# The Language of Causation

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What parts of natural language count as parts of the language of causation? Here are four *ascriptions of singular causation*:

(1) The fall caused the vase to break.

(2) The fall was the cause of the vase's breaking.

(3) The fall was a cause of the vase's breaking.

(4) The fall was causally relevant to the vase's breaking.

Ascriptions of singular causation are used to make claims about particular instances of causation between particular causal relata. Section 1 explores some features of claims like (1)–(4).

There are also *ascriptions of general causation*, as in (5):

(5) Smoking causes lung cancer.

Sentences like (5) are used to represent a causal connection between smoking 'in general' and lung cancer 'in general,' as opposed to (6), which would be used to represent a causal connection between *Al's* smoking and *his* lung cancer.

(6) Al's smoking caused his lung cancer.

Section 2 discusses ascriptions of general causation.

Then there are expressions that might have some sort of covert causal component to their meaning:

(7) Al boiled the water.

(8) Betty's insulting Carl disgusted Dawn.

The nature of any such 'causal component' is not entirely clear. Some have gone so far as to say that (7) *just means* that Al caused the water to boil, and that (8) *just means*

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that Betty caused Carl to feel insulted and that Betty's insulting Carl caused Dawn's disgust. These claims are likely too strong, as we will see in section 3, but this does not show that there is *no* causal component to claims like (7) and (8). There also may be a covert causal component to sentences like

(9) Binge drinking kills brain cells.

The similarities between (5) and (9) suggest that (9) resembles ascriptions of general causation more closely than it resembles ascriptions of singular causation.

Finally there are passages the proper interpretation of which seems to require appropriate beliefs about what causes what. Knowing that the city council's fear of violence would likely cause them to refuse the demonstrators a permit helps an addressee interpret the 'they' in (10) as referring to the city council.

(10) The city councilmen refused the demonstrators a permit because they feared violence.

Knowing that advocating revolution would likely cause one's application for a permit to be refused helps an addressee interpret the 'they' in (11) as referring to the demonstrators.

(11) The city councilmen refused the demonstrators a permit because they advocated revolution. (Winograd 1972, 295)

Section 4 is devoted to the relationship between causation and the structure of discourse.

## 1. The language of singular causation

It is controversial exactly what demands that a successful theory of causation must meet. This is at least in part because it is not always clear to what extent a particular judgment about a causal claim should be explained in terms of facts about the language of causation and to what extent it should be explained in terms of facts about causation. Following Anscombe 1971, Nancy Cartwright has even argued that

> There are a variety of different kinds of relations picked out by the abstract term 'causes' and a variety of different—correct—uses of the term for a variety of different purposes, with little of substantive content in common. (2006, 56–57; see also her 1999 and 2004, and Machamer et al. 2000)

At this point no theory of causation has a claim to being the 'standard theory.' But it will be helpful to have a clear, influential analysis in mind as we discuss the language

of singular causation, and David Lewis's theory in his 1973 paper "Causation" is a good starting point.

There Lewis analyzes singular causation in terms of patterns of subjunctive conditionals, sometimes called *counterfactuals* (see Subjunctive Conditionals). To a first approximation, he holds that *e depends causally* on *c* if and only if (12) and (13) are both true. (For important refinements, see Lewis 1986b.)

(12) If *c* had occurred, *e* would have occurred.

(13) If *c* hadn't occurred, *e* wouldn't have occurred.

On Lewis's analysis, causation itself is the ancestral of this relation of causal dependence. Put differently: suppose that there is a *Lewisian causal chain* $\langle e_1, e_2, e_3, \ldots, e_n \rangle$ such that for every natural number $m$ that is less than $n$, $e_{m+1}$ causally depends on $e_m$. Then for all $m < n$, $e_m$ is a cause of $e_n$.

Lewis's analysis of causation, like many others, predicts that *c* was a cause of *e* in some very counterintuitive cases. For example, Caesar's death 'depends causally' on his birth. But in most if not all contexts, assertions of (14) and (15) sound very odd:

(14) Caesar's birth was the cause of his death.

(15) Caesar's birth caused his death.

This oddness doesn't worry Lewis. He acknowledges that we "sometimes single out one among all the causes of some event and call it 'the' cause, as if there were no others" (1973, 558). This is not surprising: there are many independent reasons for thinking that definite descriptions in general—and so 'the cause' in particular—are heavily sensitive to conversational context (see Descriptions and Context Sensitivity). Lewisians in particular should expect context sensitivity since counterfactuals themselves are heavily context sensitive (see again Subjunctive Conditionals). And although they convey different presuppositions—(14) presupposes that Caesar's death had a cause, and (15) does not—it doesn't seem implausible that (14) and (15) have roughly the same truth conditions (see Presupposition and Implicature).

Lewis elsewhere discusses the putative context sensitivity of 'knows' and 'knowledge' in detail (see his 1996 and Philosophy of Language for Epistemology; see also Lewis 1979). In marked contrast he prescinds from the context sensitivity in 'the cause' and 'to cause':

> I have nothing to say about these principles of invidious discrimination. I am concerned with the prior question of what it is to be one of the causes (unselectively speaking). My analysis is meant to capture a broad and nondiscriminatory concept of causation. (558–559)

This position—with the assumption that one can dispel any misleading features of causal language by talking about 'a cause' or 'one of the causes'—is very common (see, e.g., Hall 2004, 228). It is reminiscent of John Stuart Mill's position on causes and conditions:

> Since … mankind are accustomed, with acknowledged propriety so far as the ordinances of language are concerned, to give the name of cause to almost any one of the conditions of a phenomenon, or any portion of the whole number, arbitrarily selected … it will probably be admitted without longer discussion, that no one of the conditions has more claim to that title than another, and that the real cause of the phenomenon is the assemblage of all its conditions. (1843, 403)

Lewis seems to assume that we can easily talk about all the causes of a phenomenon, and Mill seems to make the slightly stronger assumption that we can easily talk about all the causes of a phenomenon *at once*: that's just what it is to talk about "the real cause of the phenomenon" in the way that Mill does.

In my 2010 I argue that these assumptions are wrong. Whether something can felicitously be cited as a cause of some effect can depend, in part, on what else has already been cited as a cause of that effect, and on what we might in the future want to cite as a cause of that effect. A Lewisian might apply my theory roughly as follows: citing one representative of a given Lewisian causal chain as a cause of a certain effect generally crowds out other potential representatives of that causal chain to the effect, so that they can no longer felicitously be cited as a cause of that effect. Speakers are thus under pressure to choose a representative of a given causal chain that is likely to serve evolving conversational needs well.

For an example, consider Hartry Field's bomb case. Billy plants a bomb in a room. Suzy comes into the room, notices the bomb, and flees. Suzy later has a checkup and is found to be in perfect health. According to Field, Stephen Yablo, and many others, "the bomb is not a cause" of Suzy's health, although the presence of the bomb caused Suzy to flee, and Suzy's fleeing is a cause of Suzy's perfect health the next day (Yablo 2004, 119). From this it follows that the causation relation is non-transitive. For if $e_1$ is Billy's planting the bomb, $e_2$ is Suzy's fleeing, and $e_3$ is Suzy's good health the next day, then unless the causation is non-transitive, it follows from the fact that $e_1$ is a cause of $e_2$ and the fact that $e_2$ is a cause of $e_3$ that $e_1$ is a cause of $e_3$. A genuine counterexample to the transitivity of causation would be a counterexample to Lewis's analysis among many others. But notice that Billy's planting the bomb makes Suzy's good health the next day quite surprising. Ordinarily, we would think that Suzy's good health should be credited to her fleeing, not to Billy's planting the bomb. These reasons and others make Billy's planting the bomb a relatively poor representative of the causal paths through it to Suzy's good health the next day. So the Lewisian

who appeals to my theory to explain why some causal claims are infelicitous in certain contexts has a metaphysically neutral explanation of why it would be unusual to *count* Billy's planting the bomb as a cause of Suzy's good health. (And in fact it *is* possible to count the planting of the bomb as part of a causal chain leading to Suzy's good health, as long as the speaker makes it clear that the planting of the bomb does *not* crowd out other events on that causal chain.) So with appropriate attention to the context sensitivity that Lewis and Mill try to ignore, we can actually defuse an important objection to many theories of causation. Metaphysicians who take their theories to be constrained by our judgments about causal locutions should thus pay close attention to the respects in which causal locutions are context sensitive. And this is true whether the context sensitivity of causal locutions manifests itself semantically or pragmatically (see Semantics and Pragmatics).

If any of the context sensitivity of singular causal talk *does* manifest itself in the semantics there may be other important upshots for the metaphysics of causation. Note that Lewis assumes that singular causation is a binary relation, simply relating exactly one cause to exactly one effect. The burgeoning literature on the role of contrasts in the language of singular causation puts pressure on this popular assumption. For example, Jonathan Schaffer argues that the context sensitivity involved in causal contrasts is semantic, and as a result that "causation is a *quaternary, contrastive* relation: $c$ rather than $C^*$ causes $e$ rather than $E^*$, where $C^*$ and $E^*$ are nonempty sets of contrast events" (2005, 297). He takes this hypothesis to help capture at least some of the context sensitivity of claims about singular causation. For closely related discussion, see van Fraassen 1980; Holland 1986; Glymour 1986; Hilton & Slugoski 1986; Hilton 1990, 1995, and the sources cited therein; Hitchcock 1996; Woodward 2003; Maslen 2004; Northcott 2008; and Schaffer 2010. For other work on the context sensitivity of the language of singular causation see Collingwood 1937–1938; Anderson 1938; Gasking 1955; Hart & Honoré 1985, 35–37 (originally published in 1959); Gorovitz 1965; White 1965; Zwart 1967; von Wright 1971; Mackie 1980, 34–38, 119–120 (originally published in 1974); Unger 1977 and 1984, 38, 58–60, 107; Lewis 1986a, 216; Horgan 1989; Menzies 2004, 2007, and 2009; Hall 2007; Hitchcock 2007; Hitchcock & Knobe 2009; and Maslen et al. 2009.

## 2. The language of general causation

Recall that mere correlation between smoking and lung cancer does not suffice for the truth of (5):

(5) Smoking causes lung cancer.

Neither is a causal connection between any one person's smoking and their lung cancer sufficient for (5) to be true. And neither is any particular instance of singular causation necessary for its truth. For example, the truth of (16) is compatible with the truth of (5).

(16) Al's smoking didn't cause him to have lung cancer.

On the basis of these differences between 'singular' and 'general' (or 'token' and 'type') causation, some philosophers distinguish between them on a metaphysical level. For example, some hold that "a distinguishing mark of a general causal sentence is that its causal relata are properties" (Menzies 1989, 59). (See also Good 1961a and 1961b; Cartwright 1979; Sober 1984; and Eells 1991.) Others think that the differences between attributions of singular and general causation do not mark any deep metaphysical differences. For example, when he discusses examples like these Lewis writes:

> Presumably those are quantified statements involving causation among particular events (or non-events), but it turns out not to be easy to match up the causal generalizations of natural language with the available quantified forms. A sentence of the form "C-events cause E-events," for instance, can mean any of
>
> (a) For some *c* in C and some *e* in E, *c* causes *e*.
>
> (b) For every *e* in E, there is some *c* in C such that *c* causes *e*.
>
> (c) For every *c* in C, there is some *e* in E such that *c* causes *e*
>
> not to mention further ambiguities. …These problems are not about causation, but about our idioms of quantification. (1973, 558)

But (as Lewis recognizes) none of (a)–(c) provide very good glosses of sentences like (5).

John Carroll offers a more promising hypothesis: ascriptions of general causation are really *generic* ascriptions of singular causation (1988 and 1991). To get a sense of what this hypothesis means, consider two uncontroversial examples of generic sentences (for an extensive discussion of genericity, see Generics):

(17) Lions have four legs.

(18) The dodo is extinct.

(17) is true even though some lions have fewer than four legs. And no particular lion's having four legs is necessary for its truth. Its exception-permitting character resembles that of (5). (18) is true even though it would be a category mistake to

ascribe the property of being extinct to any particular dodo. (And besides, there are no longer any dodos to whom that property might be ascribed.)

Examples of generic sentences in the literature often include bare plurals (as in (17)) or 'kind-referring' definite descriptions (as in (18)), and ascriptions of general causation use these kinds of expressions less frequently. But consider

(19) Car accidents cause a wide range of personal injuries.

(20) The smoking of cigarettes causes nearly a half a million deaths each year.

Like (17) and (18), (19) and (20) admit exceptions and do not require anything of any particular car accident or smoking of cigarettes. And there are also uncontroversial examples of gerundive and nominalized generics (Krifka et al. 1995, 102–105):

(21) Smoking tobacco is a bad habit.

(22) The smoking of tobacco is a bad habit.

(For further discussion of such sentences, see Carlson 1977, 300–301; Conrad 1982; Chierchia 1982 and 1984; and the other sources cited by Krifka et al.) (21) and (22) obviously resemble the ascriptions of general causation (23) and (24):

(23) Smoking tobacco causes lung cancer.

(24) The smoking of tobacco causes lung cancer.

These sentences resemble standard examples of generics in other ways, too. For example, adding 'usually' or 'typically' to (23) and (24) produces "at most a slight change of meaning" (Krifka et al. 1995, 9): (23), (24), and (25) mean roughly the same thing.

(25) Smoking tobacco typically causes lung cancer.

And "it is very difficult to transform a characterizing sentence into the progressive without its losing its generic character" (Krifka et al. 1995, 12). For example, the meanings of (26) and (27) are far from the most natural readings of (24) and (25):

(26) Smoking tobacco is causing lung cancer.

(27) The smoking of tobacco is causing lung cancer.

To be sure, none of these observations *answer* the historically important questions about ascriptions of general causation and about generic sentences. But it seems likely that sustained interaction would benefit those primarily interested in the former and those primarily interested in the latter.

## 3. The hidden language of causation

George Lakoff (1965, chapter 10) influentially argues that sentences like (28) and (29) have the same "deep structure":

(28) Floyd caused the glass to melt.

(29) Floyd melted the glass.

The truth of this hypothesis (or a hypothesis close to it) would be profoundly important to philosophical thought about causation. Among other things it would open up a whole new range of causal locutions against which to test our metaphysical theories of causation. But in response to Lakoff and others Jerry Fodor argues that "one can cause an event by doing something at a time which is distinct from the time of the event. But if you melt something, then you melt it when it melts." So although (30) is fine, (31) is odd (1970, 432-433).

(30) Floyd caused the glass to melt on Sunday by heating it on Saturday.

(31) #Floyd melted the glass on Sunday by heating it on Saturday.

And D. A. Cruse observes that (32) is fine although (33) is odd (1972, 522):

(32) John caused the reflection to move.

(33) #John moved the reflection.

On Lakoff's side see also McCawley 1968 and 1972; and Lakoff & Ross 1972; against Lakoffians see also Katz 1970; Smith 1970; Chomsky 1972; Kac 1972a and 1972b; Shibatani 1972; Wierzbicka 1975; and Morreall 1976.

From out of this debate emerged views that distinguish between "direct" or "manipulative" causation on the one hand, and "indirect" or "directive" causation on the other (see, e.g., Nedyalkov & Sil'nickij 1969 and 1973; Shibatani 1973a, 1973b, 1973c, and 1976; McCawley 1976; Talmy 1976 and 2000; Comrie 1981 and 1985; and Wierzbicka 1988). James McCawley, for example, argues that

> …"lexical causatives" such as *kill* and transitive *open* refer to direct causation, whereas corresponding periphrastic causatives such as *cause to die* and *cause to open* are unspecified as to the kind of causation, since the [Gricean] cooperative principles would dictate the use of the lexical causative where direct causation is involved. (1978, 257)

(On Gricean cooperative principles see Presupposition and Implicature.) Masayoshi Shibatani writes that this distinction is "Perhaps the single most important semantic distinction linguists make in accounting for different causative forms" (2000,

11). And yet he observes that "Despite its great importance, the relevant notion has not been satisfactorily defined, and grammarians have been using the terms 'direct causation' and 'indirect causation' and related ones rather vaguely without a rigorous definition" (11).

Shibatani's observation notwithstanding, it is not clear that any distinction in the area could do all the work that the 'direct'/'indirect' distinction is put to. For example, John Morreall observes that

> Causing is not an action. Killing, on the other hand, is an action; for example, it can be done quickly or slowly. … [So] if *kill* were derived from *cause to die,* we would expect to see sentences like …
>
> (34) *John slowly caused Mary to die.
>
> But the closest we can come to a *cause to die* sentence corresponding to ['John slowly killed Mary'] is [(35)].
>
> (35) John caused Mary to die slowly.
>
> But in [(35)] it is clear that it is Mary's dying that is slow, and not John's action of killing. (1976, 516–517)

Responding to this argument by contending that 'direct causation' *is* an action, and so can be done quickly or slowly, does not look very promising. But if periphrastic causatives are "unspecified as to the kind of causation," as McCawley suggests in the quotation above, then there should be a reading of (34) on which 'caused' denotes 'direct' causation, and so a reading on which it means the same as 'John slowly killed Mary.' There are various ways to respond to this argument. One might, for example, reject the putative distinction between 'direct' and 'indirect' causation. Or one might reject McCawley's appeal to conversation implicature, or reject this particular derivation of 'kill.' Unfortunately I cannot assess the possible responses here.

The literature has focused on lexicalizations that seem related to ascriptions of singular causation, but lexicalizations that seem related to ascriptions of general causation are interesting as well. For example, a Lakoffian might have thought that (9) and (36) have the same deep structure:

(9) Binge drinking kills brain cells.

(36) Binge drinking causes brain cells to die.

But paralleling Morreall's observation, (37) is fine and (38) is odd.

(37) Binge drinking slowly kills brain cells.

(38) #Binge drinking slowly causes brain cells to die.

This is again hard for Lakoffians to explain, and again appealing to a distinction between direct and indirect causation does not look very promising.

I do not hope to resolve these issues here, but just to make the point that philosophers' skills would be useful in testing how robust the putative distinctions between direct and indirect causation really are (for an opening salvo, see Thomson 1987; but see also her 1990, 207). Philosophers' skills would also be useful in drawing any important distinctions finely enough so that they have real explanatory power. Whatever the results of such efforts, a better understanding of how the subtleties of lexical causatives reflect and influence our thoughts and intuitions about causal notions would likely benefit a wide range of philosophers interested in causation and related topics. We might even get evidence relevant to the nature of syntax and semantics (Pietroski 2005) and to cognitive science (see, e.g., Wolff 2003 and 2007; Song & Wolff 2004; and Sloman 2005).

## 4. Causation and discourse interpretation

There is much to be learned from considering sentences in isolation. But sentences rarely actually occur in isolation; a sentence is generally part of a discourse. And a discourse is not a motley collection of unconnected sentences: it is more or less *cohesive*. A discourse "forms a unified whole … [that is] best regarded as a *semantic* unit: a unit not of form but of meaning" (Halliday & Hasan 1976, 1–2). The unified nature of naturally occurring discourses is an important aspect of linguistic meaning. And so for many Frege's 'context principle'—"it is only in the context of a proposition that words have any meaning" (1980, 73, originally published in 1884)—does not go far enough. Discourses have elements of meaning that do not adhere to any particular sentence (see Anaphora, Relevance Theory, Dynamic Semantics).

The extent to which a discourse strikes its interpreters as unified depends to some extent on the causal connections between the parts of the discourse that interpreters are able to perceive. Indeed, causal relations play an important enough role in discourse interpretation that it is routine to categorize discourse relations in part in terms of their relationship with causality (see, e.g., Halliday & Hasan 1976; Mann & Thompson 1988; Hobbs 1990; Sanders et al. 1992; Lascarides & Asher 1993; Kehler 2002; and Asher & Lascarides 2003). Appeal to causal relations is essential for explaining how we interpret even quite prosaic discourses. Consider the following simple example:

(39) Max opened the door. The room was pitch dark.

(40) Max switched off the light. The room was pitch dark.

Alex Lascarides and Nicholas Asher observe that (39) and (40) have similar syntax but very different "natural interpretations": "The event and state in [(39)] temporally *overlap,* whereas in [(40)] they do not" (1993, 437). How should we explain this difference between (39) and (40)? Lascarides and Asher postulate a discourse relation "*Result*($\alpha$, $\beta$): The event described in $\alpha$ caused the event or state described in $\beta$" (440) and hypothesize that we tacitly know that "the room being dark and switching off the light, if connected, are normally such that the event causes the state" (466). The 'normally' is important here because the relevant belief is defeasible. This is to respect the fact that if (40) is embedded in a larger discourse, we can find an interpretation on which the switching off of the light and the darkness of the room do overlap:

(41) Max and Nell realized that the monkeys were all finally asleep, and decided to turn off the light in the monkey pen to conserve power. Nell stumbled around the control room trying to find the switch, but failed. Max switched off the light. The room was pitch dark. But Max was used to finding his way around the control room at all hours of the night.

The total theory that Lascarides and Asher develop is complicated enough that I will not go into its details here. The important point is that our interpretation of discourse is influenced by our conceptions of the causal relations in the world. The relationship between causation and language is extensive enough that surprisingly broad ranges of natural language are, in some sense, parts of the language of causation.

## 5. Conclusion

Philosophers interested in causation sometimes abstract away from the *language* of causation as though such language is likelier to mislead or to confuse than to edify, and as though we can think about causation in a way that is untainted by facts about language. To be sure, causal language does not wear its proper analysis on its sleeve, and there is much more work to be done on causal language. Nevertheless, because it is unlikely that we can cleanly excise causal thought from causal language, we should pay attention to both if we are to pay attention to either (see also The Role of Experiment and The Role of Intuitions). Philosophers are well-suited to push work on the language of causation forward. And at the same time, careful attention to the language of causation could benefit a wide range of philosophical projects.

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