inverse cube law. If she wishes to reject the counter-example, however, she herself posits a metaphysically possible nomic impossibility. In exchange for the metaphysical impossibility of an actual entity obeying a non-actual law, she gives her opponent the metaphysical possibility of a nomically impossible entity. In either case, then, there are indeed nomically impossible metaphysical possibilities.

Now, it’s obvious how the first horn of the dilemma helps to establish that there are married causes. We said that if A and B co-occur by nomic necessity, then they are causal indiscernibles; further, if A and B co-occur by nomic necessity, it’s plausible that there’s a law (or many laws) ensuring their co-occurrence. Philosophers often say that instances of human pain and instances of C-fiber firing stand in this relation (or perhaps a stronger one). Call the instances A and B, respectively. If it’s possible for A and B to occur where the law(s) connecting each to the other fails, then it’s possible for one to occur without the other. That is, it’s possible that causal indiscernibles A and B are non-identical; married causes are possible.

The support for married causes is not so clear on the other horn of the dilemma. If it’s not pain and C-fiber firing that are instantiated in the purported counter-example to ICI, then the example does not establish that some causal indiscernibles are discernible. The

\textsuperscript{26}This line of response is developed in [Fine, 2002].
behaviors of not-pain and not-C-fiber-firing have no bearing on the alleged identity of pain and C-fiber firing.

And yet, the possibility of schmass is significant. Recall that on this horn of the dilemma, schmass is nomically impossible but metaphysically possible. What happens in a schmassy possibility, then, has no bearing on the causal roles of any actual entities, but schmassy possibilities may still bear on the identities of actual entities. First, note that while we may grant that it’s essential to mass that it abides by the inverse square law, we need not thereby accept that this much is essential to all entities constituted by mass. Although Goliath is constituted by a lump of mass in actuality, it is at least prima facie possible that Goliath is formed from a lump of schmass in a world without mass. Instead of Goliath, consider Galatea, Pygmalion’s masterpiece and beloved. In the myth, Pygmalion sculpts Galatea, falls in love with his work and makes a wish that it should come to life; his wish is granted and the two marry. Suppose it were discovered that thanks to an error in transcribing Ovid’s *Metamorphosis*, we’ve all been unaware of a further detail in his particular telling of the story: Pygmalion is a sculptor of schmass. Would we say that what we’ve discovered is not that Ovid’s is a peculiar variant on this myth, but that it’s an entirely different myth. It doesn’t concern Pygmalion and Galatea but Schmygmalion and Schmalatea? If not, then at least some statues may exist with mass in some possibilities and schmass in others. At least some statues may be married to their constituting material(s) (as well as to their sculptors).

But we need not insist on this example, of course. The claim that an actual entity has its law abiding properties essentially is difficult to maintain for many entities that are essentially functional, normative, or phenomenal. Many ‘everyday’ objects plausibly fall into the first category. If it’s used to serve soup and stew, is it not a ladle just because it’s made of schmass? My intuition is clear that it is a ladle, and although my ladle has mass by nomic necessity, I don’t see why it’s impossible for it to have schmass. Similarly, it’s prima facie

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27 See chapter 3, §4.2 for further elaboration on this point.
possible that wars, economic crises, political parties, and legal tender could be schmassy.

An event partly constituted by an individual that has mass in actuality could be partly constituted by an individual that has schmass in a nomically impossible world; and this event could be married to an event partly constituted by an individual that has mass essentially. This latter event will not exist in a world with schmass, in which case there’d be no doubt that the events are discernible.

Similarly, it’s prima facie plausible that the property *being red* could have determinates where the actual laws constraining light are broken. Instead of particle-wave light, it’s metaphysically possible that there’s schmight, which consists entirely of particles (or schmarticles); and it seems possible that the identity conditions for colors are consistent with their being determined by schmight.

The received view is that metaphysical possibility outstrips nomic possibility, but this is contentious. In response to the opponents of the traditional view, I (i) accept the nomically impossible entities they posit, and (ii) propose that many of the higher-level entities that would be married to lower-level entities in actuality are married to these ‘alien’ lower-level entities in nomically impossible worlds. There are married causes.

### 2.4 Why Marry?

I take it that the foregoing suffices to establish the existence of married causes, but their importance is perhaps in question. Indeed, we seem to have opened the door to an ontological deluge where one might have hoped for a drought\(^{28}\); so we should note some of the discussions to which married causes are more immediately germane.

1. Think of the relations that hold between the constitutive elements of pairs of married causes. The constitutive individuals in some pairs are related as part-to-whole, as are the

\(^{28}\text{See Quine's "Wyman's overpopulated universe is in many ways unlovely. It offends the aesthetic sense of us who have a taste for desert landscapes.\ldots". \cite{Quine1953}}: 4
times in some others; and the constitutive properties in others still are related as determinate-to-determinable. These differences are plausibly the very same that distinguish “levels” of events, of causal powers, and of scientific explanations. “Lower-level” events involve parts of higher-level wholes and/or determinate properties of higher-level determinables, and perhaps lower-level events persist for only part of the time that their higher-level counterparts do.

Atoms are parts of molecules, which are parts of cells, which are parts of organs and neural pathways, which are parts of language-users, which are parts of social groups... and so on. If it’s true that every effect has a lowest-level cause, then it may be that the universe has room for higher-level causes only if each is married to a cause at the lowest level and realism about higher-level explanations depends crucially on causal matrimony.

This may still seem ontologically extravagant; so let me say something more to motivate it a bit further. First, a modest ontological conservatism would require us to posit only those concrete events that stand in causal relations. Second, realism about scientific explanations would take it that at least some of the causally potent events invoked in explanations from the myriad sciences (i) exist, and (ii) are distinct from those invoked in other explanations. These two together suggest that there are chemical, geological, meteorological, etc. causes. But if every effect has a lowest-level cause, and given that the lowest level is the micro-physical, then some effects seem to have at least two causes. One chemical, geological, meteorological, or whatever and one micro-physical. One may now have the intuition that micro-physical causes “pre-empt” their higher-level counterparts. The problem that arises from this intuition is called the problem of causal exclusion, since micro-physical causes seem to exclude all others.

Responses to this problem are legion. For the most part, it is assumed that overdetermination is leveraging the threat of exclusion.29 The thought is that if some effects were

to have both meteorological and micro-physical causes, then those effects would be over-
determined; assuming that these effects are not overdetermined, there are too many causes. Thus, philosophers have tried to show that higher-level causes’ dependence on their lower-
level counterparts mitigates (or should mitigate) the intuition that higher-level causes in
conjunction with their lower-level counterparts would overdetermine their effects. The de-
pendence proposed is uniformly asymmetric; higher-level causes depend on lower-levels, but
not vice-versa (as the levels metaphor suggests).

The author who has argued most vigorously for the problem of causal exclusion, however,
denies that overdetermined effects are the ‘true’ threat. Instead, Jaegwon Kim suggests that
the problem is the asymmetric dependence between higher- and lower-level causes.

The exclusion problem doesn’t go away when we recognize the two purported
causes as in some way related to each other, perhaps one being dependent on the
other. . . our problem is not exactly that of causal overdetermination, although
both have to do with an overabundance of causes. It is important to see that the
problem that we face arises because the two putative causes are not independent
events. The difficulty is exactly that the causal status of the dependent event
is threatened by the event on which it depends. ([Kim, 1998]: 53, emphasis in
original)

Notice that it’s not so much the multiplicity of causes that’s bothering Kim here, but the
asymmetry between them. The dependent event is threatened by the event on which it
depends. A similar theme runs though [Kim, 1989]. If Kim is right, then a straightfor-

30Kim claims here that the problem remains so long as the purported causes are distinct: “As long as they
are recognized as distinct events, each claiming to be a full cause of a single event, the problem remains.” (1)
In a footnote above, I speculated that the married relation may be a special case of the inclusion relation;
(2) although he doesn’t specify the inclusion relation, Kim does say that included events are “different, if
not entirely distinct”. ([Kim, 1993]: 45) If married causes are a subspecies of included events, then I take it
Kim would not object to the solution proposed here, at least not on grounds of distinctness. But since Kim
doesn’t clarify the inclusion relation, this is simply speculative, and so I have relegated it to footnotes.

31See, especially, pp. 85-6, in which Kim argues that the “nomic equivalents” proposed in [Goldman,
1969] are “unstable” because they must stand in an asymmetric dependency relation, contrary to Goldman’s
claims. Kim does not say, however, why he believes that there is no symmetric dependence relation short of
identity. See chapter 3 for further discussion.
ward solution would propose that the dependence between higher- and lower-level causes is symmetric. Married causes bear just this relation.\textsuperscript{32}

Moreover, it’s plausible that married causes do not overdetermine their effects. We can motivate the point simply here. First, recall that married causes are causally dependent on one another—in the causally possible worlds, each occurs iff the other does. Second, note another case in which causes A and B each suffice for C but do not overdetermine it: A and B are links in a single causal chain. Let’s say that A necessitates B, and B necessitates C. Both A and B thus suffice for C. Why shouldn’t C be overdetermined? An obvious answer is that the causal dependence between A and B “insulates” them from over-determinative causation. If so, then the same should hold for married causes, since each is causally dependent on the other.\textsuperscript{33}

And, finally, notice that if the individuals in higher-level causes have individuals in lower-level causes as parts, this explains why higher-level causes would be married to lower-level counterparts.\textsuperscript{34} As David Lewis says:

If Mary’s lamb goes everywhere that Mary goes, and if this is so not just as a matter of fact but as a matter of absolute necessity, we have a highly mysterious necessary connection between distinct existences. But... if it turns out that the lamb is part of Mary... then... the inseparability is automatic, and in no way mysterious. ([Lewis, 1991]: 85-6)

I believe all this together makes it plausible that counterpart higher- and lower-level events are married causes. Given that married causes are not identical but are very nearly so, we might call this view The Very Nearly Identity Theory.

\textsuperscript{32}To be clear: they are symmetrically dependent \textit{so far as causation is concerned}. It is an open possibility for one cause to be \textit{ontologically} dependent on its spouse but not vice versa, though each is causally dependent on the other. In terms of possible worlds, we might say that each married cause is dependent on its spouse in the causally possible worlds, but in the metaphysically possible worlds, one may depend asymmetrically on the other or the two may be independent. Plausibly, for instance, a composite depends ontologically on its parts, but the two are causally ‘on a par’. See chapter 4 for further discussion.

\textsuperscript{33}See chapter 3.

\textsuperscript{34}Most of the punch in [Ney, 2007] comes from demanding exactly this from constitution views of explanatory levels.
Married causes may help us to make sense of certain empirical findings. Consider the claim that neuroscientists have discovered the neural substrates of knowledge.\textsuperscript{35} Suppose the evidence is that whatever would cause Jack to know P causes activity in some region of Jack’s brain; and for whatever effects Jack’s knowing P would bring about, those effects are caused by activity in this same brain region. We seem now to stand in an awkward position vis-a-vis interpreting this result. On the one hand, Jack’s knowing that P is no doubt partly dependent on circumstances outside of Jack’s skull. P must be true; and, plausibly, at least some of the criteria Jack must satisfy in order to count as knowing that P are determined by (somewhat) local norms. So it’s implausible that Jack’s knowing that P is simply some activity in Jack’s brain. On the other hand, it seems that the event of Jack’s knowing that P is no different, in causal features, from the event of Jack’s having activity in the given brain region.

This situation recalls Donald Davidson’s theory of events (in [Davidson, 1980b]): event $A = event B$ iff $A$ and $B$ have all the same causes and effects. If events are individuated \textit{solely} by their causal features, then Jack’s knowing P is the same event as Jack’s having activity in the given brain region. But if we’re to take the “external” features of knowledge seriously, then this can’t be. I propose that married causes offer an attractive solution. They permit us to say that Jack’s knowing that P is distinct from Jack’s having activity in the given brain region, but without denying that the two play the same causal role—without denying the importance, in a sense, of the empirical discovery. Moreover, since many of the married causes we’ve reviewed have involved part-whole relations, we may say that activity in the given brain region is a part of knowing that P. And so, Jack’s having activity in that region is married to Jack’s knowing that P. Again, this affirms the importance of the empirical discovery. In general, this strikes me as a very attractive way to proceed when it comes to genetic pre-dispositions or neural substrates of phenomena that seem to have both causal

\textsuperscript{35} [Damasio, 1990] proposes an “organization for the neural substrates of knowledge”.
and normative or conventional features. Thus, I take it that similar considerations apply to claims regarding the neural substrate(s) of happiness ([Kringelbach and Berridge, 2009]), of sarcasm ([Uchiyama et al., 2006]), of love ([Beauregard et al., 2009], [Bartels and Zeki, 2004]), or of certain addictions ([Li et al., 2009], who claim to give the neural substrates of internet addiction).

A similar strategy could help to make sense of mental causation for a wide variety of theories of mental content. Given the familiarity of the general problem and the extent to which particular formulations of it are disputatious, let me be brief and loose. The problem is that there seems to be a conflict between our intuitions regarding causal powers and the majority of philosophical theories of content. First, there is a (related) philosophical problem about how it is (or seems to be) that mental phenomena represent, how a thought of a tree is somehow about a tree without being a tree. Some philosophers find it dubious that this “aboutness” is an intrinsic property. As John Haugeland puts it, “no single patch of matter can, purely in virtue of its own physical structure, and regardless of the rest of the universe, [be about] exactly one thing.” Rather, the philosophical consensus seems to be that “...the intentionality [i.e. the aboutness] of any individual state or occurrence always depends on some larger pattern into which it fits...”.

On the other hand, many think that causal properties are intrinsic—they do accrue to an individual purely in virtue of its physical structure. As a result, it seems that content is causally impotent. Since they’re not intrinsic, content properties can’t be causally potent. But this is at odds with the apparent truth that our thoughts bring about the actions they do partly in virtue of what they’re about. Jack goes up the hill partly because he thinks there’s a pail of water up there. But if Jack’s thinking as much is causally impotent, then this seems to be mistaken.

36 See [Haugeland, 1990]: 386.
37 Ibid.
Consider this situation in terms of Kimian events and grant for the sake of discussion that causal properties are intrinsic. Let c be part of Jack’s central nervous system, the part causally responsible for Jack’s going up the hill at $t_1$, and let F be the property that c instantiates at t and is causally relevant to Jack’s going up the hill. According to the foregoing problem, this event is distinct from Jack’s believing that there’s water up the hill at $t_2$ (which presumably includes t). The former involves properties intrinsic to c, while the latter involves properties extrinsic to c and perhaps extrinsic even to Jack. And, moreover, the widespread impression is that the latter event is causally impotent by virtue of its causally irrelevant (since non-intrinsic) constitutive property.

But suppose that F is a determinate of the determinable property bearing the content of Jack’s belief. Note furthermore that c is no doubt a part of Jack, and t is plausibly a part of $t_2$. These relations correspond to those we noted above: the constitutive elements of married causes are often related as part-to-whole or determinate-to-determinable. This lends credence to the claim that Jack believes at $t_2$ that there’s water up the hill if and only if c is F at t. Perhaps, then, these two events are married. If so, we can say (roughly) that c’s being F at t is part of Jack’s believing there’s water up the hill without denying that Jack’s belief caused him to go up the hill and without denying that content properties are non-intrinsic. Instead, we can say that the causal part of a mental event is intrinsic, but its contentful part is not.

It is worth pointing out here a difference between two challenges to all theories of mind-body relations—one reasonable and one unreasonable. The problem at hand charges that mental events or properties, qua mental, are causally impotent because they are extrinsic, and it challenges any theory of mind-body relations to show otherwise. This problem is sometimes confused with the unreasonable challenge to show that whatever distinguishes

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38 [Yablo, 1992] famously defends with aplomb the view that fundamental physical properties determine mental properties.
mental properties from physical properties is causally potent. If there were reason to make the second demand on theories of mind-body relations, then the account on offer would indeed fail to meet it. I have affirmed that the contentful features of the belief event in question above are extrinsic, and we have granted that causal properties are intrinsic. I cannot hope to show, then, that these extrinsic properties meet a necessary condition on being causal—being intrinsic.

But I see no reason to accept the second challenge. For it assumes that for any property F (or event m), F (m) is a causally potent property (event) only if all of F’s features (m’s properties) are intrinsic. Given that every property (event) has extrinsic features (properties), this assumption would show that no property (event) is causal. But this is surely absurd. It’s imperative that we show how mental phenomena are causally efficacious, and it is imperative that we show how mental phenomena differ from physical phenomena (if indeed the ‘two’ are different); it is not at all imperative that we show that the features by which mental phenomena differ from physical phenomena are causally efficacious.

On my view, the mental event and property in the given example are causally relevant qua mental. The proposal is that the mental property indeed has causal features, and these features, like all causal features, are essential to it. It is not—and needn’t be—causally potent in virtue of all its features.

2.5 Conclusion

I have argued that ICI is false because there exist married causes. Married causes are non-identical token events with all the same token causes and effects. I have demonstrated and exemplified them in terms of both Kim’s theory of events and two prominent theories of causation. In addition, I have proposed that married causes may shed light on inter-theoretic relations, empirical discoveries pertaining to phenomena with extrinsic (e.g. normative,
conventional, phenomenal) features, and mental causation.
Chapter 3
Coupled Causes

3.1 Introduction

In chapter 2, I argued against ICI directly. Contrary to the Principle of the Identity of Causal Indiscernibles, there are non-identical causal indiscernibles; I call them “married causes”. In this chapter, I address arguments that would establish ICI indirectly by focusing on the case in which non-identical causes A and B bring about a common effect, E. Since married causes have all of their effects in common, they are “always” in this position. For the sake of generality, however, let us focus on the case in which A and B bring about at least one common effect without overdetermining it. I call all such cases “causal equivalents” with respect to the effect in question. Where A ≠ B, I say that A and B are coupled causes of the given effect. Since married causes are coupled causes with respect to all of their effects, married causes form a proper subset of coupled causes.¹ Thus, if married causes are possible, so are coupled causes.

The arguments under scrutiny in this chapter attempt to establish that coupled causes are not possible, from which it would follow that married causes aren’t possible either. The general strategy is to assimilate coupled causes to some other form of Multiple Antecedent

¹For further clarification, we might introduce effectual equivalents. G and H are effectual equivalents with respect to C iff: C causes G iff C causes H. If, moreover, G ≠ H, they are coupled effects. Married causes, then, are coupled with respect to all of their causes and all of their effects, and the set of married causes is a subset of the union of the set of coupled causes and the set of coupled effects.
Causal Relation. In the traditional rubric of two-place causal relations, let me say that a Multiple Antecedent Causal Relation (henceforth MACR) has more than one event in the causal role.\textsuperscript{2} The received view on MACRs is that there are, at most, two varieties: joint causes and (for some philosophers) overdeterminers. Alternatively, some philosophers think there are situations that might be mistaken for an MACR, wherein a cause is necessarily accompanied by an epiphenomenon. None of these would justify the claims concerning married causes made in chapter 2 or about coupled causes here, and so if these are all the MACRs there are, then there are no coupled causes or married causes. This chapter argues that there are coupled causes, and it distinguishes them from joint causes, overdeterminers, and causes that necessitate epiphenomena. In so doing, it also undermines a number of arguments found in the recent literature on higher- and lower-level causes.

3.1.1 Arguments Indirectly Supporting ICI

The arguments I will show to be invalid all purport to establish either the identity of higher- and lower-level causes, the epiphenomenalism of higher-level causes, or their elimination. More importantly, these arguments share an underlying form in which the following propositions are presumed to be inconsistent:

(1) A is a sufficient cause of E

(2) B is a sufficient cause of E

(3) A does not cause B and B does not cause A

(4) E is not overdetermined

(5) A \neq B

\textsuperscript{2}Throughout this paper, I write as though events are the causal relata. If it is instead the case that tropes, facts, or some other entities are the causal relata, it would not much affect the kernel of my argument; examples and many details, though, would demand amendment. The same is true if the causal relata are three or more.
While the quintet of propositions is alleged to be inconsistent, any four are consistent; and it is proposed that any four conspire to entail the denial of the outlier. Thus, arguments for reduction make 5 the outlier:

(1) A is a sufficient cause of E
(2) B is a sufficient cause of E
(3) A does not cause B and B does not cause A
(4) E is not overdetermined

Hence:

(C) A = B

Similarly, arguments for the epiphenomenalism or elimination of higher-level causes would make the premise that attributes causal powers to a higher-level entity the outlier. Thus, if we assume that A is the higher-level entity, they would reject 1 by the threat of A and B jointly overdetermining E.

(2) B is a sufficient cause of E
(3) A does not cause B and B does not cause A
(4) E is not overdetermined
(5) A ≠ B

Hence:

(C) A is not a sufficient cause of E

But these arguments falsely presuppose that there are no coupled causes. Given the possibility of coupled causes, 1 - 5 are in fact consistent. For coupled causes A and B are both sufficient for an effect, E, and neither is a cause of the other, but they do not overdetermine E. And coupled causes are not identical.
The crux of my argument is that causal equivalents A and B “act as a single cause” of an
effect, whether $A = B$ or not. There is thus a hidden assumption in the arguments above:
if A and B are causal equivalents with respect to a particular effect, then $A = B$; i.e., there
are no coupled causes. Call it the Principle of the Identity of Causal Equivalents, ICE:

**ICE** If A and B are causal equivalents with respect to a particular effect, then $A = B$.

I believe that ICE is implausible on its face. In conjunction with Leibniz’s Law, it claims
that if (i) A and B share *one* actual causal property—*being a sufficient cause of E*—and if
(ii) E is not overdetermined, then A and B share all of their properties, including their other
causal properties, and including all their modal properties. If ICE is false, this chapter’s
central claim is justified: there is a third variety of MACR, coupled causation.

Here is the plan for the chapter. First, in order to clarify the sort of case at hand, I give
plausible examples of coupled causes in §2. Second, I distinguish coupled causes from (i)
overdeterminers, (ii) joint-causes, and (iii) the case in which a genuine cause is necessarily
accompanied by an epiphenomenon in §3. In §4, I rehearse Jaegwon Kim’s arguments to the
effect that cases like coupled causes are “inherently unstable”; we see that although these
arguments militate against the most popular solutions to causal exclusion, they are powerless
against coupled causes.

### 3.2 Examples

A and B are causal equivalents if and only if there is some effect E which A and B bring
about by acting as a single cause. Let me now define acting as a single cause for an effect E:

**SC** A and B act as a single cause of E iff (i) each is sufficient to cause E and (ii) A occurs

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3I intend the phrase “act as a single cause” to be a convenient shorthand for the purposes of discussion;
it is not a metaphysical commitment: I am not committed to the claim that events perform actions, and I
am not committed to the claim that there is only one cause in the relevant cases, whatever that might mean
beyond the claim that coupled causes do not overdetermine their effects.
iff B occurs.\textsuperscript{4} Where A = B and A (B) is a cause of E, this is uncontroversial. But if, in addition to acting as a single cause, A \(\neq\) B, then A and B are coupled causes.

Consider a weight, O, and its parts, O\(1\), O\(2\), \ldots, O\(n\)—its halves, the molecules, atoms, or sub-atomic particles composing it, etc. The exact decomposition doesn’t matter. What matters is that there is only one of O but there are many parts composing it and occupying the same space O does.\textsuperscript{5,6} (In fact, although I will assume in what follows that a decomposition into parts is appropriate, the success of my arguments don’t turn on it. If you prefer to say that O’s causal relations are underwritten by forces transmitted through it and the pan at the speed of light by means of binding forces, etc., then we can substitute these forces where I say “parts.”) Suppose that putting O on a scale at t caused it to tip. Call the scale’s tipping event E, and let P be the property or set of properties involved in O’s bringing E about, let’s say exerting force X on the scale’s pan while P\(’\) is the property or set of properties involved in O\(1\), O\(2\), \ldots, O\(n\)’s bringing E about, collectively exerting force X on the scale’s pan.

Finally consider two Kimian events. Recall that Kimian events are triples of one or more individual, a constitutive property instantiated by the individual(s), and the time at which this instantiation occurs: \(\langle i, P, t \rangle\). And event1 \(\langle i_1, P_1, t_1 \rangle = \text{event2} \langle i_2, P_2, t_2 \rangle\) iff \(i_1 = i_2, P_1 = P_2,\) and \(t_1 = t_2\). ([Kim, 1993]) Using the individuals defined above and P, then, we are interested in the two different events: A = \(\langle O, P, t \rangle\) and B = \(\langle O_1, O_2, \ldots, O_n, P’, t \rangle\). A is O’s exerting force X at t and B is O’s parts’ exerting force X at t.

\textsuperscript{4}It is not assumed here that causes are sufficient for their effects full stop. Rather, I assume that they suffice given background conditions. For simplicity, I elide reference to background conditions here. Along these lines, a somewhat more cautious formulation might say that “\ldots\ A suffices for E iff B does”. But on this account, all events that fail to be sufficient for E shall be coupled with respect to E. In addition, I take this phrasing to be less illuminating with respect to the nature of the relation between coupled causes.

\textsuperscript{5}I use “,” and “…” here and below to indicate the parts “taken together” rather than taken as a sum. The parts are many: their sum is one. We shall see below that Merricks denies ‘strong Composition as Identity’, i.e. he denies that the parts are identical to the composite, on the grounds that the former are many while the latter is one. This line of reasoning of course fails if applied to the sum of parts.

\textsuperscript{6}I am grateful to Wayne Davis not only for supplying this example but also for showing very clearly that it is apt for my purposes here.
Clearly, A occurs iff B occurs. And A causes the pan of the scale to tip iff B does, so each is sufficient to cause E and necessary for the other. That is, A and B act as a single cause of E. It is dubious, however, that A = B. If A were identical to B, then P would be identical to P’. If A were identical to B, then O would be identical to O₁, O₂, …, Oₙ; and if this were true, then it would be true that a composite individual is identical to its parts. That is, the thesis known as “strong composition as identity” would hold. At least one advocate of the arguments given above, Trenton Merricks, explicitly denies strong composition as identity. He provides a reductio: if O = O₁, O₂, …, Oₙ, then identity sometimes holds one-to-many. But this is absurd. ([Merricks, 2001]: 21) “Identicals” have all the same properties, but O is one while O₁, O₂, O₃ are three. Merricks denies composition as identity on these grounds, and thus he would believe that A ≠ B. On Merricks’s own view, then, A and B should be coupled causes.

But even if strong composition as identity holds, there are still other examples of coupled causes. For it is sometimes the case that an event partly constituted by a composite is coupled with an event constituted by just one of the composite’s parts. Think of the events involved when I cut myself shaving this morning. (1) the razor cut my face; (2) the razor’s blades cut my face; (3) it cut me quickly. These differences may seem trivial, and perhaps one is inclined to deny that there are multiple events here. But notice that we typically do take these differences seriously. The first two events concern different objects: the razor in the first, its blades in the second. These are surely distinct objects, but the apparent triviality of their difference is thanks to the fact that the blades are part of the razor. They bear the relation of part to whole. With the third event, the razor instantiates a different property: it cuts quickly. This difference is apparently trivial because cutting quickly is a determinate of the first event’s determinable property cutting.

But these differences are plausibly the very same that distinguish “levels” of events, of causal powers, and of scientific explanations. “Lower-level” events involve parts of higher-
level wholes and/or determinate properties of higher-level determinables. Atoms are parts of molecules, which are parts of cells, which are parts of organs and neural chains, which are parts of language-users, which are parts of social groups... and so on. Whatever arguments may establish that events proprietary to distinct levels are distinct shall also establish that coupled causes are distinct; and if there are genuine causal powers appropriate to distinct levels, then there are coupled causes.

### 3.2.1 Merricks v. Macroscopic Objects

Assuming that E is not overdetermined, the argument form given in §3.1.1 above as (1) - (4) and concluding with (C) holds true for the events A, B, and E in our example. If adding ICE to the argument makes it valid, and if ICE is true, then A = B, contra the conclusion we drew above. I take this as evidence that ICE is false.

Trenton Merricks has proposed a similar but far more shocking argument as regards non-living macroscopic objects and the microscopic particles of which they’re composed. His idea is that if macroscopic objects exist, they cause the same effects as do their microscopic parts and they are not identical to those parts. In our terms, an event involving a macroscopic object at a time is a coupled cause with an event involving that object’s microscopic parts at that time. But Merricks assumes that if an effect has more than one cause, then it is overdetermined. He also assumes that the effects of macroscopic causes are not overdetermined. And so he concludes that macroscopic objects do not exist.

Where A is an event involving any non-living macroscopic object and B involves the microscopic particles of which that object is composed, Merricks replaces (1) with 1*: if A exists, then it is not identical to B and it causes E. By reasoning akin to that in (2 -5) and concluding in (C) in §3.1.1, he finds 1*’s consequent to be false. He then concludes that the...
antecedent of \(1^*\) is false by *modus tollens*. That is, he concludes that no event involving a non-living macroscopic object exists.

\[ (1^*) \ (\exists x)(x = A) \rightarrow (A \neq B \& A \text{ is a sufficient cause of } E) \]

(2) B is a sufficient cause of E

(3) A is not a cause of B and vice versa

(4) E is not overdetermined

Hence:

\[ (C^*) \neg (\exists x)(x = A)^8 \]

We have said that where two non-identical events act as a single cause, they are coupled causes; I shall prove below that events acting as a single cause do not overdetermine an effect. Thus, coupled causes are two sufficient causes that don’t overdetermine an effect. But Merricks assumes that if an effect has two or more sufficient causes, then it is overdetermined. Thus he assumes that there are no coupled (or tripled or quadrupled . . .) causes, and the dubious elimination of non-living macroscopica—or the events involving them, anyway—seems to follow.

We can see the same point by considering ICE’s contrapositive: if \(A \neq B\), then A and B are not causal equivalents. That is to say, A and B do not act as a single cause if \(A \neq B\), which is to say that there are no coupled (or tripled or quadrupled . . .) causes. And hence, if A and B are sufficient for the same effect, then that effect is overdetermined. I propose, then, that ICE is the hidden, perfidious premise here too.\(^9\)

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8For brevity’s sake, I have replaced Merricks’s premise that the two purported causes are “causally irrelevant” to one another with the simpler and weaker 3; coupled causes also satisfy Merricks’s original premise—coupled causes are indeed causally irrelevant to one another on Merricks’s account of causal irrelevance. (57) I have also elided Merricks’s reasoning from the (alleged) epiphenomenalism of macroscopica to their elimination. These differences have no bearing on the present chapter.

9See [Merricks, 2001]: 58. The *Causal Principle* endorses the inference from an effect E’s having two mutually causally irrelevant causes to E’s being overdetermined. Coupled causes indeed meet the criteria for overdetermination that Merricks delineates on that same page. See §3.2 here for my response.
Perhaps C* is not strictly absurd, but this argument strikes me as a *reductio* against the conjunction of ICE and premise 4. On my view, the proposition that A and B are coupled causes of E is plausible on its own, and in this case it has the additional virtue of entailing that ICE is false. Thus, I propose that premises 1* - 4 are true, but C* does not follow. Rather, A and B do not overdetermine E because they are causal equivalents.

The concept introduced here, *coupled causation*, has given us (i) a plausible objection to Merricks’s argument against the existence of non-living macroscopic objects and (ii) a plausible view of a relation between these and their microscopic parts.

### 3.3 Comparison

We now distinguish the case in which A and B are coupled causes from those cases in which (1) F and G jointly cause an effect, (2) H and J overdetermine an effect, and (3) L causes an effect and M is a necessary epiphenomenon of L. Briefly, each joint cause is insufficient to bring about the given effect; each coupled cause is sufficient. Overdetermining causes are sufficient for a common effect and neither is necessary for the other; each coupled cause is necessary for the other. Where one of two apparent causes is an epiphenomenon with respect to an effect, one of the two is *merely* an apparent cause of the relevant effect; and, as we shall see, it may be that an epiphenomenon M depends synchronically on the cause L *but not vice versa*. Where A and B are coupled causes, by contrast, each actually does cause the effect; moreover, each is necessary for the other, and thus their synchronic dependence is symmetric.

Let us now articulate these distinctions in more detail.
3.3.1 Joint Causes

Consider the case in which F and G jointly cause an effect. Let us define the compound event Q as follows: Q = (F & G). That is, Q is the event of both F and G occurring. And let Q be a cause of E: for whatever theory of causation is true, let Q and E satisfy the criteria for Q’s being a cause of E on this theory.

Now consider two of the ways in which this situation might obtain. (i) F and G are each sufficient to cause E; (ii) neither F nor G is sufficient to cause E. In case (ii), F and G are joint causes of E. In case (i), the two causes may be coupled causes or they may overdetermine the effect. Let us suppose for now that they are coupled causes.

Consider again events A and B. The former is a weight, O’s, instantiating property P at a time; the latter is O’s parts’ instantiating P’ at the same time; each tips a scale. These suggest another tidy example. Suppose the scale is set up so that it tips only if force X is applied to the pan. Let the scale’s tipping at a time be effect E. As defined above, P is exerting force X on the scale’s pan and P’ is collectively exerting force X on the scale’s pan. As we saw above A and B act as a single cause of E. Each is sufficient for the effect and necessary for its opposite in the couple. By contrast, an event C involving one of O’s halves without the other is insufficient to bring about E; it exerts insufficient force, P− on the pan. If, however, C and an event, D, involving O’s other half’s exerting the same force on the pan were to occur at the same time, they would jointly cause the pan to tip. Together, O’s halves collectively tip the pan and their collective tipping is coupled with O’s tipping the pan; the two events in which each of O’s halves’ exert a force on the pan, however, are joint causes of the same effect.

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3.3.2 Overdeterminers

If E has two sufficient causes, however, then E seems to be overdetermined. Two considerations show that coupled causes A and B should be distinguished from overdeterminers H and J. First, there is an intuitive contrast between the familiar “firing squad” cases and cases involving coupled causes; I’ll clarify the intuition by reference to a necessary condition on overdetermination. Second, coupled causes are as “closely” related to one another as are adjacent links in a causal chain; if the latter do not overdetermine their effects, as many think, then neither should the former.\footnote{Indeed, I leave it open that at least sometimes links in a causal chain are coupled causes.} I’ll discuss both of these points in more detail below; in each case, the dependence relation between coupled causes is what differentiates them from overdeterminers. Overdeterminers H and J are independent of one another; coupled causes A and B are not.

In the “firing squad” cases of overdetermination, a man’s death occurs as the result of two independent and sufficient causes. The condemned man, call him Garcin, is brought before the line of executioners, and then “Ready...Aim...Fire!” Suppose that two of the shots strike him such that each would, under normal circumstances, be fatal. It seems that Garcin’s death is overdetermined.

The shots are not coupled causes; they fail to meet the second condition of SC: “A occurs iff B occurs”. It is certainly possible for one shot to have been fired and the other not. But there are also coupled causes of Garcin’s death: one of the bullets and its parts. Dub one of the bullets O; then call its left half $O_1$ and its right half $O_2$. Suppose O struck the bridge of Garcin’s nose with such and such a force at time $t$, and it was fatal. Call this event A, and let B be the event of $O_1$ and $O_2$ striking Garcin at time $t$ and collectively exerting the same force. Since A is sufficient for Garcin’s death iff B is, they satisfy SC. And, as above, given that composites are not identical to their parts and the former’s exerting a force is not identical to the latter’s collectively exerting a force, $A \neq B$. Do they overdetermine Garcin’s...
death, then? Of course not.

We can justify this intuition by reference to a plausible necessary condition on overdeterminers: their independence from one another. The idea is that when an effect is overdetermined, the absence of one or the other of the causes would not change the outcome. In the usual firing squad case, if either of the two shots had failed to occur, then the other would still have been fatal. If we understand this independence in modal terms, we say that there is a nearby possible world in which Garcin meets his demise even though one of the gunmen fails to shoot. The way in which this world is different from our own is immaterial to the overdetermined outcome.

Coupled causes are not independent of one another to this extent. There is no nearby world in which A occurs without B or vice versa. Taking away the bullet takes away its parts; taking away the parts suffices to take away the bullet. Each coupled cause is necessary for the other in the nearby worlds. So if the shot involving O and its parts had been the sole sufficient cause of death, then Garcin’s death wouldn’t have occurred in the nearby worlds without A or in the nearby worlds without B. Thus, his death is not overdetermined by A and B alone (but by A and B in conjunction with the other bullet).

We can further clarify the intuition by clarifying our counterfactuals. Karen Bennett does just that; she proposes that causes $c_1$ and $c_2$ are overdeterminers only if they make both of the following counterfactuals nonvacuously true:

1. $\text{(OD1)}$ if $c_1$ were to occur without $c_2$, $e$ would still have occurred: $(c_1 \& \neg c_2) \rightarrow e$, and
2. $\text{(OD2)}$ if $c_2$ were to occur without $c_1$, $e$ would still have occurred: $(c_2 \& \neg c_1) \rightarrow e$ ([Bennett, 2003]: 476)\(^{11}\)

If $c_1$ depends on $c_2$ such that $c_1 \Rightarrow c_2$, though, then OD1’s antecedent is impossible. And so OD1 would be vacuous. Similarly, if $c_2$ thus depends on $c_1$, then OD2 would come out vacuous. In either case, the necessary condition on overdetermination would be unsatisfied.

\(^{11}\)I substitute “OD1” and “OD2” for Bennett’s “O1” and “O2” so as to more easily distinguish the counterfactuals from the parts of the bullet, $O_1, O_2, \ldots O_n$. 

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and so $c_1$ and $c_2$ would not be overdeterminers. Each coupled cause depends on the other, and so they would make both antecedents vacuous. (As we said, “taking away the bullet...”)

Thus, if overdeterminers must make both OD1 and OD2 nonvacuously true, then coupled causes are not overdeterminers.

I shall return below to Bennett’s remarks on the modal force appropriate to evaluating OD1 and OD2, but let me remark here on what I take to be appropriate—causal force. That is, only what is causally possible is pertinent to the evaluation of OD1 and OD2. It is, after all, causal overdetermination that we’re trying to analyze here; whatever is causally impossible is irrelevant to causal overdetermination. I take it that the relevant point here, then, is that coupled causes “causally depend” on one another with respect to some effect, even though neither need be a (traditionally understood) cause of the other. This is just to say that neither is a cause of the effect in question without the other.

Orthogonal considerations reveal a similar point. Questions of causal overdetermination concern how an actual effect is related to its actual causes. And so, in answering particular overdetermination questions, we’re interested only in the possibilities pertinent to some particular and actual causal relation. It needn’t be, then, that $A \leftrightarrow B$ holds in actuality and in the nearest relevantly dissimilar worlds, but only in those worlds that reflect $A$’s, $B$’s, and $E$’s actual causal properties.

So which are the possibilities pertinent to a particular, actual causal relation? We don’t know, since we don’t yet know what causation is. But on the best-known theories, the sum is far short of all the possibilities. On a Lewisian analysis of causation, they are simply the possibilities realized in the nearest relevant worlds, and so if $A \leftrightarrow B$ holds in actuality and in the nearest relevantly dissimilar worlds, then neither $A$ nor $B$ shall cause $E$ in the absence of the other. And thus they won’t overdetermine $E$. On a nomological account of causation, the pertinent possibilities are all the nomic possibilities; and so if $A \leftrightarrow B$ holds by nomic necessity, then $A$ and $B$ are coupled causes, and they don’t overdetermine their effects. In
each case, there remain many possibilities in which A and B may differ.

But we need not accept the independence condition to separate coupled causes from overdeterminers. We can instead appeal to similarities between coupled causes and links in a single causal chain. It is widely held that earlier links in a single causal chain do not overdetermine later links in that chain. If A causally necessitates B and B causally necessitates E, then even though both A and B would be causally sufficient for E, it’s dubious that A and B overdetermine E. Overdetermination would be far more prevalent than we think, and it would become more prevalent as causal chains grow longer. Intuitively, it’s the very fact that there is a causal dependence between links A and B that prevents them from overdetermining E. If so, then the causal dependence between coupled causes should have the same effect. Coupled causes no more overdetermine their effects than do links in a single causal chain. But this is disputed.

While many have seized on the strategy of picking out a relation between causes that is “tight enough” to prevent overdetermination\(^\text{12}\), none that I know of have noted that causal dependence gives the tightness needed. Indeed, Bennett explicitly denies that causal dependence is “tight enough”; her reasons for doing so, however, are very weak.

Bennett’s case turns entirely on a counter-example: “Suppose that there is a causal chain leading from \(c_1\) through \(c_2\) to \(e\), and that \(c_1\) is also directly causally sufficient for \(e\).”([Bennett, 2003]: 479, underline in original)

\(^{12}\)See the “New Compatibilists” as Jens Harbecke dubs them in [Harbecke, 2009]: chapter 3. Or, see also “Causal Compatibilists”, as Terence Horgan designates his own view. [Horgan, 1998] In addition to these two, authors plausibly falling under one or both of these monikers include Simon Blackburn [Blackburn, 1991], Derk Pereboom and Hilary Kornblith [Pereboom and Kornblith, 1991], Stephen Yablo [Yablo, 1992, Yablo, 1997], Tyler Burge [Burge, 1993], D.H. Mellor [Mellor, 1995], Paul Noordhof [Noordhof, 1997], Derk Pereboom [Pereboom, 2002], Sydney Shoemaker [Shoemaker, 2004b], and Karen Bennett [Bennett, 2008, Bennett, 2003]. I won’t argue here that New/Causal Compatibilism is by its nature committed to Metaphysicalism, as I call it below, about overdetermination; I do not think it is. It is plausible, however, that most actual New Compatibilists and Causal Compatibilists subscribe to Metaphysicalism about overdetermination. If they did not, one would think they would say so, since their views are very often motivated partly as responses to the threat of overdetermination. Alvin Goldman [Goldman, 1969] may be an exception, since he rejects the threat of overdetermination partly by reference to causal chains, as I do here.
Bennett’s intuition is that this is a case of overdetermination; and, she believes that its being so speaks in favor of her account of overdetermination. As she sees it, this example shows that causal dependence between two causes does not “automatically” prevent them from overdetermining their effects. If it did, then e would not be overdetermined here.

On these grounds, Bennett concludes that the modal force appropriate to interpreting OD1 and OD2 must be stronger than that for causal necessity and possibility. As such, she reads them with metaphysical force. “...if it is at least metaphysically impossible for the one [cause] to occur without the other, then one of the overdetermination counterfactuals will come out vacuous.” (481) According to Bennett and contrary to my claim, then, causal dependence between $c_1$ and $c_2$ should not save e from overdetermination; rather, metaphysical dependence is required. For ease of expression, let me refer to Bennett’s view as “Metaphysicalism” and to my own view as “Causalism”.

I agree that overdeterminers are such that each would bring about their common effect in the absence of the other; and so I agree that overdeterminers must make both of Bennett’s counterfactuals nonvacuously true. But I disagree with her analysis of the counterfactuals. I think Metaphysicalism is over-cautious; I’m skeptical that all metaphysical possibilities are pertinent to their evaluation. According to the traditional accounts, the metaphysical possibilities outstrip the causal possibilities, such that there are causally impossible metaphysical possibilities. Metaphysicalism claims that these causal impossibilities are pertinent to whether or not an actual effect is overdetermined. But I can’t see a good reason why that
would be. It seems obvious, rather, that causal impossibilities don’t bear at all on whether an effect is causally overdetermined.

This loose and intuitive point remains persuasive when we look more closely at Bennett’s reasoning. Again, her reasons for rejecting the causal reading of OD1 and OD2 in favor of a metaphysical reading turn entirely on the alleged counter-example noted above. Bennett says it’s a case of overdetermination. First, I’m skeptical that it is. Second, if it were, (i) Metaphysicalism wouldn’t explain how the example differs from a causal chain, and (ii) absent an explanation, it would seem that earlier links in a causal chains do in fact overdetermine later links. But this is absurd (at least in typical cases), and so, again, the example isn’t a case of overdetermination. Throughout, I talk of causes A and B and their effect E.

First, then, it’s dubious that Bennett’s case is indeed a case of overdetermination. For it’s unclear in what decisive way \( c_1 \) and \( c_2 \) in the example differ from A and B in a causal chain that runs from A to B to E.\(^\text{13}\) And yet Bennett claims there is a difference: the former pair are overdeterminers, the latter pair are not. Notice what the difference is not. It is not the strength of the dependence between A and B. B causally depends on A just as \( c_2 \) causally depends on \( c_1 \). So Metaphysicalism doesn’t shed any light on the matter. The readings of OD1 and OD2 that are motivated by Metaphysicalism treat causal chains and the counter-example the same way: both would make both counterfactuals nonvacuously true.\(^\text{14}\) The counter-example, then, cannot show Metaphysicalism to be true; at best, it’s irrelevant to Metaphysicalism.

But things might not be at best. If \( c_1 \) and \( c_2 \) do overdetermine e and Metaphysicalism

\(^{13}\)Here, I will be arguing that there is no metaphysically decisive difference between the two. The assumption is that there is a metaphysical fact of the matter whether an effect is overdetermined or not. You might deny this assumption, and partly on this basis, you might believe that the difference is not metaphysical. It is conceptual, linguistic, relative to our interests, or whatever. I won’t address this possibility here.

\(^{14}\)Assuming that, in the normal case, there is not a metaphysical dependence between links in a causal chain.
cannot tell us why, then as far as Bennett has told us, there is no decisive difference between
the two. Think of it this way. It would seem that A, B, and E make up a causal chain if A
suffices to bring about B and B suffices to bring about E. This much is sufficient to make
a causal chain from A to B to E. $c_1$, $c_2$, and e have this much, though. So, according to
Bennett, it isn’t sufficient to protect e from overdetermination. Although Metaphysicalism
doesn’t tell us what it is, there must be something more, something that not all causal chains
have, that protects later links from overdetermination. In the absence of an account of this
‘something more’, we can’t say which causal chains overdetermine their later effects and
which do not. Metaphysicalism offers no help.

Causalism, by contrast, gives a straightforward explanation of why causal chains do not
overdetermine their later links: causally dependent causes don’t overdetermine their shared
effects. And Causalism doesn’t fail to bear the burden of explaining the decisive difference
between $c_1$ and $c_2$ on the one hand and A and B on the other. For Causalism denies that
there is a burden to bear; it says that neither pair overdetermine their effects. Further,
Causalism says that only what is causally possible is pertinent to the evaluation of OD1 and
OD2. It is, after all, causal overdetermination that we’re trying to analyze here; whatever
is causally impossible is irrelevant.

As noted above, we do not have a satisfactory reductive analysis of causal sufficiency—
we cannot say for sure which are the possibilities pertinent to a particular, actual causal
relation. But I take it that whichever they are, they do not constitute a modal force that
holds exclusively between causes and effects. Rather, causal dependence, like metaphysical
dependence, has both “horizontal” and “vertical” realizations. In the cases under discussion,
coupled causes “vertically” causally depend on one another, and this suffices to save their
effect, E, from causal overdetermination. Coupled causes are not overdeterminers.
3.3.3 Coupled causes

Above, we defined a compound event Q: Q = (F & G). We added that Q is a cause of E, and we said that if F and G are each insufficient to bring about E, then F and G are joint causes. But if F and G are each sufficient for E, then either E is overdetermined or F and G are coupled causes. We now know what distinguishes these two latter possibilities: whether or not each cause depends on the other.

So let us define another compound event K: K = (A & B). K is a cause of E; unlike joint causes F and G, A and B are each sufficient for this same effect, E. And unlike overdetermining causes H and J, each depends on the other in actuality—by which I just mean that if either A or B fails to occur in the relevant worlds, the other fails to occur as well. So A and B are coupled causes. And since A and B are the causes of E in actuality, E’s occurrence depends on them, and so E is also absent in the relevant nearby worlds.

None of this is new. But it may seem obscure how A and B relate to K. Since we’ve said that both A and B are sufficient causes of E, it appears that the occurrence of either A or B suffices for the occurrence of K. It may be mysterious, then, how A could be sufficient for K’s occurrence if B is necessary for the same. For one might assume that A’s being sufficient for K means that A’s occurring in the absence of any other events suffices for K; but surely A cannot suffice for K in the absence of other events if K cannot occur without B.

A does not need to suffice for K in isolation, however, in order to suffice for K. Rather, it need only be the case that A □→ K holds in actuality and relevant nearby possible worlds, as is the case.

Similarly, it may be puzzling how B can be necessary for K if A is sufficient for the same—how can K depend on the presence of B if A’s presence suffices for K? But B need not prevent any other occurrences from sufficing for K in order to be necessary for K. It need be only that K □→ B holds in actuality and relevant nearby worlds; and this is the case.

Let us be explicit about the principle that would seem to preclude such relations between
sufficiency and necessity: if A suffices for E, then no B is necessary for E. First, note that if
A = B = E, then the principle carries an implausible entailment. Assuming that A (= B =
E) suffices for itself (E), it would follow that it (B) is not necessary for itself (E). Indeed, if
this principle is true and if every E suffices for itself, it follows that B is not necessary for E
no matter what B’s value. That is, it follows that no individual is necessary for itself or for
any other: there are no necessary dependencies.

But suppose we stipulate that the principle applies only if A, B, and E are all distinct
from one another. Still it is implausible: (A ⊨ E) clearly doesn’t establish that ¬(E ⊨
B). Consider an example:

A  ABC is an equilateral triangle
B  ABC has at least one 60 degree angle
E  ABC has at least two 60 degree angles

A suffices for E while B is also necessary for it. As regards causal sufficiency and necessity,
let A, B, and E be the events from the second appearance of our earlier example, in which
the scale tips only if force X is applied to the pan:

a  The weight O’s exerting force X on the scale’s pan at t
b  O’s parts’ exerting force X on the pan at t
e  The pan’s tipping at t + n

This is perhaps less intuitive than the previous case, but given what we’ve said it strikes me
as clear that A suffices for E and B is necessary for the same.

Furthermore, where events A and B are coupled causes, the relation between them is
symmetrical. A suffices for E and B is necessary for the same; and B suffices for E while A
is necessary for the same. The principle that would support worries about coupled causes
is thus false. And, as we have seen, non-identical events A and B may each be sufficient and necessary for the same effect E; the requirement is that A \leftrightarrow B holds in actuality and the relevant nearby worlds. The apparatus of possible worlds is powerful and useful partly because it reveals and clarifies such distinctions. Indeed, it has permitted us to discover an arrangement between cause and effect that has hitherto been obscured. Events that jointly cause an effect are each insufficient for the presence of a cause. Events that overdetermine an effect are each sufficient but at least one is unnecessary for the presence of a cause. And, finally, coupled causes are each both necessary and sufficient for the presence of the given cause.

The following is a list of the salient relations that hold in actuality and nearby worlds between coupled causes A, B, and the cause K ( = A & B).

1. A \leftrightarrow K
2. B \leftrightarrow K
3. A \leftrightarrow B
4. (A \lor B) \leftrightarrow K

3.3.4 ... and Epiphenomena

But now there arises the difficult issue of a necessary epiphenomenon. Suppose L causes E, and L \leftrightarrow M holds with causal necessity, while M is an epiphenomenon of L.\(^{15}\) Now let us define N: N = (L & M). And let us add that N is a cause of E. Thanks to L \leftrightarrow M, then, it’s true that (L \lor M) \leftrightarrow N. And thus, L \leftrightarrow N and M \leftrightarrow N. Of course, L, M, and N now stand in the relations delineated just above for A, B, and K. Does nothing, then, distinguish coupled causes A and B from a cause and epiphenomenon like L and M?

\(^{15}\)Or, if you are skeptical about the existence of completely impotent events, then suppose simply that M is not a cause of E. Perhaps the individual constituting L and M is the candy that made you sick, and L has its glucose properties while M has its color properties.
The answer is qualified: nothing in the relation between A, B, and K suffices to distinguish them from L, M, and N. But there is nonetheless a difference: in the relation between A or B and E on the one hand and M and E on the other. Both A and B are causes of the relevant E while M is not.

But of course this incites the rejoinder: but nothing in what I’ve said so far justifies this distinction. This is true, but it’s not my problem. So far as M’s causal relation to E depends on the pattern of actual and counterfactual occurrences they cut in the relevant worlds, so far shall cases like A and B remain indiscernible from cases like L and M. In other words, we have just as much reason to think that M is a cause of E as to think that A, B, or L is.

And this reveals the pressing question in the epiphenomenon case on offer: on what grounds is it supposed that M is an epiphenomenon with respect to E? By hypothesis, M occurs in the same pattern of actual and counterfactual occurrences as L does. And, by our assumption, this same pattern of occurrences establishes that L is a cause of E. Why, then, should we suppose that M is not a cause of E? Whatever reasons there may be, they are ancillary to an account of coupled causes. Our analysis is general: whatever conditions establish that a cause is sufficient for an effect, coupled causes satisfy them; epiphenomena don’t.

In addition, where there should be tension between these conditions and whatever evidence there might be that some event is an epiphenomenon, the conflict has nothing to do with the account of coupled causes. Rather, it obtains between the evidence for the pertinent event’s being a cause and the evidence for its being an epiphenomenon.

This then suggests a second rejoinder: is it not evidence for an event’s being epiphenomenal that its putative effect also appears to be effected by a simultaneous event? This sentiment is at the heart of the challenge from epiphenomena. But what could justify it? This is a difficult question, and one worth exploring thoroughly. Jaegwon Kim defended a very similar principle in one of his earliest expositions of “the exclusion argument” [Kim,
1989], though it is less explicit in his later formulations. As we shall see, the force of the exclusion problem, as articulated there, comes less from the threat of overdetermination and more from epiphenomenalism; neither threaten coupled causes, though.

3.4 Kim’s Argument Against “Nomic Equivalents”

So far, we have distinguished coupled causes from those that act as joint causes, those that overdetermine their effects, and those related as cause to epiphenomenon. Each coupled cause is sufficient for the given effect and necessary for its twin. Each overdetermining cause is sufficient for the effect, and each is unnecessary for the other. Each joint cause is insufficient for the effect, and, where one event is a cause and another is its abiding epiphenomenon, the epiphenomenon does not cause the given effect. In addition, we have made explicit the relation between coupled causes.

Still, this wouldn’t satisfy the most thorough of skeptics. If causes are assumed to suffice for their effects, then one might ask: given that the occurrence of A suffices to bring about E, what “causal work” is there for B to do? The implication is a trilemma. Given that there is no “causal work” for B to do, B must either do causal work already being done, in which case E is overdetermined, or it must do no work, in which case B is epiphenomenal. If we deny both of these, one is tempted to say that A “didn’t really” suffice for E in the first place; hence, A and B jointly cause E.

To stick to the metaphor, the mistake is to assume that every causal job is single occupancy. This may be the case, but it isn’t obvious. If two events may work the same job, the trilemma is only apparent. Since the events act as a single cause, the effect is not overdetermined. Since each event is a cause of E, neither is epiphenomenal. And since each event is a cause of E, neither is epiphenomenal. And since each

\[\text{See (Ney, 2007): 487, approvingly: “Since at the same time of my intention there is and must be (due to closure) a physical cause, there is no work left for the mental event to do.” Or, disapprovingly, ([Bennett, 2008]: 280-1): “The basic idea is that if everything that happens can be accounted for in purely physical terms, then the mental seems to be left with nothing to do.”}\]
of A and B is sufficient to bring about E (again assuming that causes are sufficient for their effects), it is not the case that they are joint causes. Moreover, note that the trilemma fails for links in a single causal chain.

Now let us compare remarks found in [Kim, 1989]. Kim addresses “simultaneous nomic equivalents”, as found in [Goldman, 1969]. Simultaneous nomic equivalents are necessary and sufficient for one another by nomic necessity. Kim alleges that the relation between nomic equivalents is “inherently unstable”.

Since nomic equivalents are necessary and sufficient for one another by nomic necessity, they act as a single cause of all of their nomically possible effects; thus, all nomic equivalents are causal equivalents. And, since Goldman proposes that nomic equivalents are distinct events, all nomic equivalents are coupled causes. But not all coupled causes are nomic equivalents. A and B may be coupled causes with respect to some events but not others, or they may not be caused by all of the same events. Thus, if Kim’s argument against nomic equivalents holds, it may not impugn coupled causes; but if it fails against nomic equivalents, it fails against coupled causes as well. We shall see that it fails for both.

In what follows, I rehearse Kim’s many arguments, refuting each in turn.

3.4.1 The Principle of Explanatory Exclusion

Kim sets out to defend the following principle:

**EE** No event can be given more than one complete and independent [causal] explanation.

([Kim, 1989]: 79)

Kim’s defense of EE is an attempt to show that where there are two purported causes of a single effect, each is a ‘complete’ cause only if it is not ‘independent’ of the other, but they are independent of one another only if one or the other is not a complete cause of the effect.

But Goldman does not dispute this, and it is consistent with all we’ve said so far as regards coupled causes. Each nomic equivalent depends on the other by nomic necessity,
and each coupled cause depends on its mate in all the relevant nearby worlds. Coupled
causes are not independent and neither are nomic equivalents.

But notice that (i) these dependency relations are symmetric, and that (ii) Kim doesn’t
have symmetric dependence in mind. Rather, he claims that there must be an asymmetric
dependence between nomic equivalents.

The kind of situation Goldman describes...is an inherently unstable situation ... The instability of the situation generates a strong pressure to find an
acceptable account of the relationship between [causes] C and C*, and, by ex-
tension, that between the two systems to which they belong; the instability is
dissipated and a cognitive equilibrium restored when we come to see a more
specific relationship between the two explanations. As we shall see, in cases of
interest, the specific relationship replacing equivalence will be either identity or
some asymmetric dependency relation. ([Kim, 1989]: 85-6)

As it is stated, then, EE is irrelevant. All parties agree that coupled causes are dependent
on one another. The disagreement, rather, is over another principle that Kim does not
explicitly defend; let’s call it EE*.

**EE* No event has more than one cause unless one of the causes is asymmetrically dependent
on the other.

This formulation is obviously inadequate because it entails that overdetermination is impos-
sible. Nonetheless, let us suppose that it can be modified to avoid this problem.

### 3.4.2 Two arguments for *dependence*

Kim provides two arguments for EE that he apparently believes to support EE* as well. But
they do not: they establish that there is a dependence relation between coupled causes, but
they do not establish that this dependence is asymmetric.

1. Let us consider the more succinct argument first.

    These considerations suggest the following simple argument for explanatory
    exclusion for causal explanations: Suppose that C and C* are invoked as each
giving a complete explanation of E. Consider the two questions: (1) Would E have occurred if C had not occurred? and (2) Would E have occurred if C* had not occurred? If the answer is “yes” to both questions, this is a classic case of overdetermination. . . . If the answer is a “no” to at least one of the questions, say the first, that must be because if C had not occurred, C* would not have either. And this means that C and C* are not independent, and hence that the two explanations are not independent explanations of E. ([Kim, 1989]: 92)

As we have seen, A ↔ B holds in actuality and the nearby worlds for coupled causes A and B; so we answer “no” to both questions (provided that all else is held equal and that there are no other causes of E in the context, of course). Thus, there is, as Kim says, a dependence relation between them. But we have no reason to believe that this dependence is asymmetric. The same goes for nomic equivalents. On to the other argument.

2. The argument we’re addressing second in fact comes first in Kim’s article (it is the referent of “these considerations” in the preceding quotation). Kim’s strategy here is to give an exhaustive list of the possible relations between nomic equivalents, showing that unless E is overdetermined, the relation between the causes is a dependence relation. If the relation is identity, then E has only one cause, and so EE stands; if it is a dependence relation weaker than identity, then EE still stands. EE* remains unsupported, though. Here is Kim’s list:

1. C = C* (89)
2. “C is distinct from C*, but is in some clear sense ‘reducible’ to, or ‘supervenient’ on C*.” (90)
3. “Neither C nor C* is in itself a ‘sufficient cause’ of E, though each is an indispensable component of a sufficient cause.” (90)
4. “C and C* are different links in the same causal chain leading, say, from C to C* and then to E. In this case again we do not have two independent causal explanations; the explanans of one, C*, is causally dependent on the explanans of the other, C.” (91)
5. C and C* overdetermine E. (91)

We have distinguished single causes from 3, joint causes, and 5, overdeterminers, above. 1 is true only if ICE obtains, and ICE is implausible; moreover, Goldman proposes nomic
equivalents as incompatible with both ICE and 1. If we assume that links in a causal chain are not simultaneous, 4 is also inconsistent with Goldman’s simultaneous nomic equivalents. And of course the coupled causes we’ve discussed are not different links in the same causal chain (though I have left it open that there are such coupled causes, and it is true in general that one is causally dependent on the other).

Thus, only 2 remains. As stated, it does not entail asymmetric dependence: supervenience is sometimes symmetric, and Kim admits as much in a later work, *Mind in a Physical World*: “...mind-body supervenience as stated isn’t asymmetric; in general, the supervenience of A on B does not exclude the supervenience of B on A.” [Kim, 1998]: 11

Supervenience is a relation between sets of properties: a supervenience set, call it set Alpha, and a base set, call it set Beta. The popular slogan for the relation is: Alpha supervenes on Beta if and only if no two individuals can differ in their Alpha properties without also differing with respect to their Beta properties.\(^\text{17}\) If \{P, ¬P\} is the base set and \{Q, ¬Q\} is the supervenience set, then for all x and y, if x and y are both P, then x and y must either both be Q or both be ¬Q. They must have the same properties from the supervenience set since they have the same properties from the base set.

And this relation does not always hold asymmetrically. For instance, a set of “positive” properties \{A, B, C...\} supervenes on the set of its complements \{¬A, ¬B, ¬C...\}, and vice versa: x and y cannot differ in their “positive” properties without differing in their “negative” properties. Similarly, notice that every set of properties supervenes on itself. For all x and y, if x and y have the same Alpha-properties, x and y must have the same Alpha-properties. The dependence herein is not asymmetric.

Moreover, if 2 did state that there must be an asymmetric relation between C and C\(^*\), it would be implausible that the list is exhaustive: the foregoing accounts of coupled causes

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\(^\text{17}\)There are in fact a number of supervenience relations. For simplicity, I am reviewing only local, strong supervenience, which is Kim’s preferred relation. See, for example, [Kim, 1998]: 9.
and nomic equivalents demonstrate as much. Insofar as these accounts are plausible, it is thus far implausible that such a revised edition of Kim’s list would be exhaustive.

### 3.4.3 An argument for asymmetric dependence

But Kim does attempt to show that reduction is an asymmetric relation, and he does attempt to show that nomic equivalents satisfy the conditions for reduction. Let us grant that each psychological event has a physical nomic equivalent; this licenses the inference to P1.

1. **(P1)** Every psychological event depends on a physical event by nomic necessity.
2. **(P2)** If psychological events are dependent on physical events by nomic necessity, then psychological events are reducible to physical events.
3. **(P3)** If psychological events are reducible to physical events, then psychological events asymmetrically depend on physical events.

1. **(C1)** Psychological events asymmetrically depend on physical events.

   ([Kim, 1989]: 88)

This argument is valid, but either P2 or P3 is false. I am sympathetic with P2, but if P3 is true as well, then the “one-way” dependence of psychological events on physical events logically precludes dependence in the other direction.

The general principle is that A’s depending on B precludes B from depending on A. Thus, there are no symmetric dependence relations short of identity. This is implausible on its face. In addition to the examples provided in the foregoing text, symmetric dependencies short of identity abound. The movements of a baseball bat’s heavy end depend on those of the light end and vice versa. Where \( x = y^2 \), the value of \( x \) depends on \( y \) and vice versa. And, given the way the rear wheels of a car are connected to the drive shaft, the left wheel can turn only if the right wheel does and vice versa.\(^{18}\)

Given that the principle fails in general, Kim must convince us that it holds in the special case of nomic equivalents or in the case of psychological and physical nomic equivalents. It

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\(^{18}\)Thanks again to Wayne Davis for this last example.
is important to note that the force of dependence at issue here is nomic or ‘causal’—
the point is to ensure that psychological and physical causes are ‘causally on a par’, causally
equivalent. It is consistent with symmetric nomic or causal dependence between them that
one metaphysically or ontologically depends on the other. In other words, the coupling of
mental and physical causes is consistent with the ontological priority of the physical over
the mental (or vice versa). In the case of macroscopic objects and their parts, it is plausible
that they are ‘on a par’, causally speaking; if they are not identical, then Kim’s principle
fails, and there is no ‘instability’ between nomic equivalents or coupled causes.

I take it, then, that Kim’s arguments against coupled causes and nomic equivalents are
impotent.

3.4.4 Asymmetric Dependence and the Popular Solution

Kim’s arguments turn crucially on two propositions:

1. No symmetric dependence relation short of identity holds between synchronic events.
   [Kim, 1989]: 86:

   ...a certain instability exists in a situation in which two distinct events
   are claimed to be nomologically equivalent causes or explanations of the same
   phenomenon; stability is restored when equivalence is replaced by identity or
   some asymmetric relation of dependence. (Emphasis in the original.)

2. Where an asymmetric dependence relation holds between synchronic events, one is an
   epiphenomenon of the other. [Kim, 1989]: 86:

   ...either two explanations (or causes) in effect collapse into one or, if
   there indeed are two distinct explanations (or causes) here, we must see one
   of them as dependent on, or derivative from, the other—or, what is the same,
   one of them as gaining explanatory or causal dominance over the other.

If 1 holds, then there are no coupled causes, since coupled causes are symmetrically depen-
dent. If 1 and 2 hold, then one of every pair of alleged coupled causes is an epiphenomenon.
Presumably, this is exactly what motivates Kim’s belief that nomic equivalents are “unstable”. As we saw, however, 1 is surely false.

It is an interesting question what could motivate 2, and it is pressing. Indeed, Kim thinks that asymmetric dependence, not overdetermination, is the ‘deeper’ problem of exclusion.

The exclusion problem doesn’t go away when we recognize the two purported causes as in some way related to each other, perhaps one being dependent on the other... our problem is not exactly that of causal overdetermination, although both have to do with an overabundance of causes. It is important to see that the problem that we face arises because the two putative causes are not independent events. The difficulty is exactly that the causal status of the dependent event is threatened by the event on which it depends. ([Kim, 1998]: 53)

Since it targets asymmetric dependence, this deeper problem doesn’t afflict coupled causes at all 19; but, for this same reason, it does trouble the most popular solution to the problem of causal exclusion. According to the Popular Solution, physical causes do not exclude mental causes because the latter depend metaphysically on the former. Metaphysicalism about overdetermination is an instance of the Popular Solution, and the many Metaphysicalists listed above implicitly subscribe to the Popular Solution.20 It is plausible, however, that metaphysical dependence is asymmetric. If so, then the Popular Solution is no solution at all. It falls prey to 2. Moreover, in concert with Metaphysicalism about overdetermination, it faces a dilemma: epiphenomenalism or overdetermination. If there is no metaphysical dependence between them, then mental and physical causes overdetermine their effects; if there is a metaphysical dependence between them, then, according to Kim, one is an epiphenomenon.21 The Metaphysicalist accepts the first horn of the dilemma by her account of overdetermination; let me briefly make a case for the second horn.

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19I discuss potential motivations for 2 and my response to them in greater detail in chapter 4, §§2 - 3.
20Their subscription is implicit because the vast majority of discussants say nothing about the threat of asymmetric dependence. We must take their proposed solutions to the threat of overdetermination as allegedly complete solutions to the exclusion problem. For many, then, Metaphysicalism about overdetermination is all there is to the Popular Solution.
21In which case “cause” is a misnomer of course.
Metaphysical dependence is plausibly meant to give the “structure” of the universe. Aristotelian substances, for example, are metaphysically independent, and everything else metaphysically depends on them. Everything else is “grounded” in the substances; all else exists thanks to the substances. The metaphor of higher and lower levels at least implicitly endorses a similar structure: the lower levels ground the higher levels. If this relation held symmetrically, metaphysics would be ungrounded. The claim that A depends on B for its existence while B also depends on A for its existence at least seems paradoxical. One or the other must “first” exist in order to determine the other. Plausibly, Kim has these sorts of considerations in mind when he affirms 1 above. Metaphysical dependence is asymmetric, then, and the Popular Solution is vulnerable to the ‘deeper’ exclusion problem. Physical causes gain causal dominance over alleged mental causes.

Causal dependence doesn’t bear the same metaphysical burdens and restrictions. It does not give the “vertical” structure of the universe, and so it is not paradoxical for it to hold symmetrically between simultaneous or temporally overlapping entities. Rather, the asymmetries of causal dependence are due to the asymmetry of time. Where this asymmetry has no bearing, as in simultaneous cases, there is no bar to symmetric causal dependence. Coupled causes are instances of such symmetric dependence.

In the quotation above, Kim again conflates dependence and asymmetric dependence, and so he overlooks the possibility of coupled causes. Where each event depends on the other—where they are ‘on a par’, causally speaking, the operative principle would suggest that each cause “threatens” the other. But it can’t be that both are excluded, leaving the effect uncaused. Rather, neither is excluded.

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22See [Schaffer, 2003] for discussion.
23Further, much work on a relation of this sort is underway, and the consensus seems to be that it is an asymmetric relation ([Fine, 1994,Fine, 1995,Correia, 2005,Schaffer, 2008b]) although [Morganti, 2008] has argued that “Coherentism” of ontological dependencies shouldn’t be ruled out on conceptual grounds.
24More on this in chapter 4, §3.
Thus, coupled causes solve the problem of causal exclusion by neutralizing both the threat of overdetermination and the threat of asymmetric dependence. And thus, coupled causes offer a more complete and unified solution to the problem of causal exclusion.\textsuperscript{25} The Popular Solution is vulnerable to Kim’s dilemma between epiphenomenalism and overdetermination.

### 3.5 Conclusion

I have subverted the naive view of Multiple Antecedent Causal Relations that indirectly motivates ICI by way of ICE and the various implausible conclusions concerning mental causation and “higher-level” phenomena in general. Where K is a cause of E, A and B are coupled causes of E if each is both necessary and sufficient for K; coupled causes show ICE to be false and the arguments that assume it to be unsound. Moreover, since the causal dependence between coupled causes is symmetric, neither gains “causal dominance” over the other. And so coupled causes defuse the deeper threat of the problem of causal exclusion as well.

Furthermore, the account of coupled causes suggests that there are in fact several other MACRs that have received little attention, if any at all. Discussions of MACRs have tended to focus on (i) sufficiency and insufficiency, and (ii) symmetric cases. Thus, joint causes are both insufficient; overdeterminers are both sufficient. Some, like the Metaphysicalists noted above, have pointed out that overdetermination may be more complex than this. If one antecedent depends on the other, then perhaps the effect is not overdetermined; at any rate, the result differs from the standard firing-squad cases of overdetermination. Let’s say such effects are either “overdetermined*” or, as Kim would have it, a cause that necessitates a simultaneous epiphenomenon. Coupled causes are then an additional deviation from the standard case: \textit{each} antecedent depends on the other, and they are immune to Kim’s worries.

\textsuperscript{25}I further clarify the threat of asymmetric dependence and how coupled causes handle it in “The Metaphysical Role of Causal Roles”.

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about synchronic asymmetric dependence.

The table below charts overdeterminers, overdeterminers*, and coupled causes. An X in the leftmost column indicates a sufficient cause; an X in the second-to-leftmost column indicates a dependence relation between the causes. For convenience, I have charted only two-cause cases. Thus, where there is no X below ‘□’, the causes are independent; a single X indicates an asymmetric dependence between them; and, if there are two Xs, then they depend on one another; i.e. they are coupled causes.

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<th>effect is:</th>
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<td>-</td>
<td>Overdetermined</td>
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<td>Overdetermined*/Cause &amp; Epiphenomenon</td>
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<td>XX</td>
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As has been shown in the foregoing, these are indeed distinct varieties of MACR: whether the antecedents are necessary for one another makes a difference to the effect’s status as overdetermined, overdetermined*, or not overdetermined at all. The same may be true for cases in which only one of the antecedents is sufficient for the effect or neither is. Schematically at least, these are all distinct MACRs:

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<td>A Cause</td>
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<td>Cause &amp; Epiphenomenon</td>
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<td>X</td>
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<td>Joint Causes</td>
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<td>-</td>
<td>X</td>
<td>Sub- &amp; Supervener?</td>
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<td>-</td>
<td>XX</td>
<td>Epiphenomenon/a?</td>
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Causation is no doubt central to our philosophical, scientific, and common sense understandings of the world. Disentangling coupled causes from other varieties of causal relation
helps to resolve several puzzles about higher-level causes. We should be keen to explore and clarify the other under-appreciated varieties of MACR for their inherent interest, for their potential to solve conceptual puzzles, and for their centrality to how we understand the world and our place in it.
Chapter 4

The Metaphysical Role of Causal Roles

4.1 Introduction

In chapter 2, I defended the existence of married causes, that is, of non-identical causal indiscernibles. The razor’s cutting me this morning and the blades’ cutting me this morning have all the same causes and effects, but they’re not identical because the razor is not its blades. Shooting the bullet is shooting its parts, and both cause the victim’s death; but the bullet is one and its parts are many. The ‘threat’ to married causes was the allegation that they must be identical, on account of playing the same token causal role. Chapter 3 defused a different threat—from the received view on “Multiple Antecedent Causal Relations”. Traditionally, it was thought that there are, at most, two kinds of case in which an effect has more than one actual cause: joint causation and overdetermination. The challenge was to show that married causes relate to their effects in a way that’s hitherto been overlooked, a ‘new’ MACR. I called the relation “coupled causation”.

Whereas chapter 2 argued against a mostly unrecognized assumption and chapter 3 sought to undermine arguments found in the literature, the objections raised and rejected in this chapter are ‘new’. Thus, I raise two versions of a third threat to married causes, the
threat of non-fundamentality. The concept of fundamentality is easily understood in terms of the assumption that our world is ‘structured’, with some entities at the foundation of the structure, holding everything else up—these are the fundamental entities. In Aristotle’s metaphysics, as traditionally understood, primary substances are fundamental. The primary substances are particular individuals, like a man or a horse. All other things depend on primary substances for their existence. Properties, for instance, inhere in them, genera are said of them. Not only are primary substances fundamental, then, we might say they are more fundamental than properties and genera. The challenges raised in this chapter allege that there is no such structure amongst causes. Rather, if there were, then (i) fundamental causes would preempt non-fundamental would-be causes and, independently, (ii) non-fundamental effects would be brought about by both causes and the more fundamental entity/ies on which they depend. Although neither of these objections have been made explicitly, Jaegwon Kim has attempted to make both, and so I take part of my project here to be exegetical.

In order to clarify these problems and the dubious principles that motivate them, I make use of a general and vague synchronic dependence relation, simply called “vertical dependence”/“vertical determination.” The name comes from Kim, and I intend the relation to

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1Along these lines, it is helpful to understand the higher/lower metaphor in terms of more and less metaphysically fundamental entities, with the most fundamental entities being lowest and with relatively higher entities always being relatively less fundamental. The standard interpretation is more specific. In addition to being more fundamental, lower entities are also thought to be literally smaller. In adopting the metaphor, however, I do not intend to endorse such assumptions. In these pages, I would like to remain neutral about specific ontological dependence relations and about what is fundamental. Thus, I neither affirm nor deny that (i) sub-atomic particles are more ontologically fundamental than atoms, earthquakes, etc.; that (ii) fundamental physics concerns sub-atomic particles rather than fields or strings; that (iii) priority monism—the view that the whole is ontologically prior to its parts [Schaffer, 2010] is false. It might be thought, by contrast, that the usual interpretation of the metaphor does take a position on these points. Still, I follow the tradition in discussions of mental causation in calling the lowest-level causes “physical”. If the lowest-level causes are instead Divine (see [Patterson, 2005]: 250 for a discussion of “The Divine Exclusion Argument” and Aquinas’ response), my considerations shall not lose their probative force.

2Thus leading to a theoretically gratuitous ‘double-explanation’ that is akin to overdetermination in that it is itself in need of explanation.

3“Vertical dependence” refers to the relation as it “flows” from dependent to dependee; “vertical determination” refers to that same relation as it “flows” from dependee to dependent. If one denies that dependence and determination are generally related in this way, then let me pose this usage as a terminological stipulation.
reflect the role that Kim assigns to supervenience in his well-known “supervenience argument”. The relation’s generality seems to cover not only the modal covariation associated with supervenience but also many other non-causal dependence relations, including but not limited to (i) the constitution of material entities by their matter, (ii) the composition of wholes by their parts, (iii) the determination of “higher-level” properties by lower-level determinates, (iv) the realization of second-order properties by first-order properties, and perhaps (v) the making-true of truths by, say, states of affairs, (vi) the grounding of property instances in individuals, and perhaps others.

I argue, however, that these problems are defused when we are clearer about vertical dependence/determination. My proposal is not that relations (i) - (vi) are distinct and some of them are vulnerable to the supervenience argument while others are not. It is that referring simply to vertical dependence conflates two kinds of dependence—one appropriate to causation and the other to ontological dependence—and that there is no threat of exclusion after disambiguation. In brief, the first overlooked principle I will discuss here, Exclusion$_2$ or E2, claims that causal effects cannot be vertically determined; the second principle we’ll discuss, Exclusion$_3$ or E3, claims that causes cannot be vertically determined. The arguments motivating each principle assume that vertical determination flows asymmetrically from lower to higher entities; and each argument would fail if causal dependence could flow from higher- to lower-levels. I propose that *ontological* vertical determination does flow asymmetrically upward, but causal/nomic determination may be symmetric between synchronic entities, even if one of the two is more ontologically basic or fundamental. Hence, there may be causal determination from higher- to lower-level entities, and hence vertically determined entities may be both causes and effects. This is the “pattern” of dependence relations realized by

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4This distinction should be familiar from at least the contrast between nomological and metaphysical supervenience.

5Again: that is, it flows from more- to less-basic or less-fundamental entities, though not necessarily from literally smaller to literally larger entities.
married causes, and although I shall not argue the point, I believe there is good reason to believe it is the pattern realized by relations (i) - (iv) and perhaps (v) and (vi). Briefly, these are plausibly all higher-/lower-level relations in which both relata are causally potent.

After briefly motivating the claim that arguments for exclusion treat all forces of vertical dependence equally in the next subsection of this introduction, §2 introduces E2 and E3. §3 draws from Kit Fine’s “Ontological Dependence” (1995) to distinguish two varieties of vertical dependence and to show that E2 and E3 are false.

4.1.1 Vertical Dependence

First, Kim is fairly explicit in his “Blocking Causal Drainage and Other Maintenance Chores with Mental Causation” ([Kim, 2003]) that he intends the supervenience argument to apply to a number of synchronic dependence relations and not just to supervenience.

What do I mean by “vertical determination”? Consider an object, say this bronze statue. At any given time it has a variety of intrinsic properties, like color, shape, texture, density, hardness, electrical conductivity, and so on. Most of us would accept the proposition that the statue has these properties at this time in virtue of the fact that it has, at this time, certain microproperties—that is, it is composed of molecules of appropriate kinds in some specific structural configuration. That is, the macroproperties of the statue are “vertically” determined by its synchronous microstructure. Talk of “vertical” is meant to reflect the usual practice of picturing micro-macro levels in a vertical array, with the micro underpinning the macro. In contrast, we usually represent diachronic causal relations on a horizontal line, from past (left) to future (right)... That is what I mean by “horizontal” causation. So we have here two purported determinative relationships orthogonal to each other: “vertical” micro-macro determination and “horizontal” past-to-future causal determination. ([Kim, 2003]: 153-4)

Similarly, when discussing the “leading idea that underlies [the exclusion] argument” (153), Kim groups together a number of “vertical” dependence relations: “Mind-body supervenience, or the idea that the mental is physically ‘realized’—in fact, any serious doctrine of mind-body dependence will do...” [Kim, 2003]: 155
But as I’ve said, there are distinct kinds of vertical dependence that should be distin-
guished here, even if the distinctions between composition, constitution, etc. are immaterial for our discussion. The second point we must make here, then, is this: Kim conflates two distinct kinds of vertical dependence. In particular, he aims the exclusion arguments at a single vertical dependence relation that he takes to be (I) explanatory with respect to the existence of the dependent entity (and thus asymmetric; see [Fine, 1994, Fine, 1995, Correia, 2005, Schaffer, 2008b]), and (II) influential with respect to the actual causal roles of its relata. In marshaling quotations that support this claim, I’ll also demonstrate a prima facie tension between (I) and (II). Later, I argue that (I) is a feature of existential dependence and not causal dependence while (II) is a feature of causal dependence and a feature of existential dependence only indirectly, i.e. ‘through’ the influence existential dependence has on causal dependence.

In “Blocking Causal Drainage [...]” Kim attributes to his opponents commitment to a claim he dubs ‘[Supervenience]’; note that it has feature (I).

I take mind-body supervenience to involve the idea of dependence—a sense of dependence that justifies saying that a mental property is instantiated in a given organism at a time because, or in virtue of the fact that, one of its physical “base” properties is instantiated by the organism at that time. [Supervenience], therefore, is not a mere thesis of covariation between mental and physical properties; it includes a claim of existential dependence of the mental on the physical. [Kim, 2003]: 152 (last emphasis added, square brackets in original)

Later in the same article, however, Kim also attributes to his argumentative target the denial of metaphysical supervenience:

I think we can set aside the possibility that mind-body supervenience is logically or metaphysically necessary, since such a view is essentially a reductionist view, and we are here considering [Supervenience] as a part of nonreductive physicalism. Let us assume then that [Supervenience] is nomologically necessary... [Kim, 2003]: 162 (again, square brackets in original)
Arguably, this is an attempt to establish that [Supervenience] has feature (II). As we saw in chapter 3, §3.2, it’s dubious that nomic impossibilities bear on an actual entity’s causal role—they are causally impossible too. What is nomically possible, by contrast, likely does influence the causal roles of actual entities. The first quotation establishes that [Supervenience] is existential. As we noted in chapter 3, §4.4, existential dependence is plausibly asymmetric; plausibly, then, this establishes that [Supervenience] is asymmetric. The second quotation then claims that all of this relation’s features hold in the nomically possible worlds. Granting that what happens in the nomic possibilities has an influence on actual causal roles, then, these two remarks establish that the asymmetric dependence between a supervenience base and its supervening set has an influence on the actual causal roles of the relation’s relata. That is, [Supervenience] has features (I) and (II), and, further, non-reductive physicalists are committed to it.

It is dubious, however, that there is any such relation; it is dubious that ‘[Supervenience]’ refers.

First, it’s dubious that existential dependence is metaphysically contingent. Whether it “reduces” to modal correlation as Kim seems to think or an Aristotelian “real definition” as Fine (inter alios) thinks, existential dependence relations are such that the dependent has its existence determined by its dependee(s). If B determines A’s existence, it is not just that B makes it the case that A exists. It’s that B makes A what it is. Loosely, B is responsible for A’s identity. Can this be a matter of metaphysical contingency? I don’t see how. It’s surely no matter of metaphysical contingency that A is what it is. A = A is metaphysically necessary.

Is it metaphysically possible, then, that B doesn’t make A what it is? Although it’s metaphysically necessary that A is what it is, is it metaphysically contingent that B makes
A what it is?\(^6\) Again, I don’t see how it could be. Consider a paradigmatic case of ontological dependence: the singleton set of which Socrates is the sole member depends ontologically on Socrates. The set exists in virtue of Socrates’ existence; Socrates makes the set what it is; Socrates is partly constitutive of the set’s essence; and so on. Plausibly, Socrates and the singleton make true all the platitudes about ontological dependence. Further, it’s metaphysically necessary (indeed, it’s logically necessary) that the singleton set depends on Socrates; it’s what it is to be the singleton set; it’s constitutive of the set. It’s metaphysically necessary that Socrates makes the set what it is.\(^7\) There is no metaphysically contingent existential dependence. If a dependence relation is anything short of metaphysically necessary, then it is not existential dependence. Thus, although (I) may establish the asymmetry of [Supervenience], it undermines the claim that all of the relation’s features bear on the causal roles of its relata. On the other hand, (II) may establish that [Supervenience] influences the causal roles of its relata, but it undermines the claim that [Supervenience] is asymmetric.

Indeed, many have worried about the formal features of supervenience relations as alleged existential dependence relations. If these worries are well-placed, then Kim’s ‘[Supervenience]’ is internally inconsistent. For Kim formulates [Supervenience] in the traditional way\(^8\)—it is reflexive and non-asymmetric. Whereas existential dependence relations are ir-reflexive and asymmetric. Here is Jonathan Schaffer, arguing that supervenience “has the wrong formal features” for an existential dependence relation: “supervenience is reflexive, and non-asymmetric, while [existential dependence] is irreflexive and asymmetric.” ([Schaffer,
Further, “there are substantive [existential dependence] relations for necessary entities (like numbers), but supervenience claims go vacuous for necessary entities.” (Ibid: 364) No relation is both reflexive and irreflexive, non-asymmetric and asymmetric; “[Supervenience]” does not refer.

Kim does not explicitly acknowledge what is implausible about [Supervenience], and I know of no printed material in which it is attributed to anyone besides the “nonreductive physicalists” mentioned in [Kim, 2003]. If it is or has been advocated, I do believe it deserves censure. I find it dubious, however, that any of the relations (i) - (vi) above are essentially such dependence relations—even if some authors have characterized (say) realization this way, then although that characterization does not refer, it remains plausible that “realization” refers. Similarly for the other relations. Further, it is dubious that nonreductive physicalists have no other options at their disposal for characterizing their view. Indeed, I think relations (i) - (iv) and perhaps (v) and (vi) should be understood as combining symmetric causal dependence with asymmetric ontological dependence, as realized by married causes. Briefly: so much puts higher and lower entities “causally on a par” while still allowing for a “structured ontology”. I would not like to involve myself in the debates over reductive and nonreductive physicalism, but if the latter view takes on any of the relations (i) - (iv), then it too should involve married causes. In any case, I think the most plausible interpretation of the these apparently contradictory remarks is that Kim is conflating two distinct kinds of vertical dependence, one being mere nomically necessary correlation and the other involving genuine ontological dependence.

In explicating the two heretofore unrecognized exclusion problems, I must follow Kim in conflating these distinct forces of vertical dependence, and so I shall also follow him in referring to the single relation simply as “vertical dependence”. I hope this brief articulation of my competing view inspires the reader to see the flaws in Kim’s exclusion arguments as we review them. I will turn to these flaws myself in §3.
4.2 Exclusion$_2$ and Exclusion$_3$

In order to mirror the familiar formulation of the original exclusion principle, I formulate E2 and E3 as threats: if alleged causes do not meet Kim’s demands, they face unattractive consequences.

**Exclusion$_2$** No entity has both a cause and a vertical determiner unless it is overdetermined$_2$.

**Exclusion$_3$** No entity is both a cause (of some E) and vertically determined by another cause (of E) unless the causes are “inherently unstable”

Just as E1 is slotted into arguments toward identity, elimination, or epiphenomenalist conclusions, we may do the same with E2 and E3. The base argument accepts the unattractive consequences. Featuring E2:

(P1) A causes E  
(P2) B vertically determines E

Exclusion$_2$ No entity has both a cause and a vertical determiner unless it is overdetermined$_2$.  
(C) E is overdetermined$_2$

And featuring E3:

(P1) A causes E  
(P2) B vertically determines A  
(P3) B causes E

Exclusion$_3$ No entity is both a cause (of some E) and is vertically determined by another cause (of E) unless the causes are “inherently unstable”

(C) A and B are inherently unstable

But, as with the more familiar exclusion arguments, it is assumed that in fact the conclusion is false.

And, assuming that A ≠ B, then (P1) or (P2) is denied by force of absurdity. The result may then be epiphenomenalism (as a cause or as a vertical determiner) or elimination. Kim
has it, of course, that the presumption is against the “higher-level” cause; accordingly, I rule in favor of the more basic or fundamental determiner in both cases below.

(P1) A causes E
(P2) B vertically determines E
(P3) E is not overdetermined
(P4) A \neq B

**Exclusion**

No entity has both a cause and a vertical determiner unless it is overdetermined.

(C) P1 is false

And E3:

(P1) A causes E
(P2) B vertically determines A
(P3) B causes E
(P4) A and B are not inherently unstable
(P5) A \neq B

**Exclusion**

No entity is both a cause (of some E) and is vertically determined by another cause (of E) unless the causes are “inherently unstable”

(C) P1 is false

Let me now briefly make a case for each principle. Compare E2 with what Kim calls “Edwards’ dictum”, “the leading idea that underlies [the Supervenience] argument”. ([Kim, 2003]: 153)

**Edwards’ dictum** There is a tension between vertical determination and horizontal causation. In fact, vertical determination excludes horizontal causation. [Kim, 2003]: 153

Kim isn’t careful here to distinguish several theses that Edwards’s dictum might aver. Most generally, Edwards might have denied that any one world can be home to both vertical and horizontal determination. Thus, in every world there is either a single causal level
that does not instantiate any vertical determination relations or a single column of vertical
determination, the distinct levels of which stand in no causal relations. Or there may be
worlds without any dependence/determination relations.

This is a very strong and undoubtedly false claim. Truth-making is plausibly a vertical
determination relation. The truth of a proposition at a world W is vertically determined by
or grounded in the state of affairs in W that the proposition proposes. Since W thus harbors
a vertical determination relation, the strong interpretation of Edwards’s dictum tells us that
there can be no causal relations in W. The truth-making state of affairs can stand in no
causal relations.

What, then, of a proposition about a causal relation? If it could be grounded in a state
of affairs, the affairs would include a causal relation. But according to Edwards’s dictum,
the existence of a causal relation in W precludes the existence of a vertical determination
relation in W. Paradoxically, then, it is possible for the proposition to be grounded only if
it is impossible for its ground to occur. If the state of affairs that would make it true could
occur, its being made true would then be impossible. If, in addition, a proposition is false if
its ground does not occur and necessarily false if its ground cannot occur, Edwards’s dictum
leads to another paradox. Propositions about causal relations are possibly true only if they
are necessarily false.

I propose, then, that we localize Edwards’s dictum to particular entities. For any given
entity, its being vertically determined is mutually exclusive with its being horizontally de-
termined. In other words, no entity has both a cause and a vertical determiner. Thus,
Edwards’s dictum entails E2.

This interpretation accords with Kim’s remarks on the matter. Picking up right after the
above quotation on horizontal and vertical determination, Kim proposes that there is a “ten-
sion” whenever an entity is proposed to be determined both horizontally and vertically. No-
tice that Kim’s clarification of the tension is very similar to the claim that overdetermination
The statue has the color yellow at time t. Why is it yellow at t? There seem to be two presumptive answers: (1) because its surface has microstructural property $M$ at t; (2) because it was yellow at $t - \delta t$. To appreciate the force of the supervenience argument it is essential to see a prima facie tension between these two explanations. As long as it has microproperty $M$ at t, it’s going to be yellow at t, no matter what happened before t. Moreover, unless the statue has $M$, or another appropriate microproperty, at t, it cannot be yellow at t. Anything that happened before t seems irrelevant to the statue’s being yellow at t; its having $M$ at t is sufficient by itself to make the statue yellow at t. ([Kim, 2003]: 154, emphasis in original)

Kim’s primary argument and rhetorical strategy for motivating Edwards’s dictum is an analogy (borrowed from Jonathan Edwards [Edwards, 1758]). It compares entities alleged to be both caused and vertically determined with the ‘time-slices’ of a reflection in a mirror. ([Kim, 2003]: 154-5) The successive images in the mirror depend on the object before the mirror, and (we may assume with Kim) the object reflected is sustained from moment to moment by causal relations. This much seems apt; it even seems natural to say that higher-level causes mirror the causes vertically determining them. But the successive images in the mirror are not causally related to one another. They are completely dependent on the object they reflect at each instant. The suggestion is that this is not a quirk of reflections; it is indicative (or at least illustrative) of a structural feature of the universe: the images’ dependence on what they reflect precludes their depending on one another.

E1 and E2 are concerned with an effect’s having multiple determiners. E3, by contrast, concerns causes. In its most general form (without the parenthetical remarks), it prohibits causes from being vertically determined—so that all causes are fundamental; in its more modest form, it prohibits an alleged cause and its vertical determiner from bringing about one and the same effect. Let’s focus on the weak reading; if it fails, so does the stronger reading.

As we noted above, Kim clearly believes something like the weak form of E3:
It is important to see that the problem that we face arises because the two putative causes are not independent events. The difficulty is exactly that the causal status of the dependent event is threatened by the event on which it depends. ([Kim, 1998]: 53)

But, again, he is not clear why any one else should believe it. Very generally, he seems to be motivated by a conservativism about causation and causal dependence. He takes it as a metaphysical principle that there are only those causal relations that are necessary to explain the occurrences of fundamental entities. He then takes it that physics will someday provide us with causally embedded fundamental entities, and that every fundamental effect has a fundamental cause; and so he concludes that there are only fundamental causes.

But it’s not clear what motivates this conservative principle. We may take Ted Sider’s “causal juice” account of what’s so bad about overdetermination to offer some support.

Causation is a kind of fluid divided among the potential causes of an effect. If one potential cause acts to produce an effect, that fluid is used up, and no other potential cause can act. Atoms causing the shattering of a window would use up the available causal fluid, leaving none for the baseball composed of these atoms. [Sider, 2003]: 721

Where the atoms vertically determine the baseball or vice versa, there’s not enough causal juice for both to break the window. This account captures what might seem to be driving E3: the more fundamental cause usurps the less fundamental would-be cause’s powers. There’s not enough causal juice for there to be any non-fundamental causal relata.

But, of course, “causal juice” gives a bad account of causation; Sider continues:

It [the causal juice account] takes seriously a view of causation that no one accepts. But barring appeal to such a picture, what could be metaphysically wrong with overdetermination? [Ibid: 721]

We must similarly ask: barring appeal to such a picture of causation, what could be metaphysically wrong with a permissive attitude toward causal relations? Why shouldn’t any two
(three, four) entities that stand in the correlations—modal, statistical, counterfactual—that characterize causal dependence thereby stand in a causal relation?

Let me propose an argument. It is inspired partly by Kim’s remarks in one of his first articles on the problem of causal exclusion, “Mechanism, Purpose, and Explanatory Exclusion” [Kim, 1989], and partly by the more recent “Causal Drainage...” [Kim, 2003], but as far as I know it does not follow any of his arguments to the letter.

The argument I have in mind pivots decisively on an analogy to “late causal preemption”, and I propose that Kim believes it to follow from Physicalism, or he at least believes it is motivated by Physicalism. Let A* and E* be fundamental—we may presume that for Kim’s Physicalism, these are fundamental according to our best physics; they are particles, fields, strings, or whatever. And let A and E be non-fundamental but synchronic or at least temporally overlapping with A* and E*, where A* vertically determines A and E* vertically determines E. Finally, suppose that E* causally depends on A*—A* causes E*. For all A*,

![Figure 4.1: Simultaneous Causal Preemption](image)

A, E*, and E that realize these fundamentality relations, the argument is as follows.

1. If A causes E, then A causes E*
2. If A* occurs earlier than A or if A* is more fundamental than A, then A* preempts A in causing E*
3. A* is more fundamental than A (ex hypothesi)
4. A* preempts A in causing E (by 2, 3)
5. A does not cause E* (by 4)
6. A does not cause E (by 1, 5)

I think the following allegedly Physicalist commitments are at work here. (I) there is a fundamental level of reality consisting of micro-physical particles, fields, etc.—these are the mereological simples, the fundamental matter, the first-order realizers, and so on; (II) these basic physical entities stand in causal relations; and, (III) all reality is vertically determined by (i.e. composed of, constituted by, realized in, etc.) these basic entities, such that nothing in reality is effected unless they are effected. Many of these assumptions may be doubted, of course, but let us grant them here.

Kim affirms (1) explicitly; he thinks the supervenience argument shows it: “‘same-level’ causation entails ‘downward’ causation.” ([Kim, 2003]: 156) Suppose that A, though it bears one of the relations (i) - (iv) to some causally potent fundamental physical entities—the A*s—is not identical to these entities. If A were a cause of some E, then by (III), a change in fundamental entities is necessary to bring E about. If A were a cause of E, then, we might infer that A brings about some change in fundamental physical entities. If E is vertically determined by E*, then this change should be E*. All effects issue from fundamental effects.

The pivotal premise, no doubt, is 2. It is an attempt to reflect his emphasis in the quotations above and in the arguments noted in chapter 3, §4 on asymmetric dependence. In these remarks, Kim seems to believe that if there is an asymmetric dependence between two would-be causes, then the dependent entity must in fact be an epiphenomenon. This account of “synchronic causal preemption” is an attempt to make sense of Kim’s apparent belief.

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9 Notice that if we add the claim that physics is complete—i.e. that every physical effect has a sufficient physical cause—then overdetermination is also a threat. But E3 is not about overdetermination. It alleges the inadequacy of dependent causes, and so we need not add a completeness claim to our premises.

10 See [Schaffer, 2003] for discussion.
In the familiar cases of causal preemption, traditionally called “late preemption”, $C_1$ brings about $E$, but if $C_1$ had failed to occur, had occurred later, or hadn’t brought $E$ about so quickly, $C_2$ would have caused $E$.\footnote{See, inter alios, [Bunzl, 1980]: 115, [Davis, 1980]: 175 (note the variant that may suggest an interesting analog in the case at hand). The term “late preemption” is introduced in [Lewis, 1986b], but the concept is discussed more clearly in [Paul, 1998]: 48 and 51-3 for variations, [Menzies, 1996]: 85, [Noordhof, 1999] for variations, and especially [Paul and Hall, 2003]§§5-7. “Late preemption” is contrasted with “early preemption”. In the latter, the preempting cause interferes with the preempted cause. Imagine a firing squad case in which two gunmen are poised to fire fatal shots but when one shoots before the command, it startles the other and prevents a second shot. In late preemption, the preempting cause does not interfere with the preempted cause except to bring about the effect. As L.A. Paul and Ned Hall put it, “at no point in the sequence of events leading from cause to effect does there fail to exist a backup process sufficient to bring about [the relevant] effect.” [Paul and Hall, 2003]: 14} L.A. Paul and Ned Hall give a canonical example:

Suzy and Billy, two friends, both throw rocks at a bottle. Suzy is quicker, and consequently it is her rock, and not Billy’s, that breaks the bottle. But Billy, though not as fast, is just as accurate: Had Suzy not thrown, or had her rock somehow been interrupted mid-flight, Billy’s rock would have broken the bottle moments later. [Paul and Hall, 2003]: 14

Let $C_1$ be Suzy’s rock\footnote{Or let it be the event of Suzy’s rock hitting the window, or the instantiation of the property relevant to the window’s breaking, or whatever one believes the cause is in this instance. The same, mutatis mutandis, goes for $C_2$.} and let $C_2$ be Billy’s rock. Both $C_1$ and $C_2$ are ‘fit’ to be causes of $E$, but only $C_1$ actually does so. The difference is that $C_1$ ‘gets there first’, it occurs sooner or it eventuates in its effect more quickly. In such a case, $C_1$ causes $E$ and $C_2$ doesn’t thanks to a temporal difference between the two. Suzy’s rock breaks the bottle first and, once it’s broken, it can’t be broken again. So Billy’s rock doesn’t have a chance at it.

But in the cases at hand, would-be causes are simultaneous or at least would bring about their shared effect at the same time. So some other difference between them accounts for why one is a cause of an effect $E$ and the other is not, even though both are ostensibly fit to cause $E$. The suggestion here, of course, is that the preempting cause is more fundamental.

A similar intuition plausibly motivated many Occasionalists. Consider Nicolas Malebranche. Like many of his contemporaries, Malebranche believed that God is the ground and ‘first cause’ of all things, while earthly creatures are, at best, ‘second causes’.\footnote{See [Hattab, 2000]: 94, “all things... would go out of existence if [God] refrained from conserving them.” Humans, ordinary objects or events, etc. are then “second causes” in that they depend on God’s “con-}
had believed in synchronic causal preemption, then he would have been driven to conclude that God at least sometimes preempts “second causes”. In his own words, Malebranche thought secondary causation to be inconsistent with primary causation.

It is a contradiction for you to be able to move your armchair... The proof of this is clear. For no power, however great it be imagined, can surpass or even equal the power of God. ([Malebranche, 1997a]: VII.x, cited in [Patterson, 2005]: 249.)

For our purposes, we may suppose the view to have been this. Although ‘second causes’ would be causes on most occasions, they ‘have a chance’ to bring about their would-be effects only occasionally because God typically preempts them. God ‘gets there first’ because His causes are more fundamental; where an effect could not be brought about twice, then, there was no ‘second causing’ to do.

If this account of E3 in terms of synchronic causal preemption is to be persuasive, then there must be (i) a non-temporal sense in which more fundamental causes bring about their effects ‘before’ less fundamental causes do, and there must be (ii) a sense in which at least some effects cannot be brought about not at two different ‘times’ but at two different levels of reality. I do not have an account of either (i) or (ii), and although I am skeptical that there is a viable account to give, I won’t argue this point here; I leave the account of synchronic causal preemption to hang on whatever intuitive purport they have and the force of the analogy.

If (i) and (ii) are granted, then premise 2 in the argument above would seem to be justified. For claims 9 and 10 would be as plausible as 7 and 8.

7. $C_2$ could have effected $E$, but $C_1$, having occurred sooner, got there first.

8. Billy’s rock could have broken the bottle, but Suzy’s rock, arriving sooner, got there first.
9. A could have effected E, but B, being A’s ground, ‘got there first’.

10. My fear could have made me flee, but the activities of my amygdala, being the ground of my fear, ‘got there first’

The use of “got there first” is of course metaphorical in 9 and 10, but an account of (i) would provide a literal substitute that would, in conjunction with (ii), justify their standing.

Alternatively, one might accept the analogy if one has intuitions about ‘causal dominance’ (see [Kim, 1989]: 86) or causal fundamentality. It might be that (a) whatever is causally derivative is causally impotent. I don’t see any reason to believe this. If there’s use for concepts of causal fundamentality and derivation, or if those concepts refer to joints in nature, then it’s presumably because there’s more to the causal structure than just causes and their impotent derivatives. A weaker claim might turn on a partial ordering of causes by their “distance” from a fundamental cause. Fundamental causes are ranked highest; causes immediately vertically determined by fundamental causes are next; any causes these latter immediately vertically determine are next; and so on. It might be then claimed that (b) nothing can bring about an effect with a causal ranking higher than its own. A cannot bring about E*, then, because E* is fundamental and A is not. Alternatively, such an ordering may serve only to decide “causal competitions”. In a causal competition, if there are any, each of two distinct entities seems to be a cause of a common effect, but this cannot be, for whatever reason. If the causation of E*/E by A or A* is such a case, then it might be claimed in favor of (ii) that (c) higher ranked causes win causal competitions.

If the argument holds, then it would seem that there are no non-fundamental causes, and Kim’s conservative view on causes would be justified.
4.3 Varieties of Vertical Dependence

But E2 and E3 are motivated by conflating two kinds of vertical dependence; correcting for the conflation shows them both to be false. Moreover, the distinction motivates a more permissive attitude toward causal relations, clarifying the metaphysical role of causal roles. In this section, I reinforce the distinction between causal and existential dependence. I have two primary aims. First, the distinction should make it clear that although existential dependence between synchronic entities is asymmetric, causal dependence is non-asymmetric. Symmetric instances of causal dependence are possible, at least between synchronic entities. Second, the distinction should show that not all features of existential dependence influence causal dependence. To draw once again on the relation between metaphysical and causal possibilities, existential dependence holds by metaphysical necessity, but causal dependence does not. If A depends existentially and therefore asymmetrically on A* by metaphysical necessity, then it does not follow that A’s causal dependence on A* is asymmetric by nomic necessity. Similarly, if A existentially depends on A* but not vice versa, it does not follow that A causally depends on A* but not vice versa. Their causal dependence could be symmetric. If these points are established, we can bring to light the errors behind E2 and E3. I also have a secondary aim: to show that causal dependence is ‘promiscuous’, and so Kim’s conservatism in positing causal dependencies is unwarranted.

I take it to be prima facie plausible that there is a distinction between causal and existential/ontological dependence. Gravity plays a causal role in breaking Jack’s crown, but there’s no ontological dependence between the two. Further, it’s prima facie plausible that causal dependence is entirely a matter of correlation—if it is not simply constant conjunction, it is constant conjunction in all the nomically possible worlds; or it is a correlation in occurrences and absences in the nearby worlds; or it is a complex statistical correlation; and so on.
The recent surge in work on ontological dependence helps to further clarify the distinction. The interest derives primarily from Kit Fine’s work on ontological dependence in the mid 1990s. [Fine, 1994, Fine, 1995] Fine contrasts modal accounts of dependence and accounts in terms of an entity’s identity or essence.\(^{16}\) According to Fine’s account of the former, \(A\) depends on \(B\) if and only if, necessarily, \(B\) exists if \(A\) exists. ([Fine, 1995]: 270) The relation of course requires an interpretation of necessity, such that distinct forces of dependence may be obtained by varying the force of necessitation.

For Fine’s purposes, there’s little reason to discuss variations of modal dependence, and so he considers only the one. I believe it’s clear, however, that other dependence relations are also fairly called modal relations. All of these relations come to nothing more than modal correlation; they reduce to patterns of occurrences in possible worlds. Crucially for our purposes, many accounts of causal dependence are among them. Consider, for instance, a nomic necessitation account of causation. \(A\) causally depends on \(B\) just in case, necessarily, \(A\) exists if \(B\) exists. The dependence is nothing more than \(B\)’s occurrences correlating with \(A\)’s in the nomically possible worlds. If causal dependence is counterfactual dependence, as proposed in David Lewis’s “Causation” [Lewis, 1973], then the relation will be somewhat more complex than necessitation, but shall still reduce to a pattern of occurrences in possible worlds. If either of these two accounts of causation is true, then we should say that causal dependence is a species of modal dependence.

There are four important points. First, modal accounts of dependence sometimes hold symmetrically. On Fine’s definition or on the nomic necessitation account of causation, it need be only that ‘\(B \rightarrow A\)’ and ‘\(A \rightarrow B\)’ both hold for some strength of necessity; that is, ‘\(A \leftrightarrow B\)’ holds by necessity. Counterfactual dependence can also hold symmetrically. It need be only that both of the familiar counterfactuals hold for each entity in the relation with

\(^{16}\) So as to avoid confusion with the many references to “existential dependence” in Kim’s remarks and here, I am calling Fine’s “modal/existential dependence” simply “modal dependence”, and I am using “existential dependence” and “ontological dependence” interchangeably, as is common in the literature.
respect to the other entity in the relation. For example, A depends on B if A occurs in the nearest world where B occurs and is absent from the nearest world from which B is absent; B shall also depend on A, then, if the former world is also the nearest in which A occurs and the latter is the nearest from which A is absent. If vertical causal dependence is a species of modal dependence, then it may sometimes hold symmetrically, as is required for Coupled and Married Causes. The previous chapters “Married Causes” and “Coupled Causes” argue in more detail that various accounts of causal dependence permit symmetric instances for temporally overlapping entities.

Second, modal dependence relations are relatively abundant. If non-identical entities co-occur, modal relations do not discriminate between them. Thus, they are insensitive to the ontological distinctions between a material entity and its constituting matter, a composite entity and its parts, etc. And so they are prone to treat multiple ontological roles as a single causal role. Such accounts of causation, then, would justify the permissive view of causes and causal relations that I have been advocating in this dissertation.

Third, the distinction on offer in this section does not require that vertical causal dependence is a species of modal dependence; I have invoked modal dependence for illustration. For our purposes, it need be only that causal dependence may hold symmetrically. Still, it remains an attractive claim that causation is modal in character. It is true if causation is characterized as either nomic necessitation or counterfactual dependence. But even if causal dependence is not modal dependence, it is still plausible that it may hold symmetrically. If it is probability-raising or constant conjunction, for example, it shall still admit of symmetric instances.

Fourth, modal dependence alone doesn’t suffice for the kind of existential dependence that Kim has in mind when he says that [Supervenience] includes,

\[\ldots a\ sense\ of\ dependence\ that\ justifies\ saying\ that\ a\ mental\ property\ is\ instantiated\ in\ a\ given\ organism\ at\ a\ time\ because,\ or\ in\ virtue\ of\ the\ fact\ that,\ one\ of\ \]
its physical “base” properties is instantiated by the organism at that time. [Kim, 2003]: 152, Kim’s emphasis

A dependence relation that would justify “in virtue of” claims would demand more than modal correlation; it more closely resembles what Fine calls “ontological dependence”.

As Fine points out, an account of ontological dependence solely in terms of modal dependence is “subject to grave difficulties” (271).\(^{17}\) First, such an account would provide no grounds for distinguishing between co-occurrences; it would claim that each depends on the other for its existence. Consider again Socrates and the set whose sole member is Socrates. Since, necessarily, the set exists if Socrates does, such an account would say that Socrates depends on the set for his existence and vice versa. And yet, as mentioned above, it’s implausible that ontological dependence is non-asymmetric. Intuitively, the claim that A depends on B for its existence while B also depends on A for its existence at least seems paradoxical. One or the other must “first” exist in order to determine the other.\(^{18}\)

Second, the modal correlation between the mere existence of Socrates and the existence of the set does not account for the way, mentioned above, that a dependee makes its ontological dependent what it is. Compare the singleton’s relation to Socrates and its relation to some necessary existent, say, the number 2. The singleton is necessarily correlated with both: if the singleton exists, then so does Socrates; if the singleton exists, then so does the number 2—it can’t exist without either. But the singleton’s identity does not bear the same ontological relation to both. Socrates makes the singleton what it is; the number 2 does not.

Various proposals attempt to surmount the difficulties associated with the modal account. Fine has developed an account in terms of the identities and essences of the entities related: “we may take x to depend upon y if y is a constituent of a proposition that is true in virtue of the identity of x or, alternatively, if y is a constituent of an essential property

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\(^{17}\) Similar conclusions are reached in [Correia, 2005]: ch. 2, with respect to ‘simple dependence’, [Schaffer, 2008b], and [Lowe, 2010].

\(^{18}\) See, however, Matteo Morganti [Morganti, 2008], who argues that the “Coherentist” account of ontological dependence is not, at the very least, logically inconsistent or conceptually incoherent.
of x.” (275) Fabrice Correia takes “metaphysical grounding” as primitive and attempts to make metaphysical sense of how an ontological dependent’s existence is explained by that on which it depends. Clearly, the sort of existential dependence that Kim characterizes with the “in virtue of” locution and assimilates to supervenience should be captured in analyses such as these; but, as these authors see, this dependence may not be assimilated to a mere modal dependence. Further, insofar as causal dependence is mere modal dependence, these ‘extra-model’ features of existential dependence should not bear on any given entity’s causal relations. Causal dependence is ‘blind’ to them, their asymmetry included.

To put it metaphorically, causal dependence should be conceived as metaphysically “promiscuous”; it should hold where the appropriate correlations hold and largely independently of ontological categories, fundamentality considerations, and ontological dependence relations. I see no reason to deny, then, that causal dependence may hold symmetrically, at least between synchronic entities (i.e. when the alleged asymmetry of temporal passage is irrelevant); and I see no reason to deny that ontologically fundamental entities may causally depend on non-fundamental entities. It should then be dubious that a concept like causal priority or like causal ranking carves nature at its joints; correlations may hold will-nilly vis-a-vis ontologically fundamental and derivative entities alike.

These points give us all that we need to undermine E2 and E3.

### 4.4 Undermining E2 and E3

E2 claims that no entity has both a cause and a vertical determiner on pain of overdetermination. Against E1, I argued that if there is a causal dependence between the causes in question, then the effect is not overdetermined. If there is a causal chain from A to B to E, then E is not overdetermined; the result should be similar where A and B occur simultaneously and both cause E. If at least one of A or B causally depends on the other, then although
they both cause E, E is not overdetermined. A baseball and its parts do not overdetermine a window’s breaking all by themselves. Finally, the result should be again the same if A causes E and B vertically determines E. If B causally depends on A—that is, if A causes B as well as causing E—then there is a chain of causal determination running from A to B to E (as well as a direct link from A to E), and so A and B do not overdetermine E. The baseball and the microphysical event involved in the window’s breaking do not overdetermine the window’s breaking.\textsuperscript{19}

![Diagram](image)

Figure 4.2: Downward Causation ‘Saves’ E from Overdetermination\textsubscript{2}

The distinction in kinds of determination is crucial. Although it may be implausible that B ontologically depends on A, it remains plausible that A causally determines B. Further, the permissive view on causes is crucial. We cannot see that B causally depends on A if we insist that fundamental effects must have fundamental causes. But if we accept that a causal relation holds wherever the relevant correlation holds, then it’s a possibility. Indeed, it may be that where x ontologically determines y, the two thereby stand in all the same causal relations. Kim himself proposed something like this for first-order realizations of second-order properties under the name, “the Causal Inheritance Principle”\textsuperscript{20}:

\begin{itemize}
\item[\textsuperscript{19}] Note how the diagram resembles Karen Bennett’s alleged counterexample to Causalism, figure 3.1, chapter 3, §3.2
\item[\textsuperscript{20}] Kim then applies exclusion reasoning to would-be second-order properties: “…the [exclusion] argument places the causal efficacy of [second-order] properties in jeopardy.” [Kim, 1998]: 55. Kim raised the principle in support of the claim that first- and second-order properties are identical. But his arguments assume ICI,
\end{itemize}
If a second-order property $F$ is realized on a given occasion by a first-order property $H$ (that is, if $F$ is instantiated on a given occasion in virtue of the fact that one of its realizers, $H$, is instantiated on that occasion), then the causal powers of this particular instance of $F$ are identical with (or are a subset of) the causal powers of $H$ (or of this instance of $H$). [Kim, 1998]: 54)

E3 claims that no cause of a given effect, call it $E$, is vertically determined by another cause of $E$. We proposed that it is motivated by the following argument and, primarily, the analogy to late preemption.

1. If $A$ causes $E$, then $A$ causes $E^*$
2. If $A^*$ occurs earlier than $A$ or if $A^*$ is more fundamental than $A$, then $A^*$ preempts $A$ in causing $E^*$
3. $A^*$ is more fundamental than $A$ (ex hypothesi)
4. $A^*$ preempts $A$ in causing $E$ (by 2,3)
5. $A$ does not cause $E^*$ (by 4)
6. $A$ does not cause $E$ (by 1,5)

In light of the distinction between kinds of vertical dependence, however, we can see that premise 2 is false. If $A$ existentially depends on $A^*$, then $A$ depends asymmetrically on $A^*$. But this asymmetry cannot underwrite Kim’s intuitions about causal dominance or the analogy to the temporal asymmetries found in late preemption. For we’ve just seen that the asymmetry of existential dependence does not entail an asymmetry in causal dependence. Just as nomic impossibilities are irrelevant to causal features (as we saw in chapter 3, §3.2), the features of existential dependence that outstrip modal dependence are irrelevant to causal dependence. It is consistent with this interpretation of “$A^*$ is more fundamental than $A$”,

and our conclusions in chapter 2 can be adapted to refute his conclusion: some instantiations of giving way are married to instantiations of giving way quickly.

21 Or it is at least ambiguous with at least one false interpretation. One might claim that 2 is true if $A^*$ is causally more fundamental than $A$. I am skeptical of this point for the reasons noted above: “If there’s use for concepts of causal fundamentality and derivation, or if those concepts refer to joints in nature, then it’s presumably because there’s more to the causal structure than just causes and their impotent derivatives.” If it’s true that every effect has a fundamental cause, all causal derivatives will be causally impotent.
then, that A* and A are ‘on a par’ causally speaking, and so neither one preempts the other. The consequent of 2 does not follow from its antecedent. If A* and A are married causes, for instance, then it is false.

Consider these three principles that use Kim’s ambiguous dependence relation. 1 is familiar; 2 is a requirement to forestall a non-fundamental would-be cause’s preemption by a fundamental cause; 3 follows from the nature of existential dependence.

1. “Horizontal” causation requires “downward” causation
2. Diachronic downward causation requires synchronic downward determination
3. There is no synchronic downward determination

In light of the distinction between kinds of vertical dependence, however, we can see that this argument commits the fallacy of four terms; it equivocates on downward determination. Moreover, in light of the non-asymmetry and promiscuity of causal dependence, we can see that causal determination may flow “downward” from a cause to its ontological determiner. If all the instances of “downward determination” refer to ontological determination, then (2) is implausible—why should an ontological determination relation be necessary for a causal dependence relation to hold? It shouldn’t. And if all the instances refer to causal determination, then (3) is simply false. There is no bar to synchronic downward causal determination.

Let me illustrate. Once again let A* and E* be fundamental, and let them vertically determine A and E respectively. (1) and (2) demand that if A is to cause E, then it must cause E* and downward determine A*. Since causal dependence is the issue here, it is presumably causal and not ontological determination that is needed from A to E* and from A to A*. Since causal dependence is promiscuous, A may cause E* simply by realizing

\[^{22}\text{Recall that “downward” here is meant simply to indicate that the dependence relation at hand would run against an ontological dependence relation that is “already in place” or already granted. Thus, (3) is not meant to be inconsistent with the view, for example, that macroscopic entities ontologically determine their microscopic parts—a determination that we might consider downward on the usual interpretation of the metaphor.}\]
the appropriate modal dependence relation. If the principle mentioned above holds—if A inherits A*'s causal powers—then A causes E*, since A* does by hypothesis. And, since causal dependence may hold symmetrically, there is no bar to A’s causally determining A*. Indeed, if x’s ontological determination of y is such that it guarantees \( x \leftrightarrow y \) in all the possibilities pertinent to actual causal relations, then, indeed, ontological dependence relations shall guarantee symmetric causal dependence relations. All of this is consistent with (3). (3) prohibits downward ontological dependence, and (1) and (2) are satisfied by positing only downward causal determination.

Figure 4.3: Non-Preempted Downward Causation

Finally, consider Kim’s mock up, where P vertically determines M and causes P*, P* vertically determines M*, and M allegedly causes M*. E2 claims that M* is overdetermined because it has a cause, M, and a vertical determiner, P*. But E2 is false for reasons similar to those that falsify E1: there is a causal chain running from M to P* to M*, and chains of causal dependence do not overdetermine or overdetermine their later links on their own. Similarly, the symmetric dependence between M and P is causal dependence, and there is thus a chain of causal dependence that runs from M through P and P* to M*. This does not defy the asymmetry of vertical ontological dependence because causal dependence is weaker than ontological dependence. Indeed, causal dependence is “cheap”: it is mere modal correlation. And it can thus hold symmetrically without paradox, at least for synchronic entities. And
so P may still ontologically vertically determine M even while M causally determines P and vice versa.

![Figure 4.4: Two Pairs of Married Causes](image)

4.5 Conclusion

I have argued that there is more to the problem of causal exclusion than the threat of overdetermination. As ICI would suggest, it attempts to motivate a criterion of identity and existence in terms of causal dependencies. As stated, ICI applies to all entities; related claims might be proposed for one or another ontological kind. Speaking of properties, John Hawthorne [Hawthorne, 2001], dubs the following view “causal structuralism”:

... there is, for each fundamental property, a causal profile that constitutes the individual essence of a property. That is, the profile is both necessary and sufficient for each property. [Hawthorne, 2001]: 362

Causal structuralism endorses a version of ICI that applies only to fundamental properties. Hawthorne contrasts this view with those holding that “there is something to a property—call it its quiddity—over and above its causal profile.” And he points out that a property’s quiddity is analogous to an individual’s haecceity:

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causal structuralism about properties is analogous to a view according to which some qualitative profile is both necessary and sufficient for being a particular individual and hence that haecceities are a fiction. (363)

The view is widely called “anti-haecceitism”. Accordingly, if an individual’s qualitative profile is identified with its causal profile, then anti-haecceitism endorses a version of ICI that applies only to individuals. Since this claim and its analogue for properties are weaker than ICI, either of them may hold while ICI fails. But so far as it’s plausible that individuals or properties may be married causes, so far are anti-quidditism and anti-haecceitism implausible.

I have followed others in arguing that causal dependence is inadequate to the task of ontological determination; it permits symmetries where an ontologically significant dependence relation should not. Moreover, I have proposed that token causal roles do not determine a full ontology. Contra ICI, I propose that in some cases, distinct entities play the same token causal role. In such cases, each entity causally depends on the other even while it’s plausible that one is ontologically prior to the other. I call these Married Causes. It is plausible that entities standing in any of the relations (i) - (iv) are married causes, but I have not defended this claim here; it stands on the intuitively plausible claims that (a) entities so related are not identical, but (b) they play the same token causal role, and (c) one relatum is ontologically prior to the other.

Perhaps Kim and proponents of anti-quidditism or anti-haecceitism would reject the distinction in varieties of vertical dependence defended here. Although I know of no one who has defended this claim or anything like it explicitly, it is plausibly one target in denying the difference between metaphysical and causal necessity, in affirming the metaphysical necessity of causal laws, and in claiming that causal powers are had essentially. Sydney Shoemaker, for one, seems to accept anti-quidditism on such grounds. Notice, however, that the first two considerations are pertinent only if we accept a modal/existential account of ontological
dependence. Even if causal necessity is metaphysical necessity, causal dependence may be
distinct from ontological dependence. The former is a form of modal/existential dependence
while the latter is not; it is a form of identity-dependence, or it involves metaphysical grounding, or it justifies explanatory or “in virtue of” relations, or whatever. Similar considerations
apply if causal laws are metaphysically necessary; ontological dependencies will still hold
asymmetrically between entities to which the laws apply equally. If entities have their causal
powers essentially, then the debate over ICI, exclusion, etc. must proceed through accounts
of essence and their relation to ontological dependence. I do not have space for a review
here of course, but we can note that, prima facie, the success of such a view would not, on
its own, justify ICI or anything like it. For it would not entail that causal powers suffice
for an entity’s essence, only that they are necessary. Contra ICI, entities with the same
causal powers could still be distinct; they could differ in additional essential features that
are non-causal.

On the basis of these considerations and the foregoing chapters, then, I conclude that
the Principle of the Identity of Causal Indiscernibles is false. I would also like to venture
a further metaphysical generalization: causal dependencies do not determine ontological
dependence, much less our ontology as a whole. Causal relations, rather, are abundant, and
their metaphysical role is not primarily ontological. Causal roles do not fully determine what
there is.
Bibliography


