Causation: Relation or Connective?

by Paul Needham *

Summary

Davidson's account of singular causal statements as expressing relations between events together with his views on event identity lead to inferences involving causal statements which many of his critics find counterintuitive. These are sometimes said to be avoided on Kim's view of events, in terms of which this line of criticism is often formulated. It is argued that neither Davidson nor Kim offer a satisfactory account of events — an essential prerequisit for the relational theory — and an account of singular causal statements in terms of a modal sentential connective is advocated in place of the relational view. Such an account suffices to block the counterintuitive inferences without needing to resort to a theory of events. It is suggested that a theory of events might be built upon a connective account of singular causal statements, but no such theory is presented here.

Résumé

La conception, défendue par Davidson, des énoncés causals comme exprimant des relations entre des événements, jointe à ses vues sur l'identité des événements, conduit, concernant les énoncés causals, à des conclusions que beaucoup de ses critiques trouvent contraire à l'intuition. On dit que ces difficultés sont évitées si l'on adopte la conception des événements proposée par Kim, conception qui sert souvent de cadre aux dites critiques. Cet article montre que ni Davidson, ni Kim ne fournissent une théorie satisfaisante des événements — théorie qui serait nécessaire à une théorie relationnelle — et propose une conception des énoncés causals singuliers recourant à un connecteur modal d'énoncés (en lieu et place de la théorie relationnelle). Une telle conception suffit à bloquer les conclusions contraires à l'intuition sans nécessiter un recours à une théorie des événements. On suggère qu'une théorie des événements pourrait être basée sur cette conception connective, mais cette suggestion n'a pas été developpée ici.

Zusammenfassung

Davidsons Auffassung, wonach singuläre Kausalaussagen Beziehungen unter Ereignissen ausdrücken, führt zusammen mit seiner Ansicht über die Identität von Ereignissen zu Schlussfolgerungen, die zahlreiche seiner Kritiker für intuitiv unhaltbar halten. Es wird behauptet, dass diese aufgrund von Kims Ansicht über Ereignisse vermieden werden können. In der vorliegenden Arbeit wird gezeigt, dass weder Davidson noch Kim eine befriedigende Theorie für Ereignisse liefern, was jedoch für eine relationale Theorie unbedingt erforderlich wäre. Ich schlage deshalb eine Erklärung von singulären Kausalaussagen vor, die im Gegensatz zu der relationalen Betrachtungsweise auf einen modalen Satzjunktor abstellt. Eine solche Beschreibung genügt, um all die unerwünschten Schlussfolgerungen abzublocken, ohne auf eine Ereignistheorie rekurrieren zu müssen. Es wird nahegelegt, dass eine Ereignistheorie aufgrund einer derartigen satzjunktorischen Auffassung aufgebaut werden könnte, aber es wird hier keine solche Theorie vorgelegt.

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I

Hume argued that although there are "objects" — presumably events, at least if we follow Davidson's interpretation (1967, p. 149) — giving rise to our ideas of cause and effect, there is nothing to be observed corresponding to our idea of causally necessary connection in the individual case. The account he went on to give of our feeling of necessary connection as the mind's propensity to expect to see the effect when prompted by the cause is usually distinguished from an analysis of causal necessity. But with the benefit of hindsight, we might wonder why, when he came to consider causation in the *Treatise*, Hume didn't simply regard it as a counterexample to his ideational theory of meaning. Nevertheless, the Humean view of "causality in objects" continues to retain its grip in the modern guise of an extensional analysis which appropriately reflects what Rosenberg and Martin (1979), for example, call the "mind independence of causality".

Proponents of an extensional account argue for their view on the assumption that singular causal statements are to be analysed in terms of a relation between events. (Despite their statements to the contrary, this is an assumption from which, as Lombard (1979) makes clear, Rosenberg and Martin do not succeed in emancipating themselves.) But if the point is merely to ensure that causal statements are seen to deal with what, in Hume's conveniently ambiguous terminology, might be called objects, this is not sufficient to justify the extensional relational analysis. Føllesdal has shown in a series of articles (e.g. 1964, 1969) that modal contexts are best interpreted on the basis of what Quine calls Aristotelian essentialism, construing them as referentially transparent but allowing that coextensive general terms may not be interchangeable salva veritate. Causal statements construed as modal contexts in this way would deal with objects because of their referential transparency, whilst retaining their intensional character because of the restriction on the substitution of coexistensive general terms. Moreover, the 'objects' about which such statements deal may well not be events, but persisting physical objects in the ordinary sense of 'object'. The metaphysical import of 'object' as in some sense 'mind independent' would still be retained. In order to justify his approach, then, the advocate of the relational account must offer a clear account of what events — the things standing in his causal relation — are, and offer reasons for rejecting the competing analysis in terms of a modal connective.

This is just what Davidson has done with his sustained discussion of causal relations on the basis of a firm conception of what events are, and the various arguments he offers against the notion of a modal 'would cause' connective. I

don't think he is successful in arguing the virtues of the relational account over a modal connective analysis, the merits of which I will press here. But Davidson's own position seems to me nothing like as easily assailable as some of his opponents seem to think, whose arguments often demonstrate merely that his conception is not that of the antagonist. However, whilst I don't believe Davidson's conception can be brought down on grounds of internal tension, consideration of some of the familiar arguments attempting to reduce his conception of events and causality to absurdity will lead us to a restriction or sharpening required by his concept of an event. This in turn raises a question about Davidson's critique of the Humean thesis that causal statements are not logically necessary. He proposes instead that cause and effect are distinct, which presupposes a relational analysis and would therefore argue against the adequacy of the connective view (section III). (The intuitions underlying these arguments against Davidson are better accommodated, so I argue (section V), on the connective view than in terms of the opposing conception of events due to Kim on the basis of which they are usually put forward.) A severe weakness in the relational view is that there are singular causal statements which don't lend themselves at all to a natural interpretation in terms of a relation between events because they don't, apparently, refer to what would ordinarily be understood as events. Davidson respects this intuitive notion of an event, and simply disqualifies such cases as genuine causal statements, distinguishing between causal statements and causal explanations. But lumping such problem cases into this latter class is evidently an ad hoc manœuvre, at least in the present context of defending the relational view against the modal connective view which can uniformly accommodate all such cases (section IV).

Although I'm critical of Davidson's analysis of singular causal statements, I don't want to be understood as being entirely antipathetic to the notion of an event. But this shouldn't be construed as supporting the alternative conception of events associated with Kim, which seems to me far wider of the mark than Davidson's. I briefly discuss the Kimean approach in the following section, where I also indicate the lines along which I would hope to be able to develop an account of the connection between singular causal statements and events. Although rather tentative, this will hopefully allay certain misunderstandings which might otherwise arise in the sequel.

II

Proponents of the relational analysis of singular causal statements must say what events are, which they do by offering identity criteria for two expression's denoting the same event. Having considered and rejected several possibilities, Davidson (1969) settles on his by now notorious criterion: "events are

identical if and only if they have exactly the same causes and effects" (p. 179). There is an air of circularity about this; but that, he maintains, is only apparent. "No identities appear on the right of the conditional" *(loc. cit.)*.

Wilson (1974) and Beardsley (1975) argue that whether identities appear on the right hand side is not the only point at issue. There is quantification on the right hand side over precisely those entities the identity of which the criterion is supposed to clear up, and this is held to be fatal to Davidson's proposal. Wilson demands instead a criterion which determines identity in terms of antecedently given constituents, and comes himself to the conclusion that there is no distinction to be drawn between facts and events. The principal rival to Davidson's account of events, that of Kim (see, e.g., 1969, 1971, 1973), appears to satisfy this requirement. On Kim's view an event (taking the simplest case, what he calls a monadic event) is a triple (x, P, t) comprising a subject x, a property P and a time t. (x, P, t) exists iff x has P at t, i.e. iff $P(x, t)$ is true. And $(x, P, t) = (y, Q, t)$ iff $x = y$, $P = Q$ and $t = t'$. Like Wilson, then, Kim ends up with an analysis that doesn't distinguish events from facts or states of affairs.

Whether Kim's account really is superior to Davidson's is rather doubtful. Surely property existence and identity is too controversial a matter to pass lightly by, even if, say, the unFregean way of presenting properties could be improved. And whether the time of occurrence can be identified independently of any reference to the event itself is clearly a matter which throws doubt on Kim's procedure as a ploy for avoiding the circularity said to afflict Davidson's account. But his whole line of argument is rather insensitive to a holistic approach which Davidson evidently espouses; and it is a classic bone of contention between Kant and Hume whether events can be identified antecedently to the ascription of causal relations between them, hardly an innocent assumption. What we might nevertheless wonder is whether Davidson's identity criterion adequately reflects the point at issue here. The plausible point associated with Davidson's proposal, I take it, is the idea that causality has something to do with the constitution and characterisation of events — an idea entirely lacking in the Kimean approach. But I doubt that this intuition is best rendered in the form of Davidson's identity criterion. I am inclined to think that we can't say what an event is prior to explaining how causal statements are to be understood, and that events might be described with a notion of a singular causal statement not already presupposed to involve a relation between events, i.e. with causal statements as understood on the connective view. To illustrate, by contrast with the view of the classic billiard ball case as involving a causal relation between an event comprising the white ball's approaching the red and an event of the red's moving off, the actual knocking

on of (i.e. causing the change in) the red ball by the white would be the single event involved. Verbs expressing what Anscombe (1971, pp. 68-9) calls causal concepts — 'scrape', 'burn', 'squash', 'hurt', 'kill', etc. — describe events thus conceived. Perhaps we could go on to define a derivative causal relation between such events, which might correspond to sentences involving iterations of the basic connective. If it could be carried through, this approach would presumably avoid whatever circularity might be thought to afflict Davidson's account. But at this stage no merit can be claimed for a theory which I'm not yet in a position to present. My reason for mentioning these speculations here is partly to avoid the possible misunderstanding of being regarded as what Thalberg (1985) calls a NEM (no-event metaphysician) who envisages a world without events. They also highlight what seems to me to be the major problem with Kim's account of events, namely that whatever it might be an account of, it is hardly a characterisation of *events*. He gives us an entity for virtually every true temporally determined sentence. But many true sentences of the kind $P(x, t)$, like 'The table is brown', 'I am standing still', 'John is tall', 'The ball is moving', etc. express changeless states rather than events. Much the same might be said of sentences like 'Illiteracy was common during the Middle Ages', 'The ozone layer has been maintained for millions of years', etc., which refer to an extended time. On the other hand, true sentences such as 'It's raining', 'There's a storm brewing', etc., clearly do express the occurrence of events, although they are apparently not of the form $P(x, t)$ because there is no suitable object x as the subject of predication, and are apparently disregarded by Kim. As we saw above, Kim may not himself lay any great stress on the distinction between facts and events, but this leaves us wondering about the point of the exercise. We have the notion of a true sentence; what is to be gained, on Kim's view, by talking about a thing a sentence designates?

Perhaps the answer is to be found in Kim's 1971 paper where he takes Mackie (1965) to task for ignoring the ontology of causation. He charges that laxity in respect of ontology reduces Mackie's well known INUS condition analysis[1] to logical incoherence. "Coherent causal talk", Kim maintains, is possible "only whithin a coherent ontological framework of events and perhaps other entities of appropriate categories" (1971, p. 48). He traces the difficulties he finds with Mackie's account to "an underlying confusion of events with their descriptions", which "stems from our common use of full sentences to pick out events" (p. 56). Equivocation of this kind involves Mackie in, for example, "the unintelligible assumption that for a given event

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[1] An INUS condition for P is a condition which is an Insufficient but Necessary part of a condition which is itself Unnecessary but Sufficient for P.

A there is the statement that A occurred". Take the event to be the death of Socrates. "What is the statement that asserts the occurrence of this event? Is it 'Socrate died' or 'Xantippe's husband died' or perhaps some other statement? Which of these statements is chosen makes a great deal of difference to the question what other statements are implied by it" (p. 57). So uncertainty about how the variables in 'A caused P' are to be interpreted on Mackie's account renders completely inadequate his explanation of, for example, 'A is a necessary condition of P' as there being true universal propositions L and true singular statements S such that L, S and "the statement that A did not occur" logically imply "the statement that P did not occur".

   Kim's suggestion "that A perhaps is not an individual event but rather a generic event or property" (p. 57) may well he the best interpretation he can give of Mackie's intuitions. But to revamp Mackie's necessary and sufficient condition analysis by defining a relation of being an INUS condition between Kimean monadic events (x, A, t) and (y, P, t) is surely for Kim to miss the thrust of his earlier criticism. Given the distinction he emphasises between an event and its description, Davidson's distinction (1963, p. 16) between a stronger and a weaker interpretation of the Humean regularity theory imme- diately arises, at least prima facie. And so a predicate used in a particular description of an even may have no relevance at all to any lawlike regularity under which it falls, and therefore not be part of the formulation of any INUS condition. To take an illustration, when we talk of the causes of death it is natural to think in terms of a disjunction of alternative possible causes. We might think of different species of death falling under distinct laws, or envisage a lawlike generalisation with 'is a death' as the principle predicate in the consequent and a disjunction of conditions in the antecedent. But what- ever the interest the term 'death' might have for us, this talk of alternative possible causes may just be a reflection of how unsatisfactory it is as a term of science. As we continue to construe alternative possible causes of death, we may come to the point where we cease to view death as a genus whose various species fall under alternative laws. Faced with repeated situations in which what we take to be a law explanatory of some deaths doesn't apply, we might give up the law altogether rather than trying to save it by embarking on what looks like an indefinitely long strategy of postulating alternative antecedent causal conditions. We might come to the conclusion that we can only for- mulate strict laws regarding this or that abstract physiological aspect of human anatomy whose links with a criterion of death adequate for social purposes we are unable to codify under strict laws.

   The illustration may have its drawbacks. But clearly Davidson's distinc- tion can't be ignored. If we are to countenance the possibility of one and the

same event as being describable in different ways, different descriptions will in general be relevant for different purposes, and there is no guarantee that any particular description we might be in a position to offer actually serves a given purpose, particularly if the purpose is to show how the event falls within a pattern of lawlike behaviour. Since Kim accepts the alternative descriptions idea, and the regularity view, the weaker interpretation which wouldn't imply that a given description of an event falls within an INUS condition is a clear possibility which Kim does nothing to undermine. In failing to draw Davidson's conclusion, then, it seems Kim doesn't reveal such a firm commitment to events as entities after all. And considered as an argument against the connective view, his discussion clearly carries little weight. The problems with Mackie's old account which Kim's criticism quite rightly reveals is merely the vagueness of its ontological commitment rather than its lack of a definite stand on the particular ontological category favoured by Kim. The inadequacy could just as well be cleared up by treating cause and effect terms as non-referring expressions — as sentences, as I would like to say, linked by a causal connective — and proceeding in accordance with this assumption. How such a view would stand in relation to the regularity theory can be left for the time being as an open question. My principle purpose has been to emphasise that whatever difficulties of motivation the following pages may reveal in Davidson's account of events, they can do nothing to increase confidence in Kim's theory.

III

Event identity plays a prominent role in Davidson's discussion of human action, where he frequently has recourse the notion of alternative descriptions (of the same event). He is, for example, sceptical of the feasibility of drawing a clear distinction between primitive actions and others described with reference to their consequences, and maintains that the following descriptions are descriptions of the same event: 'I flip the switch', 'I turn on the light', 'I illuminate the room' and '(unbeknown to me) I alert a prowler to the fact that I'm at home' (Davidson 1963, p. 4). He is what Beardsley graphically describes as a unifier, as distinct from a multiplier who sees descriptions of several different events in these descriptions. It is understandable that a multiplier such as Goldman should adopt Kim's notion of an event since no one would suggest that the various predicates used in these descriptions denote the same property.

Beardsley regards himself as a restrained multiplier, and offers an argument against Davidson based on the following three premises:

(1) My turning on the light = my flipping the switch;

(2) My alerting the prowler = the prowler's being alerted;

and

(3) My flipping the switch caused the prowler's being alerted.

Since nothing causes itself, Beardsley argues,

(4) My flipping the switch ≠ the prowler's being alerted.

Therefore,

(5) My turning on the light ≠ my alerting the prowler,

and so forth, contrary to Davidson's view. (Cf. Beardsley 1975, p. 270; I have changed the example but retained the argument's structure.)

But this is not the "conclusive argument against the unifier's analysis" Beardsley says it is. The premises would not all be true on Davidson's theory. (1) and (2) could be; but whilst (3) might be on Beardsley's view, it wouldn't, I take it, be so for Davidson, who can therefore consistently maintain that (4) and (5) are false. A true sentence corresponding to Beardsley's understanding of (3) can easily be formulated provided we agree to distinguish, say, 'the prowler's coming to see that someone is in the house' as a description of an event caused by my flipping the switch, thus:

(3a) My flipping the switch caused the prowler's coming to see that someone was in the house.

(2) can also be paraphrased, in order to make its Davidsonian interpretation more perspicuous, as 'My flipping the switch = the event which caused the prowler's coming to see that someone is in the house'. But (4) no longer follows on this interpretation of 'the prowler's being alerted'. What does follow is 'My flipping the switch ≠ the prowler's coming to see that someone is in the house'; but this doesn't imply (5) on an interpretation which denies something Davidson need affirm.

An analogous equivocation belies a familiar argument against Davidson's criterion for event identity:

(6) My flipping the switch = the prowler's being alerted;

(7) My flipping the switch caused the light's being turned on;

therefore, if identical events have identical effects,

(8)   The prowler's being alerted caused the light's being turned on.

This looks like a reductio ad absurdum. But again, insofar as the conclusion follows from the premises and is false, it doesn't assert anything Davidson need affirm. Thus, although (7) could well be true on the multiplier's view, I take it this is not so on Davidson's view. Once again, we can easily formulate a sentence which would be true on Davidson's view expressing a causal connection corresponding to that expressed by (7) on the multiplier's view. But we must first establish a premise and agree to distinguish, say, 'the coming on of the light' as a description of an event caused by and distinct from my flipping the switch, and 'the prowler's being alerted' as a description of an event distinct from the prowler's coming to see that someone is in the house. The price of true premises, however, is that (8) no longer follows, but only

(9)   The prowler's being alerted caused the coming on of the lights,

provided it is interpreted consistently, i.e. along the lines

(9a) The event which caused the prowler's coming to see that someone was in the house (= the flipping of the switch) caused the coming on of the lights,

and not according to the multiplier's lights.

Davidson's critics will have to work harder to find an internal flaw in his view of events. Nevertheless, the discussion has brought to the fore an interesting ambiguity. In the terminology of Vendler (1967), we can say that a verb like 'alert' can be used to describe an activity — that of alerting the prowler — or an achievement — bringing it about that the prowler is alerted. I think we must say that Davidson's understanding of events consistently exploits one of these senses, whereas the multiplier interprets him as appealing to the other, at least in mounting a critique of the sort just considered. If I'm right in saying Davidson's view is to be defended along these lines, however, this has implications about some other things he has to say about the import of alternative descriptions of events. But first let me say a few words about Vendler's own interpretation of his distinction, which I think is wrong on at least two points.

First, it isn't true that verbs "fall completely, or at least in their dominant use, within one of these categories [— activities, accomplishments, achievements and states]" (Vendler 1967, p. 107). It would be nearer the mark to think of the distinction as a relative one, so that verbs may in general be used to express both doing/deed, or process/product, aspects, though on different occasions. The distinction is best construed in terms of different ways of predicating times, but — and this is the second point — the activity/achievement

distinction can't be made in terms of the distinction between holding during an interval of time and holding at an instant. The idea that an achievement characteristically obtains at an instant seems not merely not to explain the relevant aspectual notion, but also to be simply false. This point is not so vital for present purposes, except in so far as this second thesis of Vendler's tends to undermine the first point. It seems reasonable to think of an achievement as the attainment of some state — to illustrate with some of Vendler's own examples, entering a new country involves being in the new country; starting to draw a circle involves a line of some sort being on the paper; reaching the summit means being at the top. Now states have the characteristic of being true of, or of obtaining during, any subinterval of an interval they are true of (obtain during). Moreover, if they obtain at all they obtain at some interval — teetering on the boundary is not being in the new country, and the circle drawing must be under way if it has in fact started. So predication of instants is not what achievements are really about. But now entering a new country could be the description of an activity — of walking, flying or whatever — and similary reaching the summit is a matter of the activity of scrambling over rocks, etc. Whether the activity of entering a new country could reasonably be said to obtain at the instant of crossing the boader is doubtful, but the achievement — having entered the new country — is certainly not true at this instant. Exactly how the aspectual distinction might be further characterised and sharpened, and intuitions about the relevance of instants to achievements accounted for, needn't concern us here.

Now, most of Vendler's examples of achievement verbs are such that if we ask when they are true of some object, the answers we get when we think of the underlying activity or the achievement arising in consequence are the same, or at any rate not sharply distinguished, times. Perhaps losing something is an exception, involving the obtaining of the state of having lost whatever it is at some rather indefinite time after the underlying activity of, say, dropping the object or leaving it on the train. But consider a case in which I pour poison into a traveller's water tank which he later consumes, causing his death.

> Two events are easily distinguished; my pouring of the poison, and the death of the traveller. One precedes the other, and causes it. But where does the event of my killing the traveller come in? The most usual answer is that my killing the traveller is identical with my pouring the poison. In that case, the killing is over when the pouring is. We are driven to the conclusion that I have killed the traveller long before he dies. (Davidson 1969, p. 177)

This notorious example of Davidson's can be understood in terms of the verb 'kill' having two aspects. Asked when I killed the traveller, we think of the activity; asked when the traveller was killed, we think of the achievement; and the two times are different. We can therefore say with Davidson that there is a clear sense in which the conclusion is true, so that coping with the apparent paradox should take the form of reconciling ourselves to it. But we have to be careful in ironing out the ambiguity in the claim that "It is a matter of the first importance that we may, and often do, describe actions and events in terms of their causal relations — their causes, their effects, or both" (1969, p. 178). Such descriptions may be taken in two ways, as the arguments against Davidson considered above show, although in maintaining his unifier view he can be defended provided he is interpreted as consistently adhering to the activity sense of verbs like 'kill', 'alert', etc.

But this throws doubt on Davidson's use of his claim about event descriptions in terms of their causal relations to argue against the Humean thesis that causal statements are not logically true. It is always logically true, he says, that the cause of x caused x, and according to his claim, many ordinary causal statements are therefore logically true. What we should then say instead of the Humean thesis is that cause and effect are distinct — a new thesis requiring a relational analysis of causality. No such thesis can be expressed on the connective view, in terms of which it is natural to think of the causal connective as holding for two contingent sentences and excluding logical implication as required by the Humean thesis. It might thus be thought a weakness of the connective view that it can give no account of Davidson's insight, and in particular that there are ordinary causal statements it can't accommodate. However, it is not so clear that Davidson's notion of alternative descriptions of the same event sanctions what is said about descriptions in criticising the Humean thesis. The case of the murderer said to have killed before his victim died is reported in Davidsonian regimented form by 'A's killing B caused B's death' with the continuous, and not the perfective, form of 'kill'. The activity sense of 'kill' is at issue here, just as it is when mother-in-law exclaimed 'You were killing me!' after I put my arms around her, which doesn't entail the corresponding achievement even if it does happen to be accomplished.

Against this, it might still be maintained that the activity sense entails the corresponding achievement sense, but only on pain of disqualifying as incorrect the frequent use of continuous forms of accomplishment and achievement verbs, such as 'John was checking the pools when Jack turned up', where the result is not (necessarily) achieved. Is Davidson willing to be so uncharitable towards ordinary usage?

IV

Another strategy deployed against Davidson's criterion is to derive unwanted consequences from it by plugging in as events items distinguished according to some other criterion of identity. Myles Brand (1975, p. 137) offers the following, not entirely pellucid, example as an objection:

> Suppose that there is a causal chain in which an object first undergoes fission and is then reunited by a process of fusion. Assume further that no other object causally interacts with it during this time. There are two events that are occurring from the time slightly prior to the fission to the time slightly later than the fusion, since each event involves distinct spation-temporal objects. Nevertheless, the events have exactly the same causes and effects.

It might be said here that the fission and fussion are, respectively, cause and effect of one another; but that, apparently, would be to construe the example in an entirely different way to Brand. His thinking seems to be this: all events are either what Kim calls monadic events, or polyadic events of the kind $(x, \ldots, z, P, t)$ only if $x, \ldots, z$ form a spatially linked conglomerate without breaks troughout t, and the event's location is that of the subject(s) at t^2. Given some such idea of an event as that which somehow occupies a certain connected spatio-temporal region, counterexamples to Davidson's criterion might well be envisaged. If special relativity allows the possibility of such an event causally isolated from all others, for example, then there might be two such events which Davidson's criterion wouldn't distinguish. But it is not clear what the independent criterion of event identity at issue here and conflicting with Davidson's really is.

The location of events involving several objects poses a tricky problem. Quinton (1979) conjures up a picture of the scene in a church as a couple are married, and wonders how far the marriage extends into the rafters! Where does an eclipse of the sun by the moon occur? How are the spatial boundaries of the location determined? Does the region include, for example, every point from which an influence travelling no faster than the speed of light could reach one of the bodies involved within some given interval of time?

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2 I wonder if Davidson isn't himself falling back on some such spatio-temporal criterion rather than his official criterion in identifying my killing with my pouring in the passage (1969, p. 177) quoted above. How could he otherwise be so confident that "the killing is over when the pouring is"? Compare this with a case in which a wife kills her husband gradually by pouring an accumulative poison into his tea over, say, two years, until he finally dies. It seems to me not unreasonable to suggest that her killing didn't end until he did, even if he drank his last cup of tea 24 hours before he died.

When reviewing various possibilities before eventually deciding on his criterion, Davidson (1969) was prepared to go along with the idea that every event involves a change in some substance, but wisely avoided basing his criterion on it. That path was followed by Ducasse (1926, p. 116), who defines "the cause of the particular change K" as "such particular change C as alone occured in the immediate environment of K immediately before". The following stipulations are supposed to make this more precise:

> 1. The change C occurred during a time and throughout a space terminating at the instant I at the surface S. ([fn.] The limit of a change of a solid is obviously a surface, not a point.)
> 2. The change K occurred during a time and through a space beginning at the instant I at the surface S.
> 3. No change other than C occurred during the time and through the space of C, and no change other than K during the time and through the space of K. (Ducasse 1926, p. 116)

(S is presumably the surface of some object in which change K occurs, and I the final instant of some time during which C occurs.)

Ducasse seems to be relying on spatio-temporal constraints to make the problematic notion of change less so. But nothing here tells us, for example, where the change in the marriage and eclipse examples above occurs. When we talk about the onset of rain stopping play, the downpour causing the flood, the flash of lightning startling us, the eery noise alarming us, the party keeping the neighbours awake, and suchlike — the most plausible sort of example for the 'causes are events' thesis —, there don't seem to be any objects unambiguously defining the spatial extent of the cause with their surfaces. And where we do have an object, which changes are the 'real ones'? I change the moon, for example, when I move my pencil six inches to the left of its present position. But these Cambridge changes, as Geach call them, are hardly what is at issue. A collision by a meteor, or a movement of the sun, would be more in line with what is required. But then isn't causality the criterion of the sort of change we are talking about here? Furthermore, distinguishing between instants and intervals as Ducasse does is not sufficient to guarantee that "there is no possibility that, as Russell [(1912-13)] contended, some other event should creep in between the cause and effect and thwart the production of the effect" (p. 118). Russell's point concerns relevant conditions. If Ducasse's spatio-temporal delimitation is really to achieve sufficiency for the cause, then the spatial coverage must be great enough to cover all regions in which something could happen which would hinder the appearance of the effect. We need a theory to tell us how large any such region

must be; but it does seem on any reasonable view that it would be enormous, even for causes of relatively short duration — at any rate, large enough to make nonsense of the requirement of a unique change "during the time and through the space of C".

There has always been something fishy about the spatio-temporal constraints Hume imposed on the causal relation. The spectacle of an empiricist attempting to resolve the question of action at a distance by appeal to a priori restrictions apart, the classic Humean spatio-temporal conditions of precedence and contiguity seem to be motivated by an illicit play on the ambiguity of the word 'object'. As remarked at the beginning, Davidson interprets the imposition of the precedence constraint to mean that Hume's objects are events since events, but not persisting physical objects, stand in temporal relations. On the other hand, persisting physical objects are what stand in the relation of spatial contiguity, i.e. touch one another. Saying events are spatially contiguous is at best highly derived talk, and usually highly contrived. In any case, insofar as spatio-temporal conditions have been actually specified at all, they seem to be inadequate as a criterion for identifying events, and Davidson's criterion of event identity comes much closer to the heart of the problem by making causation the criterion of change.

As indicated in section II, I don't think Davidson's criterion takes this idea of connecting causation with the constitution and characterisation of events far enough. But it also seems too restrictive in that, given the relational view of singular causal statements, the criterion identifies entities which can stand in the causal relation in such a way as to disqualify many examples of what otherwise seem to be straightforward singular causal statements as causal statements proper. The problem is that the antecedents or consequents of a good many singular causal statements notoriously involve no change at all, or for some other reason do not describe what can intuitively be called events. Consider, for example, 'The presence of the stone caused the recess in the pillow', 'Metal fatigue caused the crash', 'The failure of the sprinkling system caused the fire', 'The fact that the dam didn't hold caused the flood', 'The slowness with which the controls were applied caused the rapidity with which the inflation developed', 'He dropped the tray, not because she spoke, but because she shouted so unexpectedly', and so forth. Causal statements such as these are no good for individuating events, and must be distinguished from those which are. "What we must say in such cases", Davidson says, is that

> ... such sentences tell, or suggest, a causal story. They are, in other words, rudimentary causal explanations. Explanations typically relate statements, not events. I suggest therefore that the 'caused' of the

sample sentences . . . is not the 'caused' of straightforward causal state-
ments, but is best expressed by the words 'causally explains'. (Davidson
1967, pp. 161-2)

The circularity involved here — to identify events, we are directed to
consider their causal relations; and to determine its causal relations, we have
to know we are dealing with events — may not raise any internal problems for
Davidson's view. But the distinction amongst prima facie singular causal
statements between what are granted as genuine ones (involving the causal
relation) and explanatory, but allegedly bogus causal, statements, is evidently
ad hoc, at least as a ploy in the motivation of the relational account. It is also
puzzling that Davidson is willing to adopt this strategy in view of his thesis
that a primary reason explains an action because it is its cause, namely an
event which, under a different description, falls under a strict, lawlike regular-
ity connecting reason and action (Davidson 1963, pp. 11-12). No such dicho-
tomy is required, however, on the connective view, which can uniformly
accommodate all these problem cases for the relational account in terms of the
basic regimented form 'The fact that . . . caused it to be the case that . . .'.
('The fact that' is syncategorematic; 'The fact that . . .' is not a term referring
to any sort of entity.) Thus we can say that the fact that the sprinkling system
failed caused the fact that the fire went unchecked, the fact that concrete rein-
forcements were absent caused the dam to burst, and so forth.

When considering what causal statements the relational view excludes
which the connective view doesn't the question naturally arises of whether
iteration of the causal connective has any significant role to play. In the case
of the sprinkling system, for example, let us suppose that it was deposition of
impurities in the water supply which caused a blockage in the sprinkling
system, and thus caused the failure. It wouldn't follow that the deposition of
impurities caused the fire; rather, the fact that the fact that impurities had
been deposited caused the water supply to be blocked caused the fire (to
destroy the whole house). It could be retorted that the depositing of the
impurities was in fact a blocking of the water supply, and thus a cause of the
fire (going unchecked). This takes us back to the unifier/multiplier discussion.
Davidson can't perhaps be faulted in adopting this strategy. But it does
obscure a subtle distinction between, on the one hand, the depositing of the
impurities being identical with an event which caused the blockage and caused
the fire to go unchecked, and on the other hand, the causing of the blockage
causing the fire to remain unchecked. This distinction does seem to be impor-
tant in contexts where causes are actions: 'Her being embarassed by her hus-
band's appearance surprised me', 'My spilling the gravy on the tablecloth caus-

ing mother-in-law to comment caused my wife to despair', 'Interrupting mother-in-law's lecture on being a responsible husband causing irreconcilable damage to our relationship would force my wife to takes sides', etc. The point is to specifically avoid saying her husband's appearance surprised me (I'm used to seeing him in his old jacket), my spilling the gravy caused my wife to despair (she had already spilled the wine), interrupting mother-in-law would force my wife to take sides (she interrupts her often enough herself), etc.

<div align="center">V</div>

Perhaps the expression of some such distinctions as those rendered here by the iteration of the causal connective is one of the reasons the multiplier's intuitions in connection with sentences like (9), for example, are also clearly represented on the connective view.

> (10) The fact that the prowler was alerted caused it to be the case that the light came on

would be counted false on this view in a context where

> (11) The fact that the lights came on caused it to be the case that the prowler was alerted

is counted true. For it is clearly a criterion of adequacy of any proposed analysis of the causal connective $C(\varphi, \psi)$ that

> (12) $C(\varphi, \psi) \supset \sim C(\psi, \varphi)$

should come out as a valid schema. A proponent of the Kimean analysis might see a solution here to his problem of specifying a criterion of property ident- ity: substitution in contexts like (10) and (11) salva veritate (cf. Achinstein 1974). This would again involve the same sort of circularity that is supposed to belie Davidson's account. But as Beardsley shows, construing φ and ψ in (12) as referring terms and C as a relation is not a viable path for the multiplier to follow.

We saw above how Beardsley tried to dispose of the unifier's view. He goes on to argue that is reasoning is equally fatal to the view of multipliers such as Goldman who want to maintain the extensionality of their causal rela- tion. Thus, "Lincoln's signing the Proclamation did not cause his alarming the Northern slave holders" on the multiplier's view, "though the Proclama- tion's being signed did cause the slaveholders to be alarmed" (Beardsley 1975, p. 270). And yet Lincoln's signing the Proclamation would seem to be identical, on the Kim/Goldman view, with the Proclamation's being signed by

Lincoln, and similarly, Lincoln's alarming the slaveholders with their being alarmed by him. For passive transformation as applied to singular statements is usually held to preserve cognitive synonymy, and synonymous transformations are held by Goldman to preserve reference to attributes. Beardsley prefers to remain a multiplier and rejects the extensionality of the causal relation. This in turn commits him to rejecting the universal substitutivity of identity (cf. Achinstein 1975, 1979, who follows suit). This, he maintains, allows us to say, in connection with a problem raised by Goldman (1970, p. 3n), that even if we cannot substitute 'the wood's burning' for 'the wood's burning yellow' in the sentence 'The presence of sodium salts caused the wood's burning yellow', they can nevertheless refer to the same event (p. 272).

I don't think Beardsley has a plausible solution here to this real problem. For reasons which have been elaborated by Quine and Føllesdal, identity must be universally substitutive, which would imply in conjunction with Beardsley's view that quantification into causal contexts is impossible. (For these reasons it is unclear what the expression 'same event' means on Beardsley's view.) But this is too high a price to pay. It would sever all links between singular causal statements and general statements, and one doesn't have to be a regularity theorist to find this objectionable. As Carnap put it in *Meaning and Necessity*, "Any system of modal logic without quantification is of interest only as a basis for a wider system including quantification. If such a wider system were found to be impossible, logicians would probably abandon modal logic entirely" (p. 196). However, I do agree with Beardsley (and authors such as Scriven 1975) in not wanting to distinguish between causal and explanation contexts, and maintaining for this reason the intensionality of causal contexts. Fortunately no impasse threatens, for on the connective view referential opacity is not only possibility which opens up.

Føllesdal (1964, 1967, 1968) has argued that the various versions of the so called Frege argument to collapse modal distinctions are rendered harmless by imposing as a criterion of being a genuine identity statement that it hold of necessity. And in his 1969 paper he traces the intensionality of modal contexts to lack of substitutivity of coextensive general terms. To illustrate with an example of a statement of the kind $C(\varphi, \psi)$, consider (cf. Rosenberg and Martin 1979)

> (19) The fact that the Titanic was struck by an iceberg on 14th April 1912 caused it to be the case that it sank,

or briefly, 'The Titanic sank because it was struck by an iceberg on 14th April 1912'. Now 'x was struck an iceberg on 14th April 1912' is coextensive, let us say, with 'x sailed with Lady Astor amongst its passengers' (assuming here

that Lady Astor only sailed once). It clearly doesn't follow that the Titanic sank because it sailed with Lady Astor amongst its passengers.

The way to save the multiplier's intuitions is to adopt the connective view and give up the relational view of causation. It might be possible, as I've speculated, to build up an account of events on the basis of the connective view, and to allow relations between entities so defined. But the causal sentential connective would be basic[3].

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