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# CAUSES AND PROBABILITY-RAISERS OF PROCESSES

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Schaffer proposes a new account of probabilistic causation that synthesizes the probability-raising and process-linkage views on causation. The driving idea of Schaffer's account is that, although an effect does not invariably depend on its cause, a process linked to the effect does. In this paper, however, I will advance counterexamples to Schaffer's account and then demonstrate that Schaffer's possible responses to them do not work. Finally, I will argue that my counterexamples suggest that the driving idea of Schaffer's account is misdirected.

## I. Schaffer's Account

It is widely agreed that there are two predominant views on causation in contemporary metaphysics, namely, what Jonathan Schaffer calls the 'probability-raising' and 'process-linkage' views on causation. Very simply, the probability-raising view is that a cause raises the probability of its effect, while the process-linkage view is that a cause is connected to its effect via a physical process. Schaffer makes severe criticisms of these two views and then proposes a new account of causation that synthesizes them [2001a].

It will be useful to have a quick look at Schaffer's criticisms of them. One of Schaffer's two criticisms of the probability-raising view concerns causal preemption [2001a: 79 – 80]. In a deterministic world, the sergeant and major shout 'Charge' simultaneously and then the corporal decides to charge. Suppose that the corporal must obey the superior officer. Then although the major's and sergeant's orders happen to converge, it is not the sergeant's order but the major's order that causes the corporal to decide to charge. Without the major's order, however, the sergeant's order would cause the corporal to decide to charge in exactly the same way at exactly the same time as he actually does. If so, it is clear that the major's order does not raise the probability of the corporal's deciding to charge. This is because, without the major's order, the corporal's decision would still occur.[1] Hence this case

[1]To be precise, without the major's order, the probability of the corporal's deciding to charge would still be 1.

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serves as a counterexample to the probability-raising view on causation.[2] Meanwhile, one of Schaffer's two criticisms of the process-linkage view on causation concerns 'disconnections'—in Ned Hall's terminology, 'double prevention' [Schaffer 2001a: 82–3; Hall 2004]. The plane is heading straight for the mountain. The air traffic controller is about to alert the pilot to turn. But the control tower is destroyed by the saboteur. As a result of this, the alert is not transmitted, and so the plane clashes. In this case, we are tempted to say that the destruction of the tower is a cause of the crash. However, there is no physical process linking the destruction of the tower to the crash. On this ground, Schaffer claims that this case serves as a counterexample to the process-linkage view on causation.[3]

In order to avoid these counterexamples, Schaffer suggests, we need to synthesize the probability-raising and process-linkage views on causation. His idea is that although a cause does not always raise the probability of its effect, it raises the probability of the process linked to the effect. This idea is formulated as follows [Schaffer 2001a: 85]:

> Analysis 1: *c* causes *e* iff *c* is a (P)robability-(R)aiser (O)f a (P)rocess for *e* (for short: *c* is a PROP for *e*).

Schaffer thinks that Analysis 1 can be interpreted in various ways. His interpretation is: Analysis 1 Interpreted: *c* is a PROP for *e* iff (i) There is an extended event 'e-line' containing actual distinct events $< c', d_1, d_2, \ldots d_n, e >$ in pairwise nomic subsumption relations, (ii) There is an actual event *c* at $t_c$, which is distinct from $d_1, d_2, \ldots d_n$, and *e* (*c* may or may not be distinct from $c'$), (iii) ch(e-line)-at-$t_c = p$, and (iv) $\sim c \,\Box\!\!\rightarrow$ ch(e-line)-at-$t_{\sim c} < p$. In a deterministic case, an event *c* qualifies as a PROP for an event *e* iff, without *c*, either *e* would not occur or if it still does it would occur via an entirely different process from the e-process.[4]

It is easy to see that Schaffer's account is not subject to the counter-examples he makes against the probability-raising and process-linkage views on causation. Let us first consider the case of causal preemption. On the one hand, without the major's order, the corporal's decision would occur by an entirely different process from the e-process, i.e., by the 'sergeant process', and therefore the major's order qualifies as a cause of the corporal's decision by Analysis 1. On the other hand, the sergeant's order does not qualify as a cause by Analysis 1 since without it, the corporal's decision would still occur via the same process as the e-process, i.e., via the 'major process'. Let us now consider the case of disconnection. Does the destruction of the radio tower qualify as a cause of the crash by Analysis 1? Let the crashing process consist of the plane flying mountainwards through the relevant interval and then crashing. The important question is whether the crash would still occur

[2]The other one of Schaffer's two criticisms of the probability-raising view concerns a case of fizzling where *c* raises the probability of *e* without causing *e*.
[3]The other one of Schaffer's two criticisms of the process-linkage view on causation concerns a case of traces where *c* is linked to *e* via a physical process without causing *e*.
[4]I will use 'e-process' interchangeably with 'e-line'.

by the crashing process if the radio tower were not to be destroyed. Without the destruction of the radio tower, the alert would be transmitted and thereby the pilot would turn the plane away from the mountain. Hence, if the radio tower were not to be destroyed, the crash would not occur; therefore, it would not occur by the crashing process. From this Schaffer derives that, according to Analysis 1, the destruction of the radio tower is a cause of the crash [2001a: 88]. It may be noted here that the crashing process does not contain the destruction of the radio tower. But this makes no difference because Analysis 1 does not require the cause $c$ to be part of the e-process.

That being said, I agree with Schaffer that his account avoids a number of counterexamples that previous theories of causation suffer from. Indeed, I believe that Schaffer's account is particularly outstanding in the current debates on causation. Schaffer refines Analysis 1 into the following Analysis 2 in order to answer three possible objections, i.e., the transitivity objection, the continuity objection, and the preemptive disconnection, the details of which should not detain us here [2001a: 90]:

> Analysis 2: $c$ causes $e$ iff $c$ is a continuous PROP for $e$.

Schaffer's interpretation of Analysis 2 is:

> Analysis 2 interpreted: $c$ is a continuous PROP for $e$ iff there is a chain of direct PROPs between $c$ and $e$, where $c$ is a direct PROP for $e$ iff (a) $c$ is a PROP for $e$, and (b) for all times $t_d$ between $t_c$ and $t_e$, there is a $d$ at $t_d$ such that $c$ is a PROP for $d$, and $d$ is a PROP for $e$.

It will be useful to have a glimpse of Schaffer's view on causal relata.[5] Schaffer takes 'the causal relata as concrete structured events' that 'are ordered [Property, Region] pairs with negative properties allowed so as to include absences' [2000b: 297]. For simplicity, given that '$e$' denotes [$P$, $R$], let '*not-e*' denote [$\sim P$, $R$]. On Schaffer's view, the supposition that *not-e* occurs is the supposition that $e$ does not occur; and the supposition that *not-e* does not occur is the supposition that $e$ occurs.

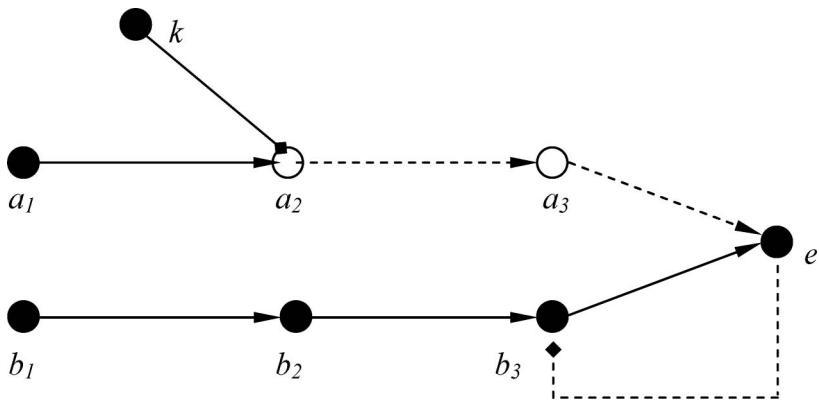
Schaffer's account purports to be an account of indeterministic causation that covers deterministic causation as a limiting case [2001a: 86–7]. For the sake of argument, though, I will assume determinism. So all my examples in the following involve deterministic causation.

## II. Counterexamples

Ned Hall discusses a case that I think can serve as a counterexample to Schaffer's account [Hall 2000: 208]. A variant of it is as follows. Suzy, an ordinary girl, and Billy, a speedball pitcher in Major League, oblivious to each other, are about to throw stones at a bottle. Jones, a hoodlum, disturbs

[5]As Schaffer says, his view on events is very similar to Lewis's [2001b: 14 n3].

Billy. So Billy fails to throw a stone. Suzy alone throws a stone and shatters the bottle. If Jones were not to disturb Billy, Billy would throw a stone; and Billy's stone would hit the bottle first; thereby Billy's stone would cause the bottle to shatter. The neuron diagram depicting this case is:[6]




The neuron $k$ represents Jones's disturbing; $a_1$ represents Billy's decision to throw a stone; $b_1$ Suzy's decision to throw a stone; $a_2$ Billy's throw; $b_2$ Suzy's throw; $a_3$ the impact between Billy's stone and the bottle; $b_3$ the impact between Suzy's stone and the bottle; $e$ the shattering of the bottle. Suppose that $k$, $a_1$, and $b_1$ occur simultaneously.

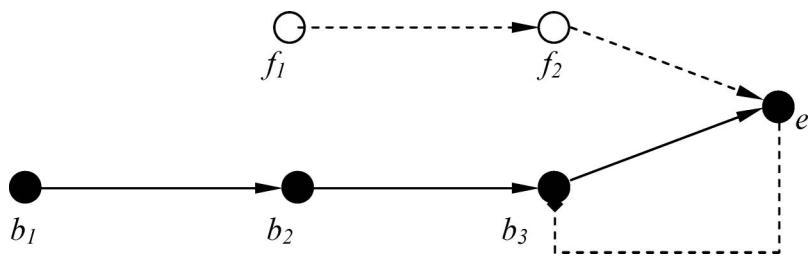
In this case, as Hall clearly states, our common sense delivers the firm verdict that $k$ is not a cause of $e$. It should be realized that, once Suzy throws her stone at the bottle, the bottle shatters regardless of whether Jones disturbs Billy or not. Then one does not need to know if Jones disturbs Billy or not in order to understand why the bottle shatters. If so, it is reasonable to suppose that the explanation of why $e$ occurs would include no reference to $k$. Indeed it sounds absurd to say that the bottle shatters because Jones disturbs Billy. In addition, Jones will not be held morally responsible for the consequences of $e$ since he makes no positive contribution to the shattering of the bottle. In general, I suggest, $k$ has almost no distinctive characteristics of being a cause of $e$. Once this is seen, it is plausible to assume that $k$ is not a cause of $e$. However, $k$ qualifies as a cause of $e$ by Schaffer's account. The e-process is $\langle b_1, b_2, b_3, e\rangle$. If $k$ were not to occur, i.e., if Jones were not to disturb Billy, Billy would throw his stone and so Billy's stone would hit the bottle first; thereby, the process leading to $e$ would be $\langle a_1, a_2, a_3, e\rangle$. Thus, without $k$, $e$ would occur by an entirely different process from the e-process. This means that $k$ is a PROP for $e$. In consequence, according to Schaffer's Analysis 1, $k$ is a cause of $e$.

The same can be said about Analysis 2. It is evident that $k$ is a direct PROP for *not-*$a_2$. Further, *not-*$a_2$ is a direct PROP for $e$. For instance, let us consider *not-*$a_3$. On the one hand, *not-*$a_2$ qualifies as a PROP for *not-*$a_3$

[6]Diagram conventions: filled circles doubly represent neurons that fire and events that occur, unfilled circles doubly represent neurons that do not fire and events that do not occur, forwards arrows represent stimulatory connections, and blocked arrows represent inhibitory connections.

because if *not-$a_2$* were not to occur, that is, if $a_2$ were to occur, then *not-$a_3$* would not occur. On the other hand, *not-$a_3$* qualifies as a PROP for $e$ because if *not-$a_3$* were not to occur, that is, if $a_3$ were to occur, then $e$ would occur via a different process from the e-process. This means that *not-$a_2$* is a PROP for *not-$a_3$* and *not-$a_3$* is a PROP for $e$. In general, for each time between *not-$a_2$* and $e$, we can find such an absence $d$ that *not-$a_2$* is a PROP for $d$ and $d$ is a PROP for $e$. It follows that *not-$a_2$* is a direct PROP for $e$. In consequence, there is a chain of direct PROPs between $k$ and $e$,[7] which means that, according to Schaffer's Analysis 2, $k$ is a cause of $e$. As already noted, however, our intuition rules that $k$ is not a cause of $e$. As a result, Hall's case serves as a counterexample to Analysis 1 and Analysis 2 alike.

It is to be observed that *not-$a_2$* is a direct PROP for $e$, which entails that *not-$a_2$* comes out a cause of $e$ by Schaffer's account. This indicates that we can construct a simpler counterexample against Schaffer's account. Suppose that Suzy alone throws a stone at a bottle at a time $t$, the stone hits the bottle, and the bottle shatters; and that Billy, a speedball pitcher, who is currently far away from Suzy, has nothing to do with the shattering of the bottle. In this case, however, if Billy were to throw a stone at the bottle (in the vicinity of the bottle at $t$), then his stone would hit the bottle first. The neuron diagram of this example is:




The neuron $f_1$ represents Billy's throw; $f_2$ represents the impact between Billy's stone and the bottle; $b_1$ Suzy's decision to throw a stone; $b_2$ Suzy's throw; $b_3$ the impact between Suzy's stone and the bottle; $e$ the shattering of the bottle.

In this case, is *not-$f_1$* [i.e. Billy's not throwing a stone, near the bottle at $t$], which is an actual event, a cause of $e$? It is simply nonsensical to say that the bottle shatters because Billy does not throw a stone at it or that Billy is held morally responsible for the consequences of the shattering of the bottle. In general, I maintain, *not-$f_1$* has almost no distinctive characteristics of being a cause of $e$, which gives us a sufficient reason for believing that *not-$f_1$* is not a cause of $e$. However, *not-$f_1$* qualifies as a cause of $e$ by Schaffer's account. If *not-$f_1$* were not to occur, that is, if Billy were to throw a stone at the bottle, his speedy stone would hit the bottle first; thereby, the bottle would shatter by a different process $\langle f_1, f_2, e\rangle$ from the e-process $\langle b_1, b_2, b_3, e\rangle$. This means

[7]In fact, $k$ is a direct PROP for $e$ since, for each time between $k$ and $e$, there exists such an event $d$ that $k$ is a PROP for $d$ and $d$ is a PROP for $e$.

that Analysis 1 delivers the verdict that *not-$f_1$* is a cause of *e*. Moreover, it is an easy step to draw the same conclusion for Analysis 2 since *not-$f_1$* is a direct PROP for *e*.

It is important to realize that this case is a common-or-garden case of causation, not a tricky case of causation at all: Suzy alone throws a stone at a bottle and the bottle shatters because of Suzy's stone. Moreover, we can make up events like *not-$f_1$* indefinitely. For instance, [a gunman's not firing at the bottle, near the bottle at *t*], will pose the same problem as *not-$f_1$* does for Schaffer's account. In general, whenever an event *c* causes an event *e*, we can imagine a non-actual event *d* that would preempt *c* if it were to occur. Then if *not-d* were not to occur, that is, if *d* were to occur, then *e* would occur via a different process from the e-process, which entails that, according to Schaffer's Analysis 1, *not-d* comes out a cause of *e*. The same can be said about Analysis 2. There is no inclination to say that *not-d* causes *e*, though. From this I conclude that Schaffer's account proliferates spurious causes in every case of causation.

## III. Schaffer's Possible Responses

In response, Schaffer may bite the bullet by rejecting our intuition that *not-$f_1$* is not a cause of *e*. We have seen, though, that our intuition is well supported by the fact that *not-$f_1$* has almost no distinctive characteristics of being a cause of *e*. Hence in order to discredit our intuition Schaffer needs to supply compelling arguments to the effect that *not-$f_1$* is a cause of *e*, overriding the fact that *not-$f_1$* has almost no distinctive characteristics of being a cause of *e*. Here is one candidate. Note that if Billy were to throw a stone at the bottle, Suzy's stone would not collide with the bottle. Therefore, if *not-$f_1$* were not to occur, then $b_3$, i.e., the impact between Suzy's stone and the bottle would not occur. If so, it is plausible to suppose that *not-$f_1$* is a cause of $b_3$. But it is clear that $b_3$ is a cause of *e*. Therefore, by the transitivity of causation, *not-$f_1$* is a cause of *e*. Thus Schaffer may motivate his rejection of our intuition by relying on the transitivity of causation.

The first point I want to make is that we have some reservation about the transitivity of causation especially when it involves disconnecting causes. It should be observed that *not-$f_1$* is a disconnecting cause of $b_3$: *not-$f_1$* prevents $f_2$ that would prevent $b_3$ if it were to occur. However, Hall convincingly argues that we can get absurd results by applying the transitivity of causation to disconnecting causes [2000: 217–19]. Indeed, Hall will say that it is another such absurd result that *not-$f_1$* is a cause of *e*. On this view, it is absurd to say that Billy's not throwing a stone at the bottle is a cause of the shattering of the bottle regardless of whether or not we can derive it from the transitivity of causation. If so, one way of criticizing Schaffer's possible response described above is to say that even though we can derive from the transitivity of causation that *not-$f_1$* is a cause of *e*, this does not warrant rejecting our intuition that *not-$f_1$* is not a cause of *e*.

My second and more important criticism of Schaffer's possible response is that we can easily construct a case where clearly it does not work. The sergeant alone shouts 'Advance' at the corporal at a time $t$; the corporal hears it and advances. Suppose that if the major were to shout 'Advance' in the vicinity of the corporal at $t$, then the corporal would advance in exactly the same way at exactly the same time as he actually does; but in this case it would be the major's order, not the sergeant's order, that would cause the corporal to advance because ranking orders trump. And, let us take the interpretation of this case that will be preferred by Schaffer: if the major were to shout 'Advance' at $t$, no events along the trumped 'sergeant process' would be prevented [2000a: 175; 2001a: 80]. Taken this way, in a counterfactual situation where the major's shouting causes the corporal to advance, the sergeant process would not be cut short, that is, there would be no failure of intermediate events along the sergeant process leading up to the corporal's advancing. If so, there is no such event $x$ along the sergeant process that, if the major were to order the corporal to advance, $x$ would not occur.

Is [the major's not shouting 'Advance', near the corporal at $t$] a cause of the corporal's advancing? Definitely no. But I think that the major's not shouting 'Advance' at $t$ comes out a cause of the corporal's advancing by both Analysis 1 and Analysis 2. If it were not to occur, i.e., if the major were to order the corporal to advance, the corporal's advancing would occur by an entirely different process, ⟨the major's shouting, the major's sound wave, the advancing⟩, from the e-process, ⟨the sergeant's shouting, the sergeant's sound wave, the advancing⟩. Therefore, according to Analysis 1, the major's not shouting 'Advance' is a cause of the corporal's advancing. Moreover, it is clear that it is a direct PROP for the corporal's advancing since, for each time between the major's not shouting 'Advance' and the corporal's advancing, there is such an absence $d$ that the first event is a PROP for $d$ and $d$ is a PROP for the second event. Therefore, the major's not shouting 'Advance' qualifies as a cause of the corporal's advancing by Analysis 2 as well.

Schaffer's possible response under consideration is based on the observation that there is an intermediate event belonging to the e-process, i.e., $b_3$, such that it is clear that *not-*$f_1$ is a cause of $b_3$, and therefore that, by the transitivity of causation, *not-*$f_1$ is a cause of $e$. The reason why we think that *not-*$f_1$ is a cause of $b_3$ is that if *not-*$f_1$ were not to occur $b_3$ would not occur. We have noted, however, that there is no such event $x$ along the sergeant process that, if the major were to order the corporal to advance, $x$ would not occur. Then we are inclined to assume that there is no event along the sergeant process that is caused by the major's not shouting 'Advance' at $t$. This means that no events along the sergeant process can serve as an intermediate event that connects the major's not shouting 'Advance' to the corporal's advancing. Furthermore, the absences that would not occur if the major were to order the corporal to advance—for example, the major's voice not being transmitted—do not serve as such an intermediate event, either. This is because it is not clear at all that they are

causes of the corporal's advancing. As a result, we have no resource to establish the causal connection between the major's not shouting 'Advance' and the corporal's advancing by relying on the transitivity of causation. In consequence, we reach the conclusion that the transitivity of causation is of no help in motivating Schaffer's rejection of our intuition that the major's not shouting 'Advance' is not a cause of the corporal's advancing.

Schaffer might pursue another strategy for motivating his rejection. Suppose that a gardener fails to water flowers, so the flowers die. Those like Lewis and Schaffer who believe in causation by absence say that the gardener's failure to water the flowers is a cause of the flowers' dying. A problem for their view is: we do not want to say that the Queen of England's failure to water the flowers is a cause of the flowers' dying, but it is doubtful that there is any ontological basis for a discrimination between the gardener's failure and the Queen of England's. Both Lewis and Schaffer attempt to settle this problem by invoking pragmatic considerations [Lewis 2000: 196; Schaffer 2000b: 295]. Schaffer holds that the Queen of England's failure to water the flowers is indeed a cause of the flowers' dying, and that the reason why we have the contrary intuition is that since we never presume that the Queen would deign to water the flowers, to speak of her failure to water the flowers is to impart no information not already supposed.

Schaffer might think that, on the same ground, he can reject our intuition that the major's not shouting 'Advance' at $t$ is not a cause of the corporal's advancing:

> It is true that the major's not shouting 'Advance' at $t$ causes the corporal's advancing. To be sure, this is in conflict with our intuition. But we can explain away our intuition by appealing to pragmatic considerations, for instance, by saying that we do not normally assume that the major will order the corporal to advance and therefore that to speak of the major's failure to order the corporal to advance adds no extra information.

But I disagree. First of all, even if we presume that the major will order the corporal to advance, we would still deny that the major's not shouting 'Advance' at $t$ is a cause of the corporal's advancing. For example, it would make no difference to modify the case by replacing the major's not shouting with the lieutenant's not shouting. It would still be preposterous to say that the corporal advances because the lieutenant does not order them to advance or that the lieutenant is held morally responsible for the consequences of the corporal's advancing. This being the case, the aforementioned pragmatic explanation of why we deny that the major's not shouting 'Advance' at $t$ is a cause of the corporal's advancing is unsatisfactory.

Counterfactual analyses of causation currently on the market reinforce my claim that, regardless of pragmatic contexts, we should deny that the major's not shouting 'Advance' at $t$ is a cause of the corporal's advancing. Let me first consider the simple counterfactual analysis of

causation that can be summarized by the following propositions [Lewis 1973: 563]:

$SCA_1$. For two wholly distinct actual events $c$ and $e$, $e$ causally depends on $c$ if and only if, without $c$, $e$ would not occur.[8]

$SCA_2$. For two actual events $c$ and $e$, $c$ is a cause of $e$ iff there is a series of actual events, $d_1, d_2, \ldots, d_n$ such that $d_1$ causally depends on $c$, $d_2$ causally depends on $d_1, \ldots$, and $e$ causally depends on $d_n$.

If the major's not shouting 'Advance' were not to occur, that is, if the major were to order the corporal to advance, the corporal would still advance in exactly the same way at exactly the same time as he actually does. Therefore, according to ($SCA_1$), the corporal's advancing does not depend causally on the major's not shouting 'Advance'. Moreover, there is no actual event $x$ such that $x$ depends causally on the major's not shouting 'Advance' and the corporal's advancing depends causally on $x$. In general, there exists no ancestral of causal dependence leading from the major's not shouting 'Advance' to the corporal's advancing, and hence the first is not a cause of the second according to ($SCA_2$). The same can be said about Paul's emended counterfactual analysis of causation that puts the following proposition in place of ($SCA_1$) [Paul 1998: 193]: $e$ causally depends on $c$ if and only if, without $c$, $e$ would not occur at all, or would occur later than the time that it actually occurs. For, if the major's not shouting 'Advance' were not to occur, the corporal would still advance at exactly the same time as he actually does.

We can get the same result for Lewis's influence theory of causation that can be summarized by the following propositions [2000]:

$IT_1$. For two wholly distinct actual events $c$ and $e$, $c$ influences $e$ iff there is a substantial range $c_1, c_2, \ldots$ of different not-too-distant alterations of $c$ (including the actual alteration of $c$) and there is a range $e_1, e_2 \ldots$ 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.

$IT_2$. For two actual events $c$ and $e$, $c$ is a cause of $e$ iff there is a series of actual events, $d_1, d_2, \ldots, d_n$ such that $c$ influences $d_1$, $d_1$ influences $d_2, \ldots$, and $d_n$ influences $e$.

An alteration of event $c$ is either a very fragile version of $c$ or else a very fragile alternative event that is similar to $c$, but numerically different from $c$.

For convenience, let us divide influence into 'whether', 'when', and 'how' influence. It is clear that the major's not shouting 'Advance' has no 'when' influence on the corporal's advancing since even if the major's not shouting 'Advance' were to occur a little sooner or later, that is, even if

[8]Two events are wholly distinct when they do not stand in a mereological or logical relation.

the major were not to order the corporal to advance a little sooner or later, the corporal would still advance by the sergeant's order in exactly the same way at exactly the same time as he actually does. What is more, the major's not shouting 'Advance' has no 'how' influence on the corporal's advancing since even if the major's not shouting 'Advance' were to occur in a slightly different way, the corporal would still advance in exactly the same way at exactly the same time. Finally, if the major were to order the corporal to advance, the corporal would advance by the major's order in exactly the same way at exactly the same time, which means that the major's not shouting 'Advance' has no 'whether' influence on the corporal's advancing. Thus, according to ($IT_1$), the major's not shouting 'Advance' does not have even a meagre influence on the corporal's advancing. Further, there is no actual event $x$ such that the first event influences $x$ and $x$ influences the second event. In general, there is no ancestral of influence running from the first to the second, and therefore, the first does not count as a cause of the second by ($IT_2$).

It is easy to see that other versions of the counterfactual analysis of causation—for example, the PCA theory of causation [Ganeri, Noordhof, and Ramachandran 1996; 1998]—deliver the same verdict that the major's not shouting 'Advance' is not a cause of the corporal's advancing. Note that proponents of the counterfactual analysis of causation tend to be friends of causation by absence since absences stand in the relation of counterfactual dependence. This means that even friends of causation by absence will endorse our intuition that the major's not shouting 'Advance' is not a cause of the corporal's advancing. In view of this, Schaffer cannot repudiate our intuition in the same way as he does to defend causation by absence.

As already noted, we have the intuition that the major's not shouting 'Advance' is not a cause of the corporal's advancing, which is supported by the fact that the first event has almost no distinctive characteristics of being a cause of the second. Therefore, Schaffer cannot maintain that the major's not shouting 'Advance' is a cause of the corporal's advancing unless he gives us good reasons for setting aside our intuitive judgment. But we have seen that Schaffer cannot give such reasons by relying on the transitivity of causation nor by invoking pragmatic considerations. Then we are led to the conclusion that Schaffer's possible responses are unsuccessful.

## IV. A Concluding Remark

I said earlier that Schaffer discards Analysis 1 in favour of Analysis 2 in order to meet three possible objections. But Schaffer explicitly says that because Analysis 2 rules out the seeming possibility of spatio-temporally discontinuous causation, it is not perfectly satisfactory, either [2001a: 91 – 2]. Having said that, it seems that he is not happy with Analysis 1 nor with Analysis 2. Then, he might claim, what my counterexamples would really

show is only that he needs to refine his analysis further since they would at most represent further problems for already problematic analyses.

The basic idea of Schaffer's account is that, although an effect *e* does not invariably depend on its cause, the e-process does. However, our discussion has revealed that it is possible that an event on which the e-process depends makes no causal contribution to the occurrence of *e* at all. For example, the e-process leading to the corporal's advancing counterfactually depends on the major's not shouting 'Advance'. But, whatever the exact notion of causal contribution may be, it is clear that the major's not shouting 'Advance' makes no causal contribution whatsoever to the corporal's advancing. Hence I agree with Hall that 'it does not follow from the fact that an event *c* determines the causal route to an event *e* that *c* is among *e*'s causes' [2000: 208]. With this in mind I conclude that there is no point refining Schaffer's account further since the underlying idea of it is misdirected.[9]

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