

Constraining Premise Sets for Counterfactuals

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Abstract

This note is a reply to "On the Lumping Semantics of Counterfactuals" by Makoto Kanazawa, Stefan Kaufmann, and Stanley Peters. It shows first that the first triviality result obtained by Kanazawa, Kaufmann, and Peters is already ruled out by the constraints on admissible premise sets listed in Kratzer (1989). Second, and more importantly, it points out that the results obtained by Kanazawa, Kaufmann, and Peters are obsolete in view of the revised analysis of counterfactuals in Kratzer (1990, 2002).

A unifying theme of my papers on premise semantics, starting with the earliest one in 1976¹ and leading up to the latest one in 2002, was the search for suitable constraints on premise sets for modals and conditionals. In the case of counterfactuals, the task is to find constraints that are exactly right for modeling the vagueness and context dependence that those constructions are known to exhibit. I have tried various avenues towards this goal, but I think it is fair to say that a completely explicit and satisfying characterization of the relevant constraints has not yet been given. I agree that the analysis of Kratzer (1989) failed. But it didn't fail because it was committed to problematic premise sets. The paper made clear that the list of constraints it explicitly discussed was not meant to be exhaustive. The usual fate of a linguistic analysis is to be superseded by another one. I abandoned the approach of Kratzer (1989) as early as 1990 because I had found a better way of characterizing the constraints for admissible premise sets.

¹ Kratzer (1976) is the German predecessor of Kratzer (1977). Frank Veltman independently developed a premise semantics for conditionals around the same time: Veltman 1976.

In their contribution to this issue, Kanazawa, Kaufmann, and Peters (henceforth KKP) identify certain premise sets that should not be permissible in the evaluation of counterfactuals. Their discussion is for the most part framed as a reply to Kratzer (1989), though, which became obsolete after the publication of Kratzer (1990) and Kratzer (2002). For editorial reasons, my reply has to be short, so I will only address two issues: the first one is that under reasonable assumptions, the first triviality result obtained by KKP is already ruled out by the tentative constraints mentioned in Kratzer (1989). The second and more important issue is that none of the potential problems discussed in KKP are problems for the more recent method of constructing premise sets proposed in Kratzer (1990) and (2002). In fact, the new method did away with closure under lumping, was developed precisely so as to explicitly rule out premise sets of the kind discussed in KKP, and seems independently supported by the semantics of knowledge ascriptions.

The triviality results presented in Propositions 2 and 3 of KKP require the singleton proposition $\{w\}$ to be relevant for the interpretation of counterfactuals. This violates the condition of Kratzer (1989) that the relevant propositions be "graspable by humans". A plausible necessary condition for a proposition to be graspable by a human mind seems to be that it should be possible for a person to believe that proposition. For the singleton $\{w\}$ to be believed by a person, then, that person's set of doxastic alternatives has to be a subset of $\{w\}$. Assuming that the person's beliefs are consistent, it follows that she has to be omniscient in a rather strong sense. Her beliefs have to be so specific that they are able to distinguish the actual world from all other possible worlds - including all of its perfect duplicates! It seems, then, that given a fairly obvious necessary condition for propositions to be graspable by humans, premise sets of the kind assumed in KKP's Proposition 2 are already ruled out by the constraints mentioned in Kratzer (1989).

The main idea of Kratzer (1990) and (2002) was to construct premise sets for counterfactuals in such a way that whenever they contain propositions p and q such that p lumps q , p also logically implies q . The requirement that premise sets be closed under lumping became superfluous, then. From the present perspective, the work reported in the 1989 paper was a useful intermediate step that eventually helped me find a way of getting rid of closure under lumping, while nevertheless acknowledging the crucial role of lumping

relations for the premise sets needed for counterfactuals. On the (1990, 2002) analysis, lumping relations are paid attention to by 'hard-wiring' them into the construction of premise sets, rather than by stipulating a condition of closure under lumping. The unpleasant results of KKP are all brought about by applying the closure conditions of Kratzer (1989) to premise sets containing propositions like singletons, tautologies, negations, and disjunctions. The new approach excluded the dangerous kinds of premises on general grounds, and at the same time eliminated the need for closure under lumping, too.

Kratzer (1990) and (2002) constructs premise sets for, say, the actual world, by expanding singleton sets containing actual situations. Apart from satisfaction of the persistence requirement, the driving engine for the expansion are relations of maximal similarity between situations. Assuming strictest standards of similarity, only situations that are perfect duplicates are maximally similar to each other. Lowering those standards somewhat allows situations to be maximally similar without being perfect duplicates. The method of projecting 'natural' propositions from particular situations can be illustrated as follows:

Suppose there is exactly one situation s exemplifying the proposition that Thomas picked a rose in the actual world. Then $\{s\}$ is a proposition, albeit a very specific one. Its smallest persistent extension is $p = \{s' : s \leq s'\}$, the set of all actual situations in which Thomas picked that particular rose. The proposition p is persistent, but not yet natural. To extend p into a natural proposition, we must add all situations that are maximally similar to some situation in p . Assuming persistence then forces us to add all situations that contain any one of the recently added situations as parts. Naturalness requires us to add all situations that are maximally similar to the situations we just added, ... and so on. We eventually end up with a set of situations in which a maximally similar counterpart of Thomas picks a maximally similar counterpart of the rose in a way that is maximally similar to the way he picked the rose in the actual world.

There is a substantial body of philosophical work on the connection between similarity and natural properties (e.g. Lewis (1986)). That work is very relevant since propositions are properties, too - properties of situations in our case. The project of Kratzer (1990, 2002) was to exclude from premise sets for counterfactuals true propositions that are too "gruesomely

gerrymandered" or too "miscellaneously disjunctive" (Lewis (1986), 59). The technique was to ban premises that could not be projected as natural propositions from actual situations.

On the proposed analysis, there are two possible sources for the notorious indeterminacy of counterfactuals. One is underspecification of the similarity relation, and the other one is underspecification of the set of relevant actual situations – the set of starter situations. In the spirit of Kratzer (1981), one desirable constraint might be that the mereological sum of all starter situations be identical to the actual world. Non-accidental connections between facts of the kind discussed in Tichy (1976) and Kratzer (1981) might be reflected by the way worlds are partitioned into situations. Two facts that stand and fall together might not contribute two separate starter situations, for example. They would have to be 'lumped' together. I would expect that independent justification for constraints on admissible ways of partitioning worlds into subsituations could be found outside the area of counterfactual reasoning by exploring the highly underdetermined principles for individuating places and events. Those explorations might then feed the development of formal theories of suitable parthood structures of the kind discussed in Casati and Varzi (1999), for example. I would also hope that constraints on the range of admissible similarity relations might eventually be grounded in general theories of category formation, hence would not have to be stipulated specifically for the analysis of counterfactuals. Kratzer (2002) does not address the role of laws in the proposed account of counterfactual reasoning. Since laws seem to play an important role in category projection, too, we would expect laws to impact counterfactual reasoning via the similarity relation, as in David Lewis' work (Lewis 1979)². Two situations would not count as maximally similar, if they are part of worlds with very different laws. Laws could play an important role in counterfactual reasoning, then, without ever being premises. Crucially, propositions expressing law-like generalizations would not have to be natural projections from actual situations.

². The role played by similarity in Kratzer's (1990, 2002) premise semantics for counterfactuals is quite different from that in Lewis' (1973) analysis, however. In Kratzer's semantics, similarity is only used for projecting natural propositions from actual situations.

Clearly, more research is needed to flesh out the account of Kratzer (1990, 2002). Yet even in its present form, certain conclusions can be drawn. Neither the set of all possible worlds W , nor singleton sets like $\{w\}$ (where w is the actual world) will come out as natural projections of actual situations. W could be a natural projection of an actual situation only if w was a relevant situation, and all other possible worlds were maximally similar to w . This could only be if our standard of similarity was absurdly permissive. For $\{w\}$ to be a natural projection of an actual situation, w would have to be a relevant situation, too. But this time round, no other possible worlds whatsoever - not even perfect duplicates - could be allowed to be maximally similar to it. Our standards of similarity would have to be absurdly restrictive. 'Negative' propositions do not fare any better. Let p be the proposition that there are ghosts. One possible persistent negation of p would be a proposition that is only true in worlds (as opposed to proper situations, that is, proper parts of worlds). It would be true in precisely those worlds in which there are no ghosts. The verdict on that proposition is similar to the one for W . To obtain it as a natural projection of some actual situation, we would have to assume that w is a relevant situation, and all possible worlds in which there are no ghosts would have to be maximally similar to it. Again, this would require a highly implausible similarity relation. The set of possible worlds in which there are no ghosts is a rather diverse bunch. Alternatively, consider a negation of p that is true in any possible situation that is part of a situation in which there are no ghosts. If this proposition is true in a world, it is true in all of its subsituations³. What would it take for this negation to come out as a natural projection of some actual situation, according to the method I described? I can't see how to pull this off in any reasonable way. If we take w as our starter situation, for example, we would have to look for a similarity relation that not only makes all subsituations of w maximally similar to w , but also all other possible worlds in which there are no ghosts, and all of their subsituations. No way. Maybe we should start with some small subsituation s of the actual world. In the next step, we would then have to add all supersituations of s . Next, all possible situations are added that are maximally similar to one of the situations in

³ On the approach of Kratzer (1989), this kind of negation would correspond to a law-like generalization. Since laws do no longer have to be premises on the new approach, propositions expressing law-like generalizations do not have to be projected as natural propositions from actual situations.

the set we have so far. One of the problems here is that to get the intended proposition, we would have to find a way of excluding all those possible situations that are part of worlds that do have ghosts, even if those situations themselves were extremely similar to *s* or one of its supersituations. Bad luck. Finally let us try to produce the true disjunctive proposition that I am in Brazil or cats have wings. Again, I see no good way of generating this proposition from some actual situation using the prescribed method. Since cats have no wings in the actual world, our starter situation *s* would have to be one in which I am in Brazil. None of the situations that are maximally similar to *s* or any of its supersituations are situations in which cats have wings.

I think, then, that the method proposed in Kratzer (1990, 2002) provides at least a promising starting point for characterizing suitable premise sets for counterfactuals. It is a method that is worth thinking about, even though in its current state of development, it cannot be considered more than a beginning. As with all empirical research, it will take many more years to fully explore the consequences of what I have already been thinking about for so long. This kind of work is extremely difficult and can only be done well in cooperation with others.

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