

Deontic modality in formal semantics: some problems

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In the formal semantics literature the standard analysis of (English) modal verbs ((Kratzer 1981) and (Kratzer 1991)) is in terms of generalized quantification. That is, modal verbs are uniformly construed as propositional operators contextually dependent on an intensional context (namely on two conversational backgrounds: the modal base and the ordering source) that fixes their interpretation as epistemic or deontic:

Operator [intensional context] [proposition]

This analysis, pioneered by (Kratzer 1978), is based on the conviction that modal items like *must* and *may* are inherently context dependent. The framework can thus account for the apparent polysemy of those modal verbs by linking the type of interpretation (epistemic or deontic) to the type of context provided.

The goal of this contribution is to show that even if the analysis of modal verbs in terms of generalized quantification in a possible worlds framework is attractive, it falls short on several issues as an analysis of deontic modality in natural language.

In order to argue for this position, I will focus on five problems of the standard framework: the first three have to do with its foundations whereas the last two are consequences of the design choices. The first problem is due to the propositional nature of the analysis, that is, deontic sentences always have the form of *ought-to-be* sentences (Feldman 1986) (i.e. a deontic modal having scope over a proposition), whereas in natural language obligations and permissions are most often ascribed to particular agents.

- (1) a. It ought to be the case that John comes to the party. (deontic reading)
- b. John must come to the party.

I will present (Brennan 1993) which tries to remedy to this problem within the standard framework. However, to improve the standard framework, (Brennan 1993) has to give up the foundational goal of a uniform analysis.

The second problem has to do with the nature of the intensional contexts. The conversational backgrounds are represented in the framework as (functions from worlds to) sets of propositions irrespectively of their type. That is, there is no formal difference between a deontic or an epistemic conversational background. This is however problematic for modal items like *to be allowed* which is only deontic. It is often argued that such a modal is able to select an deontic conversational background (von Fintel 2006).

But how can it select a particular type of conversational backgrounds if we cannot distinguish them?

The third problem goes the other way around: an overt deontic context does not seem sufficient to guarantee a deontic interpretation of a typically context dependent modal as *may*.

(2) In view of what the law provides, Jockl may be executed. (epistemic reading)

The fourth problem is an old problem of deontic logic rediscovered by (Frank 1997) and (Zvolenszky 2002) for the standard framework. Within the standard framework (with its traditional treatment of conditionals), both the deontic conditional (3-a) and the deontic sentence (3-b) are always true.

- (3) a. If Clarissa is working, she has to work.
b. (We see that Clarissa is working) She has to work.

However, (3-a) is not a tautology and the deontic reading of (3-b) is plainly false in case Clarissa is working but doesn't have the obligation to do so. I will argue that this problem arises because deontic and epistemic modals are analyzed in a uniform fashion and thus license the same inference patterns.

For the last problem, I will show that the standard analyses make false predictions by allowing unwanted combinations of modal items and this against cross-linguistic evidence.

(4) (In view of this new law) John may have to pay taxes.

In the standard analysis, *may* and *have to* are context dependent. However, in example (4) the modal verb *may* is unambiguously epistemic even if we try to force a deontic reading by making a deontic context available. I will argue that sentence (4) actually exemplifies a cross-linguistic pattern following which epistemic modality has always scope over deontic modality when the two are combined. In particular, the presence of the modal *have to* in the scope/as argument of *may* forces its epistemic interpretation. This is however unexpected under the standard analysis where any modal sentence should be able to appear in the nuclear scope as long as it could access an intensional context.

Finally, I will present the backbone of an alternative framework within update semantics that takes care of those problems. I will in particular propose to distinguish hierarchically between modal domains (along the lines of (Mastop 2005) and (Veltman 2005) for the deontic realm) to account for the simple intuition that whereas we can have (epistemic) uncertainty about obligations, we don't have obligations about uncertainties.

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