

Is Causation Influence?¹

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David Lewis has recently given a new version of the counterfactual theory of causation: *C* causes *E* if *C* and *E* are actual distinct events and *C* influences *E*. (Take the ancestral of influence to get the necessary condition.) According to Lewis' approach to philosophical theorising, the task in offering a theory is conceptual analysis, understood as making explicit the concepts inherent in our thought and language, so that intuitions about the appropriate use of the concept shared by competent users of the language count as evidence for or against a theory. In this discussion I show that there are cases of influence as defined by Lewis which are not cases of causation according to strong intuitions. I offer seven such counterexamples.

1. Counterfactual Dependence and Redundant Causes

According to Lewis' original (1973) theory *C* causes *E* just if *C* and *E* are actual distinct events and were *C* not to occur, *E* would not occur. The would-counterfactual is true if in the closest world without *C*, *E* does not occur. This 'counterfactual dependence' theory faces immediate problems with redundant or backup causes. Lewis (1986, Postscript E) therefore introduces a number of modifications to deal with various versions.

First, there are cases of 'early preemption'. For example, two chains of neurons lead to the same outcome (*E*), where the initial neuron in the first chain may also inhibit one of the events in the second chain. Suppose the initial neuron in the first chain fires (*C*), initiating a chain which cuts off the second chain, and also itself goes on to produce *E*. There is no counterfactual dependence between *C* and *E*, since had *C* not occurred, *E* still would have because the second chain would have produced *E*. To deal with such cases Lewis introduced stepwise dependence: *C* causes *E* just if *C* and *E* are actual distinct events and *E* counterfactually depends on *C* or *E* counterfactually depends on an intermediate event *D* which counterfactually depends on *C*, or etc. So taking *D* as the firing of an intermediate neuron in the first chain, since had the first neuron in the first chain not fired, *D* would not have occurred, and had *D* not occurred *E* would not have occurred at all. (In evaluating the latter counterfactual we take the closest world in which the intermediate neuron in the first chain does not fire, which is a world which matches the actual world exactly up to a time just before *D* thereby including the fact that the second chain has been inhibited, but then has *D* excised completely by a small miracle, so that consequently *E* fails to occur.) So *C* causes *E* after all, in agreement with intuitions.

¹ I would like to thank Stephen Barker, Helen Beebe, and Paul Nordoff for comments on this paper.

Second, there are cases which Lewis once called ‘late preemption’. For example, suppose Billy and Suzy are throwing rocks at a glass bottle. Billy throws a split second later than Suzy, on target, but misses simply because the bottle has just been smashed by Suzy’s rock. Had *C*, Suzy’s throw, not occurred, *E*, the bottle smashing, still would have occurred because Billy’s rock would then have smashed the bottle. But the strategy of step-wise dependence fails here because for *any* event *D* that lies on the causal chain between *C* and *E*, had *D* not occurred the bottle still would have been smashed. To deal with late preemption Lewis introduced the concept of quasi-dependence: if in most other cases of the process between C-type events and E-type events, including all its intrinsic features, there is counterfactual dependence of the E-type event on the C-type event, then *C* quasi-dependes on *E*. And *C* causes *E* if there is counterfactual dependence or quasi-dependence of *E* on *C*. Since normally bottle smashings counterfactually depend on the throw that produced the rock that connected with it, in our late preemption case the smashing quasi-dependes on Suzy’s shot.

Third, there are symmetric cases of overdetermination. For example, both rocks successfully hit the bottle at the same instant. To this Lewis says our intuitions are unclear as to whether each causes the smashing individually, or only jointly. Therefore it is ‘spoils to the victor’, which means we let the truth about overdetermination be determined by the verdict of the analysis which is successful in dealing with those cases where we do have clear intuitions. If that analysis is counterfactual dependence, then the two throws are jointly the cause, but the individual throws are not causes. (This assumes the two events jointly qualify as an ‘event’.)

2. *Trumping and Causation as Influence*

However, Lewis now feels that his original account is unsatisfactory because he had not recognised the possibility of ‘trumping’, and he gives this example: the major and the sergeant shout ‘advance!’ at the same instant, and the troop advances (*E*) because the major shouts (*C*), not because the sergeant does. There is no counterfactual dependence between *C* and *E* because had *C* not occurred the troop would still have advanced. Further, there is no step-wise dependence between *C* and *E* because for any event *D* along the causal chain between *C* and *E*, had *D* not occurred, the alternative chain would still have gone through, leading still to *E*. There is a relation of quasi-dependence of *E* on *C*, since in most intrinsically-similar cases of major commands there would be counterfactual dependence. But *E* also quasi-dependes on the sergeant’s command since in most intrinsically similar cases of sergeant commands there would be counterfactual dependence of *E* on those commands. So the quasi-dependence amendment makes the trumped event a cause.

For these reasons Lewis offers a new counterfactual theory of causation, causation as influence:

Where *C* and *E* are distinct actual events, let us say that *C* influences *E* if and only if there is a substantial range *C*₁, *C*₂, ... of different not-too-

distant alterations of C (including the actual alteration of C) and there is a range E_1, E_2, \dots of alterations of E , at least some of which differ, such that if C_1 had occurred, E_1 would have occurred, and if C_2 had occurred, E_2 would have occurred, and so on. (Lewis 2000, p. 190)

The definition of an alteration is:

Let an *alteration* of event E be either a very fragile version of E or else a very fragile alternative event that is similar to E , but numerically different from E . (Lewis, 2000, p. 188)

One advantage of this disjunctive definition is that it yields the ambivalence we have as to how different an event would have to be before it would be a numerically different event rather than a variation of the same event. Throughout this paper I will use the term 'influence' in the sense just defined.

The implied analysis of causation is: C causes E just if C and E are actual distinct events and C influences E or the ancestral of influence obtains between C and E . According to Lewis this gives "a pattern of dependence of how, when and whether upon how, when and whether." (2000 p. 190) The throw caused the bottle to shatter if had the throw been slightly later then the shattering would have occurred slightly later (when-on-when dependence) and had the throw been a bit stronger, the bottle would have shattered in a slightly different manner (how-on-how dependence) and so on.

According to Lewis the analysis solves various problems of redundant causation. Late preemption cases come out as causation: had Suzy's throw been slightly earlier then the shattering would have occurred slightly earlier and had the throw been a bit stronger, the bottle would have shattered in a slightly different manner. It doesn't matter that had she not thrown, the bottle would still have shattered on account of Billy's throw. Thus there is no need to appeal to quasi-dependence. Trumping cases are also solved, Lewis says. Had the major said 'retreat' or 'take cover' the soldiers' actions would have varied correspondingly, but had the sergeant's command varied thus, there would have been no difference in the soldiers' actions (2000 p. 191).

3. Seven Counterexamples

However, it is not hard to think of counterexamples which exhibit influence but which intuitively are not cases of causation. (The following seven counterexamples are not unrelated, but it is beyond the scope of this paper to spell out the various connections.)

(i) There are *delayers* which we wouldn't intuitively call causes. The rain delayed the fire, since without the rain (which occurred in December) the fire would have occurred in January rather than its actual February date. But competent users of English would agree that it is inappropriate to call the rain the cause of the fire, even though they might agree that it is appropriate to say that the rain caused the delay of the fire or even that the rain caused the fire to occur in January. But the rain influenced the fire in numerous

ways (amount of rain, exact location, timing, and so on), therefore on Lewis' analysis the rain caused the fire, contrary to clear intuitions. Similarly, no-one would say that the nurse caused someone's death when her action simply delayed it, or that my successful application to have my court hearing postponed was the cause of my court hearing.

Lewis offers the following argument for the symmetry of delayers and hasteners (ie that both are cases of causation). Since delaying is prevention of prevention (the rain prevented the January fire, which had it occurred would have thereby prevented the actual February fire), the rain both prevents and causes versions of the fire, and we focus on the former fact and say the rain does not cause the fire. But in fact it causes one version of the event, the actual version. So Lewis could claim to have shown why our intuitions go a little astray.

I don't believe that prevention of prevention is genuine causation (see Dowe 2000 ch 6, Dowe forthcoming), but let us leave that aside. There is another problem with the argument. The event which would have been prevented (the fire in February) is more fragile than the version which our intuitions insist is not caused by the rain (the fire simpliciter). Taking firstly the fragile version, we note that perhaps our intuitions allow that it is caused by the rain, so then there is no problem in saying that the rain prevented the fire in January and caused the fire in February. At this level of fragility nothing is delayed. On the other hand the less fragile version is not prevented by the rain, but merely delayed. But it is this version that we have in mind when we insist the rain is not the cause of the actual fire. The mere fact that we acknowledge the more fragile but not the less fragile version as a genuine effect of the rain shows that, contra Lewis, we are not losing sight of the fact that the rain causes one version because we focus on the fact that it prevents the other version. So Lewis' argument fails to counter the point that delayers can influence events without causing them.

(ii) There are *hastenings* which are not causes. My letter of application to bring forward the date of my hearing might be considered the cause of the date of my hearing, but not as the cause of my hearing. My crime, arrest and other circumstances are the causes of the hearing. (Those who hold to the asymmetry of hasteners and delayers need to acknowledge the exceptions.)

(iii) There are also *alterers* which are not causes. My letter applying to bring forward the date of my trial might affect the trial in other ways, for example that I get a different judge or jury, but it is still my crime, not the letter, that is the cause of the trial. So my letter influences the trial, but does not cause it.

(iv) *Alleviation* is a particularly potent case of alteration which is not causation. My pain is not caused by the mildly effective pain-killers I took, but my pain is less acute and less tiring than it would have been without the pain-killers.

(v) It is counterintuitive to call *hinderers* causes. Hinderers serve to prevent, and those which are unsuccessful usually influence, but we would not call them causes. The murderer has the victim tied up and plans the execution at dawn. The aspiring hero arrives, wrestles with the murderer,

but is defeated. The murderer is more angry, and the dawn execution consequently occurs in a more violent manner. Of course the hero did not cause the death. The difference between alleviation and at least this case of hindrance is that the purpose of hindrance is to prevent, not alleviate. It is unsuccessful, whereas alleviation is successful. Some hinderers are alleviators, some are delayers, but my example is neither.

Counterexamples (iv) and (v) are also counterexamples to the transitivity of causation. Lewis gives what he takes to be the general case²: Black makes a move, Red responds with a countermove, which gives Red victory. Transitivity seems to entail, counterintuitively, that Black's move is the cause of the victory.

Lewis takes causation to be transitive, and so rejects the intuitions behind the counterexamples. He gives three considerations to justify this rejection. First, in typical cases Black's move delays the outcome, and hence should be considered the cause. This draws on Lewis' claim that delayers are causes, a claim dealt with above. Second, we may be confusing the fact that generally moves similar to Black's are conducive to winning with the fact that in this instance Black's move leads to losing. But we need additional support for this suggestion, because if valid, it would give us a ready made response to any particular counterexample where our theory says causation and our intuitions say not: explain away our intuitions about the particular case as being a confusion between the general and the particular. Third, Lewis suggests it may be the idea that causation must involve whether-on-whether dependence that misleads us- but if we make exceptions in preemption cases it would be inconsistent to insist on it here. But I don't think this consideration shifts the relevant intuition. We can agree that Black's move caused the delay of the victory, but then in the same breath go on to insist that all the same Black's move does not cause the victory simpliciter. Thus we can be clear on the fact that causation need not involve whether-on-whether dependence but still be sure of our contra-transitivity intuitions. So I don't think Lewis' three considerations do anything to justify disregarding clear intuitions about the appropriate application of the concept of causation.

In a footnote Lewis notes that it may be that in such cases *C* does not cause *E* because there is an equivocation on the alleged intermediate event *D* such that what really happens is that *C* causes *D*₁ and *D*₂ causes *E*, where *D*₁ and *D*₂ are different events, for example different parts of the same event (footnote 14, p. 195.) While this may help us avoid the problem of the failure of transitivity, it makes things worse for Lewis concerning the problem with influence. For such cases would still exhibit influence- eg *C*

² Lewis says he knows of many such cases, and references some in 2000, footnote 12. The following example I owe to Igal Kvat. On Monday I cut my finger off, on Tuesday the doctor sews it back on, and on Wednesday my finger is fully operational again (or 'moving freely' if we want to avoid possibly dispositional properties). This is a counterexample not only to transitivity, but also to influence. Intuitively, cutting off my finger on Monday is not the cause of its being fully operational on Wednesday, but influences it (a different slash would have resulted in a different scar, etc).

delays *E*, but now Lewis no longer has the principle of transitivity to support his rejection of the intuition that *C* does not cause *E*.

All of the above counterexamples have the feature that we would be happy to say that the first event is the cause of some feature of the second event, but not that it is the cause of that event simpliciter. The following two counterexamples do not have this feature.

(vi) In cases of trumping, the *trumped* event influences the effect, but intuitively should not count as a cause. Had the sergeant's shout occurred earlier, the soldiers would have advanced earlier, because in the absence of a command from the major they obey the sergeant. Had the sergeant shouted 'advance quickly', the soldiers would have advanced quickly, since the qualification does not contradict the major's command (I owe this latter example to Stuart Black). So Lewis' analysis makes both the trumping and the trumped events causes of the effect, contrary to our intuitions and also to Lewis' stated intention.

(vii) The same applies to preemption. Lewis' account makes the *preempted* event a cause just as much as the preempting event. Had Billy thrown his rock earlier to a sufficient degree, the bottle would have shattered earlier, and in a slightly different manner. Again, we have influence without causation.

Is the required time variation "too-distant" to be an alteration? No- it need be no greater than the time variation involved when we say that had Suzy's throw been slightly earlier then the shattering would have occurred slightly earlier, an alteration in virtue of which it is true that Suzy's throw caused the shattering. The same can be said in the trumping case.

It seems, nevertheless, that trumping/preempting events influence the effect to a greater extent than do the trumped/preempted events. Could this be the basis of a defence of influence?

Lewis considers the fact that, due to a minute gravitational effect, the shattering *is* influenced by Billy's throw (2000, p. 189). But Suzy's throw influences the shattering to a larger extent, which, Lewis argues, is enough to break the symmetry between Billy's and Suzy's throws, demonstrating that the asymmetry is not all or nothing. Could we use the same strategy for our counterexamples?

I think not. Even supposing there is a case by case degree of difference between trumping/preempting and trumped/preempted events, it's not at all clear how this can be used to delineate causation. How much influence makes for causation? This can only be measured by the number, and distance from actuality, of alterations which exhibit counterfactual dependence. Clearly no universal standard will do the work, because for any standard we can imagine one case where a trumper fails to meet the standard, and a second case where a trumped event does. As with the case of minute influence, the standard must in some way be context dependent. But, and this is the key point, to simply say as much is not yet an answer. We need some idea of what features of the context in, for example, the case of Billy's and Suzy's rock throwing are going to determine the appropriate causation-determining degree of dependence. We cannot appeal to

intuitions about causation, for that would beg the question: this is supposed to be a counterfactual analysis of causation. This being so, it's hard to see just what features of the context are going to tell us that the degree of influence between the trumped/preempted event and the 'effect' is insufficient for causation.

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