



Is ‘cause’ ambiguous?

Phil Corkum¹ 

Accepted: 11 January 2022

© The Author(s), under exclusive licence to Springer Nature B.V. 2022

Abstract Causal pluralists hold that there is not just one determinate kind of causation. Some causal pluralists hold that ‘cause’ is ambiguous among these different kinds. For example, Hall argues that ‘cause’ is ambiguous between two causal relations, which he labels dependence and production. The view that ‘cause’ is ambiguous, however, wrongly predicts zeugmatic conjunction reduction, and wrongly predicts the behaviour of ellipsis in causal discourse. So ‘cause’ is not ambiguous. If we are to disentangle causal pluralism from the ambiguity claim, we need to consider what other linguistic approaches are available to the causal pluralist. I consider and reject proposals that ‘cause’ is a general term, that the term is an indexical, and that the term conveys different kinds of causation through implicature or presupposition. Finally, I argue that causal pluralism is better handled by treating ‘cause’ as a univocal term within a dynamic interpretation framework.

Keywords Causation · Causal pluralism · Ambiguity

1 Introduction

Aristotle held that ‘cause’ is said in many ways.¹ Among the relations picked out by causal talk, in his view, are the relations between a substance and its material constituents, a substance and its form, a state and the process that brings that state about, and an activity and the final state brought about by that activity. These causes

¹ See *Phys.* 195^a4, 29, *Meta.* 983^a26, 1013^b4, 1052^b48, *De An.* 415^b9. My name-dropping here is not intended as scholarship. But we will return to Aristotle’s association of causal pluralism and questions.

✉ Phil Corkum
pcorkum@ualberta.ca

¹ University of Alberta, Edmonton, Alberta, Canada

are introduced at *Phys.* 2.3 (194^b16-5^a3) as various answers to the questions why an event occurs or why a state is the way it is: one kind of answer is given by identifying that out of which a thing comes to be and which persists through the change, another by stating that for the sake of which an activity is undertaken, and so on. There now has been a long period where the conversation among metaphysicians over causation has centered on providing a single, generally applicable analysis. But recent years has seen renewed interest in *causal pluralism*, the view that there are several causal relations. Some causal pluralists follow Aristotle's lead and view 'cause' as ambiguous. My aim in this paper is to disentangle these two positions. I will run through a prominent example to illustrate how and why the ambiguity claim is made (Sect. 2), argue that 'cause' is not ambiguous (Sect. 3) and float a few alternatives (Sect. 4). I will conclude with a sketch of a proposal: causal pluralism is better handled by treating 'cause' as a univocal term within a dynamic interpretation framework (Sects. 5 and 6).

Before diving in, let me address a worry that referee #2 may already have. The paper concerns in part the thesis that there are several causal relations, but I simply will be assuming that this thesis is correct. Instead of questioning the pluralism, I will be asking how best to talk about a distinction among causal relations, whether the distinction requires us to say that 'cause' means different things in different contexts, and in particular whether such contextual variation is best cashed out as the view that 'cause' is ambiguous. The central issue of the paper then is a question of semantics: the meaning of 'cause'—both in our ordinary causal talk and in the somewhat rarefied context of causal theorizing. Indeed, the paper might be viewed as in part a linguistic study of a dialect of English—that dialect which results from endorsing causal pluralism. As such, the paper may seem thin on philosophical content. So let me very briefly make two points in order to indicate the philosophical interest of the issue, and I will return to this worry near the end of the paper.

First, the paper plays defense. I said just now that some causal pluralists view 'cause' as ambiguous, but it would be better to say that a certain version of causal pluralism is typically associated, by both its proponents and its critics, with the ambiguity claim. Some of those who reject this version of causal pluralism mount an attack on the alleged ambiguity of 'cause', taking the attack to throw into question the associated version of causal pluralism. If causal pluralism can be disentangled from the claim that 'cause' is ambiguous, then causal pluralists have available a response to this line of criticism. And second, the issue of the paper is a case study in contextual variation in our causal talk. As we will see, the framework introduced to handle this case can be applied to a wide variety of causal discourse, and so the sketched proposal can itself be detached from any specific claim about what and how many kinds of causal relations there are.

Footnote 1 continued

Readers interested in the scholarly issues around Aristotle's application of homonymy to causation might begin with Stein (2011).

2 Causal pluralism and causal ambiguity theory

It will be useful to introduce somewhat more precise characterizations. Call *causal pluralism* the view that there is not just one determinate causal relation.² Causal pluralists might be divided into two broad classes: those who hold that there are a determinate number of clearly defined kinds of causation; and those who hold that causation is an indeterminate cluster concept: call these theorists determinate and indeterminate causal pluralists, respectively. Now call the view that 'cause' is lexically ambiguous *causal ambiguity theory*. Determinate causal pluralism and causal ambiguity theory may seem to be natural allies. If you held that there are several determinate causal relations, it might be natural to view 'cause' as being ambiguous among these relations.

Before turning to our example of a causal pluralist who is also a causal ambiguity theorist, I will make two observations. First, not all causal pluralists endorse causal ambiguity theory. For example, Cartwright (2007) holds that 'cause' picks out a single thin concept; it is *other* causative verbs, such as 'compress', 'attract' and 'discourage', that pick out distinct thick concepts. And many indeterminate causal pluralists view 'cause' as vague but not ambiguous among several clear meanings: see, for example, Godfrey-Smith (2010). Second observation: not all causal ambiguity theorists endorse causal pluralism. For example, Davidson is a causal ambiguity theorist who does not view 'cause' as ambiguous between kinds of causation. Davidson takes causation to be an extensional relation holding among coarsely individuated events. But our causal judgements appear to be sensitive to finer grained distinctions among events. Davidson (1980, 161) considers examples such as the following:

- (1) The collapse was caused, not by the fact that the bolt gave way, but by the fact that it gave way so suddenly and unexpectedly.

On Davidson's view, the bolt giving away and the bolt giving away suddenly do not differ in causal role. Our judgements that (1) can be true challenges this view. Davidson (1980, 161–62) responds:

What we must say in such cases is that in addition to, or in place of, giving what Mill calls the 'producing cause', 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 singular causal statements, but is best expressed by the words 'causally explains'.

One might view Davidson's move as positing an ambiguity between causation, an objective relation between coarse grained events, and causal explanation, a relation between finer grained representations. So although Davidson arguably views 'cause' as ambiguous, he does not thereby endorse causal pluralism. With these

² Causal pluralists include Anscombe (1993), Skyrms (1984), Sober (1985), De Vreese (2006), Cartwright (2007), Godfrey-Smith (2010), Illari and Russo (2014), and McDonnell (2018).

observations out of the way, now let us look at an example of a determinate causal pluralist who is also a causal ambiguity theorist.

Hall (2004, 2006) argues that ‘cause’ is ambiguous between two objective causal relations. Here is a heavily streamlined version of Hall’s argument. Counterfactualist theories of causation endorse some variant of counterfactual dependence between wholly distinct events as being sufficient for causation. Counterfactual dependence is usually tweaked in one way or other, but not all of these complications need detain us. Let us just look at three features. Causation is transitive, as so-called early preemption cases bring out.

ONE ROCK. Suzy and Billy each aim a rock at a window. Suzy throws her rock first, and it shatters the window. Seeing this, Billy does not throw his rock. But had Suzy not thrown her rock, Billy would have thrown his, and broken the window himself. Suzy’s throw causes the shattering.

Intuitively, Suzy’s throwing her rock is a cause of the window shattering, but the shattering is not counterfactually dependent on Suzy’s throw. The shattering however is dependent on Suzy’s rock sailing through the air towards the window, and Suzy’s rock sailing through the air is dependent on Suzy’s throwing the rock. We can handle these cases by allowing causation to be the ancestral of the counterfactual dependence relation.

This tweak does not handle all cases, as late preemption cases bring out:

TWO ROCKS. Suzy and Billy both throw a rock towards a window simultaneously. Suzy throws a little harder than Billy and her rock reaches the window first, shattering it. Billy’s rock passes through the empty window frame a split second later. Suzy’s throw causes the shattering.

Suzy’s throw causes the window to shatter, but of course had Suzy not thrown the rock, Billy’s throw ensures that the window would have shattered anyways. Looking for the ancestral of counterfactual dependence does not help. Every event that constitutes the trajectory of Suzy’s rock is a cause of the shattering but the shattering depends on none of them. One response to such cases is to add a condition of spatiotemporal connectedness. Call this, after Hall (2004, 225), locality: “causes are connected to their effects via spatiotemporally continuous sequences of causal intermediates.” Suzy’s throw is connected to the shattering, and so counts as a cause, Billy’s is not. Another response is to add a condition of intrinsicness: “[t]he causal structure of a process is determined by its intrinsic, noncausal character (together with the laws).” The process leading to the window shattering is determined by the intrinsic features of Suzy’s throw, her rock, the window, and so on, along with the physical laws—but the process is not determined by the intrinsic features of Billy’s throw, and his rock. This can be brought out by considering a world with perfect duplicates of Suzy’s throw, her rock and the window, but lacking Billy altogether: the window shatters in just the same way in this world as in the actual world.

Call this relation exhibiting transitivity, locality and intrinsicness *production*. Production is arguably the intuitive notion of causation about which causal theorists are theorizing. But the account of production fails to predict cases of causation

involving omissions or double preventions. Consider Hall's (2004, 241) case of double prevention:

THE BOMBING. Suzy is piloting a bomber on a mission to blow up an enemy target, and Billy is piloting a fighter as her lone escort. Along comes an enemy fighter plane, piloted by Enemy. Sharp-eyed Billy spots Enemy, zooms in, pulls the trigger, and Enemy's plane goes down in flames. Suzy's mission is undisturbed, and the bombing takes place as planned. If Billy hadn't pulled the trigger, Enemy would have eluded him and shot down Suzy, and the bombing would not have happened. Billy's actions partly cause the bombing.

Billy's pulling the trigger prevents an event, Enemy's shooting down Suzy, which would have prevented the bombing. Billy's pulling the trigger is one of the causes of the bombing, but is spatiotemporally unconnected with the effect. A perfect duplicate of Suzy's flight, but lacking both Billy and Enemy, would lead to the bombing. So double preventers are intuitively counted as causes, but fail to exhibit locality and intrinsicness. Or consider a case of causation by omission:

THE PLANTS. I usually water my plants but I do not water my plants for a month, while binge watching T.V., and the plants die. My not watering the plants causes them to die.

My not watering the plants causes their death. But if the omission is some kind of negative event, it does not seem to be spatiotemporally located at all, let alone connected to the plants' death. Or suppose talk of my not watering my plants picks out some positive and causally efficacious event such as what I actually do instead of watering the plants—my binge watching T.V. Still, my binge watching T.V. is not spatiotemporally connected to the plants' death. So some omissions are intuitively counted as causes, but are not productions.

Hall's response is to posit two concepts or kinds of causation. Under one conception—production—transitivity, locality and intrinsicness are true but counterfactual dependence does not generally hold. Under the other conception, counterfactual dependence between events is causation. In this sense of causation, transitivity, locality and intrinsicness are not generally true. Call this *dependence*. Cases of late preemption exhibit production without dependence. Cases of intrinsicness and locality failure, such as omissions and double prevention, exhibit dependence without production. Hall views dependence and production as both causal notions. Dependence captures the notion that a cause is a difference maker for an effect. And the idea behind production is that a cause helps to bring about an effect. Furthermore, dependence and production can be both picked out by our causal terminology. An advantage for us in considering this position is that Hall's move is explicitly a claim of lexical ambiguity. For example, Hall (2004, 253), in reviewing the contrasting considerations in favour of the claim that counterfactual dependence is causation, on the one hand, and those supporting the claim that the

counterfactual dependence is not causation, writes that “what is meant by ‘causation’ in each case is different.”³

So Hall provides an example of a causal pluralist who is also a causal ambiguity theorist.⁴ Some critics of determinate causal pluralism also appear to view the ambiguity claim as entailed by determinate pluralism. For example, the indeterminate causal pluralist Godfrey-Smith (2010) argues that, if determinate causal pluralism were true, we would expect disambiguation requests similar to the clarification ‘funny weird or funny ha-ha’, but switching between two senses is not viable in causal discourse—the situation is more disorderly. These specific criticisms might miss their target, as I will argue in Sect. 3. But Godfrey-Smith brings out well that it is not just determinate causal pluralists who associate pluralism and causal ambiguity.

Before moving on, let me address an objection. As we have seen, there is good evidence that at least some theorists associate causal pluralism and causal ambiguity theory. However, the ambiguity claim, even when explicitly made, often feels tossed off. So, the objection runs, causal pluralists are not especially invested in causal ambiguity theory. Were this correct, then the critical part of this paper might seem to lack interest. In response, note that some pluralists indeed might merely casually endorse the ambiguity claim—and of course the thesis of the paper is that a pluralist should not be an ambiguity theorist—but precision in expressing what linguistic claim is concomitant with pluralism is a virtue.

Multiple interpretability can arise from a variety of phenomena, such as context sensitivity, vagueness or sense generality. But it is a difference of some philosophical significance which of these is the case for causal ascriptions. To give a few examples, were ‘cause’ vague, this would support indeterminate versions of causal pluralism but not determinate versions. Only were ‘cause’ general, would the alleged various kinds of causation need to fall under a genus. And were ‘cause’ an indexical, there would be a linguistic rule, known by competent speakers, that would determine in a context of use which kind of causation is picked out. The

³ Hall’s specific version of determinate causal pluralism has received considerable attention. Some have embraced the distinction between production and dependence: see, for example, Illari and Russo (2014), and McDonnell (2018). Others have responded with unitary analyses of causation that nonetheless employ the distinction: for example, Beckers and Vennekens (2018) argue that dependence is an unnecessary but sufficient condition for causation, and production is an insufficient but necessary condition; and Andreas and Günther (2020) offer an analysis of causation by complementing production with a weak condition of difference-making. Hall’s pluralism has also received its share of criticism. Some criticize the sufficiency of production and dependence for causation: for example, Schaffer (2001, 2016) describes cases where an event causes an effect but neither does the cause produce the effect nor does the effect depend on the cause. Others criticize the necessity of the distinction: for example, Strevens (2013) argues that a single causal relation suffices to explain Hall’s double prevention cases.

⁴ The theses that causation is univocal or multivocal could be seen as conceptual positions, and not linguistic claims. For example, Hitchcock (2001) associates causal pluralism with the rejection of the thesis that causation is univocal, and it is unclear whether this association is with a conceptual or a linguistic thesis. But Hitchcock (2007) explicitly endorses the linguistic ambiguity claim, and Hall and Hitchcock both confirm in personal correspondence that a linguistic ambiguity claim was their original intention. Other authors who contrast pluralism with an explicitly linguistic univocality thesis include De Vreese (2006, 2009), Love (2012) and Schaffer (2016). Authors who contrast pluralism with a conceptual univocality thesis include Longworth (2006, 2010) and Reiss (2009).

ambiguity claim is a natural correlate to determinate causal pluralism, in part because ambiguity is a common phenomenon of multiple interpretability, and one which lacks these consequences for pluralism: a pluralist who holds that 'cause' is ambiguous can endorse determinate pluralism (unlike the vague theorist), need not hold that there is a genus of causation (and, for example, there does not seem to be a genus with a differentia distinguishing the formally dissimilar notions of production and dependence), and need not saddle causal discourse with the machinery of indexicals. So let us turn next to the meaning of 'cause', and ask first whether 'cause' is ambiguous.

3 Against causal ambiguity theory

'Cause' fails tests for ambiguity. The view that 'cause' is ambiguous wrongly predicts zeugmatic conjunction reduction, and wrongly predicts the behaviour of 'cause' in ellipsis.⁵ Let us run through each kind of test in turn. Our first test relies on the observation that ambiguous terms allow the derivation of zeugmatic conjunction reductions. Consider the following:

- (2.1) The mood here is heavy.
- (2.2) The piano is heavy.
- #(2.3) The mood here and the piano are heavy.

'Heavy' is used with different senses in (2.1) and (2.2), as the infelicity of (2.3) brings out. Zeugma typically has a somewhat humorous tone—of course, this is not to say that zeugma is all that funny, and the success of (2.3) as comedy falls a level somewhere around dad jokes. But regardless whether there is a humorous tone, such reductions do not allow cross readings: there's no interpretation of 'heavy' in (2.3) that makes sense of the whole: if 'heavy' means foreboding, the piano is not heavy; and if 'heavy' means weighty, the mood is not heavy. The single occurrence of 'heavy' must do double duty in the reduced conjunction, a job it is incapable of performing.

What of causation? We have been considering the view that 'cause' is ambiguous between dependence and production. This view predicts the derivation of zeugmatic conjunction reductions for mixed causal claims. But consider the following two triples, said in the contexts of *THE PLANTS* and *THE BOMBING*, respectively:

- (3.1) My not watering the plants caused their death.
- (3.2) The unusually arid conditions caused the plant's death.
- (3.3) My not watering the plants and the unusually arid conditions both caused the plants' death.
- (4.1) The bomber's actions caused the bombing.

⁵ For these two tests, I'm drawing largely on Zwicky and Sadock (1975). For a recent survey of ambiguity from a philosophical perspective, see Sennet (2016). And for a recent use of such tests within metaphysics, see Shaheen (2017a), who argues that 'because' is ambiguous between causation and grounding from alleged zeugmatic conjunction reduction.

- (4.2) The fighter's actions caused the bombing.
 (4.3) The bomber's and fighter's actions both caused the bombing.

(3.3) and (4.3) lack the awkwardness and humorous tone of (2.3). 'Cause', when allegedly ambiguous between production and dependence, fails the zeugmatic conjunction reduction test.

A second test for ambiguity involves ellipsis failure. Consider:

- (5) I saw Larry's duck under the table, and I saw Darryl's too.

By uttering (5) I could be saying that I saw two waterfowl or two evasive actions, but I could not be saying that I saw one of each, except in another lame attempt at comedy. As in conjunction reductions, the single remaining occurrence of the elided term must provide a sense for both clauses. Ambiguous terms cannot always do this job. What of causation? The distinction between production and dependence does not yield infelicitous ellipsis. Consider the following, said in the context of THE BOMBING:

- (6) The bomber caused the bombing, and the fighter did too.

(6) is felicitous, even when I mean that the bomber's actions produced the bombing and the bombing is dependent on the fighter's actions. The reader can easily confirm that similar comments could be made about omission cases. So the hypothesis that 'cause' is ambiguous between production and dependence fails to predict correctly linguistic judgements involving ellipsis.

Other arguments against causal ambiguity in the literature fail to persuade. As mentioned above, Godfrey-Smith (2010) argues that 'cause' is not ambiguous among determinate causal notions because 'funny weird or funny ha-ha'-style clarifications are not possible. But one can introduce the contrast between production and dependence, and when encountering an utterance of (4.2) in the context of THE BOMBING, request a clarification specifying which kind of cause does the fighter's actions fall under. (Of course, passing clarification tests does not *establish* ambiguity.) To give a second example, Shaheen (2017b) argues against the causal ambiguity claim on the following grounds. Suppose that in the TWO ROCKS situation I utter 'Suzy's throwing the rock was the cause of the shattering of the window'. Were 'cause' ambiguous, with one disambiguation counterfactual dependence, then this utterance would have a false reading since, recall, had Suzy not thrown her rock, Billy's rock would have broken the window. Shaheen claims there is no such false reading, and so 'cause' is not ambiguous. But one can induce a context where counterfactual dependence is the expected reading of causal talk; my utterance about Suzy's throw may in such contexts be false or, at least, infelicitous. So it is not clear that there are not the false readings of the utterance which the ambiguity theorist predicts. For these reasons, the Godfrey-Smith and Shaheen tests are inconclusive. In zeugmatic conjunction reduction and ellipsis tests, by contrast, an ambiguous term must do double duty, yielding multiple disambiguations within a single context of assessment. So a context where only one reading is appropriate can not be easily induced. For this reason, these tests provide robust evidence of ambiguity. Of course, I have incurred an obligation to illustrate in more detail a

context where the Godfrey-Smith and Shaheen tests are inconclusive, and I will discharge this obligation in Sect. 4.

Let us sum up. The view that 'cause' is lexically ambiguous wrongly predicts zeugmatic conjunction reductions, and wrongly predicts ellipsis failure. If this is right, then 'cause' is not ambiguous. Before moving on, I will address two objections. First, we have looked at empirical evidence to argue against causal ambiguity theory, and our opponent might respond that tracking ordinary linguistic judgements is just one virtue among many: to fail tests for ambiguity is to incur a cost, but it is a cost outweighed by the philosophical benefits of causal ambiguity theory. This objection misconstrues the dialectic. Causal ambiguity theory is put forward as a linguistic claim about our ordinary causal discourse. Correctly predicting linguistic judgements is not one virtue among many. One might shift to a revisionist stance, and concede that our pre-philosophical causal talk is not ambiguous, yet hold that we ought to treat 'cause' as ambiguous, since to do so yields philosophical rewards. But to view ambiguity theory as prescriptive and not descriptive would be to undercut the strategy of using the ambiguity claim in order to handle countervailing linguistic judgements. Hall wants to show that our reactions to cases such as *THE PLANTS* and *THE BOMBING*, counting omissions and double preventers as causes, does not require revision of an account of production. A revisionist stance would not allow these moves.

Second objection. With (2.3) and (5), I have chosen cases that contrast strikingly with causal examples such as (3.3), (4.3) and (6). But we should distinguish two kinds of ambiguity. Homonymous terms, such as 'heavy' or 'bank', have unrelated senses. Some homonyms, such as 'heavy', have senses that are etymologically connected: 'heavy' took on the sense of foreboding by metaphorical extension of its sense as weighty. For others, such as 'bank', it is just an accident that the same syntactic string of letters have the different senses. But for any homonym, there is no shared meaning component that relates the current meanings of the term. By contrast, there are other examples of ambiguity where the term has distinct but related senses. A classic example is 'healthy': a diet is healthy since it promotes health; but a complexion is healthy since it indicates health. The various senses of 'healthy' share, as a component of their distinct senses, the sense of 'health'. Call a term having multiple related senses *polysemy*. 'Healthy' is a polysemous term in this sense. Now consider a conjunction reduction with polysemy.

- (7.1) His diet is healthy.
- (7.2) His complexion is healthy.
- ?(7.3) His diet and complexion are healthy.

Readers might find (7.3) felicitous. (7.3) lacks a humorous tone, and we do talk this way on occasion. But just as in the case of 'heavy' in (2.3), there is no cross reading that can interpret 'healthy' in (7.3). Polysemous terms share a meaning component. But there isn't a single complete meaning common to all occurrences that would allow a plausible reading of (7.3). One might suggest, as a candidate single meaning, something along the lines of 'pertains in some way or other to health'. It would be unusual circumstances where one would utter (7.3) to make the vague

observation that his diet and complexion both pertain in some way or other to health. If one were to utter (7.3), they likely would be misspeaking or speaking loosely, and intending to get across what the following says:

(7.4) His diet is healthy and his complexion is healthy.

The unreduced conjunction (7.4) means that his diet promotes health and his complexion indicates health. The slip from an unreduced conjunction to a reduced conjunction is a natural one. But to observe this is not to say that (7.3) means what (7.4) means. At any rate, if such a reading is available, then ‘healthy’ is neither ambiguous nor polysemous.

Polysemy is the kind of ambiguity presumably intended by those who claim that ‘cause’ is ambiguous. Dependence and production are not unrelated or merely etymologically related pairs of senses of ‘cause’. And just as the feeling of zeugma is attenuated in (7.3), in comparison to (2.3), so too (the objection continues), the weak zeugma of (3.3) and (4.3) does not show that ‘cause’ is not polysemous. To report my own linguistic judgement, I hear (7.3) as zeugmatic, and (3.3) and (4.3) as not. But readers might not share this judgement. And I will reconsider viewing ‘cause’ as polysemous in Sect. 6. Until then, I will concede that we ought to take the conjunction reduction and ellipsis tests as providing merely initial evidence, and not conclusive proof, for or against ambiguity.⁶ The right response to this second objection, then, is to provide a univocal interpretation of ‘cause’. To do so will support my judgement that there is a single meaning that can interpret both conjuncts in each of (3.3) and (4.3), and can provide a referent for the elided term in (7). And to do so will allow us to conclude that one who endorses the distinction between production and dependence need not take ‘cause’ to be ambiguous. I turn to this task after the next section.

4 Some other options

What options are there, other than viewing ‘cause’ as ambiguous? I will next consider four options: viewing ‘cause’ as a general term, viewing ‘cause’ as an indexical; taking one of the causal relations as conveyed through implicature; and taking one of the causal relations as presupposed.

The reader might wonder why I am considering these other options. The following survey of alternative semantic views available to the pluralist, while not exhaustive, lends some support to selling the interest of the issue of the paper (in part since it is not obvious what the pluralist should say about the meaning of ‘cause’), lends some support to the positive proposal sketched in the next section (in part since, although the survey is not exhaustive, the proposal is at least the last one standing), and addresses actual suggestions and objections I’ve heard in conversation. Finally, recall that multiple interpretability can be due to a variety of phenomena. Viewing ‘cause’ as ambiguous might be the most natural semantic

⁶ For critical discussion of these tests, see for example Norrick (1981) and Geeraerts (1993).

correlate to determinate causal pluralism. But it will yield philosophical fruit to consider these other options.

It might seem promising to view 'cause' as a general term. On this view, causation is a genus, and kinds of causation, such as production and dependence, are its species. Notice that, like causal statements, general terms do not generate zeugmatic conjunction reductions. Consider the following, said of a cat and a dog.

- (8.1) Kitty is an animal.
- (8.2) Rex is an animal.
- (8.3) Kitty and Rex are both animals.

General terms also exhibit behaviour similar to causal statements with respect to elision. General terms, unlike ambiguous terms, allow the elision to pick up on the a different species from the elided species. For example, consider again:

- (5) I saw Larry's duck under the table, and I saw Darryl's too.

I could utter (5) if I saw Larry's mallard and Darryl's common eider.

Ambiguous terms are associated with a disjunction of meanings. 'Bank' may mean a financial institution or it may mean a river bed. And 'cause' arguably exhibits a similar association. 'Cause' sometimes picks out the relation of production, and exhibits transitivity, locality and intrinsicness; and 'cause' sometimes picks out the relation of dependence, and may exhibit none of these features. However, association with disjunctions is not unique to ambiguity. Ambiguous and general terms can be difficult to discern, since both may be associated with disjunctions. Although 'bank' may mean a financial institution or it may mean a river bed, 'animal' might be associated with a cat or a dog, and so on for the other species of animals. Many of the tests for ambiguity, at which we have been looking, were originally designed to distinguish ambiguity and generality.

Roberts (1984, 1987) noted that although both general terms and ambiguous terms can be associated with disjunctions, the scope differs. General terms can have a single disjunctive meaning; ambiguous terms, by contrast, are associated with a disjunction of meanings. This suggests a test for ambiguity. For discussion of Robert's (1984) test, see Zwicky and Sadock (1987), and for a response, Roberts (1987). If there is a context in which a term has the meaning ϕ , and in another context ψ , then the term may be ambiguous. But if the term can be read as having the disjunctive meaning (ϕ or ψ) in both contexts, it may be instead an unambiguous general term. One way to bring out this contrast between disjunctive meaning and a disjunction of meanings is to consider certain questions. For example, McCawley (1981, 9) considers:

- (9) Is John a bastard?

We might be asking if John is a nasty man. Or we might be asking if he is illegitimate. If 'bastard' meant *nasty man or illegitimate*, then the answer would be yes provided he was at least one. But if John is nasty and legitimate, or pleasant and illegitimate, the answer may well be no, in the right context. That is to say, we are either asking whether John is nasty, and his legitimacy is irrelevant, or we are asking

whether John is illegitimate, and his pleasantness is irrelevant. By contrast, consider:

(10) Is Kitty an animal?

Here the answer is yes provided Kitty is a cat or a dog or some other species of animal. Does ‘cause’ pass tests for general terms? The picture here is complicated. Consider a question test, applied in the situation of *THE MISSION*:

(11) Did the fighter cause the bombing?

If ‘cause’ were ambiguous, an indexical or otherwise context dependent, we might expect (11) to be true in contexts of utterance where (11) is asking if the bombing depends on the fighter’s actions, and false in contexts where (11) is asking if the fighter produces the bombing. But if ‘cause’ is a general term, we would expect the same answer regardless whether the bombing depends on the fighter’s actions or (counterfactually in *THE BOMBING*) the fighter’s actions produce the bombing. Readers might hear (11) in this way, and so true regardless of the kind of influence the fighter has on the bombing. But personally I do not find this judgement to be robust. We can bring this out with the following dialogue:

(12) A: Did the fighter cause the bombing?

B: Yes.

A: I meant, did the fighter pull the switch releasing the bombs?

The felicity of (12) suggests that there may be contexts of utterance where (11), applied in the situation of *THE BOMBING*, can be answered negatively. By contrast, general terms do not allow for such continuations.

#(13) A: Is Spot an animal?

B: Yes.

A: I meant, is he a cat?

(13) might be said as a correction, with A’s second utterance indicating that they should not have said ‘animal’ before. But such situations are unlike contexts where the question, ‘Is Spot an animal?’ should be answered negatively, provided Spot is a cat.

Before moving on, let me briefly return to a promissory note I made in Sect. 3. When discussing criticism of the ambiguity thesis, I noted that some tests floated in the literature are inconclusive. We can now see why this is so. Recall that Godfrey-Smith (2010) argues that, since we do not find ‘funny weird or funny ha-ha’-style clarification requests with causal statements, ‘cause’ is not ambiguous among determinate causal notions. Dialogues such as (12) suggest that at least sometimes such clarifications can be made, and one causal notion or another can be prompted by the direction the discourse takes. Similarly, Shaheen (2017b) claims that ‘cause’ is not ambiguous since there is no false reading of a statement such as

(4.2) The fighter’s actions caused the bombing.

Dialogues such as (12) bring out that this claim is not obviously true. We can induce a context where productions are salient. In such contexts, it is at least infelicitous to continue to assert that the fighter's actions, on which the bombing depends but which do not produce the bombing, are a cause of the bombing. Now back to the survey of semantic mechanisms.

Even if 'cause' is neither ambiguous nor a general term, those who agree with Hall in drawing a distinction between production and dependence might find it attractive to view 'cause' as shifting its meaning from one context of use to another. A natural suggestion would be to view 'cause' as an indexical. Variation of meaning from one context of use to another is paradigmatically handled through indexicals, and an indexical proposal is common in other areas; for example, many epistemic contextualists view 'knows' as an indexical. But indexicals and demonstratives exhibit zeugmatic conjunction reduction. Consider the following.

- (14.1) Fred went there.
- (14.2) George went there.
- #(14.3) Fred and George both went there.

Suppose that I utter (14.1) pointing south, and (14.2) pointing north; then (14.3) lacks a felicitous reading. We have seen that 'cause' fails conjunction tests; so 'cause' is not an indexical.

Might we instead view 'cause' as univocal but with a variety of uses? Such an approach would place our causal distinctions—between production and dependence, or between causation and explanation—into the pragmatics of causal discourse. Pragmatic strategies come in one of two flavours. One might view the act of making an utterance as adding information not narrowly said by that utterance. On this approach, causal claims assert just one causal concept, but can convey information about other causal concepts. So for example, we might try to retain Hall's distinction by holding that causal statements assert what produces what, and not what depends on what. Then, strictly, (3.1) and (4.1) all say something false. These statements, recall are:

- (3.1) My not watering the plants caused them to die.
- (4.1) The bomber's actions caused the bombing.

My not watering the plants does not cause the plants to die, since my inaction does not produce the death, but (3.1) can convey that the death depends on my inaction. And similarly for (4.1). On this approach, the information conveyed is something added on by the action and context of utterance, after a proposition expressed by the utterance itself has already been determined. So call this *post-propositional* pragmatics.

I will turn to the second kind of pragmatic approach in the next section. But I will first raise two objections to post-propositional pragmatic approaches. First, these pragmatists implausibly must ascribe pervasive semantic blindness to ordinary speakers. Suppose that our causal talk picks out production, but we can use such talk to convey information about the relevant dependence relations. And suppose again that I did not water my plants, as I usually do, and they die. I say (3.1). Most of us,

outside of philosophy discussions, would view (3.1) as true. The pragmatist strategy is to view all such claims as false, since my not watering the plants did not produce the plants' death. So pragmatists must view most of us as mistaken about the truth values of many of our causal statements. Of course, speakers are capable of misconstruing felicitous but false utterances for truths. And we should not view empirical evidence from ordinary speaker's usage as sacrosanct. But care ought to be taken when rejecting such evidence. Such care is needed generally in philosophy and especially in this context. Much of the argumentative methodology in the causation literature hangs on linguistic judgements. If we reject too much ordinary linguistic behaviour, we risk undercutting our own methodology.

A second objection. The post-propositional pragmatist holds that, when I utter (3.1), I unawares say something false but I deliver true information about the dependence of the plant's death on my not watering them. But there is no known mechanism that can carry this information for the post-propositional pragmatist.⁷ Let me look briefly at the two main mechanisms for pragmatic delivery of information. The first is conversational implicature. To repeat a well-worn example, suppose I say of a job candidate

(15) They have excellent handwriting.

I convey that I believe that they are a poor candidate, without saying that they are so. Conversational implications are typically cancellable: an implicature that *p* is explicitly cancellable if it is permissible to add 'but not *p*'. (15) can be cancelled, for example by:

(15.1) They have excellent handwriting, but I do not mean to suggest that they are a poor candidate. On the contrary, they both have excellent handwriting and are a good candidate.

It would be unusual in a hiring meeting to say (15.1) but it is not infelicitous. Any analogous attempted cancellation for my utterance about my plants, however, is worse than infelicitous.

#(15.2) My not watering the plants caused them to die, but I do not mean to suggest that the plants' death depended on my not watering the plants. On the contrary, my not watering the plants produced their death.

#(15.3) The fighter's actions in THE BOMBING partly caused the bombing. But I do not mean to suggest that the bombing merely depended on the fighter's actions.

Cancellation tests are defeasible evidence. But cancellation tests typically fail for reasons that offer little comfort for the causal pragmatist. For example, propositions that are both implicated and entailed can not be cancelled. But if a dependence

⁷ I indirectly owe my appreciation of this point to Schaffer's (2012) discussion of pragmatic mechanisms for conveying contextually variant causal contrasts.

relation is entailed by the omission statement, then it is arguably part of what is said, and not, as the pragmatist would have it, conveyed but not part of the content. To give another example, we might expect awkward cancellation when speakers conflate what is said and what it conveys. The pragmatist views her opponent as making this very conflation. But (15.2) is not merely awkward; it undermines the very distinction between production and dependence the pragmatist wishes to make.

A second pragmatic mechanism for the delivery of information is presupposition. When I say

(16) The knave stole the tarts

I presuppose the information that there is a knave. One test for presupposition is that a sentence and its negation share presuppositions:

(16.1) The knave did not steal the tarts

also presupposes that there is a knave. The omission statement (3.1) does presuppose the lack of a certain watering event. This presupposition can be brought out by a negation test. Consider:

(16.3) My not watering the plants did not cause the plants to die.

(3.1) and (16.3) presuppose the same lack of a watering event. However, (3.1) does not merely presuppose this lack. It, unlike (16.3), asserts that this lack is salient to identifying the cause of the plants' death. It is this information with which the eliminativist would replace omission talk. Similar comments could be made about negations of double prevention claims.

The information about dependence that I get across when I say that my not watering the plants caused them to die is neither conveyed through implicature nor presupposed. So, if such information is delivered pragmatically, it is by a less well studied mechanism. But the problem is not merely that pragmatists owe us a detailed account of the pragmatics. No mechanism could do the job needed by the post-propositional pragmatist. Shuffling the information from what is said to what is conveyed or presupposed gets the means by which these causal statements deliver information wrong. When I say 'My not watering the plants caused them to die', we might agree that there is information about the dependence of the plants' death on my inactivity that I get across. But this information is part of what I said; it is not something that I merely convey.

5 A dynamic interpretation approach

We have set out several desiderata. A theory of causal discourse should correctly predict behaviour in tests for ambiguity such as zeugmatic conjunction elimination and ellipsis; in tests for general terms such as the question test; in tests for implicature such as the cancellation test; and in tests for presupposition such as the negation test. And we should hesitate to ascribe semantic blindness to ordinary speakers. Viewing 'cause' as ambiguous, a general term, an indexical or as

conveying additional information through implicature or presupposition all fail to meet at least some of these desiderata.

In the previous section, I noted that there are two kinds of pragmatic approach. The first kind we labelled post-propositional since the context of utterance contributes information only after the proposition said has been determined. Let us turn to the second kind. In pre-propositional pragmatics, the act and context of an utterance contributes to determining what proposition is expressed. I will sketch a pre-propositional pragmatics, and indicate how the theory could be applied so to retain the distinction which Hall introduces between production and dependence. My goals here are modest. The presentation will be informal. I will lay out one version of a pre-propositional pragmatics, a dynamic theory, so that the discussion will have specificity. But I will not defend the details of the sketch, since my aim is to illustrate a general approach, and not defend any specific version of a pre-propositional pragmatics.

Dynamic theories draw on Stalnaker's (1974, 1978, 1999) work on assertion and presupposition, and were developed by the linguists Partee (1978), Heim (1982, 1992), Groenendijk and Stokhof (1989), Kamp and Reyle (1993), Roberts (1996) and others. These theories range from approaches more proximate to Stalnaker's work to approaches more distal, as I will discuss momentarily. But the leading idea behind all of these theories is that communication takes place within a context of information that shifts as the discourse continues, and new utterances update this background. In Stalnaker's approach, any moment of a conversation has a *common ground* of the interlocutors' shared beliefs at that time—those propositions implicitly recognized by each interlocutor as shared. Associated with the common ground is a *context set* of the possible worlds that, for all we know, might be the actual world. The goal of an assertion is to reduce the context set, discarding worlds from the live options. If we could continue our conversation indefinitely, we would distill the context set down to a singleton, identifying the actual world. Stalnaker cashes out this idea by introducing a pragmatic rule: in an assertion, one utters a sentence expressing a certain proposition to add this new information to the context set, thereby altering the information constituting the common ground. Since propositions can be modelled as sets of worlds, assertion is treated as intersecting the asserted proposition with the prior context set to produce an updated conversation state. The asserted sentence is thus associated with a function from contexts of possible utterance to updated contexts, what Heim (1983) calls its context change potential.

A model for discourse requires that more structure be added to this framework. Different dynamic theories take different approaches; for example, discourse reference theory adds a *set of discourse referents*, the objects under discussion, which allows for such features as anaphora and deixis. But for most dynamic theories, the context set far outstrips the salient possibilities: not all worlds in the context set are equally relevant to the interlocutor's goals and intentions at a given moment of a conversation. If we leave these sets unordered, we fail to track what worlds and objects are salient to the discussion. One way to impose more structure is to view communication as governed by a *question under discussion*. For a theory developed along these lines, see for example Roberts (1996).

Questions might be thought of semantically as partitions on the space of worlds. A primary goal of communication is to determine, for the question under discussion, in which cell the actual world lies. A strategy for answering this question is to raise subquestions entailed by the question under discussion. Following Groenendijk and Stokhof (1989), let's say that one question (the superquestion) entails a second (the subquestion) just in case any answer to the first answers the second. A conversation proceeds by breaking up the question under discussion into subquestions that are entailed by that question, and which might be easier to answer. To illustrate, here is an example similar to one given by Roberts (2004).

- (17) A1: How do I get to Santa Monica?
B1: You can take the 2.
A2: Where do I catch that?
B2: It stops on Hilgard.

A1 introduces the question under discussion. B2 partly answers this question and might be viewed as introducing the 2 bus into the set of discourse referents. A2 draws on the salience of this object to provide a referent for the demonstrative. This second question is entailed by the question under discussion, and so B2 contributes to providing a fuller answer to this superquestion. In (17) the questions are explicit but the questions under discussion and their subquestions are often implicit.

Now let us apply this framework to causal discourse. I will assume a Hall-style pluralism, with distinct causal notions of production and dependence. This choice of underlying pluralist theory is being made to give the proposal specificity. But the proposal is neutral with respect to which pluralism is true, and I will return to the assumption of a Hall-style pluralism after laying out the proposal. We might view the question under discussion for causal discourse as 'How did the target event come about?' But this question under discussion can entail a variety of subquestions. One such question might take the form 'What is the process by which the target event come about?' An exhaustive answer to that question would include the event's complete production history. This history contains every event linked by production relations leading to the target event. A real world discourse would not provide a complete answer, of course: for example, good representatives of the production path often suffice, and proximate links in the production history are typically more salient. Another subquestion might take the form 'What difference-makers are there for the process by which that event came about?' Such questions can have as answers events which do not produce the effect but on which the effect depends. An exhaustive answer to this question might include all such events. These difference-makers to the process would include innumerable many omissions, and might include double preventers. And again a real world discourse would be highly selective as to what answers are appropriate.

Answers to subquestions contribute to answering their superquestion, and for their expression can inherit locutions appropriate to that superquestion. Since the superquestion 'How did the target event come about?' entails both of the subquestions 'What is the process by which the target event come about?' and 'What difference-makers are there for the process by which that event came about?',

it is not surprising that answers to these subquestions make use of causal locutions. We talk of my not watering the plants as *causing* their death because, insofar as they answer the second subquestion, they are part of a strategy to answer the question under discussion in causal discourse. The proposal is that interlocutors can introduce these different subquestions under a superquestion that governs the overall goal of causal discourse, and this explains the use of causal locutions to characterize both production and dependence.

On this view, ‘cause’ is univocal. The meaning of ‘cause’ is a function from possible contexts of utterances to updated contexts, governed by the superquestion ‘How did the target event come about?’ That question entails different subquestions—one where it is appropriate to identify a producer, and one where it is appropriate to identify an event on which the effect depends but which does not produce the effect. English does not use distinct terminology to distinguish answers to these subquestions. This is why we speak of omissions and double preventers as causes. In effect, through coining talk of ‘dependence’ and ‘production’, Hall has introduced the terminology to distinguish answers to the subquestions into a dialect of English, that fragment of the language used by metaphysicians.

How does the causal superquestion, and the way it can break into subquestions, yield a single context change potential for ‘cause’? The semantic value of the term is a function from contexts of utterances to updated contexts where certain possible but nonactual features of the causal history have been eliminated. Sometimes citing a cause eliminates possible alternative processes that might have brought the effect about: if I say that the lightning caused the forest fire, I am eliminating other options, such as an undoused campfire. This partly answers the subquestion asking by what process does the effect come about, but it also partly answers the superquestion governing causal discourse. On the other hand, sometimes citing a cause identifies that on which the effect depends, and eliminates alternatives on which the effect might have counterfactually depended. Since citing a cause can reduce the context set in a variety of ways, causes range over a variety of types.

Here is some evidence in support of the proposal—the dynamic interpretation approach meets our desiderata. First, the proposal explains the behaviour of causal statements in ambiguity and ellipsis tests. For example, we can explain why conjunction eliminations are not zeugmatic. Consider again:

- (4.1) The bomber’s actions caused the bombing.
- (4.2) The fighter’s actions caused the bombing.
- (4.3) The bomber’s and fighter’s actions both caused the bombing.

(4.1) and (4.2) both contribute to answering the same superquestion, albeit through answering different subquestions. Although the bomber’s and the fighter’s actions influence the causal history leading to the bombing in different ways—one as an event on which the bombing counterfactually depends and the other as part of the process producing the bombing—citing either reduces the context set in ways which partly determine that causal history, and which is governed by the causal superquestion. As such, there is a single meaning for the reduced term, ‘caused’, in (4.3) that can do double duty for both conjuncts, and no zeugma results. And so,

with with THE BOMBING as the backstory, (4.3) is felicitous. Similar comments can be made about the ellipsis test. Consider again

(6) The bomber caused the bombing, and the fighter did too.

(6) is felicitous. Although the action of the fighter produces the bombing and the bombing merely depends on the action of the fighter, the superquestion structures the set of discourse referents so that both actions are salient.

Second, unlike with post-propositional pragmatic theories, claims such as (3.1), 'My not watering the plants caused their death', are not read as false and we do not need to ascribe semantic blindness to ordinary speakers. Moreover, the proposal explains the behaviour of causal statements in tests for implicature and presupposition. The dependence of the plants' death on my inaction is a part of what is said by (3.1), and so can not be cancelled, and is not presupposed by both the claim and its negation.

Finally, the proposal explains the somewhat complicated behaviour of causal claims in the question test for general terms. Recall, I suggested that readers might find

(11) Did the fighter cause the bombing?

to be answered affirmatively regardless of context, a mark of general terms. But, recall, the proposal that 'cause' is a general term wrongly predicts that the dialogue

(12) A: Did the fighter cause the bombing?

B: Yes.

A: I meant, did the fighter pull the switch releasing the bombs?

is infelicitous, since analogous dialogues with uncontroversial general terms are indeed infelicitous. (Remember, we compared (12) with: A: Is that [pointing at a dog] an animal? B: Yes. A: I meant, is it a cat?) It is a point in favour of the dynamic interpretation that it predicts the felicity of (12) since the reading allows for there to be two uses of A's first utterance in (12), one looking for information about production, and another looking for information about dependence. So in contexts governed only by the question under discussion, (11) is answered affirmatively provided the fighter either produces the bombing or the bombing depends on the fighter's actions. In contexts governed by the subquestion 'What is the process by which the target event come about?', (11) can be answered negatively since the bombing merely depends on the fighter's actions. The dialogue in (12) introduces just such a context.

There are other advantages to the proposal. Recall that multiple interpretability can arise from a variety of mechanisms. The dynamic interpretation avoids the constraints placed on pluralism by these alternatives. Unlike the view that causal pluralism is expressed by sense generality, the dynamic interpretation theorist need not hold that there is some genus under which the various kinds of causation fall. The great variety of ways in which a superquestion might be answered by answering a subquestion allows for greater flexibility than the species-genus relation. Unlike the view that 'cause' is an indexical, the dynamic theorist need not ascribe to

speakers knowledge of a straightforward rule that determines which causal relation is appropriate in a given context. There are of course contextual indicators that influence what causal subquestion is appropriate, arising from the progress of the discourse, and the shared beliefs and intentions of the interlocutors. But such contextual determination is more subtle than any rule that maps an indexical expression onto a content.

So much for the sketch of a dynamic theory and its application to causal discourse. Now, a few disclaimers. The proposal is neutral in two respects. First, the proposal is neutral with respect to a specific semantic framework. For specificity, I have sketched a broadly Stalnakerian approach. Such an approach uses a traditional, static semantics: a sentence expresses a truth condition which, relative to a context, determines a proposition, modelled as a set of worlds. Supplementing this semantics, as we have seen, is a pragmatic rule: one utters a sentence, expressing a given proposition, with the typical intention of changing the conversation state by adding the information encoded by that proposition to that state. Since conversation states are also modelled as sets of worlds, an assertion can be seen as a proposal to intersect the asserted proposition with the initial conversation state. Such manoeuvres can be thought of as governed by implicit questions, since questions might be viewed as partitions on a space of possible worlds. Making an assertion, and so answering a question, reduces the conversation state to one cell. Updating the common ground can only eliminate possibilities. There is no going back. This limits the dynamicism of the approach; indeed, some linguists view such eliminativeness as a mark of a static conversation system. See for example, Rothschild and Yalcin (2016).

But a Stalnakerian approach is just one option among many. There have been proposed a wide variety of dynamic semantics: Kamp's (1981) discourse representation theory, Heim's (1983) file change semantics, Groenendijk and Stokhof's (1991) dynamic predicate logic, and many others. Although a static semantics is compatible with viewing a conversation dynamically in terms of context change potential, a more dynamic semantics identifies the semantic content of a sentence with that context change potential, not a truth condition. Such systems are typically noneliminative. For example, in dynamic predicate logic an indefinite can reset the set of discourse referents without regard for previous membership.

The choice of a Stalnakerian approach offers several advantages. One advantage is that the presentation is, I hope, broadly accessible. Partly for this reason, I have kept the presentation nontechnical, and I have presented a mere sketch of the mechanics. Another advantage is that the presentation is conservative. More outré approaches to dynamicity are controversial.⁸ Although many linguists argue that we need more robustly dynamic theories, the Stalnakerian approach offers a minimally dynamic approach, the rough lines of which is something on which we

⁸ For discussion of this controversy, see for example Lewis (2017). The application of one approach or another to a specific issue of philosophical interest also generates controversy. See for example, Gillies (2007) and Moss (2012) on handling reverse Sobel sequences with either a dynamic semantics or dynamic pragmatics, and the implications for counterfactuals.

can all agree. And a final advantage is that our discussion remains ecumenical. The observation that causal pluralism can be handled by incorporating dynamic elements is plausibly neutral on what specific dynamic theory we should endorse—or, more cautiously, a variety of approaches are live options, and it is not my current purpose to decide among these options. The goal of this paper has been to argue that causal pluralism and causal ambiguity theory should be disentangled; I hope to have persuaded you of this, regardless of your semantic proclivities.

Secondly, the proposal is neutral with respect to the questions under discussion. For specificity, I have sketched a broadly Hall-style pluralism, with questions corresponding to what produces the effect and to that on which the effect depends. But the questions used for the sketch are little more than placeholders. Other pluralists will choose other kinds of questions, and the specific interpretation of the super- and subquestions will reflect internal debates among pluralists. But, as in the case of the choice of dynamic theory, so too for the choice of pluralism: it is an advantage to remain ecumenical. This paper has aimed to show that pluralists should not be causal ambiguity theorists; this is true regardless of what stripe of pluralism you advocate.

That is not to say that the characterization of the questions will be straightforward. Notice that there is no difficulty in stipulating a superquestion that can be answered by different causal relations. The question is just a partition of the context set. And a characterization of the question is easy: a disjunctive question ranging over the plurality of kinds of causes succeeds. For example, for a pluralist who holds that either a cause produces an effect or an effect depends on its cause, the disjunctive question, ‘what produces the effect or on what does the effect depend?’ successfully characterizes the appropriate superquestion. The difficulty is to motivate a nondisjunctive characterization of the question that can be answered by any of the range of kinds of causes, and which could be grasped by competent language users. I do not know how to do this. And I leave it as an unsolved problem for pluralists.

6 A few further remarks

I have explained the advantages of keeping the positive proposal underspecified, and some readers might be satisfied with the sketch drawn in Sect. 5. But other readers—and yes, I really am talking about referee #2 now—might demand more detail. So before bringing the paper to a conclusion, let me say a few words in order to locate the proposal relative to the current literature on polysemy. Traditionally, polysemy—recall, a lexical item having multiple related senses—has been treated as a kind of ambiguity, and this approach continues to have its advocates: for a few recent examples, see Lepore and Stone (2015), Brocher et al., (2016, 2018), and Devitt (2013, 2020, 2021). On this line, polysemous terms have distinct conventionally encoded lexical meanings, stored mentally and retrieved individually from that store on an occasion of use. The approach allows polysemy to be handled with a contextually invariant compositional semantics—that is to say, with the same theoretic resources used for monosemous terms. But the line faces certain

challenges. It conflates polysemy and homonymy, since both terms with related senses and terms with unrelated senses are treated as ambiguous. It requires profligate stored senses, since each interpretation of a polysemous term requires a distinct conventionally encoded lexical meaning; as such, the approach appears vulnerable to the charge of being ideologically inflationary. And it cannot easily account for novel usage; for example, Devitt (2021) concedes that a semantic approach must be supplemented with a pragmatic process to explain use of a term when there is no conventionalized meaning but a speaker introduces an ad hoc sense through an original metaphor, metonymy, or some such trope.

In recent years, pragmatic approaches have received considerable attention. Such approaches tend to take a polysemous term as having a single lexical meaning. The contribution the term makes to the truth conditions of the proposition expressed in a given occasion of use is derived inferentially from this directly retrieved lexical meaning. For example, one might view the term's literal meaning as modulated in a context through such phenomena as metonymy ('school' as institution, building or personnel), sense extension or loosening ('swallow' applied to living agents with digestive systems or to an ATM), enrichment or narrowing ('drink' applied to drinks generally or to an alcoholic drink), and metaphor ('chicken' applied to the animal or a coward). Modulation exhibits a great variety of dimensions, including container/contents ('He drank the whole bottle'), object/information ('book'), place/event ('Woodstock'), creator/creation ('I've read Dickens'), and many more. Recent discussion of broadly pragmatic approaches can be found in Ruhl (1989), Frison and Pickering (2001), Recanati (2004), Wilson and Carston (2007), and Falkum (2015, 2017), to name a few. For a current survey, interested readers might look to Carston (2021).

Within broadly pragmatic approaches, there are a variety of choice points. Theorists differ on the nature of the pragmatic process. Earlier, we distinguished pre- and post-propositional pragmatic processes. One might view the pragmatic process for polysemy as pre-propositional: on this approach, the lexical meaning of a polysemous term is the input to modulation; the content contributed to truth conditions of utterances containing that term is its output. In this way, the process determines what is said or the truth-conditional content. To give just one example, Recanati (2004, 2010, 2017) takes this approach. Alternatively, one might view the process as a post-propositional pragmatic process, taking what is said as input and yielding additional information conveyed as output. For example, Falkum's (2015) relevance-theoretic approach might be viewed as employing a post-propositional pragmatic process.

A different choice point is the nature of the lexical meaning. Some hold that a polysemous term has a thin lexical meaning which only contains information constraining the range of concepts the term can be used to express. See, for example, Carston (2012). Others hold that the term has a core meaning, a set of features shared by all senses. See for example, Jackendoff (1992). Still others, a lexical meaning rich in conceptual information, which interlocutors have to select only a portion appropriate to a given context. For example, see Pustejovsky (1995), Vicente (2018), Ortega-Andres and Vicente (2019), and Quilty-Dunn (2021).

A third question, related to the first two, is whether the lexical meaning is a literal meaning available to speakers. If so, then modulation is optional: when an expression is used literally, the term's contributed content just is its lexical meaning. Such availability is arguably a mark of post-propositional pragmatic processes. Understanding a modulated use, however, does not require awareness of the expression's literal meaning. To access the literal meaning, one must reflect on a variety of occasions of use so to isolate the core meaning, or identify the rich meaning. Ruhl (1989), for example, views the lexical meaning as underspecified along dimensions of concrete/abstract, static/dynamic, and so on; the lexical meaning is encoded unconsciously and cannot be articulated by typical competent speakers.

The proposal floated in this paper might be seen as a variant of these pragmatic approaches to polysemy. The proposal treats the multiple interpretability of 'cause' as a kind of context sensitivity, not as a kind of ambiguity. There are not distinct lexical meanings conventionally encoded, and retrieved separately on different occasions of use. And so the proposal does not incur the challenges faced by those who treat polysemy as ambiguity. We can retain a distinction between polysemy and homonymy; we do not require profligate lexical meanings for each polysemous term and so the proposal offers an arguably more parsimonious theory; and we can easily allow for novel usage. It would be an instructive exercise to compare an approach drawing on iterated questions under discussion with other pragmatic approaches to 'cause'. Like some other approaches, the proposal resolves the multiple interpretability of 'cause' through a post-propositional pragmatic process. What is said is partly determined by what is being asked, at any given point of a discourse. The proposed lexical meaning of 'cause' bears similarities with some of these other pragmatic theories, as well. A dynamic semantics takes the meaning of an statement to be a function from the context of utterance to the updated context or, roughly equivalently, the answer to a question under discussion. Insofar as answers to subquestions, involving for example that which produces an effect or that on which an effect depends, partly answers the superquestion governing a causal discourse, we might think of the meaning of 'cause' on this proposal as akin to a core or rich lexical meaning. But the proposal does not rely on a literal meaning to 'cause', encoded as a lexical meaning (whether available to speakers or not), that is subsequently modulated through various tropes such as metonymy, narrowing, broadening or metaphor.

All that seems right to me. The sense in which Billy's actions in *THE BOMBING* or my not watering the plants in *THE PLANTS* are causes of what happens is not merely metaphorical. Nor does calling these events causes strike me as a metonym with production like calling both the institution and the building a school, a loosening like saying an ATM swallows a credit card, or a narrowing like restricting 'drink' to alcohol. However, it is not my intention to argue for these claims here. Rather, I am assuming the truth of causal pluralism, and I doubt that causal pluralists should view causal notions as related along these dimensions of modulation. For example, if one held that there are two distinct legitimate causal notions, production and dependence, one would likely be disposed to reject treating talk of one notion as mere metaphor. Moreover, I do not aim to argue for the superiority of the proposal

over other pragmatic theories. To argue for the proposal as a general theory of polysemy would take us far afield. I put the proposal forward as an example of an approach to causal discourse, available to the causal pluralist, that does not view ‘cause’ as ambiguous. The proposal has been given a bit of detail, so to flesh out the example. But the proposal remains a sketch.

Finally, I have an ulterior motive in choosing an approach that employs stacked questions under discussion. To bring out this motivation, I will return to the concerns, raised in the introduction, over the philosophical interest of the paper. The metaphysical thesis that there are two kinds of causation can be disentangled from the linguistic claim that ‘cause’ is ambiguous. Can and should: causal ambiguity theory is vulnerable to the objections raised in Sect. 3. So the paper gives to determinate causal pluralists a defensive manoeuvre. Of course, to note this is not to endorse the distinction between production and dependence. But the distinction also has given us a case study for the application of dynamic interpretation theory. The framework is flexible enough to model alternative ways of carving up causation. Let me mention two examples from earlier in the paper. First, we began with an origin story for causal pluralism. Aristotle’s views about causation are far removed from our own. But the affinities between the dynamic interpretation approach, and Aristotle’s association of the four causes with different answers to why-questions, should be clear. Although I have rejected Aristotle’s view that ‘cause’ is ambiguous, I have plumped for an approach that nonetheless could be loosely labelled ‘Aristotelian’. Our second example is Davidson’s causal ambiguity theory. Recall from our comments in Sect. 2, Davidson holds that ‘cause’ is ambiguous between causation and causal explanation. Explanations might be thought of as answers to certain kinds of questions. And so the contrast between causation and causal explanation might be well handled partly with a dynamic interpretation approach. But these issues lie outside our topic of causal pluralism, and I must leave discussion to another occasion.

Acknowledgements Thanks to Christopher Hitchcock, Michael Hymers, Tom Vinci and the auditors of talks given at Dalhousie University and the APA Central. Thanks especially to Ned Hall for magnanimous comments. I gratefully acknowledge financial support from SSHRC Insight Development Grant #430-2020-00713.

Funding N/A.

References

- Andreas, H., & Günther, M. (2020). Causation in terms of production. *Philosophical Studies*, 177(6), 1565–1591.
- Ancombe, G. E. M. (1993). Causality and determination. Orig 1971. In E. Sosa (Ed.), *Causation and Conditionals* (pp. 63–81). Oxford University Press.
- Beckers, S., & Vennekens, J. (2018). A principled approach to defining actual causation. *Synthese*, 195(2), 835–862.
- Brocher, A., Foraker, S., & Koenig, J.-P. (2016). Processing of irregular polysemes in sentence reading. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 42(11), 1798–1813.

- Brocher, A., Koenig, J.-P., Mauner, G., & Foraker, S. (2018). About sharing and commitment: The retrieval of biased and balanced irregular polysemes. *Language, Cognition and Neuroscience*, 33(4), 443–466.
- Carston, R. (2012). Word meaning and concept expressed. *The Linguistic Review*, 29(4), 607–623.
- Carston, R. (2021). Polysemy: Pragmatics and sense conventions. *Mind & Language*, 36, 108–133.
- Cartwright, N. (2007). *Hunting causes and using them*. Cambridge University Press.
- Davidson, D. (1980). The individuation of events. Orig. 1969. *Essays on actions and events* (pp. 163–180). Oxford: Clarendon Press.
- Devitt, M. (2013). Is there a place for truth-conditional pragmatics? *Teorema*, 32, 85–102.
- Devitt, M. (2020). *Overlooking conventions: The trouble with linguistic pragmatism*. Springer.
- Devitt, M. (2021). Semantic polysemy and psycholinguistics. *Mind & Language*, 36(1), 134–157.
- De Vreese, L. (2006). Causal pluralism and scientific knowledge: An underexposed problem. *Philosophica*, 77, 125–150.
- De Vreese, L. (2009). Disentangling causal pluralism. In R. Vanderbeeken & B. D'Hooghe (Eds.), *Worldviews, Science and Us: Studies of Analytical Metaphysics* (pp. 207–223). World Scientific Publishing.
- Falkum, I. L. (2015). The how and why of polysemy: A pragmatic account. *Lingua*, 157, 83–99.
- Falkum, I. L. (2017). The lexical pragmatics of count-mass polysemy. *Semantics and Pragmatics*, 10(20), 52–87.
- Frisson, S., & Pickering, M. (2001). Obtaining a figurative interpretation of a word: Support for underspecification. *Metaphor and Symbol*, 16, 149–171.
- Geeraerts, D. (1993). Vagueness's puzzles, polysemy's vagaries. *Cognitive Linguistics*, 4, 223–272.
- Gillies, A. (2007). Counterfactual scorekeeping. *Linguistics and Philosophy*, 30, 329–360.
- Godfrey-Smith, P. (2010). Causal pluralism. In H. Beebe, C. Hitchcock, & P. Menzies (Eds.), *Oxford Handbook of Causation* (pp. 326–337). Oxford: Oxford University Press. uCcbloelimshNheidlo Hsoaplly of causation.
- Groenendijk, J., & Stokhof, M. (1989). *Dynamic montague grammar: A first sketch*. ITLI/Department of Philosophy, University of Amsterdam.
- Groenendijk, J., & Stokhof, M. (1991). Dynamic predicate logic. *Linguistics and Philosophy*, 14(1), 39–100.
- Hall, N. (2004). Two concepts of causation. In J. Collins, N. Hall, & L. A. Paul (Eds.), *Causation and counterfactuals* (pp. 225–276). MIT Press.
- Hall, N. (2006). Philosophy of causation: Blind alleys exposed; promising directions highlighted. *Philosophy Compass*. <https://doi.org/10.1111/j.1747-9991.2006.00002.x>
- Heim, I. (1982). *The Semantics of Definite and Indefinite Noun Phrases*. PhD dissertation, University of Massachusetts.
- Heim, I. (1983). File change semantics and the familiarity theory of definiteness. In R. Bäuerle, C. Schwarze, & A. von Stechow (Eds.), *Meaning, Use and Interpretation of Language* (pp. 164–189). De Gruyter.
- Heim, I. (1992). Presupposition projection and the semantics of attitude verbs. *Journal of Semantics*, 9, 183–221.
- Hitchcock, C. (2001). A tale of two effects. *The Philosophical Review*, 110, 361–396.
- Hitchcock, C. (2007). How to be a causal pluralist. In P. Machamer & G. Wolters (Eds.), *Thinking about causes: From Greek philosophy to modern physics* (pp. 200–221). University of Pittsburgh Press.
- Illari, P., & Russo, F. (2014). *Causality: Philosophical theory meets scientific practice*. Oxford University Press.
- Jackendoff, R. (1992). *What is a concept, that a person may grasp it? Languages of the mind: Essays on mental representation* (pp. 21–52). MIT Press.
- Kamp, H. (1981). A theory of truth and semantic representation. In J. Groenendijk, T. Janssen, & M. Stokhof (Eds.), *Formal methods in the study of language* (pp. 277–322). Mathematisch Centrum.
- Kamp, H., & Reyle, U. (1993). *From discourse to logic*. Kluwer.
- Lepore, E., & Stone, M. (2015). *Imagination and convention*. Oxford University Press.
- Lewis, K. (2017). Dynamic semantics. *Oxford Handbooks Online*. <https://doi.org/10.1093/oxfordhb/9780199935314.013.14>
- Longworth, F. (2006). Causation, pluralism and responsibility. *Philosophica*, 77, 45–68.
- Longworth, F. (2010). Review: Cartwright's causal pluralism: A critique and an alternative. *Analysis*, 70, 310–318.

- Love, A. (2012). Hierarchy, causation and explanation: Ubiquity, locality and pluralism. *Interface Focus*, 2, 115–125.
- McCawley, J. D. (1981). *What linguists have always wanted to know about logic but were ashamed to ask*. Chicago, IL: University of Chicago Press. (2nd edition, 1993.)
- McDonnell, N. (2018). Making a contribution and making a difference. *American Philosophical Quarterly*, 55, 303–312.
- Moss, S. (2012). On the pragmatics of counterfactuals. *Noûs*, 46, 561–586.
- Norrick, N. (1981). *Semiotic principles in semantic theory*. John Benjamins.
- Ortega-Andres, M., & Vicente, A. (2019). Polysemy and co-predication. *Glossa*, 4, 1–23.
- Partee, B. (1978). Bound variables and other anaphors. In D. Waltz (Ed.), *Theoretical issues in natural language processing 2* (TINLAP-2). Urbana, IL: University of Illinois, pp. 79–85. Reprinted in *Compositionality in formal semantics: Selected papers by Barbara H. Partee*. (2004) Oxford: Blackwell, pp. 110–121.
- Pustejovsky, J. (1995). *The generative Lexicon*. The MIT Press.
- Quilty-Dunn, J. (2021). Polysemy and thought: Towards a generative theory of concepts. *Mind & Language*, 36(1), 158–185.
- Recanati, F. (2004). *Literal meaning*. Cambridge University Press.
- Recanati, F. (2010). *Truth-conditional pragmatics*. Oxford University Press.
- Recanati, F. (2017). Contextualism and polysemy. *Dialectica*, 71, 379–397.
- Reiss, J. (2009). Causation in the social sciences: Evidence, inference, and purpose. *Philosophy of the Social Sciences*, 39, 20–40.
- Roberts, L. (1984). Ambiguity vs. generality. *Canadian Journal of Philosophy*, 14, 295–313.
- Roberts, L. (1987). Intuitions and ambiguity tests. *Canadian Journal of Philosophy*, 17, 189–197.
- Roberts, C. (1996). Information structure: towards an integrated theory of formal pragmatics. *OSU Working Papers in Linguistics*, vol. 49: *Papers in Semantics*, pp. 91–136.
- Roberts, C. (2004). Discourse context in dynamic interpretation. In L. Horn & G. Ward (Eds.), *Handbook of contemporary pragmatic theory* (pp. 197–220). Oxford: Blackwell.
- Rothschild, D., & Yalcin, S. (2016). Three notions of dynamicness in language. *Linguistics and Philosophy*, 39, 333–355.
- Ruhl, C. (1989). *On monosemy: A study in linguistic semantics*. State University of New York Press.
- Schaffer, J. (2001). Causes as probability-raiser of processes. *Journal of Philosophy*, 98, 75–92.
- Schaffer, J. (2012). Causal contextualisms. In M. Blaauw (Ed.), *Contrastivism in Philosophy: New perspectives* (pp. 35–63). Routledge.
- Schaffer, J. (2016). The metaphysics of causation. *The Stanford Encyclopedia of Philosophy* (Fall 2016 Edition), E. Zalta (Ed.), URL = <<https://plato.stanford.edu/archives/fall2016/entries/causation-metaphysics/>>.
- Sennet, A. (2016). Ambiguity. *The Stanford Encyclopedia of Philosophy* (Spring 2016 Edition), E. Zalta (Ed.), URL = <<https://plato.stanford.edu/archives/spr2016/entries/ambiguity/>>.
- Shaheen, J. (2017a). Ambiguity and explanation. *Inquiry*, 60(8), 839–866.
- Shaheen, J. (2017b). The causal metaphor account of metaphysical explanation. *Philosophical Studies*, 174, 553–578.
- Skyrms, B. (1984). EPR: Lessons for metaphysics. In P. French & T. H. UehlingWettstein (Eds.), *Midwest studies in Philosophy IX* (pp. 245–255). University of Minnesota Press.
- Sober, E. (1985). Two concepts of cause. In P. Asquith and P. Kitcher (Eds.), *PSA 1984* (Volume 2), East Lansing: Philosophy of Science Association, pp. 405–24.
- Stalnaker, R. (1974). Pragmatic presuppositions. In M. K. Munitz and P. K. Unger (Eds.), *Semantics and Philosophy*. New York: New York University Press, pp. 197–214. Reprinted in Stalnaker (1999), pp. 47–62.
- Stalnaker, R. (1978). Assertion. In P. Cole (Ed.), *Syntax and semantics 9: Pragmatics* (pp. 315–322). Academic Press.
- Stalnaker, R. (1999). *Context and content*. Oxford University Press.
- Stein, N. (2011). Aristotle's causal pluralism. *Archiv Für Geschichte Der Philosophie*, 93(2), 121–147.
- Strevens, M. (2013). Causality reunified. *Erkenntnis*, 78, 299–320.
- Vicente, A. (2018). Polysemy and word meaning: An account of lexical meaning for different kinds of content words. *Philosophical Studies*, 175(4), 947–968.
- Wilson, D., & Carston, R. (2007). A unitary approach to lexical pragmatics: Relevance, inference and ad hoc concepts. In N. Burton-Roberts (Ed.), *Pragmatics* (pp. 230–259). Palgrave.

Zwicky, A., & Sadock, J. (1975). Ambiguity tests and how to fail them. In J. Kimball (Ed.), *Syntax and semantics*, 4 (pp. 1–36). Academic Press.

Zwicky, A., & Sadock, J. (1987). A non-test for ambiguity. *Canadian Journal of Philosophy*, 17, 185–188.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.