



October 2023

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Recommended Citation

West, Evan (2023) "Would-Be Counterfactual Dependence, Binary Causation and the Causality of Absences," *International Journal of Undergraduate Research and Creative Activities*: Vol. 4: Iss. 2, Article 13.

Available at: <https://digitalcommons.cwu.edu/ijurca/vol4/iss2/13>

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Abstract

Metaphysics has long taken for granted that causation is a binary relation. Recently, theories have arisen which challenge this claim. Such theories claim that some metaphysical problems regarding causation can be solved by taking causation to be ternary or quaternary. I respond to an argument that a quaternary formulation of causation can help resolve the causality of absences paradox (CAP). I reject this claim and propose an alternative solution to the CAP, which I argue is both consistent with a binary formulation of causal relations and preferable to the solution which a quaternary formulation allows for.

Would-Be Counterfactual Dependence, Binary Causation and the Causality of Absences

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Published online: 07 June 2012

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Abstract

Metaphysics has long taken for granted that causation is a binary relation. Recently, theories have arisen which challenge this claim. Such theories claim that some metaphysical problems regarding causation can be solved by taking causation to be ternary or quaternary. I respond to an argument that a quaternary formulation of causation can help resolve the causality of absences paradox (CAP). I reject this claim and propose an alternative solution to the CAP, which I argue is both consistent with a binary formulation of causal relations and preferable to the solution which a quaternary formulation allows for.

Metaphysics has generally assumed causation to be a binary relation: c causes e . Metaphysical accounts that make this assumption generally proceed by constructing a bi-conditional statement of the form c causes e iff $c R e$, where R is some relationship that holds between c and e , and by identifying the value of R .¹ Arguments for these accounts have focused almost exclusively on the proper value of R . This focus is unsurprising given the consistency between the first part of the bi-conditional and the common assumption that causation is binary.

Recently, metaphysical accounts that challenge this assumption have emerged.² Schaffer (2005: 327) advances such an account. Rejecting the assumption that causation is binary, Schaffer argues that causation is a contrastive and quaternary relation: c rather than c^* causes e rather than e^* , where c^* and e^* are non-empty sets of contrast events. He argues (329) that such an account helps to resolve five types of paradoxes that emerge when one considers: whether absences are causal, whether events are fragile, whether causation is extensional, whether causation is transitive, and whether selection of the cause is objective. I focus solely on the first of these arguments — that is, his claim that the causality of absences paradox (CAP) motivates acceptance of a quaternary account of causation. I argue that the CAP does not motivate acceptance of such an account. I do so by advancing a solution to the CAP, which is both preferable to the solution provided by a quaternary account and compatible with binary causation.

First, I flesh out the CAP. Then, I explain how Schaffer's account of quaternary causation attempts to resolve the CAP. Then, I advance an alternative solution to the CAP and show that this solution is consistent with a binary account of causation. Finally, I argue that Schaffer's solution is problematic because it cannot give an account as to how one can derive the proposition expressed by a sentence containing a negative nominal from the structure of the sentence itself. The ability to derive the proposition expressed by a bit of language from the bit of language itself is necessary to explain why one can understand the propositions expressed by novel bits of language. The solution that I advance can

easily provide an account as to how this is possible for sentences containing some negative nominal or other.

To ensure that the differences in our conceptions of causation differ solely in arity,³ I will proceed under all of Schaffer's non-arity related assumptions (328-29) regarding causation. The first is that causal relata are actual, world bound, concrete events or sets thereof. The second is that counterfactual dependence is a sufficient test of causal relatedness (i.e. R is counterfactual dependence). R 's form differs in binary and quaternary contexts. A binary account of causation which takes R to be counterfactual dependence has the form: c causes e iff if $\sim c$ then $\sim e$. A quaternary account that does so has the form: c rather than c^* causes e rather than e^* iff if c^* had occurred then e^* would have occurred. This difference is not fundamental, however, as c and e in a binary account indicate the same events as c^* and e^* in a quaternary. Though it is irrelevant for a binary account, it is important to note that Schaffer also assumes that c^* and e^* are fixed by the context in which causal inquiry occurs only in positive causal claims. From these assumptions and the assumption of binarity, we arrive at the following formulation of causation: (1) c causes e iff if $\sim c$ then $\sim e$, where c and e are actual events.

For the same reason that I proceed under Schaffer's assumptions, I use Schaffer's formulation of the CAP. The CAP emerges when one considers whether negative nominals (e.g. 'the gardener's not watering my flowers') denote things that can be causal relata. Schaffer identifies four reasons for accepting that they do (329). (a) In some cases it is intuitively acceptable that they do (e.g. 'The gardener's not watering my flowers caused my flowers to wilt.'). (b) Negative nominals can play a predictive or explanatory role (e.g. they can be invoked to explain why my flowers wilted). (c) Negative nominals are sometimes considered causal in moral and legal contexts (e.g. 'the father's not feeding his infant'). (d) They mediate causation by disconnection (e.g. decapitation causes the blood's not flowing which causes brain death).

There are several reasons for denying that negative nominals denote causal relata as well (330). (a) There are some cases in which it is intuitively unacceptable that they do (e.g. 'The Queen of England's not watering my flowers caused them to wilt.'). (b) Negative nominals cannot seem to denote causal relata in principle. (c) Absence causation is metaphysically problematic (i.e. there is no energy that connects the wilting flowers to the gardener's not watering, and this violates the spatio-temporal continuity of macro-causation). Of these reasons, the claim that negative nominals cannot denote causal relata in principle requires elaboration.

Are the things that negative nominals denote such that they can be causal relata? If we assume they are, there seem to be three possibilities as to the sort of things that they can denote. (a) Negative nominals denote non-actual events. (b) They denote actual facts. (c) They denote actual events. All three possibilities are problematic. If negative nominals denote non-actual events, then both of our original assumptions are violated, the first because non-actual events are not actual concrete events and the second because R can no longer be counterfactual dependence because assuming the nonoccurrence of non-actual events leaves us with an actual event. And an actual event does not entail the nonoccurrence of another actual event (i.e. if $\sim c$ then $\sim e$ is not identical to if $\sim\sim c$ then $\sim e$). If negative nominals denote actual facts, we violate our first assumption because facts are not events. If negative nominals denote actual events, then our second assumption is violated. For 'The gardener's not watering' to denote an actual event, it must denote something other than non-watering. It would have to denote the event that occurred instead of the watering. If the gardener were taking a nap, the negative nominal would denote the actual event of the gardener napping. The nonoccurrence of the gardener napping, however, does not

entail the nonoccurrence of my flowers wilting, because the gardener might have done any number of other things rather than water my flowers. Thus, it seems that negative nominals both can and cannot denote causal relata. The CAP is as follows (331); (a) Intuition accepts that some absences are causal. (b) Absences play explanatory causal roles. (c) Absences play legal and moral causal roles. (d) Absences mediate causation by disconnection. (e) Intuition rejects some absences as causal. (f) Negative nominals cannot denote causal relata in principle. (g) Absence causation is metaphysically problematic.

Schaffer's solution (331-32) treats negative nominals as denoting actual events. Absence talk is seen as functioning to set the proper contrast to a possible, but non-actual event. (2) 'The gardener's not watering my flowers caused my flowers to wilt' really denotes a proposition like: the gardener's napping rather than watering my flowers caused my flowers to wilt rather than flourish. This reconciles a-g in the following way. f is resolved because negative nominals denote actual events. The fact that they denote such is no longer a problem because the contrast allows for the appropriate formulation of counterfactual dependence. Rather than $\sim c$ and $\sim e$, we have c^* and e^* . As long as c^* and e^* are would-be counterfactually dependent, there is no problem. Would-be counterfactual dependence is the relationship that holds between possible events which would be counterfactually dependent if actual. a-d are resolved as follows. Causal sentences containing negative nominals can be true, so some should be acceptable. The predictive role of causes is preserved (e.g. The gardener's napping rather than watering my flowers serves to predict or explain why my flowers wilted rather than flourished). The legally responsible father's legal responsibility is dependent on the truth of a statement like 'The father's watching television rather than feeding his child caused his child to starve rather than be nourished.' Schaffer's account even preserves causation by disconnection (e.g. the murderer's decapitating his victim rather than shooting him in the leg caused his victim's brain to shut down rather than work properly which, in turn, caused the victim to die rather than live). The claim that c^* and e^* are would-be counterfactually dependent reconciles the problem of macro-causation as well. In any possible case in which c is absent, c^* is present. Thus, if c and e aren't causally related, c^* and e^* are. These arguments allow us to conclude that negative nominals do denote causal relata and explain away our reasons for thinking they do not.

My resolution of the CAP denies that negative nominals denote causal relata. Rather, they denote only possible, but non-actual events. In sentences containing negative nominals and possible events 'cause' does not have its normal meaning. It does not claim counterfactual dependence between two actual events, but claims that the two possible events are would-be counterfactual dependent: if $\sim c$ then $\sim e$ and that $\sim c$. (2), then, has the general form if ($\sim c$ then $\sim e$) and $\sim c$. e would be counterfactually dependent on c if actual. In this case, c is the gardener watering, and e is the flowers' flourishing. This solution is consistent with (e), (f), and (g) because it denies that negative nominals denote causal relata. To resolve the paradox satisfyingly, it is necessary that it provide some response to (a), (b), (c), and (d).

Given this denotation (c) is explainable as follows. Take for example the sentence, 'The father's not feeding his infant caused his infant to die.' In this case we take there to be a possible event e , the infant living, that the father is responsible for bringing about. There is an assumption that e is would-be counterfactually dependent on c , the father feeding the infant, and a claim that $\sim c$. Thus, the father is held responsible for not bringing about c and, therefore, failing to produce the desired event e . If the child's living was not would-be counterfactually dependent on the father's feeding him (\sim (if $\sim c$ then $\sim e$)) or the father fed him (c), then the father is not at fault.

(b) is explainable in a similar way. Why did my flowers not flourish (i.e. $\sim e$)? Because my flowers'

flourishing is would-be counterfactually dependent on the gardener's watering them (if $\sim c$ then $\sim e$) and it is not the case that he watered them ($\sim c$). Therefore the gardener's not watering my flowers caused my flowers not to flourish (to wilt) ($\sim c$ therefore $\sim e$). In this way, this denotation of negative nominals allows them to retain their explanatory role. (d) is solved in the same way as the crux of the problem is similar — that is, negative nominals are sometimes needed to explain how decapitation leads to the death of the brain (because it is not the case that the blood flowed).

This denotation also explains why it is intuitively acceptable for some negative nominals to denote causal relata and not others. The difference is an assumption of would-be counterfactual dependence. In (2), we assume that the flowers' flourishing is would-be counterfactually dependent on the gardener's watering. We do not make the same assumption in 'The Queen of England's not watering my flowers caused my flowers not to blossom.' In both cases $\sim c$ and $\sim e$ are true. However, the latter doesn't include the necessary conditional premise if $\sim c$ then $\sim e$. This analysis is also consistent with our intuitions. The reason that 'The Queen of England's not watering my flowers caused my flowers not to flourish' seems absurd is not because it seems absurd to attribute causal powers to the Queen of England's actions. Rather, it seems absurd to think that the flourishing of my flowers relies (is would-be counterfactually dependent or counterfactually dependent) on her actions. At first, it may seem like this solution is simply vacuously compatible with binary causation as it makes no causal claims at all. Indeed, there are no actual causal claims made. There are, however, would-be causal claims. If we take causation to be a relationship of counterfactual dependence, and also claim that two possible events are would-be counterfactually dependent, we make the claim that two possible events are would-be causally related. Since we are only talking about two events, possible or actual, there remains no need to reject that causation is a two-place relation.

In order to fully understand the problem that Schaffer's solution encounters when it attempts to derive the proposition expressed by a sentence like (2) from the structure of (2) itself, one needs to be familiar with some claims which are commonly made in modern semantics. I do not intend to argue for these claims at this time; I simply stipulate their truth.

- S1: The meaning of a declarative sentence is the conditions under which the proposition it denotes is true.
- S2: If two sentences have different meanings, then they are not identical.
- S3: All declarative sentences have meaning.

Assume that Schaffer's solution is correct. Negative nominals can denote casual relata, and sentences like (2) denote a proposition with the form: c rather than c^* caused e rather than e^* . The values of c^* and e are determined explicitly by the sentence. (2) denotes a proposition with the form c rather than my gardener's watering my flowers caused my flowers to wilt rather than e^* . How, then, are the values of c and e^* determined for a given utterance? I can think of three possibilities. They are determined by actual events, thoughts of the utterer, or arbitrarily.

If they are determined by actual events, then (2) will denote a proposition with the form: the gardener's napping rather than watering my flowers caused my flowers to wilt rather than flourish iff the gardener's napping really was the event which precluded his watering my flowers, and my flowers would have flourished had he watered them. This is problematic for two reasons. The first is that the flowers' flourishing is only a possible event, not a real one. Therefore, there is nothing in the actual world that would supply it as a value of e^* . The second problem is that it precludes the possibility of the

proposition expressed by an utterance to be determined by the thoughts of the utterer. What if the utterer thought that the gardener had been dancing rather than napping? The proposition expressed by his utterance cannot have the form the gardener's dancing rather than watering my flowers caused them to wilt rather than flourish because, in fact, the gardener was napping. A proposition of this form, however, is exactly what the utterer seems to intend.

One also encounters a problem if he takes these values to be supplied by the utterer's thoughts. The problem here is that it precludes the possibility of people uttering sentences like (2) which are meaningful if they have no thoughts about what the gardener might have been doing instead. This seems like an unnecessary condition for making such utterances. Furthermore, it places an unnecessary condition for understanding the propositions expressed by such utterances as they are meaningless to all those who cannot directly access the utterer's thoughts.

It does not seem that the values can be supplied arbitrarily either. If they could, an utterance of (2) might express the proposition the gardener's shaving rather than watering my flowers caused my flowers to wilt rather than flourish or the proposition the gardener's napping rather than watering my flowers caused my flowers to wilt rather than flourish. These propositions have different truth conditions and, thus, the meaning of (2) is, in principle, indeterminate. It should be noted that S2 precludes the possibility that (2) denotes both possibilities at once. Consequently, it seems as if there is no acceptable way to supply the values of c and e^* for any utterance of (2).

One might wonder whether we need to supply values for c and e^* at all. Why not just allow for the proposition expressed by (2) to contain some variables. (2) simply denotes a proposition with the form the gardener's (x) rather than watering my flowers caused my flowers to wilt rather than y . This solution is problematic because it allows (2) to denote something containing free variables. Because it contains free variables, it cannot be truth apt. If it is not truth apt, then there are no conditions that make it true. Thus, (2) is meaningless. (2), however, is clearly a declarative sentence and, thus, cannot be meaningless.

One might argue that we can allow the proposition expressed by (2) to contain only variables bound by quantifiers: there exists an x such that x was done by my gardener and x precludes my gardener's watering and x caused my flowers' wilting rather than y . There are still problems with this proposition. y is still free. Thus, the proposition still has no truth conditions. Furthermore, it is unclear whether y can be bound by an existential quantifier as y is necessarily non-existent.

My solution avoids all of these problems by having utterances containing negative nominals denote a proposition with a form that is wholly derivable from the form of the utterance. Sentences like (2) denote propositions with the general form if ($\sim c$ then $\sim e$) and $\sim c$. c is supplied by the first nominal in all cases (in (2) it is supplied by 'the gardener's watering'). $\sim e$ is always supplied by what comes after 'cause' (if it is explicitly negated) or the antithesis of that (if it is not). In (2) what comes after 'cause' is 'my flowers to wilt.' Since there is no explicit negation, e is supplied by the antithesis, which is 'my flowers to flourish.'

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¹ One such account is advanced by David Lewis (1973)

² Van Fraassen (1980) and Hitchcock (1996) both argue that causation is a three-place relation. Both do so with an appeal to contrast. Van Fraassen argues that causation requires a contrastive possible effect. Hitchcock argues that causation requires a contrastive possible cause.

³ The number of arguments a predicate or relation takes. For example, small has an arity of one, as it is a property of a single entity. Kicks has an arity of two because it is a relationship between two entities.