

Comments on Moss's paper

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Overview of comments

- Nested epistemic modal words: empirical issues.
- Modal flavors of some of the crucial examples.
- Comments from a ordering semantics, contextualist perspective.

Nested epistemic modals

It was not clear to me that crucial examples are really grammatical, or have nested meaning.

A basic corpus study:

- Grab combinations of auxiliaries and adverbs with epistemic readings in the BNC. (Thanks: Yanyan Cui)
- Discover prevalence of relevant combinations.
- Look for patterns.
- Examine actual examples to see if their meaning confirms the analysis.

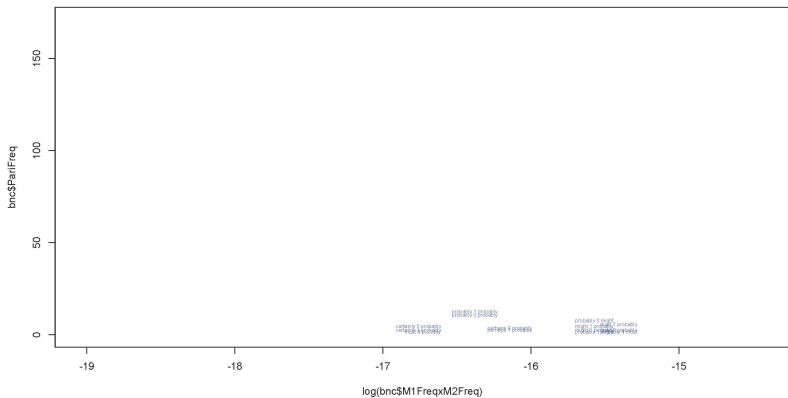
Combinations cited in the paper: BNC

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> moss.exs.data[,1:9]
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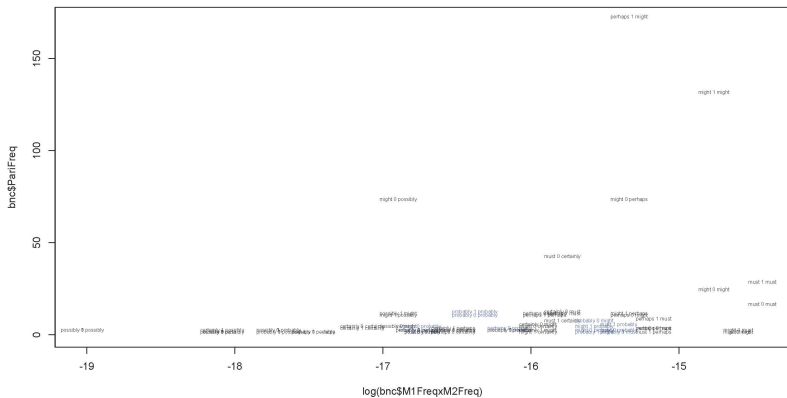
	Pair	M1	M2	Corpus	CorpusSize	WordsBetween	PairFreq	M1Freq	M2Freq
1014	certainly_probably	certainly	probably	BNC	95446441	0	3	18100	26486
1020	might_probably	might	probably	BNC	95446441	0	1	59383	26486
1025	must_possibly	must	possibly	BNC	95446441	0	0	69991	7036
1026	must_probably	must	probably	BNC	95446441	0	1	69991	26486
1032	perhaps_probably	perhaps	probably	BNC	95446441	0	2	33521	26486
1040	probably_might	probably	might	BNC	95446441	0	6	26486	59383
1041	probably_must	probably	must	BNC	95446441	0	0	26486	69991
1044	probably_probably	probably	probably	BNC	95446441	0	9	26486	26486
2346	certainly_probably	certainly	probably	BNC	95446441	1	1	18100	26486
2352	might_probably	might	probably	BNC	95446441	1	3	59383	26486
2357	must_possibly	must	possibly	BNC	95446441	1	0	69991	7036
2358	must_probably	must	probably	BNC	95446441	1	4	69991	26486
2364	perhaps_probably	perhaps	probably	BNC	95446441	1	1	33521	26486
2372	probably_might	probably	might	BNC	95446441	1	0	26486	59383
2373	probably_must	probably	must	BNC	95446441	1	0	26486	69991
2376	probably_probably	probably	probably	BNC	95446441	1	11	26486	26486

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These combinations' relative frequency

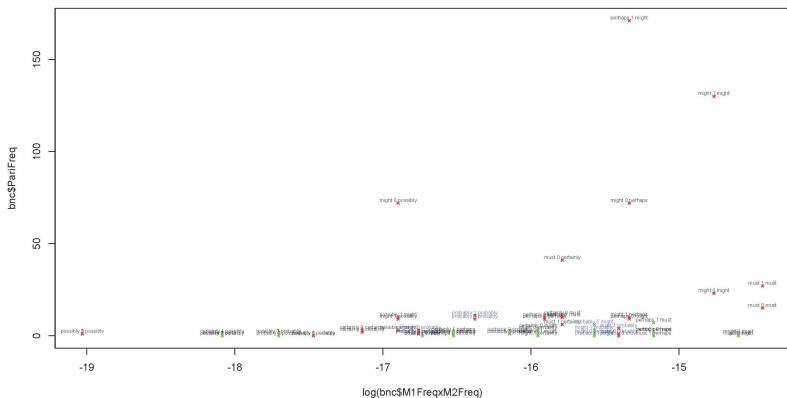


A wider range of epistemic combinations



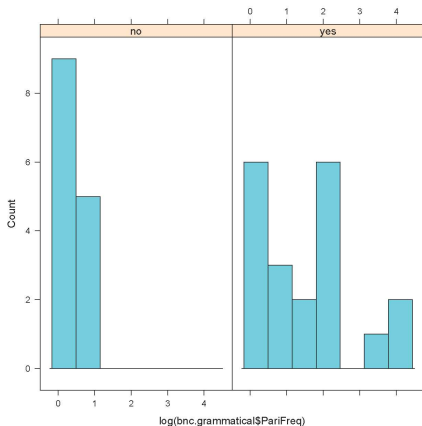
Whether the forces match seems to play a role

(*probably* counted as strong)

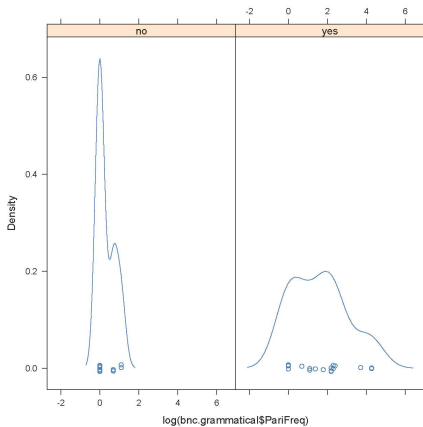


Same vs. different force

(remove Aux+Aux; log frequency)



A more detailed view



Results: some basic patterns

- Data is still quite messy, but combinations of the same force are in general more frequent. (But not all same-force combinations are particularly frequent.)
- This difference does not follow from the proposal.
 - As far as I can see, the proposal leads us to expect that all sorts of combinations would be equally common.
 - The difference is more expected under a view which says that epistemic combinations (when grammatical) result from concord, emphasis, or degree marking.
- However, there could be two mechanisms which combine epistemic modal words: a common way which results in force matching, and a less common way which accords with the proposal.

What do actual examples look like?

I examined the 42 examples in the BNC which include the combinations of epistemic words discussed in the paper.

Many are not so relevant

How how soon should I get it treated? Does it matter I think it *probably it probably* doesn't. I mean the r the risk of progression is i i I would think is minuscule erm and erm you're only talking about changes in size not risk of of erm muscle invasion, and I think therefore So if it's not causing me any symptoms I should?

Many are unclear

Phil joined the Palace in February 1984 for a modest £10,000 fee from Aylesbury Town, but he soon established himself as a valuable member of our League side, playing either on the left of midfield or _UNDEF_ up front as a striker, and he *must probably* be reckoned to be the best signing made for our club by manager Alan Mullery. Tough, modest and possessing an ideal temperament, Phil is renowned for always giving of his best for the Palace cause.

There are a few of the kind described in the paper

I think Chair, a far better idea might be that it, when we get particular applications from a given district, that the officers actually ascertain er, a bit of erm, information from that particular district _UNDEF_ in order to present to the Committee, to take into account when they're doing things, I think that would be a far better way because if we have politicians elected in that particular area, they'd *certainly probably* come and, and try and hold the sway for that particular item, and there may be justifiable grounds on a countywide basis not to concede it.

Another good one

Yeah, I mean it's alright for people like my son John, who's got a good salary. I was gonna say he's on about thirty thousands ain't he? Oh it *must be probably* more than that.

Overall corpus findings

- There are very few examples which do not fit into the more common force-matching pattern and which have anything close to the right meaning.
- Weeding all the rest out, we can consider whether these few have exactly the meaning predicted by the analysis.
- To think about:
 - Are there enough such good examples to say the pattern is “pervasive”?
 - Enough to support the theory, given the important role assigned to epistemic combinations by the conceptual framework?
 - Enough to be confident they are truly part of the language at all (i.e., not errors or creative utterances beyond the boundaries of grammaticality)?

Do the crucial examples have the readings they are supposed to?

I worry that some of the key data involves non-epistemic modality.

- Potential cases of circumstantial (dynamic) modality
- Potential cases of priority (buletic/teleological) modality

Some crucial examples may be circumstantial

- My feeling is that many crucial examples can be described as expressing circumstantial modality under the scope of epistemic modality.
- The committee example above may concern the speaker's opinion about the chance, given the relevant facts, that local politicians would come and speak.

Some crucial examples may be circumstantial

The discussion in the paper also fits with this way of looking at some examples:

(35) It is probably even or less than four.

The second partition described for (35) is “the six possible outcomes the rolling the die.”

Is *probably* always epistemic?

- *Might* is epistemic; *can* is circumstantial (dynamic) — cf. Kratzer's (1981) hydrangeas.

A fair die might come up 1.

A fair die can come up 1.

A fair die will probably come up less than 5.

Which is *probably* like?

- It can be very hard to tell epistemic and circumstantial readings apart (Rubinstein et al., 2012).

Some crucial examples may be buletic/teleological

- The discussion in the paper is suggestive of a priority-type interpretation for some of the crucial elements:

(58) Eastwell Towers must possibly be one of the finest views.

The first partition described for (58) “contains propositions about what sorts of values matter when evaluating views.”

- “... your credences would satisfy (58) just in case conditional on any proposition about what sort of value matters, ... conditional on some proposition about about what views have what values, Eastman Towers is counted as one of the finest views.”

Discussion

I'm not saying that the readings of (35) and (58) are (or aren't) correctly explained by any existing theory. I just am skeptical that they involve two layers of epistemic modality.

The right kind of example

- The son's salary example above does not seem to lend itself to an analysis as involving circumstantial or priority modality.
- It is the kind of case we want to focus on to determine whether the theory as stated has some clear examples under its responsibility.

Comments from a ordering semantics, contextualist perspective

- I am not a committed contextualist, and I think this probability-based approach is interesting, but it seems to me that contextualism (in particular, the ordering semantics version) has not been applied with enough creativity to many of the recent challenges.
- I'll apply some tricks employed by Katz et al. (2012) to deal with the Miners, and by me in a recent talk on probability expressions in premise semantics.

Liem's shirt

In the interests of having a basis for discussion, I'll sketch an Kratzerian ordering semantics analysis of the Liem's shirt example:

(22) Liem is almost certainly probably wearing green.

I don't feel completely confident in the acceptability of this particular sentence, but the committee example above has the same modal combination, so let's work with it.

The discussion of Liem's shirt

- M raises problems for a contextualist, probability-based analysis on pp. 7-9:
 - “It is suspiciously difficult to say exactly what salient probability function (22) is talking about.”
- My intuition is that *probably* here expresses dynamic modality (i.e., non-priority, circumstantial modality); this would be similar to the “objective chance” account which M argues against, but we don't have to assume that it's objective chance in the strict sense.
- Circumstantial modality = modality based on a set of relevant facts.
- Those facts can themselves be based on probabilities.

Circumstantial *probably*

Here's an ordering source which compares relevant alternatives (constrained by focus), and turns them into a premise set according to the alternatives' probability given a set of relevant facts $f(w)$:

$$\text{ALT} = \{\text{L is wearing green, L is wearing red, L is wearing blue, } \dots \}$$

$$\text{PS} = \{\bigcup\{q \in \text{ALT} : q \text{ has probability at least } p \text{ given } f(w)\} : 0 < p \leq 1\}$$

(Worlds in which more likely alternatives are true are ordered above worlds in which only less likely alternatives are true.)

Circumstantial *probably* in the Liem's shirt example

- This is dynamic modality: $f(w)$ is a set of facts concerning Liem's nature.
- What he is wearing is not the right kind of fact.
- PS orders worlds in which Liem wears green highest relative to any world in which Liem's nature made his choosing green more likely than any of the alternatives.

Discussion of Liem's shirt

- Put this kind of circumstantial *probably* under a standard epistemic modal:

The known facts make it certain that we are in a world in which Liem's nature made his choosing green more likely than any of the alternatives.
- Further issues:
 - Meaning of *certainly*: should it be treated as similar to *probably*?
 - What do eavesdroppers and the like require of us?
 - What is the meaning of *almost*?

Summary

- Relevant modal combinations are very rare: most nested epistemic modals are likely to represent concord, emphasis, or degree marking, but a few may be of the kind discussed in the paper.
- The paper's key examples might involve circumstantial or buletic/teleological modality.
- At least for the sake of comparison, we should try harder to develop a contextualist, ordering semantics meaning for *probably* which works for the data discussed in the paper.

References

- Katz, Graham, Paul Portner, and Aynat Rubinstein. 2012. Ordering combination for modal semantics. In *The Proceedings of SALT 22*, ed. Anca Chereches. CLC Publications.
- Kratzer, Angelika. 1981. The notional category of modality. In *Words, worlds, and contexts*, ed. Hans-Jurgen Eikmeyer and Hannes Rieser, 38–74. Berlin: de Gruyter.
- Rubinstein, Aynat, Dan Simonson, Joo Chung, Hillary Harner, Graham Katz, and Paul Portner. 2012. Developing a methodology for modality type annotations on a large scale. URL <http://www9.georgetown.edu/faculty/ar1029/research.htm>, paper presented at the Modality Workshop @ OttawaU, April 2012.