

Periphrastic Causative Verbs in English: What Do They Mean?

The expression of causal necessity and causal sufficiency in ordinary English*

Sven Lauer

Department of Linguistics, Stanford University

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English has a variety of periphrastic causative verbs, each of which appears to be specialized for the expression of particular kinds of causal dependence. Take the examples in (1):

- (1) a. John caused the children to dance.
- b. John made the children dance.
- c. John had the children dance.
- d. John got the children to dance.

(1a-d), intuitively, are not paraphrases. What, exactly is the difference in meaning, though, that gives rise to this impression? This paper will focus on the two verbs *cause* and *make* to the exclusion of other causative verbs. The decision to focus on *make* (together with the ‘unmarked’ causative verb, *cause*) is supported by a number of considerations:

- (i) *Make*-causatives are the most frequent ones, especially so in spoken English (Stefanowitsch (2001, p. 129) finds a 15:1 ratio of *make* vs. *cause* in the Switchboard corpus¹).
- (ii) As it will become clear in the following, I think that *cause* and *make* exhibit an interesting, and so far unappreciated, semantic difference, which may well have implications for the analysis of various other constructions.
- (iii) The *make* causative and its relationship to the *cause* causative is surprisingly understudied, more so than the *have* and *get* causatives.

The *make*-causative also presents unique challenges for a semantic analysis. Take, for example, the contrast between (1a) and (1b): On hearing the latter, but not the former, a hearer will likely conclude ...

- (i) that John *intended* to bring about the dancing (Wierzbicka 1998);
- (ii) that the children were unwilling to dance (Dixon 2005, Shibatani 1976, ‘coercive causation’);
- (iii) that John commanded or requested that the children dance (Shibatani 1976, ‘directive causation’);
- (iv) that John wanted the children to dance (Stefanowitsch 2001);
- (v) that the children were aware that John wanted them to dance (Wierzbicka 1998))

As I will argue in Section 5, however, none of these implications can be proper entailments, as there are contexts in which they do not (or even cannot) arise from the utterance of a causative *make* sentence.

So it seems we are between a rock and hard place: On the one hand, replacing *cause* with *make* in a sentence can induce a variety of rather specific

¹Compare that to 10:1 for *have* vs. *cause* and 5:1 for *get* vs. *cause*.

implications, on the other hand, none of them seem to be proper entailments, because not every use of *make* induces these implications. This is indeed the reason why the only two substantive works on causative *make* to date (Wierzbicka 1998, Stefanowitsch 2001) argue that we have to recognize a number of *make* ‘constructions’ that carry irreducible meanings. The bottom line is that these authors take *make* (or, in their parlance ‘the *make* construction’) to be ambiguous.

I think we can do better. The general strategy will be to assign a single, uniform semantic content to all occurrences of *make*, and explain the multitude of (apparent) implications as arising through the interaction of this lexical meaning, contextual entailments and implicature(-like inferences).

The central idea is that a *cause*-sentence says that the ‘cause’ was **necessary** for the effect, while a *make*-sentence says that the ‘cause’ was **sufficient** for the effect, in a sense to be made precise.

1 Causative *make*: Some challenges

In the introduction, I exemplified the variety of (perceived) implications that *make* gives rise to but *cause* lacks. However, when first confronted with a minimal pair like (1a) and (1b), repeated below for convenience, we are likely to be struck by the similarity in meaning: Both sentences say that John ‘brought about’, in some sense, the dancing of the children.

- (1) a. John caused the children to dance.
b. John made the children dance.

Together with the impression of implications that are present with *make* (but not with *cause*) this suggests that *make* is a stronger version of *cause*, that it is ‘*cause* plus’ something else (this is the basic underlying idea of calling the causal influence predicated by *make* ‘directive’ or ‘coercive’ causation, e.g. by Shibatani (1976)). This thesis immediately raises the question: *cause* plus what? What is the additional meaning contributed by *make*?

When looking at an example like (1), we might be tempted to say (as was Shibatani (1976)), that the additional meaning that *make* carries has somehow to do with an entailment to the effect that the entity denoted by the apparent object of the causative verb (the CAUSEE) was ‘coerced’ to do the action denoted by the embedded VP against his will by the subject (the CAUSER).

Indeed, this kind of ‘coercive implication’ arises fairly regularly when the causer and causee are volitional entities and the embedded verb is a volitional action. Regularly, but not universally:²

²This status message shows a fairly usual switch in person-agreement: Since the status message is shown adjacent to the ‘speaker’s’ name, many messages omit the subject (having the name stand in as the subject), and hence using 3rd person agreement in the first sentence. It is fairly typical to switch back to the expected 1st person pronouns and agreement in subsequent sentences.

- (2) [status message on a social networking site]
(the speaker) has freaking awesome friends. freaking awesome. But some of them make me smoke too much.

The speaker in (2) does not claim that his or her friends coerce or force her to smoke too much. Though, maybe we can just retreat a little bit and say that all that *make* says (over and above what *cause* says) is that the causee was coerced/forced to do the action denoted by the embedded VP (though not necessarily by the causer, but perhaps by a combination of the causer in combination with the causee's psychological addiction to nicotine)?

While I think that that is on the right track **for uses of *make* when the embedded VP denotes a volitional action**, it cannot be generally true. For how can one be coerced to do something involuntarily? What's more, there are a lot of instances where *make* has a non-volitional (or even inanimate) causee:

- (3) The sun made the flowers wilt.

(3) is a particularly telling example, because flowers do not even have a non-volitional tendency to not wilt (if anything, they have a tendency to wilt), so that simply broadening our notion of coercion, as suggested by the following quote from Dixon (2005, p. 312f) does not really help:

"It is generally only appropriate to use a *make* construction when the subject of the complement clause is—by its character or nature—impeding the success of the activity; *make* refers to overcoming this impedance."

Similarly, it is not clear what the 'impedance' would be with verbs of experience, as in:

- (4) His attentions made her feel giddy.

There is no implication of coercion, or overcoming of an impedance in (4) (except, perhaps, the tendency not to feel giddy without reason, but this tendency is also relevant in the *cause*-version of the sentence).

So while we want to predict some version of a coercive implication for (all or many) uses in which the 'effect' is a volitional action, we cannot generally assume that this is part of the conventional meaning of *make* (for then we would be forced to stipulate an unattractive ambiguity).

Similar qualms apply to other aspects of meaning that are sometimes attributed to *make*: For example, it is sometimes suggested (e.g. by Wierzbicka (1998)) that (in certain uses), *make* asserts that the causer intended to bring about the caused event. But not only can we have inanimate causers (as, for example in (3)), even with human causers (and causees), it is felicitous to modify *make* with *accidentally* or *inadvertently*.³

³I use the diacritic ³ to indicate that a sentence is attested on the internet, following the practice of Horn (2010)

- (5) ³Yes, I accidentally made [my 3-year old son] fall off the boogie board because holding the board and two bottles of fish food was a little much.⁴
- (6) ³Instead of motivating him to improve, you've inadvertently made him tune you out.⁵

The goal of the following sections is to outline a way in which we can account for the perceived interpretative effects of *make* (in particular those that contrast with or are absent in *cause*-sentences) on the basis of a single, uniform, lexical meaning.⁶ It should be clear that none of the proposed implications mentioned above can count as proper parts of the semantic content of *make*.

2 *Make does not entail cause*

A central first step is to give up the notion, as intuitive as it may initially be, that *make* is a hyponym of *cause*. The puzzling question ‘*cause* plus what?’ maybe was the wrong question to ask. Maybe we should look for a way to characterize the semantics of *make* independently from that of *cause*.

Some evidence that lends some plausibility to the view that *make* is not a hyponym of *cause* are cases in which *make* is felicitous, but *cause* is not. The contrast is particularly striking in cases where causer and causee are identical:

- (7) a. I made myself work out three times a week.
b. ??I caused myself to work out three times a week.

Similarly, with verbs of appearance, while *cause* may not quite be infelicitous, it often sounds marginal:

- (8) a. The earthquake made the World Series seem unimportant.
(Switchboard)
b. ?The earthquake caused the World Series to seem unimportant.

An analysis that denies an entailment-relationship between *cause* and *make* will still have to assume that the meanings assigned to both are compatible: This is so because there are many utterances in which *cause* and *make* can be used interchangeably:

⁴<http://www.trekaroo.com/activities/ko-olima-ocean-adventures-honolulu-hawaii>, retrieved on 2009-08-26

⁵http://mycrains.craainsnewyork.com/executive_inbox/2009/06/post.html, retrieved on 2009-08-26

⁶The goal of a unified analysis of *make* has its limits: What is pursued here is a uniform analysis of **causative** *make*, that is, uses of *make* that follow the pattern ‘make NP VP_{inf}’. Thus I exclude uses of *make* as a generic creation verb (*make a card*, *make ice cream*), and other uses with a single NP argument, as well as uses with two NP arguments (*make him president*), though the latter perhaps may be unified with the causative analysis. Even more likely is that uses following the pattern ‘make NP AdjP’ (e.g. *make him sick*) are amenable to an analysis parallel to the one outlined in here. I will ignore these uses, nonetheless.

- (9) a. He saw something which caused his big heart to give a sickening lurch and made his hair bristle on the back of his neck.
 b. He saw something which made his big heart give a sickening lurch and caused his hair to bristle on the back of his neck.

(9b) is attested (in the Brown corpus), (9a) constructed by swapping *cause* and *make*. An informal survey shows that native speakers perform at chance when asked to identify the attested example. Furthermore, none of the questioned speakers asked about information about the context, and when asked if the two sentences could be appropriate in the same context, they confirmed that they were.

We can account for this if we assume that the meanings of *cause* and *make* overlap enough so that in cases like (9), both are applicable. Assuming that neither causative verb is properly stronger than the other explains the absence of **blocking** effects in cases like (9): If two expressions stand in a hyponym relation, speakers tend to choose the stronger one if both are applicable, giving rise to an implicature that the stronger expression is not applicable when the weaker form is used.⁷ And yet, no such implicatures are perceived in (9).

Thus assuming that *make* and *cause* are logically independent (though compatible), we are indeed in a better position to account for data like (9) (together with (7) and (8)). The following section will support this point, showing that a certain entailment of *cause*-sentences does not hold for the corresponding *make*-sentences.

3 *Cause, make and causal necessity*

Following Lewis's (1973) influential counterfactual analysis of causation, it is common to assume that a statement involving the verb *cause* entails a counterfactual which says that, had the cause been absent, the effect would have been absent, as well. Thus, (10a) is taken to entail (10b):

- (10) a. The recession caused Jerry to lose his home.
 b. (Other things being equal,) if the recession had not happened, Jerry would not have lost his home.

For Lewis, this counterfactual entailment was (partially) constitutive of what *cause* means. Not everyone shares this view, but there is a strong intuition that the causal statement in (10a) supports the counterfactual statement in (10b). We may capture this by saying that *cause* ascribes a certain kind of **necessity** to the cause: The cause was a necessary condition for the effect.

Now, in previous analyses, it has been assumed that *make* supports a similar entailment, either implicitly (by assuming that *make* is a hyponym of *cause*, as, e.g. supposed by Shibatani (1976)), or explicitly, by Wierzbicka (1998).

⁷See McCawley (1978). Indeed, it might be tempting to invoke blocking to explain the infelicity (or reduced felicity) of *cause* in (7) and (8)—but doing so would exacerbate the problem of the **absence** of blocking in (9): If *make* blocks *cause* in (7), why does it not block it in (9)?

Wierzbicka gives semantic explications of a handful of ‘*make* constructions’ (which she claims carry irreducible meanings), but every single one of them contains a clause saying that

$$\left. \begin{array}{l} Z \text{ would not have happened (to Y)} \\ Y \text{ would not have done Z} \end{array} \right\} \text{if } \left\{ \begin{array}{l} X \text{ had not done something} \\ X \text{ had not have happened} \end{array} \right.$$

where Y is the causee, X is the causer or causing event, and Z the eventuality denoted by the embedded VP. That is, she claims that causative *make* constructions invariably entail counterfactual necessity.

I think this claim is mistaken: *make* causatives do not always predicate necessity, in fact I think they never do.

Take the following example, from a recent installment of the *Rachel Maddow Show* (MSNBC, Monday, August 10, 2009,⁸, emphasis mine):

- (11) MADDOW: You worked for [the health insurance company] CIGNA for 15 years, you left last year.

What **caused** you to change your mind about what you were doing and to leave?

POTTER: Well, two things. One, it was kind of gradually. One instance or in one regard because I was becoming increasingly skeptical of the kinds of insurance policies that the big insurance companies are promoting and marketing these days. [...]

The other thing that really **made** me make this final decision to leave the industry occurred when I was visiting family in Tennessee a couple of summers ago, and [narrates the experience of happening on a ‘healthcare expedition’ where uninsured patients were treated by volunteer doctors in animal stalls at a fairground].

While it is fairly clear that the experience at the fairground was the ‘final straw’ that, according to Potter, brought about his decision to leave his former employer, it is equally clear that he might just as well have been gradually become convinced to quit by his growing doubts about the business practices of health insurance companies that he observed in his everyday life, if he had not been to the ‘healthcare expedition’. Before his visit there, it was simply a possibility, afterwards, it was inevitable.

That is, Potter’s *make*-assertion does not commit him to the truth of (12):

- (12) If Potter had not gone to the ‘healthcare expedition’, he would not have left CIGNA.

⁸A transcript of the show is available at http://www.msnbc.msn.com/id/32372208/ns/msnbc_tv-rachel_maddow_show/

This is just not something that Potter asserts with his utterance.⁹

The same point can be made more forcefully with a constructed example:

- (13) I was not sure if I should go to band camp last year, but then my mother insisted that I go. I am so happy that she made me go. I had the best summer ever.

The speaker of (13) first says that there was a (contingent!) possibility that she would go to band camp. Yet, in the second sentence she says (in fact, presupposes) that her mother made her go. If *make* entailed counterfactual necessity, this should be incoherent, but it is not.¹⁰

I conclude that Wierzbicka's assumption that *make* entails counterfactual necessity is not adequate: There are examples in which an assertion of a *make*-causative does not commit the speaker to the corresponding statement of counterfactual necessity. At the same time, *cause* causatives *do* seem to entail counterfactual necessity, lending support to the idea that *make* is not a hyponym of *cause*.

To make this clear: I do not deny that *make*-utterances are often understood as asserting counterfactual necessity. I simply point out that they **need not** be so understood, and hence counterfactual necessity cannot be an entailment.¹¹

4 *Make, cause and causal sufficiency*

Let us go back to this last example: The speaker asserts that her not going to band camp was a possibility, as was her going. Then her mother insisted that she go, and thus **ensured** that she went. Similarly, in the *Rachel Maddow* example (11), before his visit to the 'healthcare expedition' Potter leaving CIGNA was merely a possibility, afterwards, it was a done deal. I propose that **this** is what a *make* utterance asserts:

- (14) **Sufficiency Hypothesis:** A *make*-causative asserts that, given the cause, the effect was inevitable, in a weak sense to be made precise.

⁹It is tempting to cite (3) (repeated here for convenience) to make the same point. However, it is plausible to say that, in the case of (3), it is likely true that the flowers would not have wilted **at the time they did** and one might think that this is what is asserted by the sentence.

- (3) The sun made the flowers wilt.

The same counter-argument cannot be made with respect to (11): Potter does not even commit himself to the truth of (i):

- (i) Potter would not have left CIGNA at the time he did, if he had not been at the health-care expedition.

¹⁰Note also that (13) is not felicitous with *cause* instead of *make*.

¹¹This point is valid even if it is rather hard to come up with such counterexamples—that only shows that the inference is drawn regularly.

Indeed, I think this is a rather natural form of causal dependence, but one that is often ignored in studies of causatives: It captures the intuition that the effect is the *result* of the cause much more aptly than the usual Lewis-style necessity-analyses.

The notion of ‘inevitability’ appealed to in (14) has to be rather weak: In saying that his experience at the ‘health care expedition’ made him (decide to) leave his job, surely Potter does not claim that nothing could have happened that would have prevented him from leaving CIGNA. For example, his employer could have threatened him with dire consequences, thus changing his mind. Or CIGNA could have suddenly become a humanitarian organization that offers affordable, comprehensive health care. In either of these situations, Potter might well have stayed at CIGNA.

The notion of inevitability needed, thus, is a weak one: Given that the cause happened *and no interfering event happened*, the effect was bound to happen. To make this clearer, we can think of this in the following way: In order to establish causal sufficiency, we have to check certain **alternative courses of affairs**, besides the actual one. If in all these alternative courses of affairs in which the cause happens, the effect happens, as well, then the cause is causally sufficient for the effect.

However, not all possible courses of affairs are considered: For one thing, only those whose past, up to the point of the occurrence of the cause, is the same as the actual one are relevant. Secondly, if a course of affairs *c* differs from the actual course of affairs in that an event that actually did not occur occurred in *c* (after the cause occurred), then *c* is not taken into account when judging causal sufficiency. This ensures that courses of affairs in which ‘interrupting events’ (such as CIGNA becoming a humanitarian organization) are not taken into account.^{12, 13}

In contrast, if there is another alternative course of affairs *c'*, which differs from the actual course of affairs in that an event that actually **did** occur does not occur in *c'*, then that does not prevent *c'* from being considered in the evaluation of claims of causal sufficiency.¹⁴ This ensures that a sufficient

¹²The idea of ignoring ‘interruptions’, of course, is reminiscent of analyses of the progressive in general, and Dowty’s (1979) ‘inertia worlds’, in particular. The courses of events taken into account here are different from inertia worlds in that they include worlds in which events occur which occurred in the actual world, regardless of whether these events are results of the states of affairs at the time of the cause or not. Inertia worlds, on the other hand ‘are to be thought of as worlds which are exactly like the given world up to the time in question and in which the future course of events after this time develops in ways most compatible with the past course of events’ (Dowty 1979, p. 128).

¹³One may wonder whether causal sufficiency is not better captured in terms of the **likelihood** of the effect, instead of by quantifying over a restricted set of future courses of events. The idea would be to analyze *make* as entailing that after the cause happened, the effect was very likely to happen. I do not think this can be made to work. In particular, it is unclear how such an analysis can capture the coercive implications of *make*: Even if *A* sees to it that it is very likely that *B* does *a* (but still leaves the choice up to *B*), we cannot say ‘*A* made *B* do *A*’, regardless of how unlikely it is that *B* abstains from *doing* after what *A* did.

¹⁴In fact, things are slightly more complex than that. In the end, we want to characterize the relevant sets of alternative courses of events in terms of **relative similarity** to the actual course of events, to accommodate the fact that we cannot just ‘take out’ events out of possible history

cause is actually sufficient, i.e. that the occurrence of the effect does not depend on events subsequent to the putative sufficient cause. As an example, suppose a hurricane weakens the structural integrity of a house, but the house does not collapse. Days later, a minor earthquake hits, and the weakened house collapses. (15a) is not appropriate (though (15b) is). The current account predicts this, because when checking sufficiency, we do include courses of affairs in which the the earthquake did not happen—and in (some of) those courses of affairs, the house will not have collapsed.

- (15) a. The hurricane made the house collapse.
 b. The hurricane caused the house to collapse.

In contrast, when evaluating a *cause*-statement, I want to suggest that events that actually did happen and events that did not happen, are on a par: if in all courses of events in which the cause did not happen (but that are otherwise as similar to the actual course of events as possible), the effect does not happen either. Thus, worlds in which an event that actually happened does not happen are considered, for the purpose of judging necessity, as just as different from the actual world as worlds in which an event that did happen in reality, did not happen.¹⁵

The two analyses are summarized in (16) and (17):

- (16) $w \in \llbracket X \text{ cause } Y \text{ to } VP \rrbracket$ iff there are times t_c, t_e such that $t_c \leq t_e$ and
- a. event c happens in w at time t_c ,
 where $c = \llbracket X \rrbracket$ if X is eventive, otherwise, c is an event in which $\llbracket X \rrbracket$ is participant.
 - b. $\llbracket VP \rrbracket(\llbracket Y \rrbracket)$ is true or happens in w at t_e
 - c. $\llbracket VP \rrbracket(\llbracket Y \rrbracket)$ is not true / does not happen at t_e at all possible futures v of w at t_c which are maximally similar to w except that c does not happen in v at t_c .
- (17) $w \in \llbracket X \text{ make } Y \text{ to } VP \rrbracket$ iff there are times t_c, t_e such that $t_c \leq t_e$ and
- a. event c happens in w at time t_c ,
 where $c = \llbracket X \rrbracket$ if X is eventive, otherwise, c is an event in which $\llbracket X \rrbracket$ is participant.
 - b. $\llbracket VP \rrbracket(\llbracket Y \rrbracket)$ is true or happens in w at t_e
 - c. $\llbracket VP \rrbracket(\llbracket Y \rrbracket)$ is true / happens at t_e in all possible futures v of w at

of the world without changing anything else. Condoravdi and Kaufmann (2009) suggest a way in which this can be done formally, ignoring certain differences between courses of events, but not others. A variant could be adopted for what I am doing here. Then we would say that *make* is evaluated relative to all those possible courses of events that are most similar to the actual one, **where events that happened subsequently to the cause are ignored in judging similarity.**

¹⁵This difference in the courses of events that are taken into account reflects the fact that we asking very different question when asking about necessity and sufficiency: When asking about necessity, we are interested in how the world would have been without the cause, so ideally, we would like to look at only one course of affairs (the actual one minus the cause), though that might not always be feasible. In contrast, when asking about sufficiency, we are interested in a number of alternative ways the world could have turned out to be (though not one's in which 'interrupting' events happen).

t_c that are such c happens in v at t_c and all events that happen in v (up to t_e) also happen in w .

The (a) and (b) clauses, in both cases, simply state that both the cause and the effect happened in the actual world w . (16c) states that the cause is counterfactually necessary for the effect, while (17c) states that the cause is causally sufficient for the effect, by quantifying over possible courses of affairs, as outlined above.

The definitions in (16) and (17) are phrased in terms of events for the sake of a simpler exposition. Nothing in my account commits me to the claim that *cause* and *make* must relate two events. To accommodate the fact that both states and absences can *cause* and *make* (as seen in (18) and (19)), it would be opportune to have the verbs relate two **time-bound** propositions instead. It should be obvious how this generalization would go.

- (18) a. The lack of water made the flowers wilt.
b. The depth of his voice made him seem very mature.
- (19) a. The lack of oversight caused the accident to happen.
b. The tone of her voice caused his knees to go soft.

Before applying the analysis to see if it makes the right predictions, we need to slightly amend the analysis. Consider examples like (20):

- (20) You did not MAKE me take the class, I would have done so anyways.

The analysis presented here does not account for the intuition that the second clause in (20) is a proper justification for the first. This is a symptom of a really serious problem with the proposal as it stands: After the outcome is determined (by a sufficient causing event, say), any event e that happens before the effect will qualify as a sufficient cause. This is surely undesirable.

I thus impose the following additional requirement on *make*-causatives (which clearly is not fulfilled in (20), because the speaker would have done so anyways):

- (21) Prior to the causing event c , it must have been possible that the effect would not occur.

That is, the weak counterfactual 'If c had not happened, e might not have happened' must be true. Whether this is another entailment (i.e. asserted), or a presupposition of *make*, I will leave undecided here ((20) suggests that this requirement is not a presupposition, but the example could be a case of presupposition denial, and seems to require the appropriate intonation). In any case, it should be immediately clear why (20) is appropriate, given (21): The speaker asserts that the *make*-clause is not true, because, at the time of the causing event, the effect was already certain to happen.

Before I conclude this section, I want to point out that my analysis does not reduce causality itself to counterfactual dependencies (as Lewis attempted to do), nor does it entail that causal knowledge is knowledge about counter-

factuals: The analysis is compatible with the view that causal knowledge is knowledge about the branching structure of the underlying model. If one takes this route, one is committed, however, to the claim that we never express our causal knowledge directly (at least not with periphrastic causatives), but rather by predicating something of the branching time structure governed by our (possibly complex) causal knowledge of the world. I may add that, to me, this seems to be a rather attractive position.

5 Coercive implications and freedom of the will

As noted in the introduction, ‘coercive’ implications will arise only when the embedded VP denotes a volitional action (and hence the causee is a volitional agent). If this condition is not met, coercive implications will be absent. While the previous literature mostly focussed on cases where the causer is a volitional agent as well, this is not necessary for coercive implications to arise:

- (22) a. John made the children dance. (coercion)
b. John made the children laugh (non-volitional predicate, no coercion)
c. The data made me do it. (non-volitional causer, coercion)

The coercive implication, in a nutshell, is that the causee did not have a choice to do otherwise. I want to suggest that other putative implications are simply assumptions about how this lack of freedom of choice came about in a given context (they are, thus, ‘sense-making inferences’—something that is **not** part of the communicated meaning, but may appear to be).¹⁶ That is, I contend that none of the implications putatively contributed by *make* mentioned in the introduction are actual implications of the *make* sentence. Let us examine them again:

- (i) that John *intended* to bring about the dancing (Wierzbicka 1998);
- (ii) that the children were unwilling to dance (Dixon 2005, Shibatani 1976, ‘coercive causation’);
- (iii) that John commanded or requested that the children dance (Shibatani 1976, ‘directive causation’);
- (iv) that John wanted the children to dance (Stefanowitsch 2001);
- (v) that the children were aware that John wanted them to dance (Wierzbicka 1998))

I contend that (i), (iv) and (v) are simply things that sometimes happen to be true in a context where *make* is appropriate. (iii) is likely to be a sense-making

¹⁶These kinds of inferences are similar to assumptions of normality and so-called ‘i-implicatures’, or stereotypicality-inferences. While all of these play a role in interpretation (and sometimes the speaker may even be committed to their truth), they are not part of the meaning proper in any interesting sense.

inference proper. If John has the requisite authority over the children, then it will just be natural to assume that he would use a command to ensure that they dance. In certain contexts, this could become a contextual entailment (namely if it is part of the common ground that the **only** way John could ensure the dancing is by commanding). (ii), finally, will often be a relevance implicature (why is it relevant that John did something to ensure the children's dancing if they wanted to anyways)?

To reiterate: I claim that **none** of the apparent implications in (i)-(v) are entailments of *make*-sentences. The idea that they are is an artifact of speakers judging *make*-sentences unwittingly restricting attention to certain (perhaps typical) contexts. The **only** implication that consistently shows up, as mentioned above, is that a (volitional) causee did not have a choice in the matter of whether or not the effect came about.

The task before us now is this: How can we explain the **universal** presence of the minimal coercive implication when the embedded verb describes a volitional action? That is, how can we account for the fact that the coercive interpretation is mandatory in this case? Thusly:

Assume the following postulate about the branching structure of time¹⁷:

- (23) **Volitional Action Postulate.** An **action** always occurs at a branching point.¹⁸ An action is **volitional** iff the agent of the action determines which of the branches becomes actual.

Arguably, (23) is a very intuitive way to conceptualize volitional action in a branching-time framework.¹⁹

Now, assuming the postulate, what does a sentence like (1b) entail?

- (1b) John made the children dance.

If (23) is true, on the current analysis, it cannot be that the children made a free decision to dance. For if they did, they might have decided otherwise, in which case they would not have danced. But then, whatever John did was not sufficient to ensure their dancing.

Thus, for a sentence *A made B do a* to be true, *A* must take away the option 'not *a*' from the 'choice point' at the time of *a*, the effect.

Of course, that does not mean that the only way (1b) can be true if John hypnotized the children or otherwise took away their free will, or physically moved their bodies around (though it seems reasonable to say that the sentence would be true in such a situation). Typically, the removal of the option to not

¹⁷This assumes a 'forward branching' model of time, as, for example, in Thomason (1984). Intuitively, in such a model, the actual course of events can be viewed as a timeline from which alternative courses of events 'branch off'. Thus alternative courses of events will always share the same history, up to the point where the branching occurs. It is these point that the statement of the postulate refers to as 'branching points'.

¹⁸Perhaps we want to require that all events do.

¹⁹The usual disclaimers apply: These are not philosophical claims, but claims about how language users conceptualize the world. Thus the postulate is perfectly compatible with physicalism about the mental and determinism about the physical.

do the act will happen in a more complicated manner, exploiting a standing desire or prior plan of the causee. Consider (24):

(24) The mugger made John hand over all his money.

Now, in a typical instance in which (24) is true, of course John *theoretically* is free to not give the mugger his money. He could decide not to, and face the consequences. However, if John is like most of us, he has a standing desire to continue to live and to avoid physical harm. This desire, if strong enough²⁰, will pre-determine a lot of John's future decisions (conditional on certain circumstances). Thus, in virtue of his standing desire to not get hurt, when the mugger threatens to hurt John, and John believes him, John **cannot but** give him the money. That is, the mugger made him hand over the money.

Similar reasoning applies to (1b): One way in which (1b) can be true is when John threatens consequences that the children want to avoid (e.g. punishment). Another would be that they simply have resolved to honor commands made by John (because he is their father, say). And so forth. The main point is this: By deciding on a future course of action, or forming a desire, an agent effectively determines a (typically) large number of future contingents. That is, he excludes certain futures from becoming actual merely by deciding. Of course, he might change his mind, but this is an independent event: There is no future in which he does not change his mind (or forgets, or ...) and does not honor his decision.

Thus, the analysis presented in the last section, together with the assumption about the underlying ontology, predicts that if an agent has a standing desire or plan which entails him doing *a* under conditions *c* (but not necessarily otherwise), then that agent can be *made to do a* by someone or something bringing about *c*. This seems intuitively right.

This also explains why a sentence like (25) is false in a context in which the mother gave John the option to do the dishes or mop the kitchen floor, for what John's mother did not rule out (by assumption) the possibility that he does the dishes²¹:

(25) His mother made John mop the kitchen floor.

(25) is a problematic example for Stefanowitsch's (2001) analysis, as he predicts (25) to be true in such a context. Thus, not only is the present account more attractive because it does not stipulate an ambiguity, it also accounts for the

²⁰I am simplifying here by assuming John has only compatible desires. Clearly, this is inadequate, even for this example. For, of course, John will have a desire/plan to not part with his cash. However, this desire is likely to be weaker than his desire to not get hurt. I have to defer discussing how such ranked preferences are best represented to another occasion.

²¹Of course, we can imagine circumstances in which this is not the case: Assume that doing the dishes is John's least favorite chore, he would do anything to avoid doing them. In such a context, intuitively, John's mother's offering of the choice **does** determine his mopping the floor. But, crucially, in such a context, (25) is appropriate, just as the current analysis predicts.

data better.²²

In sum: The current analysis (together with plausible assumptions about the underlying ontology) predicts that, indeed, the ‘minimal’ coercive implication (that the causee had no choice to do otherwise) is an **an entailment** of the *make*-sentence—but only when the embedded predicate denotes a volitional action. It is such not the meaning of *make per se* that gives rise to this implication, but the meaning of *make* together with the meaning of its complement.

6 Making *make* necessary in context: Causal perfection

If the foregoing analysis of *make* is correct, that is, if *make* only predicates causal sufficiency, but not causal necessity, how do we explain the strong intuition that some (perhaps many) utterances of *make*-sentences appear to imply necessity? Take (26): Surely, what the speaker (apologetically) tries to convey is that he would not have done *it*, if the data had not made him?

(26) The data made me do it.

It turns out that this is just an instance of a very general phenomenon: Statements of sufficiency often ‘invite the inference’ (or appear to entail) necessity. In modern pragmatics, this tendency is called **conditional perfection**²³, a term introduced by Geis and Zwicky (1971). They were concerned with the phenomenon that conditionals are often understood as biconditionals: That is, (27a) will often be perceived to imply (27b), and hence be equivalent to (27c)

- (27) a. If you study hard for the exam, you will get an A.
b. If you do not study hard for the exam, you will not get an A.
c. If and only if you study hard for the exam, you will get an A.

Despite the strong intuition that sometimes (perhaps most of the time) *if* simply means *if and only if* (introductory logic textbooks tend to claim English *if* is ambiguous between \rightarrow and \leftrightarrow), most linguists want to analyze it as some sort of pragmatic inference (recent examples include van der Auwera (1997), Horn (2000), von Stechow (unpublished) and Franke (2009)). A key piece of evidence that this is the right way to go is that the ‘only if’-direction of the biconditional can always be coherently denied:

- (28) If you study hard for the exam, you will get an A. And you even might get an A if you don’t.

²²There are various other over-predictions, as well as under-predictions (e.g. Stefanowitsch predicts that (5) and (6) are necessarily false). I do not demonstrate all these advantages my analysis has over his, taking for granted that an analysis that does not postulate an ambiguity is better, *ceteris paribus*, than one that does.

²³Thanks to Lucas Champollion and Larry Horn for independently pointing out the relevance of conditional perfection for my analysis. Their keen minds saw a connection that, upon appreciating it, I cannot believe I did not see myself.

Do we find the same behavior with *make*? We do:

- (29) My husband's arrest (finally) made me get a divorce. ... Even if his arrest had not made me do it, I might have gotten a divorce anyways, given the way he treated me.

But not with *cause*. (30) is terrible:²⁴

- (30) My husband's arrest caused me to get a divorce. ... # Even if his arrest had not caused me to do it, I might have gotten a divorce anyways, given the way he treated me.

Now, the fact that, since the publication of Geis and Zwicky (1971), the bulk of the literature on conditional perfection has focused on indicative conditionals should not be taken to show that conditional perfection is just applies to (some) indicative conditionals. Counterfactual conditionals are often perfected, as well:

- (31) If I had watered that plant, it would have survived. (Horn 2000)

As Horn points out, (31) will usually be understood to imply/implicate that in the nearest world in which the plant survived, the speaker watered it.

I thus propose that *make*-sentences are just another instance of an expression of sufficiency that is often understood as implying necessity. We might want to call this particular instance of this tendency 'causal perfection', if a name is wanted. Causal perfection with *make* is slightly different from conditional perfection as described in recent treatments (von Stechow unpublished, Franke 2009), in that it is now usually assumed that conditional perfection as described above is two-step process along the following lines:

- (32) If you study hard for the exam, you will get an A.
 ↪ If you do not study hard for the exam, you might not get an A.
 ↪ If you do not study hard for the exam, you will not get an A.

Causal perfection (at least for *make*) only requires the second step—the first is guaranteed by the entailment in (21).²⁵

Of course, my appeal to causal perfection ultimately requires an account of conditional perfection that can be extended to causal perfection. How conditional perfection is to be explained is still a matter of lively debate, and this not the place to argue for one treatment over another.

²⁴Thanks to Cleo Condoravdi for helping me to construct these examples.

²⁵It may be tempting to assume that this (apparent) entailment actually arises as an implicature in the same way as for conditionals. I doubt that this can be made to work: *make* simply does not seem to be compatible with the effect being determined before the cause happens.

7 Raising vs. control: The syntax of periphrastic causatives

Up to now, I have ignored the issue of whether *cause* and *make* are raising/ECM verbs or control verbs, and have spoken as if they were raising verbs—that is, taking two arguments, the subject and whatever the infinitive complement (including its subject) denotes.

This seems correct for *cause*: (33) shows that the complement of *cause* can have an expletive *it* or *there* as a subject, and (34) demonstrates the general fact that passivization of the complement does not seem to affect the truth conditions of the matrix sentence.

- (33) *Expletive subject in embedded clause*
- a. \forall The Cloud Callers had caused it to rain; to magnificently rain.²⁶
 - b. \forall Also, the weight of this water would have caused there to be a greater barometric pressure prior to the Flood.²⁷
- (34) *Truth conditions preserved under passivization of the embedded verb*
- a. Peter caused Mary to slap Sue.
 - b. \Leftrightarrow Peter caused Sue to be slapped by Mary.

At first glance it seems that *make*, by contrast, must be a control verb, i.e., take **three** arguments²⁸: The causer, the causee and the infinitival VP. If the semantics of *make* can make direct reference to the causee (because it is one of the verb's arguments), we can explain the intuitive difference in meaning between (35a) and (35b), which differ only in that the 'complement' of *make* is passivized:

- (35) a. Peter made Mary slap Sue.
b. Peter made Sue be slapped (by Mary).

In particular, the coercive implications seem to arise only with respect to the agentive **subject** in (35a), but not for the agent specified in the **by**-phrase in (35b).²⁹

In fact, Paul Kiparsky (p.c.) has suggested³⁰ that, possibly, the **only** difference between *make* and *cause* is that the former is control verb and the latter is a raising verb. That is, he suggested that one might assume the following semantic analysis for *make*, where *c* is the denotation of the subject, and *c'* is the denotation of the object of *make*:

²⁶http://tpmcafe.talkingpointsmemo.com/talk/blogs/w/e/wendy_davis/2010/04/hopi-snake-danceimpressions.php, last retrieved on 2010-04-22

²⁷<http://www.westarkchurchofchrist.org/library/noahsark.htm>, last retrieved on 2010-04-22

²⁸All that is relevant is the arity (and hence semantics) of the verbs. The distinction between raising and control can be implemented in various ways in various syntactic frameworks. I do not want, nor do I need to, take a stance on how this is done here.

²⁹It is not surprising, that in neither case, coercive implications arise with respect to *Sue*: Since *being slapped* is not a volitional action, the explanation for coercive implications advanced above does not apply to *Sue*.

³⁰This should not be taken as an indication that he would endorse such an analysis.

- (36) $make(c)(c')(P)$ iff c influences c' and, as a result of this, $P(c')$ came to happen/be true.

Where ‘as a result of this’ is understood just as *cause*. There are three issues with this kind of analysis, which I will raise in turn.

What does ‘influence’ amount to? Kiparsky intends this formulation to account for his intuition that *make* involves ‘direct causation’. If this is made to work ‘influence’ must mean ‘directly influence’, and the question arises, for both notions, what ‘directness’ amounts to. The concept of direct causation involved here **cannot** be the concept that is usually invoked in the analysis of lexical or morphological causatives: This notion of directness, for example, usually requires temporal adjacency of cause and effect, a fact that has been long appreciated in the literature on lexical and morphological causatives (at least since Fodor (1970) and Smith (1970))

- (37) ??John broke the vase today by putting it in an unsafe place yesterday.

No such temporal adjacency requirement exists for *make*:

- (38) John made everyone leave the party at ten (by threatening to cancel it if they did not promise to be gone by then).

Also, absences cannot ‘directly cause’ in this sense:

- (39) ??The lack of water wilted the flowers.

Again, they can with *make*:

- (40) The lack of water made the flowers wilt.

Thus it seems to be clear that the kind of ‘directness’ involved in the meaning of *make*, if any, must be different from that involved in the meaning of lexical and morphological causatives. But what kind of directness?

It also is not clear to me that Kiparsky’s analytical intuition that *make* has to do with directness of the influence of the cause(r) on the causee is valid: Take, for example, the following variant of an example by Miller (unpublished):

- (41) Mary actually made John like spinach.

This sentence would be true and appropriate if Mary simply prepared the spinach in the delicious way only she can and (formerly) spinach-hating John helped himself to the left-overs she left in the fridge. There is no direct interaction of Mary and John in this scenario, in any reasonable sense of ‘direct’.

These examples are also problematic with respect to the formulation used in the definition in (36), that the causer ‘influences’ the causee—for, in the imagined scenario, Mary **does** influence the spinach, but it is patently unclear in what sense she influences John.

Make does not predicate necessity, cause does. As we saw in the preceding sections, while *cause* reliably entails the corresponding ‘necessity counterfactual’, *make* does not (though it may be ‘perfected’ to imply necessity in a context). But if ‘as a result’ in (36) is understood as *cause*, then *make* should entail the necessity counterfactual, too.

What’s more, (36), with the intended understanding of ‘as a result’ does **not**, in fact, predict the coercive implication: Suppose John is oblivious with respect to housework. He just keeps forgetting to mop the floor, etc. One day, his roommate Claire wordlessly hands him the mop. John takes the hint and mops the floor (let us assume, though, that, being frequently reminded, John has done his fair share of chores lately, so he might well have refused to mop, citing other obligations he has on that day). Claire has directly acted on John, and John would not have mopped without her doing so, but (42a) is inappropriate, though (42b) is not.

- (42) a. Claire made John mop the floor.
 b. Claire caused John to mop the floor

We could of course, say that ‘as a result’, instead, is understood as ‘is causally sufficient for’, in my sense. Then, we would avoid predicting that a *make* sentence entails the corresponding necessity counterfactual, and would predict coercive implications in the right contexts, as outlined above.

If an appropriate notion of ‘influence’ can be found that is appropriate for the counterexamples presented above, I would be quite comfortable with such an analysis³¹, if it were not for the facts discussed in the following.

Make is not as much of a control verb as it seems. The non-synonymy under passivization of the complement strongly suggests that *make* is a control verb—but consider the following:

- (43) [∇]The CIA couldn’t have made it rain at Woodstock. [It had to be the FBI.]³²
- (44) a. [∇][About a production of MacBeth] He made there be FIVE witches.³³
 b. [∇]I’d be really sad if the Census made there be a national language.
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While it is true that many (constructed) instances of existential *there*, like the one in (45), sound very unnatural, the examples in (44) sound fine. A simple Google search for “made there be” allows us to easily find a large number of

³¹The simplest possible notion of ‘influences’, viz. simply requiring that the causee is a participant in the causing event, will not work, as it does not explain the facts in (41) and (42), for example

³²<http://www.popsci.com/science/article/2009-11/chinas-weather-manipulation-brings-crippling-snowstorm-beijing> last retrieved on 2010-04-22.

³³<http://www.sheilaomalley.com/archives/003995.html>, last retrieved on 2008-04-22

³⁴<http://www.elephantjournal.com/2010/04/hispanics-may-become-ethnic-majority-in-us-say-goodbye-to-taco-bell/> last retrieved on 2010-04-27

more examples of this kind.³⁵

(45) ??He made there be an accident.³⁶

This raises an obvious problem for the analysis Kiparsky suggested, as well the modification suggested in the last section: Neither *it* in (44), nor *there* in (45) refer to anything, they are semantically empty. So it cannot be that the meaning of *make* entails that the cause(r) influenced the causee—for there are cases in which there is no causee.

So we have one diagnostic clearly speaking for considering *make* to be a control verb, and another which clearly speaks against such an analysis. What to do? A simple, unattractive solution is to assume *make* is lexically ambiguous between a control and a raising verb— but there does not seem any independent evidence for such an ambiguity. Miller (unpublished) notes the behavior discussed here and proposes to analyze *make* as a raising verb. With respect to the passivization behavior, he notes that examples of *make* with a passive complement are actually quite hard to find in actual speech, and in the ones he found occurring naturally, the passivized version typically **had** identical truth conditions as their active counterparts. One his examples is in (46):

(46) As safekeeper of Catholic doctrine, Pope Benedict was focused and responsible in a way that “made him be perceived by many as a hardliner,” Sister Mary said.

But even if all naturally occurrences of *make* with a passive complement are truth-conditionally equivalent to their active counterparts, it is still not clear how to explain the oddness (and hence non-occurrence) of other instances of passivization, where, despite the oddness, we have the strong intuition that they are not so equivalent.

Frankly, I do not know a way, at present, to analyze *make* syntactically to account for all the facts, and how many arguments *make* really has. So I content myself with noting that, even if *make* is a control verb with a semantics roughly like (36), the relevant notion of ‘result’ employed cannot be that expressed by *cause*, for *cause* entails causal necessity, while *make* does not. Rather, the relevant notion of ‘result’ must be something like my notion of causal sufficiency or something that predicts the same facts in the cases considered in this paper.

8 Conclusion

This paper proposed a semantic analysis of causative *make* and *cause* which is theoretically more attractive than previous analyses in that it specifies a uniform meaning for *make*. Further, the account achieves its (relative) simplicity

³⁵Such a Google search also matches a large number of linguistics papers and grammars of English, citing starred constructed examples as evidence that *make*’s ‘complement’ cannot have existential *there* as its subject.

³⁶Huddleston (1984, p. 220)

and broad coverage through appeal to various contextual and pragmatic factors and thus demonstrates that the truth about the conventional meaning of word can be greatly obscured by a variety of factors that play a role in the interpretation of natural language utterances. The development of the analysis also illustrates that this is no reason to despair, but that a thorough understanding of the relevant pragmatic mechanisms is vital to understand the lexical semantics of a word.³⁷

I suspect that the causal necessity/sufficiency distinction will be relevant for the semantics of constructions other than periphrastic causatives. One particular idea is that the contrast between *allow* and *let* also traces back to the contrast between necessity (*allow*) and sufficiency (*let*), explaining, among other things, why the latter is veridical in its clausal argument, while the former is not. Further, if the analysis presented here is right, we would expect to find the distinction between necessity and sufficiency to be relevant to causative expressions in other languages. In particular, I suspect that the multi-purpose causative *lassen* in German (which can, depending on contextual circumstances, be translated with *let*, *make*, *have* or (maybe) *cause*) expresses causal sufficiency, rather than causal necessity; and that this realization may open the door for a uniform analysis of *lassen* that predicts all and only all readings *lassen* can have in context. Further, it will be interesting to see which other language that has (at least) two kinds of causatives encodes the sufficiency/necessity distinction. Finally, the notion of ‘direct causation’ that is often employed to characterize lexical or morphological causatives might be illuminated by taking the necessity/sufficiency distinction into account. Preliminarily, I want to note that it seems that lexical and morphological causatives usually express **both** necessity and sufficiency, and perhaps, this is all they express, with the implication of ‘directness’ coming about as a secondary inference—a cause that is both necessary and sufficient cannot be very far removed from its effect³⁸.

This all is speculative, of course, but the necessity/sufficiency distinction surely is a valuable tool that enables us to take a fresh look at some old problems.

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³⁷That is not to claim that I, or anyone else, have a thorough understanding of phenomena like conditional perfection. In the case at hand, it turned out that we understand them well enough to unearth the meaning of *make*.

³⁸It is not clear, though, how this analysis would account for the fact that lexical causatives require temporal adjacency of cause and effect.

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