Abstract: This paper gives a framework for understanding *causal counterpossibles*, counterfactuals imbued with causal content whose antecedents appeal to metaphysically impossible worlds. Such statements are generated by omissive causal claims that appeal to metaphysically impossible events, such as "If the mathematician had not failed to prove that 2+2=5, the math textbooks would not have remained intact." After providing an account of impossible omissions, the paper argues for three claims: (i) impossible omissions play a causal role in the actual world, (ii) causal counterpossibles have broad applications in philosophy, and (iii) the truth of causal counterpossibles provides evidence for the nonvacuity of counterpossibles more generally.

Omission Impossible

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Right now, you omit to do to many things: clean your office, write that overdue referee report, and throw the winning pitch in the World Series, to name a few. Omissions (roughly, events that do not occur) are *causally relevant*: because of them, your office is messy, an author waits in anticipation, and your dreams of being a professional baseball player remain unrealized.

In addition to the everyday things you omit to do, you also fail to do *impossible* things, such as prove that 2+2=5, and disprove that 5 is a prime number. Because of these omissions, mathematical laws remain intact, children's mathematics textbooks remain unchanged, and your bank account contains exactly what it does.

Impossible omissions raise important and deep metaphysical questions that span ontology, causation, and semantics: what *are* impossible omissions? Are metaphysically impossible events causally relevant to the actual world in the way that possible events are? Can counterfactual causal claims involving *impossibilia* be true or false non-vacuously?

This paper lays the groundwork for answering such questions. I provide a framework for understanding metaphysically impossible omissions and omissive causal statements, and argue that they are causally relevant to actual-world events. In Section 1, I provide some preliminary definitions and clarifications. In Section 2, I motivate and endorse the view that omissions are possibilities. I then extend my framework to account for metaphysically impossible omissions (Section 3.1). In Section 3.2 I argue that causal

counterpossibles are non-vacuously true and provide evidence for the non-vacuity of counterpossibles more generally. In Section 3.3, I suggest that impossible omissions play a causal role in the actual world. I then suggest that causal counterpossibles are philosophically helpful to a variety of debates.

1. Preliminaries

Counterfactuals are conditional subjunctive statements of the form "If *c* hadn't occurred, *e* wouldn't have occurred." *Causal counterfactuals* are such statements imbued with causal content; for example, "If I hadn't dropped the glass, it wouldn't have shattered." *Counterpossibles* are counterfactuals whose antecedents appeal to impossible worlds; for example, "If Hobbes had squared the circle, small children in rural Afghanistan would not have cared." The topic of my discussion will be *causal counterpossibles*: statements that are counterfactual, causal, and whose antecedents run contrary to metaphysical possibility. Causal counterpossibles are generated by *omissive* causal statements, or statements of the form "If x hadn't failed to y, z wouldn't have occurred." All causal counterpossibles are omissive, since impossibilities are never actualized.[1]

On the surface, such statements seem to be irredeemably abstract, or of no broader interest. But causal counterpossibles are of interest for two reasons. First, there has been a surge of interest in general counterpossibles in recent years; in particular, with respect to whether they can be true or false non-trivially. Second, causal counterpossibles generate intuitively true causal claims. Consider the mathematician who is scrambling to prove a prestigious theorem in order to win the Fields medal. After she fails, she begins talking about what would have happened if she hadn't failed to prove that 2+2=5: "If only I hadn't failed to prove that 2+2=5, that medal wouldn't have gone to my rival!," she exclaims. Intuitively, this statement and others like it seem true, and they deserve an account that can make sense of them.

Thus far, however, no one has analyzed these sorts of statements, for it seems

[1] For example, the counterfactual "If Billy hadn't squared the circle, the mathematicians wouldn't have been surprised" is causally infelicitous, since there is no metaphysically possible world in which he does square the circle.

unlikely that impossibilia can enter into causal relations. But given some simple assumptions about causation and causation by omission, impossible events play a causal role in the actual world. Or so I will argue.

Counterfactuals interact with problems about causation insofar as many take causal dependence to involve counterfactual dependence.[2] According to the standard Lewisian model, the counterfactual "If *c* hadn't occurred, *e* wouldn't have occurred" is true if the worlds closest to ours in which *c* occurs are worlds in which *e* also occurs. For example: "If Billy had not thrown the rock, the window would not have shattered," is true if the possible worlds closest to ours in which Billy throws his rock are also ones in which the window shatters. The literature on the counterfactual theory of causation is vast, and I will not recap it here. But I will assume that counterfactual dependence plays a central role in causation.

Finally, following Nolan (1997), Berto (2009), Yagisawa (1987), Van der Laan (2004) and Jago (2015), I will assume the existence and philosophical intelligibility of impossible worlds. I take no stand on what they are, but will assume that they can be ordered by similarity and ground the truth of statements with metaphysically impossible referents.

2. Omissions as Possibilities

To get a grip on impossible omissions, let us first begin with an ordinary omissive causal claim:

(Plant) If I hadn't failed to water your plant, the plant wouldn't have died.

There are several puzzles concerning such a claim. First: what, exactly, is the referent of the failure to water the plant? Second: is the omission causal? Third: what are the semantics for such a claim? I will briefly treat these questions in turn.

What is an omission? Omissions are not *actual* things, for there is no single event to which to reduce the omission. For example, suppose that the plant-watering takes

[2] See Lewis (1973, 1999), and more modern interventionist theories such as Woodward (2003).

thirty minutes. To which thirty-minute period does the plant-watering reduce?: 10-10:30am? 11:07-11:37pm? There is no single obvious candidate for the reduction base.

Omissions are not *non*-things, for then they cannot play the explanatory, causal, and predictive roles that they do.[3] Omissions play central roles in our scientific, metaphysical, and moral theories; thus a desideratum for a theory of omissions is that we model their existence accordingly.

The concept of an omission in a causal context is counterfactual: an omission is an event such that, had it occurred, another event would not have occurred. Thus I endorse an analysis according to which omissions are *possibilities*: specifically, an omission is a tripartite metaphysical entity composed of an actual event, a possible event, and a contextually specified counterpart relation between them.[4] For example: suppose that while I should have been watering your plant, I was instead singing karaoke. The omission is composed of my singing karaoke (the actual event), my watering your plant (the possible event), and a contextually specified counterpart relation between them. I will assume this account here in order to build on it.

A few clarifications will help make its details clearer. First: the account makes use of *de re* predication for events. Roughly, an event has the *de re* property P if it is possibly the event P. *De re* predication for events works much the same way it does for objects: just as a lump is possibly a statue, a particular event is possibly another event.
For example, my karaoke-singing is possibly a plant-watering; this paper-writing is possibly a sun-bathing.

Taking omissions to be possibilities requires the use of two major modal notions: counterpart theory, and distance from actuality. I'll describe both briefly.

I accept a counterpart relation between events, similar to the one Lewis holds for objects. Events are worldbound, but have counterparts at other possible worlds. Counterparthood is a matter of contextually specified similarity between events. For example, the omissive claim "Sara failed to water the plant" contextually identifies a salient similarity between the karaoke-singing and the plant-watering events (namely,

[3] Varzi (2006) suggests that omissions can provide causal explanations without referring to actual things.
[4] For an extended argument for such an analysis, see Bernstein (2014).

Sara's involvement.)

Omissive claims by nature specify this relationship. Even omissive claims that fail to make explicit reference to an actual event (for example, "There was no karaoke-singing") implicitly implicate an actual-world event ("There was no karaoke-singing *at the time and place it should have occurred* and *by the person that should have performed it*.") Omissive claims differ from *absences* insofar as the latter are straightforward negative existential quantifications over events. For example, "There was no karaoke singing" has an absential reading according to which no actual-world event is implicated. The same statement can have an absential or an omissive reading.

Like Lewis[5], I take distance from actuality to be a matter of similarity between worlds. A possible world in which everything is exactly the same as this one except that I have blue hair is more similar, and thus "closer", to this one than a world entirely made of onions.

Distance from actuality distinguishes between omissions and mere absences. Omissions, on my view, occur close to actuality; absences occur far from actuality. Absences are the entire class of things that don't occur. The threshold between an omission and an absence is vague. Consider the distinction at work in the following claims:

(a) I failed to water the plant.
(b) Barack Obama failed to water the plant.
(c) Abraham Lincoln failed to water the plant.

Intuitively, the reason that (b) and (c) seem strange is that the worlds in which Obama and Lincoln water the plants are much farther from actuality than the world in which I water the plant. My watering the plant is an *omission*, but Barack Obama's and Abraham Lincoln's failures are *absences*. There are strange contexts according to which Barack Obama's failure to water the plant counts as an omission (for example, he secretly promised to water it, but failed); but most contexts do not specify the relevant contextual

[5] See Lewis (1973a).

similarity between the event in which he is involved at the actual world (say, a speech to the UN), and the plant-watering.

The locution "x failed to y" most often indicates an omissive, rather than an absential, claim. While it is true that no one watered the plant, it seems strange to say that Barack Obama and Abraham Lincoln *failed* to water the plant. This is because the worlds closest to actuality are the ones in which I watered it. Closeness grounds truth conditions for omissive claims.[6]

Whether or not omissions are causes (as opposed to *causal explanations* or something merely "cause-like") is controversial. Those who hold *oomph* or process theories of causation cannot accommodate causation by omission, since there is no thing or event from which energy can by transferred. Counterfactual theorists, on the other hand, generally endorse causation by omission, for omissions easily fit into counterfactuals of the form "If I hadn't failed to water the plant, the plant wouldn't have died."

My view occupies a middle ground between denying causation by omission and granting omissions full efficacy: omissions are causally *relevant*. Relevance is a property an event has in virtue of being a counterpart of an actualized event and being located at a world reasonably close to actuality. Causal relevance is a kind of causal relationship that does not require "oomph" or transfer of energy but nonetheless grounds causal claims via counterfactual dependence.[7] I will not argue for this view in detail, but I will motivate it briefly.

Causally relevant omissions often play predictive, explanatory, and moral roles of causes *simpliciter*. By way of illustration, consider the following two cases:

(Button) Pressing a button at time *t* will cause a weapon to detonate and kill innocent civilians.

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[6] One might be worried that norms are doing the work in ordering worlds; for example, my promise to water the plant places the world where I do order it closer to actuality. But I do not take norms to order worlds. Anyone in close proximity to the plant could have watered it, and thus omissively causes its death. And there are true omissive claims involving no agents at all; for example, "The drought caused the famine" specifies the nearby world in which the rain does, in fact, fall.

[7] See my (2014) and "Possible Causation" (MS) for a view that possible and actual causation are determinates of a common determinable.

(Modified Button) Failing to press a button at time *t* will cause a weapon to detonate and kill innocent civilians.

Whether or not the weapon is detonated because I press the button or fail to press it, there are not important asymmetries between such causes. Either the button-pushing or the failing-to-push-the-button predicts whether the weapon will be detonated, and explains why it is. And I am morally responsible for the killing of the civilians in either scenario. For theoretical purposes, there is no principled reason to distinguish between causally relevant events and actual causes.

Causation theorists have struggled, in recent years, to generate a theory of causation that both vindicates "productive" intuitions—roughly, causation as a transfer of conserved quantity from one thing to another—with "dependence" intuitions—roughly, causation as counterfactual dependence between one event and another.[8] Productive intuitions track energy transfer and spatiotemporally local causal chains; for example, one domino knocking over another. Counterfactual intuitions largely track dependence without direct energy transfer: for example, my call to a friend in Tokyo causing her to pick up the phone.

Omissions do not participate in energy transfer or "production". But if we are to account for the causal status of omissions, then we must accept that their participation in true causal counterfactuals generally suffices for some sort of causal relationship. I call this relationship *relevance* so as not to confuse it with "oomph" causation, and also to suggest that which omissions turn out to be causally important is partly a matter of context. More on this below.

Recap: I've endorsed the view that omissions are *possibilities*; specifically, that an omission is a tripartite entity composed of an actual event, a possible event, and a contextually specified counterpart relation between them. Omissions are causally relevant to the actual world and ground true causal claims in virtue of participating in true counterfactuals. They are truth evaluable using a framework based on counterpart theory

[8] See Ned Hall's (2004) for more on this distinction.

and closeness of worlds.

3. Impossible Omissions

With this framework in hand, we can now move on to impossible omissions. Consider the following omissive claim:

"The mathematician failed to prove that 2+2=5."

Several questions arise. First: what is the referent of the impossible omission? Second: does the mathematician's failure to prove that 2+2=5 count as an omission in any informative sense? After all, none of us proved that 2+2=5. Does singling out the *mathematician's* failure communicate additional informative content? Further, there are countless things we are not doing at every moment; for example, none of us are dissolving into a horde of conscious dust particles. In what sense can we be said to be *failing* to do those things? Third: is the impossible omission causally relevant to the actual world?

3.1 Impossible Omissions Have Components at Impossible Worlds

Extending the preceding account of omissions yields the result that an impossible omission is one whose nonactual component occurs at a metaphysically impossible world. For example, suppose that the mathematician proved that 2+2=4 when she aimed to prove that 2+2=5. The omission is a tripartite entity composed of the actual event (proving that 2+2=4), the impossible event (proving that 2+2=5), and a contextually specified counterpart relation between them.

Impossible omissions differ from "normal" omissions in that context predicates of the actual event that its counterpart is located at an impossible world. An immediate problem arises: how can a counterpart relation obtain between an impossible event and a possible one? It is natural to think that all possible events are more similar to each other than any impossible one. If the counterpart relation is a matter of contextually specified similarity, then an impossible event must be more similar to an actual world event than a

possible one in order for the impossible event to count as its counterpart.

This idea violates Nolan's "Strangeness of Impossibility Condition" (hereafter: SIC). SIC holds that any possible world is closer to actuality than any impossible one. The idea is that any possible world, no matter how weird, is less weird than a world in which, for example, logical or mathematical laws don't hold. A possible world made entirely of onions is still less strange than the world exactly like ours in every respect except in which a mathematician secretly proves that 2+2=5.

The friend of impossible omissions should not abide by SIC. Context orders worlds by specifying relevant dimensions of similarity between events. For the purposes of omissive claims, the dimensions of similarity often involve a particular person (for example, *the mathematician*) or a particular activity (for example, *working on mathematical proofs*). Context naturally prioritizes these features over, for example, sameness of mathematical laws.

This picture isn't as counterintuitive as one might think. Consider the event of the mathematician proving that 2+2=4 and the impossible event of the mathematician proving that 2+2=5. Intuitively, these events are more similar to each other than is the former to a random basketball game in which the mathematician does not participate: we imagine the mathematician hunched over her desk in both cases, scribbling proofs and reveling in the joy of mathematical discovery. There is more similarity between the two proving events than there is between the mathematician's proof that 2+2=5 and the metaphysically possible event of the game.[9] (I will discuss this idea more in section 3.)

The account also allows for differential closeness of *impossibilia*. Such differences ground variance in the informativeness of impossible omissive claims. For on the surface, it seems that no impossible omission claim is truly illuminating: *no one* proved that 2+2=5, so what content is asserted by "The mathematician failed to prove that 2+2=5"?

The answer is that context specifies a particular dimension of similarity between

[9] Similar arguments have been made with respect to the comparative closeness of impossible worlds. Advocates for this view argue that there can be impossible worlds closer to the actual world than some possible ones. See Nolan (1997) for more on this point.

the actual event and the counterpart. To get a handle on this idea, consider the plant-watering example. While it is true that everyone failed to water the plant, there is a sense that *I* should have been the one to do it, given my promise. Similarly, while it is true that *everyone* failed to prove that 2+2=5, there is a sense that "If anyone could have done it, the mathematician could have." Just as the possible world in which I water the plant is closer than the one in which Barack Obama waters the plant, the impossible world where the mathematician proves that 2+2=5 is closer than the one in which the mathematically untrained student does.

This model also accounts for the hyperintensionality of impossible omissions. Hyperintensional phenomena arise when two entities are necessarily equivalent but not intersubstitutable *salva veritate*. For example, "2+2=4" and "4=4" are necessarily equivalent (given that they are both necessary), but they cannot be substituted *salva veritate*: I can believe one without believing the other. Similarly, impossible omissions are finer-grained than possible worlds: every possible world at which two plus two fails to equal five is also a world in which the circle fails to be square. But, intuitively, these are different omissions. Utilizing possible worlds exclusively doesn't distinguish between impossible omissions.

Deploying impossibilia provides a principled way to distinguish between them: the impossible world in which 2+2=5 is a different world in which the circle is square. These distinctions are appropriate for omissive statements, since one but not the other can be the subject of various beliefs, desires, and even causal claims. For example, suppose that the mathematician will *only* win the Field's Medal for proving that 2+2=5, but not for squaring the circle. Then "Had the mathematician not failed to prove that 2+2=5, she wouldn't have failed to win the Field's medal" is true, but "Had the mathematician not failed to square the circle, she wouldn't have failed to win the Field's medal" is false. Extending the account of omissions as possibilities to impossible omissions enables a distinction between hyperintensional causal statements.

3.2 Causal Counterpossibles are Non-Vacuously True or False

So far I have focused on the metaphysics and semantics of omissive claims without specific reference to their role in causation. Before turning to this topic, it will be helpful to discuss the truth conditions of counterpossibles more generally.

The central debate over counterpossibles concerns their *vacuity*. Vacuists hold that all counterpossibles are vacuously true in virtue of the impossibility of their antecedents. Generally, two reasons are given. First, there are no *c* worlds in which *e* occurs, because there are no possible *c* worlds simpliciter. Second, if the antecedent is impossible, "anything goes." For example, a world in which 2+2=5 doesn't seem to rule out any sort of consequent: it might be plausible that a world in which mathematical laws are different is one in which squaring the circle causes trees to bloom.

Non-vacuists, in contrast, hold that counterpossibles can be true or false non-vacuously.[10] There is powerful intuitive evidence for non-vacuism. Consider the following paradigmatic contrast cases drawn from Nolan (1997):

> (a) If Hobbes had squared the circle in private, sick children in the mountains would not have cared.
> (b) If Hobbes had squared the circle in private, then the trees would have blossomed early.

Intuitively, (a) seems non-trivially true and (b) seems non-trivially false. If the mathematical laws had been proven false, sick children would not have been interested. But it does not seem true that if geometric laws had been proven false, cherry trees would have blossomed: even given the impossible antecedent, there isn't an obvious logical relationship between the squaring of the circle and the blossoming of the trees. Non-vacuists take these intuitive differences to signal that some counterpossibles can both differ in their truth conditions, and do so non-vacuously.

This lesson can be extended to causal counterpossibles. Consider:

> (a) If the mathematician hadn't failed to square the circle, the geometry textbook

[10] Non-vacuists include Nolan (1997), Brogaard and Salerno (2007), Krakauer (2012), and Bjerring (2014).

would not have remained intact.

(b) If the mathematician hadn't failed to square the circle, the school bus would not have remained yellow.

Intuitively, (a) is a true causal claim and (b) is a false causal claim. There is a causal relationship between squaring the circle and the content of geometry textbooks, but there is not a causal relationship between squaring the circle and the color of schoolbusses. Note also that (a) is causally *informative* in a way that (b) is not: it gives us true information about the difference-making capacity of squaring the circle. The geometry books remain intact because Hobbes hasn't violated them. Such cases are evidence that impossible omissions are informative, non-trivial, and non-vacuous.

3.3 Impossible Omissions are Causally Relevant

In Section 2, I suggested that omissions are *causally relevant*. To be causally relevant is to exhibit a causal relationship in virtue of counterfactual dependence even if transfer of energy is not present. I also suggested that causally relevant omissions play roughly the same predictive and explanatory roles as "normal" causes.

Similarly, impossible omissions are causally relevant to the actual world in virtue of their participation in true causal counterfactuals. The mathematician's failure to prove that 2+2=5 is causally relevant to the mathematical laws remaining intact (and myriad other results, like her colleagues' mathematical proofs remaining correct, math textbooks remaining unchanged, and so on.) For example, the following causal counterpossibles are intuitively true:

(a) If the mathematician hadn't failed to prove that 2+2=5, children's math textbooks wouldn't have remained the same.

(b) If the mathematician hadn't failed to prove that 2+2=5, she wouldn't have failed to get a raise.

(c) If the mathematician hadn't failed to prove that 2+2=5, her mentor wouldn't

have remained unimpressed.

Here, the mathematician's failure has tangible results: children's math textbooks remain intact, her salary remains the same, and her mentor remains unimpressed. If we accept that the truth of counterfactuals is enough to generate causal relevance, there are no principled reasons for barring impossible events from this relationship.

Now, one might be skeptical of this claim for several reasons. Most obviously, one might doubt the metaphysical potence of *impossibilia*. It is natural to hold that *impossibilia* cannot explain or cause anything at the actual world. Like the idea that numbers cannot mathematically explain, there is resistance to the idea that metaphysically bizarre entities cause and explain actual world events.

But for our purposes, *impossibilia* are no stranger than *possibilia*. We should be modal egalitarians. If one already buys that normal counterfactuals ground causation and causal explanation, one automatically accepts that a modal, multiworld framework is required to make sense of causation. The most ordinary of causal claims—"If *c* hadn't occurred, *e* would not have occurred" already requires appeal to something in addition to the intrinsic relation between *c* and *e*. Nor does this counterfactual dependence relationship require or even suggest a transfer of conserved quantity between *c* and *e*. Given this, the friend of counterfactuals has no principled reason for barring impossibilia from her causal framework if she already accepts possibilia.

Modal egalitarianism should also be extended to the use of impossible worlds in explanation. If the fact that *c* causes *e* is explained by the nearest possible *c* worlds being *e* worlds, then it is not much of a leap to accept that impossible *c* worlds play the same role. If one is already a friend of utilizing "normal" counterfactuals in explanation, then one should be equally amenable to the explanatory power of *impossibilia*.

A thought experiment might help bring this out. Consider an all-knowing being that has a god's eye view of the pluriverse. And suppose that the being wants an explanation of why the children's mathematics books are the way they are in this world. There is no information to be gained by looking only at the metaphysically possible worlds, for in all those worlds, the mathematics books are the same. Only examining

impossible worlds provides the contrast necessary to explain why the math books are the way they are.

One might also be skeptical that such causal counterpossibles arise in ordinary discourse at all. But such claims are commonplace and easily entertainable. Consider the case in which Walter challenges me to a bet: he will pay me $1000 only if I can state a true contradiction; if I fail, I must pay him $1000. I fail and lose the bet. The counterpossible

If I hadn't failed to state a true contradiction, I wouldn't have lost the $1000.

is true.

Or suppose that you would like to attend colloquium talks in Durham and in Chapel Hill, only to learn that they are concurrent. Then you might think:

> If I hadn't failed to be spatially bilocated, I would not have missed the colloquium talk.

While this kind of causal counterpossible reasoning seems initially strange, it is actually quite commonplace to explore the range of impossibilities in addition to the space of possibilities. Who hasn't wondered, on her busiest day, what would have happened if bilocation were possible?

One might object that causal counterpossibles are only true in virtue of the *general* impossibility of their antecedents. Thus any *specific* counterpossible fails to be informative. In other words, it is the general fact of metaphysical impossibility, rather than the specific omission, that explains a given outcome. The children's math textbooks remain intact because it is impossible to prove that 2+2=5 *in general*, but not because the mathematician failed to prove so specifically.

But we should resist this idea for several reasons. First, context plays a role in specifying which events are omissions. Thus it is semantically informative and true that the mathematician failed to prove that 2+2=5, but not true that the untrained student failed to prove that 2+2=5. The semantics of the term "failure" divides the omissions from the mere absences.

Second, not every counterpossible has such a general fact to which to appeal. Suppose that there is a medal—call it Medal X—created specifically for the mathematician. Only she can win it; and she can only do so if she proves that 2+2=5. Now consider:

> If the mathematician hadn't failed to prove that 2+2=5, then Medal X would not have gone unclaimed.

Here, the best explanation for why Medal X is unclaimed is that the mathematician failed to prove that 2+2=5, *not* the more general explanation of such a proof's impossibility.

One might be similarly tempted to reduce impossible omissions to less outré failures. Reconsider Walter's bet, and why I lost the $1000. Rather than accept that it was my failure to state a true contradiction that caused the loss, it is tempting to reduce the cause of the loss to some other, more general fact, like my failure to understand the basic laws of logic. The idea is that one can reduce the metaphysically impossible antecedent to a possible one, generating a "normal" counterfactual such as:

> If I hadn't failed to understand the laws of logic, I wouldn't have lost the bet.

But this less strange fact does not automatically generate true counterfactuals concerning the bet. For example, suppose that I *do* understand the basic laws of logic, but still accept the bet. (Perhaps I am unwise, or I do not want to hurt Walter's feelings.) Then the following counterfactual is false:

> If I hadn't failed to understand the basic laws of logic, I wouldn't have lost the $1000.

It is false because I understood the basic laws of logic and still lost the $1000. The lesson is that counterpossibles play a unique and irreplaceable role in some forms of causal reasoning.

4. Causal Counterpossibles are of Broader Use in Philosophy

Metaphysics has already begun to make light use of causal counterpossibles. Fine[11] uses them to make sense of the notion of essence; Krakauer (ms) uses them to make sense of fundamentality. But causal counterpossibles are useful for a range of wider philosophical topics. I will now set aside omissive counterpossibles to look at broader applications of causal counterpossibles for metaphysics of mind, metaethics, and epistemology.

Causal counterpossibles are particularly useful in illuminating the metaphysical status of supervenient entities without their subvenient bases. Consider the mental causation debate, which partly concerns the modal relationship between a physical property, P, and its supervening mental property, M. Many hold that it is metaphysically impossible that P occur without M. Consider:

If P and M hadn't co-occurred, the arm wouldn't have been raised.

Here, there is no metaphysically possible world where P occurs without M. The causal counterpossible is informative insofar as it tells us about mental causation at the actual world: both causes are necessary to bring about the raising of the arm.

Or consider Bennett's (2003) counterfactual test for overdetermination, according to which a physically caused outcome *e* is overdetermined only if the following counterfactuals are true and non-vacuous:

(O1) If M had happened without P, *e* would still have happened.
(O2) If P had happened without M, *e* would still have happened.

Bennett takes a counterfactual to be automatically vacuous when its antecedent appeals to an impossible world. Given the necessitation of M by P, then, she argues that (O2) is

[11] See Fine (1994), (1995), and (2012).

vacuous. She writes:

> "If one of the causes guarantees the existence of the other, there is no issue about skipping over some worlds to get to one where the antecedent of the relevant overdetermination counterfactual holds. There are no further worlds to skip to. To put the point more formally: if one of the causes necessitates the other, if it is at least metaphysically impossible for the one to occur without the other, then one of the overdetermination counterfactuals will come out vacuous. And there is something to be said for the idea that the vacuity of one of them means that the effect is not overdetermined." (Bennett, 2003)

In evaluating whether the mental and the physical overdetermine the physically caused outcome, Bennett argues that we should automatically skip over the impossible worlds to the possible worlds where P modally necessitates M.

But this picture changes if we take impossibilia seriously. For a causal counterpossible will illuminate the causal contribution of the mental cause in a way that evaluating the co-necessitation worlds cannot. Consider a typical example of causal overdetermination in which Billy and Suzy are individually poised to shoot Victim. Billy and Suzy each shoot Victim; either bullet would have been independently sufficient to kill Victim; Victim dies. Suppose that we want to know precisely how Suzy's bullet contributes to Victim's demise. In order to evaluate the causal capacity and contribution of Suzy's bullet, we examine the nearest possible world in which only Suzy shoots Victim. Looking only at worlds in which both causes occur is not informative, because those worlds fail to isolate the causal contribution of Suzy's bullet.[12]

Similarly, informative metaphysical facts about mental causation stem from the impossible worlds which allow evaluation of the causal capacity and contribution of the mental property M *without* the presence of the physical realizer P. Ignoring impossible worlds while paying attention to co-occurrence worlds is equivalent to looking only at the worlds in which Billy *and* Suzy shoot Victim. Co-occurrence worlds do not provide information about the causal capacity of the mental cause.

[12] I discuss this point in further detail in my Bernstein (forthcoming).

When investigating the causal capacity of the mental cause apart from its physical realizer, impossible worlds are the only options.

Similar causal counterpossibles can be constructed about the relationship between moral facts and non-moral facts. Suppose that there can be no moral facts without non-moral facts. Now consider:

> If moral fact M had existed without its subvenient base of non-moral facts, the world would have been different.

Here, examining worlds in which moral and non-moral facts co-occur does not yield any new information about the status of moral facts. Rather, the informative worlds are the impossible ones in which the moral facts exist without the non-moral facts: only they speak to the metaphysical status of the entities in question.

Taking these sorts of causal counterpossibles seriously also yields interesting results with respect to metaphysical entities whose explanatory power is a source of controversy. Consider the controversy over the explanatory power of moral facts. Harman[13] holds that moral facts do not figure into causal explanations. Sayre-McCord (1988) sums up the problem thusly:

> "Consider two situations […]: In one, a person goes around a corner, sees a gang of hoodlums setting a live cat on fire, and exclaims, "There's a bad action!" In the other, a person peers into a cloud chamber, sees a trail, and exclaims, "There's a proton!" In both cases, part of the explanation of why the report was made will appeal to the movements of physical objects, and the effects these movements have initially on light and eventually on the observers' retinas. A more complete explanation would also have to make reference to the observers' psychological states as well as the background theories each accepted. […] But, the argument goes, we will not explain the moral judge's belief that burning the cat is wrong by appeal to the wrongness of the act."

The problem is that moral facts appear to be explanatorily impotent: any explanation of moral reactions fails to include moral facts themselves.

Causal counterpossibles can be of service here. Suppose that moral facts are

[13] Most famously, Harman (1979).

supervenient on nonmoral facts. And suppose that the wrongness of killing the cat is moral fact M. Further, let M be supervenient on a particular group of nonmoral facts N. Now consider:

> If nonmoral fact N occurred without moral fact M, killing the innocent cat wouldn't have been wrong.

Here, the antecedent appeals to an impossible world in which N occurs without M. Like the mental causation case, evaluating this causal counterpossible is valuable insofar as it tells us about the contribution of the moral fact absent its subvenient base. The moral fact M may not *directly* figure into causal explanations, but its counterpossible absence makes a difference to the wrongness of killing the cat.

Similar causal counterpossibles can be generated and applied to debates in epistemology, philosophy of biology, economics, and other controversies surrounding the causal contribution of supervenient entities. Causal counterpossibles open new avenues of exploration for any debates that center around the metaphysical status of necessarily co-occurring phenomena.

5. Conclusion

This paper has provided a framework for understanding metaphysically impossible omissions. An impossible omission is a three-part entity composed of an actual event, an impossible event, and a contextually specified counterpart relation between them. Such an account grounds truth conditions for omissive claims that involve impossibility, and explains why and how such claims are informative and non-vacuous. I argued that the friend of causal counterfactuals should also be a friend of causal counterpossibles. Causal counterpossibles suggest that impossible omissions are causally relevant to the actual world.

Paying attention to causal counterpossibles is a natural next step following the recent spate of interest in counterpossibles and *impossibilia*. Causal counterpossibles can be put to use in other areas of philosophy, and especially to those that center around

supervenience or dependence claims. Causal counterpossibles open new avenues of investigation.

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