Modal Concord as Modal Modification

I. INTRODUCTION. When certain adverbs appear with modal verbs, they do not seem to contribute separate modal force to a sentence, despite their ability to do so independently (1).

(1) a. John (definitely) must be home.
b. John is definitely home.

Guerts and Huitink (2006), who dub this phenomenon *modal concord*, analyze it as ABSORPTION under identity (2), while Zeijlstra (2008) treats it as SYNTACTIC AGREEMENT between a probing modal operator (the adverb) and an expletive goal (the modal) (3).

(2) $[\![$[adv modal]$]\!]$=$[\![[F(\text{adv})\ \text{modal}]]\!]$=$[\![$[adv]$]\!]$ — where F is a covert operator that requires identity between $[\![$[adv]$]\!]$ and $[\![$[modal]$]\!]$, that is: $[\![F]\!] = \lambda M'_{st,st} \lambda M_{st,st} : M = M'.\ M'$

(3) [OP$_{i\forall,iDeon}$ must$_{u\forall,uDeon}$ [John be home]]

We argue that modal concord is best understood as **modal modification** by the adverb in question. Thus, we follow Guerts and Huitink (2006) and take modal concord to be a semantic phenomenon. Unlike Guerts and Huitink (2006) and Zeijlstra (2008), this approach captures: (*i*) the fact that deontic adverbs cannot appear on their own (6) and (*ii*) the sensitivity of concord adverbs to negation's effect on quantificational force (7).

II. MODAL DISPLACEMENT AND CONCORD. As Guerts and Huitink (2006) documents, modal concord is sensitive to both modal flavor and quantificational force. While quantificational force mismatches yield ungrammaticality (4), pairings across modal flavors – *E*(pistemic) and *D*(eontic) – are grammatical only when the adverb is epistemic, in which case there is no concord (5).

(4) John {definitely$_E$ must$_E$, perhaps$_E$ might$_E$, *definitely$_E$ might$_E$, *perhaps$_E$ must$_E$} be home.

(5) a. John {*must$_E$ obligatorily$_D$, definitely$_E$ must$_D$} be home.
b. John {*might$_E$ allowably$_D$, possibly$_E$ may$_D$} be home.

Since modal concord can be derived for epistemics via the introspection principles while assuming, as standard wisdom would have it, that the two modals are stacked on top of each other (Guerts and Huitink, 2006), the only certain case of modal concord is deontic – so we will henceforth focus on deontics.

The idea that modal concord is just modal modification is supported by the fact that deontic adverbs cannot on their own induce modal displacement of their complement (6) and are hence not modal operators by themselves – contra Guerts and Huitink (2006) and Zeijlstra (2008), which predict that (6) should be felicitous. Deontic adverbs contrast with epistemics, which are felicitous by themselves (1).

(6) *John obligatorily is home. (in contrast to the felicitous: John must obligatorily be home)

III. NEGATION AND CONCORD. While existential modals are ungrammatical with universal adverbs, the combination becomes acceptable with negation, as long as the adverb scopes above negation (indicated by linearity). Adverbs below negation, however, remain existential (7).

(7) a. John {obligatorily, *legitimately} cannot be home.
b. John cannot {*obligatorily, legitimately} be home.

The above facts, which straightforwardly align with the semantics of quantifiers and negation, are surprising if concord is a syntactic relation between the featural specification of modals and adverbs.

IV. ANALYSIS. We argue that deontic adverbs are modal modifiers that assert their own modal claims about the proposition in question. Abstracting from the positional freedom of adverbs, we will assume a schematic LF in which deontic adverbs are sisters of the modal head, which takes its modal base f (we ignore ordering sources for simplicity of exposition) as an argument (8). We assume that modal verbs have their usual denotations (9),(10). Modal adverbs predicate their own modal claim about the argument proposition p (which they 'share' with the modal verb) with respect to the *common* modal base f (11),(12).

(8) [[[adv modal] $f_{modal-base}$] proposition]

(9) $[\![\text{must}]\!] = \lambda w \lambda f_{s,\langle st\rangle t} \lambda p_{st}.\ \bigcap f(w) \subseteq p$

(10) $[\![\text{can/may}]\!] = \lambda w \lambda f_{s,\langle st\rangle t} \lambda p_{st}.\ \bigcap f(w) \cap p \neq \emptyset$

(11) $[\![\text{obligatorily}]\!] = \lambda M_{s,\langle\langle s,\langle st\rangle t\rangle,\langle st\rangle t\rangle} \lambda w \lambda f_{s,\langle st\rangle t} \lambda p_{st} : f \text{ is deontic}.\ M(w)(f)(p) \wedge \bigcap f(w) \subseteq p$

(12) $[\![\text{legitimately}]\!] = \lambda M_{s,\langle\langle s,\langle st\rangle t\rangle,\langle st\rangle t\rangle} \lambda w \lambda f_{s,\langle st\rangle t} \lambda p_{st} : f \text{ is deontic}.\ M(w)(f)(p) \wedge \bigcap f(w) \cap p \neq \emptyset$

While a presupposition on the modal base derives deontic-only concord, it does not capture agreement in quantificational force, i.e., the fact that existential adverbs go only with existential modals and universal adverbs go only with universal modals (cf. Guerts and Huitink 2006). We argue that this is derived via implicature, namely, that uttering a simultaneous universal and existential statement about the same restrictor and nuclear scope yields a contradiction between the assertion contributed by the universal and the implicature contributed by the existential, which negates the universal assertion. This dispreference is evident in the individual domain as well (13), suggesting that a domain-neutral pragmatic procedure is at work.

(13) Boys will {always, *sometimes} be boys.

V. INCORPORATING NEGATION. Recall that when negation scopes over a modal (7), it allows the dual deontic adverb to scope over the modal+negation constituent. We propose that in this case negation acts as a dual operator on the modal, operating below the position of the adverbial modifier:

(14) $[\![\text{NEG}]\!] = \lambda M_{s,\langle\langle s,\langle st\rangle t\rangle,\langle st\rangle t\rangle} \lambda w \lambda f_{s,\langle st\rangle t} \lambda p_{st}.\ [\text{DUAL}(M)](w)(f)(\overline{p})$ (e.g., $\text{DUAL}([\![\text{can}]\!]) = [\![\text{must}]\!]$)

As negation also allows quantificationally congruent adverbs below it, we assume that in this case negation is the usual complementation operation over propositions $\overline{p} := \lambda w.\ \neg p(w)$. Evidence for this mixed view comes from the unavailability of both adverbs simultaneously: (15) below is infelicitous because negation is either an operator over modals or over propositions, but not both simultaneously.

(15) *John obligatorily cannot legitimately be home.

VI. CONCLUSION. We have argued that modal concord in deontic environments arises because the deontic adverb is a modifier that makes its own ancillary modal claim. While modal flavor consonance is grammatically determined, we have argued that quantificational agreement is a pragmatically mediated phenomenon. Finally, we have demonstrated that the interaction of negation and modal concord is suggestive of a semantic explanation, and proposed that it is the result of negation's function as a dual operator.

References

Guerts, Bart, and Janneke Huitink. 2006. Modal concord. In *Concord phenomena and the syntax semantics interface*. ESSLLI.

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