

CAUSAL OVERDETERMINATION AND
COUNTERFACTUALS REVISITED*

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In an earlier paper,¹ I introduced the technical term 'C-condition'. Intuitively, event a is a C-condition of event b if and only if a is a cause of b or a is a causal overdeterminant of b . I then provide analysis of ' a is a cause of b ', ' a is a causal overdeterminant of b ', and ' a is a C-condition of b ', in the contexts of each of three different approaches to the analysis of singular causal statements: analyses in terms of necessary and sufficient conditions, in terms of natural laws, and in terms of counterfactuals. John O'Connor has produced an alleged counterexample to my analysis of 'C-condition' on the counterfactual approach.²

To state that analysis, I must introduce some terminology. A single event is a special case of a disjunction of events with only one disjunct. A disjunction of events D depends counterfactually on a disjunction of actual events $a_1 \vee \dots \vee a_n$ just in case: if none of a_1, \dots, a_n had occurred, D would not have occurred; and if any non-empty subset of a_1, \dots, a_n had occurred, D would have occurred.

A disjunction of events is a simultaneous-disjunction of events if and only if all its disjuncts occur simultaneously. A finite sequence of actual simultaneous-disjunctions of events D_1, \dots, D_n is a counterfactual chain just in case: D_2 depends counterfactually on D_1, \dots , and D_n depends counterfactually on D_{n-1} . Then a is a C-condition of b just in case

- (i) there exists a counterfactual chain from a simultaneous-disjunction of events that includes a (as a disjunct) to event b .³

In route to stating this analysis, I produced the following case.⁴ Harry puts a lethal quantity of poisonous light white mushrooms in the soup (event a_1), and Harry puts a lethal quantity of poisonous dark white mushrooms in the soup (a_2). In addition, Harry puts a lethal quantity of poisonous brown mushrooms in the soup (a'). The white mushrooms (light and dark) contain a substance which neutralizes the poison in the brown mushrooms. Harriet eats the soup; Harriet dies (b). Intuitively, we want these results: both a_1 and a_2

are causal overdeterminants (and hence C-conditions) of b ; but, since the brown mushrooms are neutralized, a' is neither a cause nor a causal overdeterminant (and hence not a C-condition) of b .

O'Connor rightly points out that I do not explicitly show how my counterfactual analysis of ' a is a C-condition of b ' yields these results. He states that nevertheless

... it is possible to reconstruct [Loeb's] reasoning. To do so we must refer to intermediate event i : Harriet's ingestion of a lethal quantity of white mushrooms. (See 541.) Loeb would presumably argue as follows: First, there is a simultaneous-disjunction of event with a single member i which counterfactually depends upon a simultaneous-disjunction of events $a_1 \vee a_2 \dots$, and further b counterfactually depends upon i . Hence, by (i), a_1 and a_2 are C-conditions of b . Second, i is not counterfactually dependent upon $a_1 \vee a_2 \vee a'$, since if a' alone had occurred, i would not have occurred. Hence a' is not a C-condition of b .

While Loeb's reasoning is correct given this specification of the intermediate event, he gives no general procedure for selecting the proper specification of events. The result is that it is possible, by an appropriate selection of an intermediate event, to show that a' is a C-condition of b .⁵

If we introduce the simplifying assumption that $a_1 \vee a_2 \vee a'$ is a simultaneous-disjunction of events, the heart of O'Connor's argument can then be extracted as follows:

Consider intermediate event i' : Harriet's ingestion of a lethal quantity of mushrooms. Event i' is counterfactually dependent upon $a_1 \vee a_2 \vee a' \dots$ Since b depends counterfactually on i' it follows by (i) that a' is a C-condition of b .⁶

I reject O'Connor's claim that 'Event i' is counterfactually dependent upon $a_1 \vee a_2 \vee a'$ '. This claim is correct only if: if any non-empty subset of a_1, a_2, a' had occurred, i' would have occurred. Consider the non-empty subset consisting of a' . It is true that if a' alone had occurred, Harriet would have ingested a lethal quantity of mushrooms. It does not follow, however, that i' would have occurred. The (light and dark) white mushrooms were the only lethal mushrooms Harriet in fact ingested; Harriet's actual ingestion of a lethal quantity of mushrooms was nothing over and above her ingestion of a lethal quantity of (light and dark) white mushrooms. The expression ' i' ' designates an actual event in this world: Harriet's ingestion of a lethal quantity of mushrooms, which, in fact, was an ingestion of a lethal quantity of (light and dark) white mushrooms. If a' alone had occurred, *that* event, Harriet's ingestion of a lethal quantity of (light and dark) white mushrooms, would *not* have occurred. Rather, there would have been an ingestion of a lethal quantity of brown mushrooms, and no ingestion of white mushrooms at all. 'Harriet's

ingestion of a lethal quantity of white mushrooms' (i') and 'Harriet's ingestion of a lethal quantity of mushrooms' (i'') do provide different 'specifications' = descriptions of events, but they do not generate different 'specifications' = designations of events. Since i' does not depend counterfactually on $a_1 \vee a_2 \vee a'$, the sequence $a_1 \vee a_2 \vee a', i', b$ is not a counterfactual chain – O'Connor has failed to produce a counterexample.

If I were O'Connor, I would reply that while this defense blocks the result that a' is a C-condition of b , it has the additional consequence that a_1 (and likewise a_2) is not a C-condition of b ! Event i is counterfactually dependent on $a_1 \vee a_2$ only if: if any non-empty subset of a_1, a_2 had occurred, i would have occurred. Consider the non-empty subset consisting of a_1 . It is true that if a_1 alone had occurred, Harriet would have ingested a lethal quantity of white mushrooms. It does not follow, however, that i would have occurred. The expression ' i ' designates an actual event in this world: Harriet's ingestion of a lethal quantity of white mushrooms, which, in fact, was an ingestion of a lethal quantity of light white and dark white mushrooms. If a_1 alone had occurred, *that* event, Harriet's ingestion of a lethal quantity of light white and dark white mushrooms, would *not* have occurred. Rather, there would have been an ingestion of a lethal quantity of light white mushroom, and no ingestion of dark white mushroom at all. O'Connor could then conclude: since i does not depend counterfactually on $a_1 \vee a_2$, the sequence $a_1 \vee a_2, i, b$ is not a counterfactual chain – Loeb has failed to sustain the claim that (i) yields the result that a_1 is a C-condition of b .

I accept the conclusion that the sequence $a_1 \vee a_2, i, b$ is not a counterfactual chain.⁷ It does not follow, however, that a_1 is not a C-condition of b . O'Connor's initial reconstruction of my reasons for holding that (i) yields the result that a_1 is a C-condition of b is mistaken. While there do exist counterfactual chains from a simultaneous-disjunction of events that includes a_1 to event b , the sequence $a_1 \vee a_2, i, b$ is not one of these counterfactual chains. O'Connor incorrectly presumes that I would cite the (single-membered) disjunction of events i (Harriet's ingestion of a lethal quantity of white mushrooms) in order to locate a counterfactual chain from $a_1 \vee a_2$ to b .

But then what intermediate simultaneous-disjunction of events could I cite? Let i_1 be Harriet's ingestion of a lethal quantity of light white mushrooms, and let i_2 be Harriet's ingestion of a lethal quantity of dark white mushrooms. Then consider the simultaneous-disjunction of events $i_1 \vee i_2$. I claim that the sequence $a_1 \vee a_2, i_1 \vee i_2, b$ is a counterfactual chain. First, $i_1 \vee i_2$ (unlike i)

does depend counterfactually on $a_1 \vee a_2$: if none of a_1, a_2 had occurred, $i_1 \vee i_2$ (like i) would not have occurred; and if any non-empty subset of a_1, a_2 had occurred (that is, a_1 alone, or a_2 alone, or a_1 and a_2), $i_1 \vee i_2$ (unlike i) would have occurred. (I take it that a disjunction of events occurs just in case at least one of its disjuncts occurs.) Second, b depends counterfactually on $i_1 \vee i_2$: if none of i_1, i_2 had occurred, b would not have occurred (because the brown mushrooms were neutralized by the time i_1 and i_2 in fact occurred); and if any non-empty subset of i_1, i_2 had occurred, b would have occurred. Thus, there does exist a counterfactual chain (namely, the sequence $a_1 \vee a_2, i_1 \vee i_2, b$) from a simultaneous-disjunction of events that includes a_1 to event b .

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NOTES

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¹ Louis E. Loeb, 'Causal Theories and Causal Overdetermination', *The Journal of Philosophy* LXXI (1974), 525–544.

² John O'Connor, 'Causal Overdetermination and Counterfactuals', *Philosophical Studies* 29 (1976), 275–277.

³ More precisely, this is my analysis of 'a is a C-condition of b' given the following assumption: "Let X be any non-simultaneous-disjunction of events such that b depends counterfactually on X . Let x be any disjunct in X . Then we assume that there exists at least one simultaneous-disjunction of events D in which x is a disjunct and such that b depends counterfactually on D ." (Loeb, *op. cit.*, p. 542.) This assumption is irrelevant to the issue between O'Connor and myself. Cf. O'Connor, *op. cit.*, p. 276. Obviously, (i) is an extension of David Lewis' analysis of causation. See his 'Causation', *The Journal of Philosophy* LXX (1973), 556–567.

⁴ Cf. Loeb, *op. cit.*, p. 542.

⁵ O'Connor, *op. cit.*, p. 276.

⁶ *Ibid.*

⁷ It is tempting to suppose that I should not accept this conclusion, on the following grounds. It is true both that i' does not depend counterfactually on $a_1 \vee a_2 \vee a'$, and that i does not depend counterfactually on $a_1 \vee a_2$. But these two failures of counterfactual dependence are not on all fours. The ingestion of a lethal quantity of brown mushrooms is no part of the ingestion of a lethal quantity of light and dark white mushrooms. So if a' alone had occurred, no part of i' would have occurred. On the other hand, the ingestion of a lethal quantity of light white mushrooms is a part of the ingestion of a lethal quantity of light and dark white mushrooms. So if a_1 alone had occurred, some part of i would have occurred. These considerations suggest replying to O'Connor that the account of counterfactual dependence should be construed as follows: event e depends counterfactually on a disjunction of events $a_1 \vee \dots \vee a_n$ only if: if any non-empty subset of a_1, \dots, a_n had occurred, some constituent part of i would have occurred. More would be required to sustain this line of defense. O'Connor could appeal to intermediate event i' : Harriet's ingestion of the (light and dark) white and brown mushrooms. If a' alone had occurred, some constituent part of *that* event *would* have occurred.