On root modality and grammatical relations in Tagalog
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Introduction
-Modal expressions can be associated with a range of “flavors”; (1-2) show two different flavors of root modality (i.e. non-epistemic modality) with English have-to and need-to:

“Deontic” flavor — necessity in light of third-party rules
(1a) (According to his strict parents), John has to go to bed now
(1b) (According to his strict parents), John needs to go to bed now

“Subject-teleological” flavor — necessity in light of the subject’s priorities
(2a) (To feed his addiction), John has to smoke
(2b) (To feed his addiction), John needs to smoke

-Our claim is that modal flavor distinctions for some modal expressions are determined in part by the grammar, not just contextually
-This claim is based on the interpretations of Tagalog kailangan, a necessity modal verb that enters two different structures, which we identify as “impersonal” (3) and “thematic” (4)

(3) Impersonal: [kailanga[-ng ma-tulog si-Juan]]
MOD-COMP AV-sleep SUBJ-Juan
Approx. ‘Juan is required to sleep’

(4) Thematic: [kailangan ni-Jua[-ng ma-tulog]]
MOD GEN-Juan-COMP AV-sleep
Approx. ‘Juan feels a need to sleep’

Roadmap
○ We show that impersonal structures only express deontic necessity, and thematic structures only express subject-teleological necessity

○ We propose that kailangan always expresses necessity in view of a presupposed desire of its thematic “needier” argument

○ In thematic constructions, the genitive argument is the needier; in impersonal constructions, an implicit free variable, whose reference is constrained by Binding Conditions, is the needier.
Constraints on the reference of the free variable translate into constraints on modal flavor.

○ We conclude by discussing how our analysis can extend to English need, which conforms to the pattern in Tagalog, despite appearances

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1. **Background on syntax-semantics of flavor**

   In Kratzer’s (1977, 1981, a.o.) original analysis of modal auxiliaries, she concludes that the sheer number of possible modal flavors necessitates a contextual account.

   More recently, however, Cinque (1999) shows that in many languages, epistemic flavor and root (ability, deontic, subject-teleological) flavors are grammatically distinguished by syntactic height.

   **“Epistemic” flavor — possibility in light of available information**

   \( (5) \) Er bin-kwan-de-darib

   she go-FUT-3SG-PROBAB

   ‘She might go’

   **“Ability” flavor — possibility in light of subject’s abilities**

   \( (6) \) Ni buk-ñu-nyi

   I sit-ABIL-PRES

   ‘I can sit’

   *Una (Cinque 1999:54)*

   Adopting Baker’s Mirror Principle, Cinque proposes the universal ordering in (7), where epistemic modals scope above tense and root modals scope below.

   \( (7) \) \( \text{Mod}_{\text{Epistemic}} > \text{T(absolute)} > \text{Mod}_{\text{Root}} \)

   Attempting to explain Cinque’s observation without positing lexical entries with predetermined flavor, Hacquard (2006, 2010) proposes that auxiliaries have a single underspecified denotation, which can be inserted high or low in the syntactic structure.

   The epistemic/root split is a result of a modal’s dependency on the immediately c-commanding event-binding functional head.

   Despite the large literature on modal auxiliaries, the grammatical properties of lexical modals, i.e. thematic verbs, are less understood; Tagalog is useful in studying lexical modals because grammatical relations that verbs establish are transparent.

2. **Tagalog *kailangan***

2.1 **Two different structures**

   Case marking patterns in (3-4), repeated below, reveal a difference in syntactic structure.

   **Tagalog clauses are verb-initial, and a verb’s voice affix (glossed AV for “Actor Voice,” TV for “Theme Voice” etc.) causes the verb’s thematic arguments to be case marked in a particular way**

   \( (8) \) **Impersonal:** [kailanga[-ng ma-tulog si-Juan]]

   MOD-COMP AV-sleep SUBJ-Juan

   Approx. ‘Juan needs to sleep’

   **Thematic:** [kailangan ni-Jua[-ng ma-tulog]]

   MOD GEN-Juan-COMP AV-sleep

   Approx. ‘Juan needs to sleep’

   The *si*-marking on “Juan” in (8) shows that it is an argument of the embedded verb, which, with its AV-inflection, realizes a *si*-marked sleeper.
- In contrast, the GEN-marking on “Juan” in (9) must be from *kailangan* itself, which realizes a GEN-marked needer (see Asarina & Holt 2005 for more details)
- Preservation of idiomaticity (10-12) and animacy restrictions (13-14) support the conclusion that the case alternation correlates with different thematic dependencies

(10) **Idiom:** um-init ang-ulo ni-Juan
    *PFV.AV-get.hot SUBJ-head GEN-Juan*
    ‘Juan got angry’ (lit. ‘Juan’s head got hot’)

(11) **Impersonal, idiomaticity preserved**
    [kailangan[-ng um-init ang-ulo ni-Juan ]]
    *MOD-COMP AV-get.hot SUBJ-head GEN-Juan*
    ‘Juan needs to get angry’

(12) **Thematic, only (very odd) literal meaning**
    *[kailangan ng-ulo ni-Jua[-ng um-init ]]
    *MOD GEN-head GEN-Juan-COMP AV-get.hot*
    ‘Juan’s head feels a need to get hot’

(13) **Impersonal, no animacy restriction**

(14) **Thematic, animacy restriction**

2.2 **Two different interpretations**
- We presented Tagalog native speakers with constructed contexts and impersonal/thematic minimal pairs (presented as productions of a non-native speaker, learning how *kailangan* is used)
- Contexts describe a tension between 3rd-party rules and the subject DP’s priorities, thus ensuring that no overlap exists between deontic and teleological necessities (inspired by Rubinstein’s [+content, -preference] contexts (2012: §4))
- To see what flavor *kailangan* can have in the two constructions, we tested four combinations:

Purely deontic necessity
- Judgement collected for statements expressing necessity in light of 3rd-party rules; speakers accept impersonal (14) and reject thematic (15)

Context: Juan is hungry. His mother gave him a plate of food, but she told him to set some food aside for his brother, who is hungry too. Juan intends to keep eating and to finish the plate.

(14) **Impersonal:**
    [kailangan[-ng mag-tira si-Juan ng-pagkain]]
    *MOD-COMP AV-set.aside SUBJ-Juan OBJ-food*
    ‘Juan is required to set aside food’

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2 We make it clear that the subject intends to act in a way that contravenes the 3rd-party priorities. This precludes what Rubinstein (2012:137) calls a “...pseudo-deontic interpretation: a goal-oriented interpretation with a goal of abiding by the law”
(15) **Thematic:** 
\[
\text{MOD} \quad \text{GEN-Juan-COMP} \quad \text{AV-set.aside} \quad \text{OBJ-food}
\]
‘Juan feels a need to set aside food’

**Purely subject-teleological necessity**
Judgement collected for statements expressing necessity in light of subject’s priorities; speakers accept thematic (16) and reject impersonal (17)

*Context: Juan has smoked since he was young. Doctors have ordered him to quit, but he can’t resist. Though he stopped for a few weeks, today he decided that he’ll buy a pack.*

(16) **Impersonal:** 
\[
\text{MOD-COMP} \quad \text{AV-smoke} \quad \text{SUBJ-Juan}
\]
‘Juan is required to smoke’

(17) **Thematic:** 
\[
\text{MOD} \quad \text{GEN-Juan-COMP} \quad \text{AV-smoke}
\]
‘Juan feels a need to smoke’

**Syntax-flavor mapping generalization**
Impersonal constructions express deontic necessities but not purely subject-teleological necessities; thematic constructions express subject-teleological necessities but not purely deontic necessities

3. **Analysis**
*Kailangan* always selects a proposition and a “needer” argument, and expresses necessity in view of a presupposed desire of the needer; in thematic constructions, the overt GEN-marked DP is the needer, and in impersonal constructions, a covert free variable is

- Binding Conditions constrain the referent of the free variable in the impersonal construction, resulting in the observed constraint on subject-teleological flavor with this structure

3.1 **A lexical entry for kailangan**
In our model, the interpretation function is relativized to a context C, which provides a Kratzerian modal base function \( f_{<s,<t,>}> \), an ordering source function \( g_{<s,<t,>}> \), and an assignment function \( G_{<n,>}> \).

- We treat *kailangan* as having two presuppositions: (i) the ordering source must return a set containing a desire of *need*’s thematic argument and (ii) the prejacent proposition must not to be settled in the modal base (like with *want*, e.g. Heim 1992)\(^3\)

\[
(18) \quad \text{[kailangan]}_C^C (p_{<s,>})(x)(w) \text{ is defined only if } \exists q_{<s,>} \in \text{DES}(x,w) \text{ and } g(w) = \{q\} \\
\text{and } \cap f(w) \cap p \neq \emptyset \text{ and } \cap f(w) \cap \neg p \neq \emptyset \\
\text{if defined, } \text{[kailangan]}_C^C (p)(x)(w) = 1 \text{ iff } \forall w' \in \max_{g(w)}(\cap f(w)). p(w')=1
\]

\(^3\) For any set of worlds \( W \), set of propositions \( A \), possible worlds \( w,w' \), and individual \( x \):

\[
\max_x(W) = \{w \in W : \neg \exists w' \in W. w' >_d w\}
\]

\( w' >_d w \text{ iff } \{p : p \in A \text{ and } w' \in p\} \subset \{p : p \in A \text{ and } w' \in p\} \)

\( \text{DES}(x,w) = \{p_{<s,>} : p \text{ is desirable to } x \text{ in } w\} \)

\( \text{tas} = \{\} \)
3.2 Explaining the mapping: restriction on thematic constructions
-Thematic constructions express subject-teleological modality and not purely deontic modality
-We propose that thematic constructions have LFs as in (19), where the DP-subject is base generated in the matrix clause, perhaps controlling an embedded PRO

(19) \[ \langle_{\phi} \text{GEN-DP} \ [\text{kailangan-w} \_0 \ [\text{\langle_{\phi} \text{PRO} ...}]])\]

-The Tagalog thematic construction in (19) has the truth conditions given below in (20)

Context: Juan is hungry. His mother gave him a plate of food, but she told him to set some food aside for his brother, who is hungry too. Juan intends to keep eating and to finish the plate.

(20) Thematic: \#[kailangan ni-Jua-[ng mag-tira ng-pagkain]]
MOD GEN-Juan-COMP AV-set.aside OBJ-food
‘Juan feels a need to set aside food’

Presupposition from kailangan (roughly): The ideals in our world include a desire of Juan’s, and within a set of relevant possibilities, it’s unsettled whether Juan will set aside food
Assertion (roughly): The desire of Juan’s necessitates that he set aside food.

-On our analysis, speakers reject (20) because the context excludes the possibility of Juan having a desire that is realized only by setting aside food (otherwise, he wouldn’t finish the plate)
-The first part of kailangan’s presupposition is always false with inanimate subjects, which have no desires in the relevant sense; hence inanimate subjects trigger presupposition failures

3.3 Explaining the mapping: restriction on impersonal constructions
-Impersonal constructions can express purely deontic modality and cannot express purely subject-teleological modality
-We propose that kailangan’s individual argument is a covert free variable pronoun, which receives its value from an assignment function \(G_{<\langle_{\phi},d>,d>}\)
-Impersonal constructions in Tagalog have LFs as in (21):

(21) \[ \langle_{\phi} \text{pro}_{\gamma,e} \ [\text{kailangan-w} \_0 \ [\text{PROPOSITION} \ ]])\]

-We adopt Heim & Kratzer’s (1998:292) pro-forms and traces rule for the interpretation of covert free variables like \text{pro}_{\gamma,e}

(22) Pro-forms and traces
-If \(a\) is a pro-form or trace, \(i\) an index (number-type pair), and \(G_{<\langle_{\phi},d>,d>}\) an assignment function whose domain includes \(i\), then \([a]^C = G(i)\)

-In order for an impersonal construction to express subject-teleological necessity, kailangan’s implicit argument would have to refer to the embedded subject
-Coreference between the c-commanding pro and a thematic argument of the embedded predicate results in a Condition C violation
3.4 Summary of analysis
-Kailangan’s flavor is lexically-specified: it expresses necessity in view of a desire of its thematic argument
-Flexibility in flavor is a consequence of the verb’s ability to enter an impersonal construction with an implicit free variable argument
-Constraints on modal flavor arise because of Binding Conditions constraining pro’s reference

4. English need
-Like kailangan, English need enters two structures which correlate with different flavors

\[(24) \text{Thematic:} \quad \text{need+CP} \quad \rightarrow \quad \text{subject-teleological flavor}\]

\[(25) \text{Impersonal (raising):} \quad \text{inanimate-DP need+IP} \quad \rightarrow \quad \text{deontic flavor}\]

Thematic need
-Rubinstein 2012: §4 finds that when need is complemented by a full CP as in (25), it expresses subject-oriented teleological necessity exclusively; (25) must be a thematic construction

Context: city regulations mandate that homeowners put up fences between their properties. You and your neighbor get along well without a fence, and you both object because a fence would destroy the flowerbeds flourishing between your properties. You say to your neighbor:

\[(25) \quad \#\text{We need \([_\text{cp} \text{ for there to be a fence here}]\)}\]

\[(26) \quad \text{We need \([_\text{ip} \text{ to put up a fence here}]\) \quad (\text{Rubinstein 2012: 155})}\]

-As with Tagalog kailangan, the thematic subject of need cannot be inanimate, shown in (27)

\[(27) \quad \#\text{The stew needs \([_\text{cp} \text{ for the head chef to inspect it}]\)}\]

Raising need
-When expletive-there or an inanimate subject precedes need-IP, it must have a raising structure
-We claim that in such constructions, need can only receive a purely deontic interpretation

Context: John obsesses about the cleanliness of the bathroom. Although the bathroom is clean...

\[(28) \quad \#\text{The bathroom needs \([_\text{ip} \text{ to be cleaned by John}]\)}\]

\[(29) \quad \text{John needs \([_\text{ip} \text{ to clean the bathroom}]\) \quad \text{Rubinstein 2012: 155}}\]

-The inability of raising need in (28) to express necessity in light of John’s priorities follows if it involves an implicit needer in the matrix clause, whose reference is constrained by Condition C
-Need-IP can express necessities in light of 3rd-party or subject-priorities cf. (26), (29) respectively; we claim that it is ambiguous between a raising and control structure (see appendix)
5. Conclusion
-We identify one strategy made available by grammars to achieve modal flavor expressiveness
-Kailangan’s flavor is lexically-specified, and apparent flavor flexibility is a result of the verb’s ability to take implicit arguments
-The way implicit arguments interact with binding principles results in a flavor shift
-A tentative, more articulated typology of necessity modals involving a grammatical split among the lexical modals is shown in (30)

(30)

References
Kratzer, Angelika. 1977. What ‘must’ and ‘can’ must and can mean. Linguistics and Philosophy 1, 337-55
Appendix: *need*-IP is ambiguous between raising and control
-Previous analyses of *need*-IP treat it as raising (Harves 2008:213)

(i) There needs to be a doctor present

-We find that *need*-IP only passes raising diagnostics when it expresses deontic necessity, and that it behaves as a control verb when expressing subject-teleological modality

Complement clause pseudoclefting
-Raising verb complements can’t be pseudoclefted; (some) control verbs complements can

(ii) **Raising:** *What John is likely is [TP to be examined by the doctor]*
(iii) **Control:** What John **wants** is [cp to be examined by the doctor]

-The possibility of pseudoclefting *need*-IP’s complement shows that it isn’t uniformly raising

(iv) What Bill needs is to be taken care of

Meaning preservation under passivization

(v) a. The doctor **is likely** to have examined John
   b. John **is likely** to have been examined by the doctor

(vi) a. The doctor **needs** to examine John
   b. John **needs** to be examined by the doctor

(vii) a. The doctor **wants** to examine John
   b. John **wants** to be examined by the doctor (meaning shift)

-*Need* does not pass this diagnostic when it expresses subject-oriented necessities; we note a striking meaning shift from subject-oriented to deontic necessity

Context: John obsesses about the cleanliness of the bathroom. Although the bathroom is clean...
(viii) John needs to clean the bathroom/#the bathroom needs to be cleaned by John
    John needs for the bathroom to be cleaned by him in particular

-Conjoining a raising verb with the negation of its passivized counterpart is contradictory; subject-teleological *need* statements are potentially consistent with their passivized counterparts, which express deontic necessities

(ix) #The doctor is likely to have examined John, but John is not likely to have been examined by the doctor.

(x) John needs to clean the bathroom, but the bathroom doesn’t need to be cleaned (by John/anyone)