

# Of Monsters and Modals

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Kratzerian semantics for modals treats simple necessity and possibility modals as duals (Kratzer, 2012). This means that any distributional differences between the two must stem from the differences in quantificational force, or their environments. English *must* and *might* show differences in the available modal bases in certain syntactically unembedded contexts (Egan et al., 2005; von Stechow & Gillies, 2008). This paper aims to account for these distributional differences using a novel proposal on the nature of epistemic modality. Consider the examples below:

*Sophie is looking for some ice cream and checks the freezer. There is none in there. Asked why she opened the freezer, she replies:*

- (1) *There might have been ice cream in the freezer.* (von Stechow & Gillies, 2008:87)

The modal base in (1) consists of the beliefs of the ‘erstwhile Sophie’ at a previous time, not the current beliefs of Sophie, about a previous time. Considering a similar set-up, in which Sophie has information from a reliable source that ice cream was indeed in the freezer (but unbeknownst to her, I found it and ate it all), she cannot say:

- (2) *#There must have been ice cream in the freezer.*

With the meaning that ‘erstwhile Sophie’ believed there was ice cream (it can only mean ‘current Sophie’ believes there was ice cream in the past). So while *might* can have a temporally shifted reading, *must* cannot. The same pattern is shown by Egan et al. (2005) with respect to a modal base consisting of the worlds accessible to an individual that is not the speaker. As with the temporal shift, the accessible alternatives making up the modal base can be shifted from those of the speaker to another individual for *might*, but not for *must*.

An environment-based argument results in a judge-dependent analysis with a covert judge manipulator (following Stephenson, 2007). I argue that such an account is unable to explain the differing distributions of the two epistemic modals, even with suitable modifications. I then give a quantificational force-based argument, adapting the proposal of Anand & Hacquard (2013) for epistemics under attitude verbs, but show that this too has shortcomings. Such an analysis requires a somewhat suspect silent operator with an uncertainty presupposition, existing for the sole purpose of ruling out the undesirable constructions in English.

I propose that English epistemics are in fact not duals, arguing that an analysis based on an index-context split () is able to best account for the facts. I argue that epistemic necessity in English is context-dependent, while epistemic possibility can be made to accommodate to an index-dependent reading. In order to account for the fact that epistemics under attitude verbs build their modal base from the subject’s accessible worlds, I follow Anand (2006) and von Stechow (2004) in proposing that attitude verbs select a monstrous diagonalisation operator (in the sense of Kaplan, 1977; Schlenker, 2003) which overwrites the context with the index.

To support this analysis, I present evidence from Kinyarwanda showing that predictions about cross-linguistic variation in the indexicality of modals is at least partially borne out. I conclude by arguing that while modals show the same distributions in English in unembedded shifts, under certain attitude verbs, and in the consequent of a counterfactual conditional, we should not aim for a unified account of the distribution of modals. Work by Ippolito (in prep.), Lewis (1973), and novel cross-linguistic evidence illustrate that modals in three constructions in fact behave differently cross-linguistically, and by chance show similar distributions in English.

An extension of the indexical proposal to account for the distribution of epistemic modals under attitude verbs, as well a broader cross-linguistic survey of the availability of epistemics in various unembedded contexts are left as paths of future inquiry.

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