

Possession and necessity: from individuals to worlds*

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1 Introduction

Observation: In a variety of languages, modal necessity can be expressed with the same morphosyntax used to express predicative possession.

True not only for *have*-possession languages, as in (1), but also apparently for *be*-possession languages, as in (2):

- (1) a. The children have to do their homework now. [English]
b. Juan tiene que comer esta manzana.
Juan has that eat-inf this-f apple
'Juan has to eat this apple.' [Spanish]
c. Der Hans hat rechtzeitig in Wien anzukommen
the Hans has in-time in Vienna to-arrive
'Hans has to arrive in Vienna in time.' [German: Bhatt, 1997, (6)]
- (2) a. John-ko seb khaa-naa hai
John-DAT apple eat-GER be.PRES
'John has to eat the apple.' [Hindi-Urdu: Bhatt, 1997, (8)]
b. Ghor-ṭa-ke porijkar korte ho-be
room-DEF-DAT clean do-INF be-FUT
'The room has to become clean.' [Bengali: Neil Banerjee p.c.]

General Claim: The use of possessive morphosyntax to express modal necessity reveals something about the structure of both predicative possession and necessity.

More Specifically: A core meaning of possession is a relation of inclusion or containment: the possessor includes the possessee (i.e. part-whole, body part relations).

The same relation of inclusion is involved in modal necessity, but between sets of worlds.

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We propose that possessive modality results from:

- a possession feature (INCL) generalizing its contexts of occurrence, so that it can relate not only individuals but also sets of worlds.
- the addition of a feature contributing a modal base (ROOT, EPIST, etc.) to the head hosting INCL.

Outline:

- Section 2: Possession as inclusion
- Section 3: Necessity as inclusion
- Section 4: Connecting possession to necessity
- Section 5: The syntax of modal *have*
- Section 6: Extension to *be*-possession

2 Possession as inclusion

Proposal: a basic meaning of predicative possession with *have* is inclusion. This aspect of possessive meaning forms the basis for extension to modal necessity.

- A somewhat controversial view: many uses of predicative possession don't seem to involve inclusion or part-whole relations.
- Following Cowper (1989): the interpretation of *have* is contextually determined by the arguments it links. When the arguments do not determine the interpretation, inclusion / part-whole interpretation appears.
- The interpretation of *have* with a nominal complement is determined largely by the complement itself (See Grimshaw and Mester 1988 on the Japanese light verb *suru*).
- With event or state complements, subject may be thematically or pragmatically related:

(3) Events:

- a. Dr. Smith had three operations last week. (agent)
- b. That patient had two operations last month. (patient)
- c. Professor Jones has a class this morning. (agent)
- d. All of the students have a class on Thursday afternoon. (patient)
- e. Mrs. Astor had a party on Saturday. (host)
- f. The catering company has four parties this evening. (caterer)

(4) States:

- a. Sue has a bad headache. (experiencer)
- b. Davey had the measles last winter. (experiencer)
- c. Newt has some very odd beliefs. (believer)
- d. The company has a new position on that issue. (proponent)

- Cowper (1989): the verb *have* has two θ -roles, but these are radically underspecified and can inherit any role supplied by the event/state nominal.
- For us: v_{have} imposes extremely minimal interpretive constraints on its subject – inherited from the event/state nominal.
- ...but not *none*: the arguments of *have* are nonetheless asymmetrically related.

- With individual-denoting complements, again a wide range of possibilities:

- (5)
- a. Mr. Romney has several houses and many cars. (ownership)
 - b. The university has a farm outside of town. (ownership, abstract part-whole relation)
 - c. That house has a beautiful tree in front of it. (proximity)
 - d. I couldn't do my homework because I didn't have my notebook. (physical possession)
 - e. Freddie has two sisters. (inalienable possession)
 - f. The car has a red roof. (part-whole)
 - g. That dog has three legs. (part-whole)

- Thematic interpretation of the subject cannot be *inherited* from the complement of v_{have} : individual-denoting nominals have no thematic roles to assign.¹
- Here, v_{have} does more work: but provides extremely minimal content, allowing the object argument to make a pragmatic contribution (as in Cowper, 1989).

So what **does** v_{have} contribute?

- (6)
- a. That snarf has two borks.
 - b. That wug had a big shrack.

- When the nominals themselves make no contribution, all native English speakers interpreted the object argument as being in a part-whole relation with the subject argument.

What does *inclusion* or *part-whole* mean?

- In some cases it is clearly literal inclusion or part-whole relations.
- An open question whether more abstract cases (e.g. alienable possession, kinship relations) can be usefully related to some kind of “inclusion”, as e.g. in Boneh and Sichel (2010):

“We take Part-Whole to be broader than inalienable possession and to include also social relations and inanimate Part-Whole” (2-3)

“[T]he complement of the applicative head [=a subset of possessors] can be understood as **falling within the sphere** of the applied argument.” (28, emphasis ours)

- Latter quote in particular suggests connection to notion of *control* in possessive constructions (Stassen, 2009) – topic for further formal investigations of the lexical semantics of predicative possession.
- In this talk we set this possibility aside and focus on the extension of **literal** part-whole interpretations.

¹Except for inherently relational nouns like *sister* or *friend*.

2.1 Inclusion in syntax

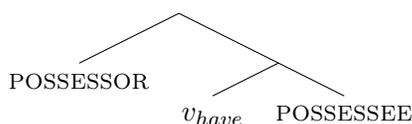
A broad consensus: The syntax of possession involves a functional head that relates two arguments. Variously identified. . .

- As prepositional (P_{loc} : Freeze 1992; D/P: Kayne 1993; P_{with} : Levinson 2011)
- As a flavour of v^0 (v_{have} : Harley 1995; v : Ritter and Rosen 1997)

What distinguishes a transitive P^0 in the clausal spine from an instance of v^0 ?

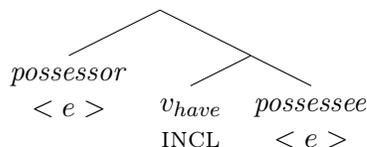
Little enough that in this talk we simply notate the relevant functional head as v_{have} .

- (7) **Structure of *have*-possession:** The possessor c-commands the possessee.



- On its own, v_{have} expresses a very general relation of inclusion or containment.
 - The external argument is the inclusive/containing member of the relation.
 - The internal argument is the included/contained member of the relation
- This reflects the general view of *have* as spelling out a basic transitive head: Hoekstra (1984); Cowper (1989); Harley (1995); Ritter and Rosen (1997); among many others.

- (8)



Key Points:

- The feature INCL on v is the basis of its semantic interpretation.
- INCL is post-syntactically realized as *have* (assuming Distributed Morphology, Halle and Marantz, 1993, 1994, et seq.).

3 Necessity as inclusion

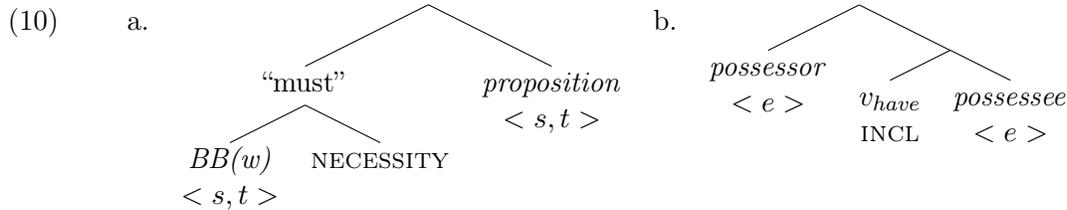
The challenge: generalization of a verb like *have* from possession to necessity requires some commonality between modal necessity and the meanings explored in section 2.

So, first we need a semantics for necessity.

An (abbreviated) formal semantics for modals:

- Modality has long been understood in terms of (sets of) **possible worlds**.
 - Possibility (\diamond) = in **some** possible worlds a proposition is true.
 - Necessity (\square) = in **every** possible world a proposition is true.

- Section 3: the semantics of necessity is such that the first argument of a modal operator (the set of ‘best’ worlds in the Modal Base) is **included** in (i.e. a subset of) the second argument (the proposition).
- Differences are **syntactic**:
 - *must* is syntactically intransitive: first semantic composition occurs head-internally (10a).
 - possessive *have* is syntactically transitive: first semantic composition occurs in head-complement relation (10b).



- Also a semantic difference: possession and necessity involve arguments of different semantic types, individuals vs. sets of worlds.
- Differences explain why languages don’t automatically extend possession to necessity.
- Similarities explain why extension is possible in the first place.

5 The syntax of modal *have*

So far we have argued:

- there are similarities between the compositional semantics of possession and of modal necessity
- these similarities forms the basis of extension from possession to necessity.

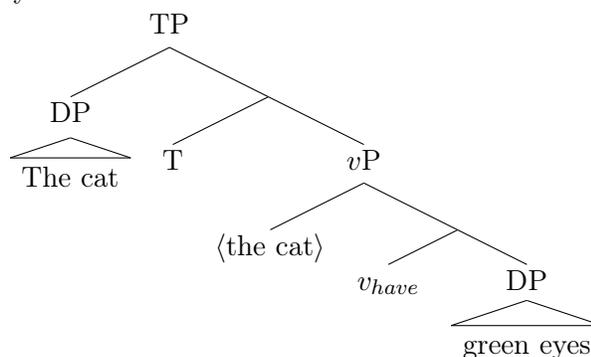
What remains:

- deriving the syntax of *have to* sentences from the same structure as their semantics.

A place to begin: the syntax of possessive *have*.

- Possessive *have* is a functional head (v_{have}) that relates two individual-type arguments.
- Specifier (possessor) moves to Spec-TP to receive nominative Case and satisfy EPP.

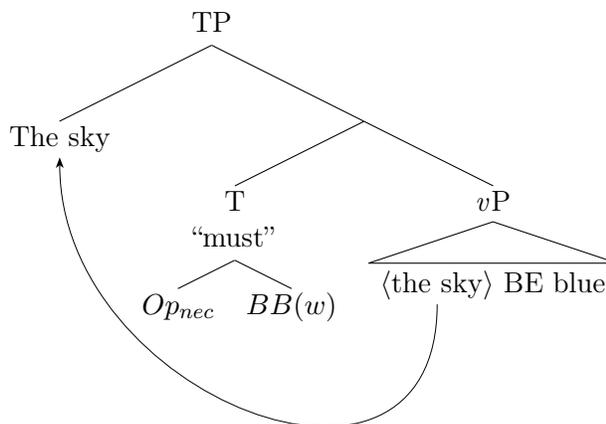
- (11) a. The cat has green eyes.
 b.



Adapting possessive syntax to modal *have*:

- Consider first the syntax of *must*
 - occurs in T^0 (at least approximately)
 - consists of a modal operator and $BB(w)$
 - operator combines first with the $BB(w)$
 - T takes a non-finite propositional complement (*vP* or larger)
 - subject of the non-finite complement raises to Spec-TP.²

- (12) a. The sky must be blue.
 b.



²We assume raising for both epistemic and deontic modals. Though it is sometimes claimed that deontic/root modals involve control, consider the following types of examples:

- (i) There must be an answer by 5PM.
 (ii) Dinner must be ready when we return. (instructions to a cook)

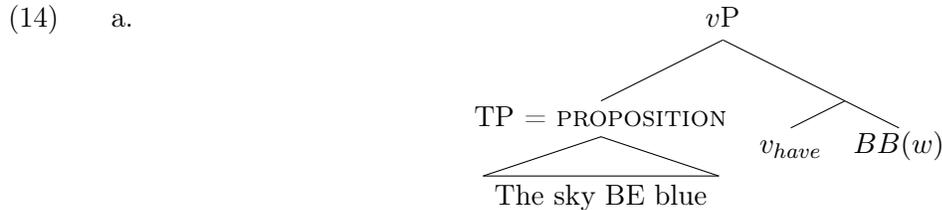
The availability of expletive subjects of deontic modals, and of a surface subject distinct from the holder of an obligation, show that the subject of a deontic modal is not the thematic holder of the obligation, arguing in favour of a universal raising analysis of modal subjects. See also discussion by Wurmbrand (2003), Hall (2002) for further discussion of the raising analysis of modals like *must*.

This reasoning applies to modal *have* as well as to *must*, as observed by Bhatt (1997), further arguing against the idea that modal *have* continues to express possession, but possession of an obligation rather than an object.

- Recall from section 4 the syntactic difference between *must* and possessive *have*:
 - *must*: first argument (modal base) composes head-internally
 - possessive *have*: first argument (possessee) is a syntactic complement

(13) The sky has to be blue (when we film this scene).

- Mapping the first and second arguments of *must* from the structure in (12b) onto the syntax of possessive v_{have} gives (14a):



- b. *The sky (to) be blue has.
- c. *For the sky to be blue has.

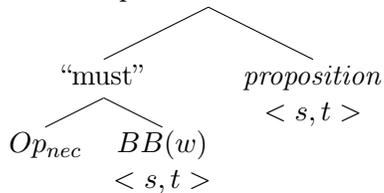
- Clearly the brute-force approach of combining the syntax of possession with the arguments involved in modality is not the way forward.

Alternative: model the syntax of modal *have* more directly on the syntax of *must*.

- First argument of modal *have* combines head-internally.
- Second argument of modal *have* is a proposition in its complement.

But how precisely does the first argument of a modal operator combine?

(15) The compositional semantic structure of modals:



- The syntactic composition of Op_{nec} with $BB(w)$ cannot be accomplished by Merge: the first element that Merges with a head can only be its complement.
- Yet if semantic composition depends on syntactic structure, and complex syntactic structure is formed only by Merge, how could a head ever have internal semantic complexity?

Two ways to get a semantically complex head:

1. **Head Movement:**

- $BB(w)$ corresponds to a lower head.
- Moving $BB(w)$ to head-adjoin to Op_{nec} gives the structure in (15).³

But: in the syntax, no evidence for two heads, one corresponding to the modal base and the other to modal force.

In the absence of such evidence, we prefer a simpler structure with a single syntactic head.

2. **Feature Complexity:**

- A single syntactic head bearing multiple interpretable features, spelled out by the modal.
- Head-internal features compose with one another before the result composes with the syntactic complement.
- Interpretable features define systematic contrasts within a particular category: Harley and Ritter (2002); Béjar (2003); Harbour (2007); Cowper (2005, 2011, a.o.).
- Modality can be fruitfully decomposed in this way: modal systems track (at least) two dimensions of meaning
 - Modal force: necessity vs. possibility
 - Modal type: epistemic vs. “root” (vs. circumstantial)
- Matthewson et al. (2005, et seq.): while modals in languages like English are distinguished by modal force, modals in St’át’imcets are distinguished by modal type:

(16) Modals in English and St’át’imcets [Matthewson et al. 2005:12]

a. English:

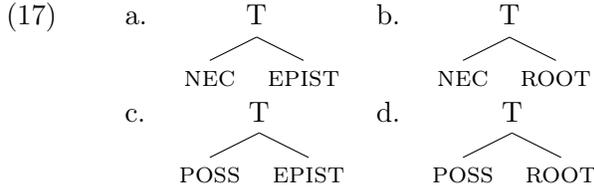
	epistemic	deontic	circumstantial	future
strong	<i>must</i>			<i>will</i>
weak	<i>can</i>			<i>might</i>

b. St’át’imcets:

	epistemic	deontic/irrealis	circumstantial	future
strong	<i>k’a</i>	<i>ka</i>	–	<i>kelh</i>
weak			<i>ka-a</i>	

³This assumes that head movement can have semantic consequences, contra Chomsky (2001) but following much subsequent work, including Lechner (2006, 2007), Hartman (2010), and Iatridou and Zeijlstra (2010), among others.

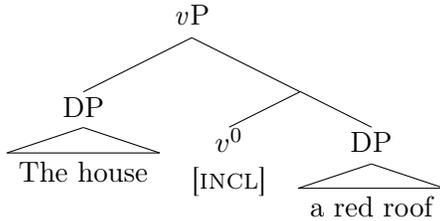
- Natural way to capture this distinction is via two cross-classifying features:⁴



- (17) uses the familiar terms NECESSITY and POSSIBILITY as the values for a modal force feature.
- On a Kratzerian approach, NECESSITY would be interpreted as x includes y , where x is the set of P-worlds, and y is $BB(w)$.

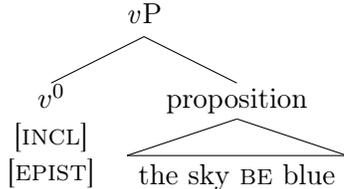
This featural account permits a straightforward account of the syntax of modal *have*.

(18) Possessive *have*:



- two arguments denoting individuals
- external argument (*the house*) includes internal argument as a subpart (*a red roof*).

(19) Modal *have*:



- No external argument for v^0
- Complement is a non-finite clause rather than a DP
- Differences explained by the presence of the modal type feature (here [EPIST]) on v^0 :
 - EPIST provides $BB(w)$; INCL provides the inclusion relation.
 - Composition of [EPIST] and [INCL] gives a monadic predicate taking an argument denoting a set of worlds.
 - The clausal complement to v^0 supplies this propositional argument; this saturates the argument structure of v^0 , precluding the possibility of an external argument.⁵

⁴There could be further subdivisions, depending on how many types of root modals were featurally distinguished (deontic vs. circumstantial vs. bouletic, for example). Whether these distinctions are best encoded featurally or in terms of the “lexical” (perhaps encyclopedic) meanings of individual heads is a question for further work.

⁵We assume that the propositional argument is nonfinite for whatever reason the complement of other modals in

5.1 Interim summary

- Extending possession to modality involves changes in the syntactic and semantic properties of INCL;

Initially:

- occurs independently on v^0
- takes two arguments of type e (individual-denoting DPs).

Once extended:

- still occurs on v^0 but co-occurs with a second feature that provides $BB(w)$.
- semantically, takes two arguments of type $\langle s, t \rangle$; i.e., sets of worlds.
- $BB(w)$, provided by the new feature on v^0 , saturates the first argument.
- syntactic complement thus provides the second (outer) argument.

5.2 Against Possession of Obligation

Alternative approach: modal *have* expresses the possession/existence of an obligation (Bhatt, 1997; Cattaneo, 2009).

- (20)
- a. John has [to eat an apple.]
 - b. John has an obligation [to eat an apple.]
 - c. There is an obligation [for John to eat an apple.]

- In outline, the modal meaning of sentences like (20a) not due to *have* itself, but to a covert necessity operator.
- *have* occurs because of a prepositional element that is part of the larger possessive/existential structure.
- The details of Bhatt (1997)'s proposal are framed in terms of Kayne (1993)'s account of possession.
- Setting aside any questions specific to that framework, Bhatt's account leaves at least two questions open:
 - If modal interpretations of *have* come from a covert modal, why is it always a *necessity* modal?
 - Given the possible universality of covert modal operators, why don't *all* languages have a modal use of their possessive morphosyntax?

English are non-finite. This may be linked to incompatibility between modality and deixis, in the feature system of Cowper (2005).

- Our account answers both questions:
 - By attributing the modal meaning of *have* to *have* itself, we capture the absence of possibility readings: necessity is the result of applying INCL to sets of worlds.
 - By acknowledging the semantic difference between possessive and modal *have*– they take arguments of different semantic types – we leave room for a role to be played by language change. Possession does not *automatically* extend to necessity.

6 Extension to BE-possession

So far we have considered only possessive modality in English, an account that can extend (in principle) to other *have*-possession languages.

What about *be*-possession languages?

Recall: some *be*-possession languages also appear to express necessity with possessive-like morphosyntax. Bhatt (1997) discusses cases from Indo-Aryan, particularly Hindi-Urdu but also Bengali, Gujarati, and Sindhi.

Here we focus on Hindi-Urdu and Bengali.

- (21) a. John-ko sirdard hai
 John-DAT headache be.PRES
 ‘John has a headache.’
 b. John-ko seb khaa-naa hai
 John-DAT apple eat-GER be.PRES
 ‘John has to eat the apple.’ [Hindi-Urdu: Bhatt 1997, (8)]

- (22) Bengali:
 a. Amar bondhu-r aḳta boi aaṭhe
 my friend-GEN one book be.PRES
 ‘My friend has a book.’
 b. Amar bondhu-ke je-te ho-be
 my friend-DAT go-INF be-FUT
 ‘My friend has to leave.’ [Bengali: Neil Banerjee p.c.]

Question: are these indeed cases of possessive modality?

Less obvious than in *have*-possession languages, where we can point to the presence of an identical ‘lexical’ verb.

Proposal: at least for Indo-Aryan languages, the same proposal developed above for modal *have* can be naturally extended to account for this necessity constructions.⁶

⁶Jung (2011) suggests that Russian – another *be*-possession language – exhibits possessive modality, based on examples such as the following, and argues for a unification with English modal *have*.

- (i) Začem mne bylo tam ostavat’sja?
 Why me-DAT be.PAST.N.SG there stay.INF
 ‘Why was I supposed to stay there?’ [Russian: Jung, 2011, p.105, (17)]

- In Indo-Aryan languages, as in other *be*-possession languages, predicative possession is expressed via a copular verb whose subject is an oblique-marked possessor.
- In Hindi-Urdu the specific oblique marking on the possessor is determined by the “flavour” of possession involved:

- (23)
- a. DAT(-*ko*) = “Experiencer” possession
 Ram ko bukhaar/sirdard/cancer hai
 Ram DAT fever/headache/cancer be.PRES
 ‘Ram has fever/a headache/cancer.’
 - b. GEN(*ke*) = Inalienable possession (body parts, family members)
 Ram kii do bet.iyãã hai
 Ram GEN.f two daughters be.PRES
 ‘Ram has two daughters.’
 - c. GEN+LOC(*ke-paas*) = Alienable possession,
 Ram ke-paas ek kitaab kitaab hai
 Ram GEN+LOC one book/every book be.PRES
 ‘Ram has a book.’
 - d. “in” (-*mẽ*) = Possession of properties? (Bhatt calls this simply “possession”)
 Ram mẽ pratibhaa hai
 Ram in talent be.PRES
 ‘Ram has talent’
- [Bhatt 1997, (42)]

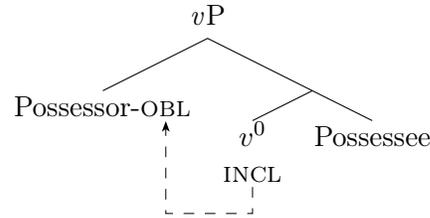
- The apparent possessive modality construction expresses modal necessity via dative case on the subject – the same case used for “experiencer possession” as in (23a):

- (24)
- a. Ram-ko phal khaa-naa hai/thaa
 Ram-DAT fruit eat-GER be.PRES/be.PAST
 ‘Ram has/had to eat the fruit.’
 - b. Tim-ko davaai pii-nii hai
 Tim-DAT medicine.F drink-GER.F be.PRES
 ‘Tim has to drink medicine.’
- [Bhatt 1997, (20, 27a)]

- This pattern of oblique subject marking can be accounted for by the same syntax we have suggested for possessive and modal *have*.
- In predicative possession, the differences are relatively minimal:
 - v_{poss}^0 (bearing INCL) assigns oblique case to the DP in its specifier.
 - INCL does not trigger more specific realization of v^0 (i.e. as a lexical verb of possession)
- v_{poss}^0 is thus essentially an applicative head, introducing an argument and licensing it via oblique case, as in Myler (2013, 2014).

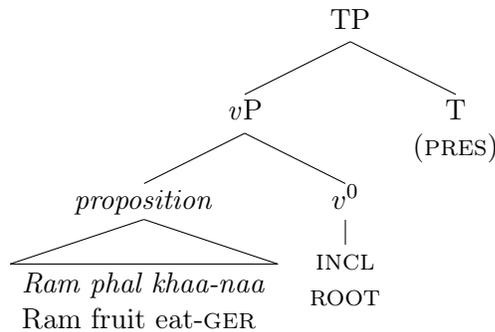
Elsewhere this type of sentence in Russian has been discussed as a “dative infinitive” (Moore and Perlmutter, 2000; Sigurdsson, 2002; Fleisher, 2006). Unlike the possessive modality cases discussed here, it is unclear that this is a true modal necessity construction. Moore and Perlmutter (2000) gloss its meaning as “it is in the cards that X”; Igor Yanovich (p.c.) similarly suggests that examples like (i) would be better translated as “What good is it for me to stay there?”. For this reason we do not further consider the Russian data here.

(25)



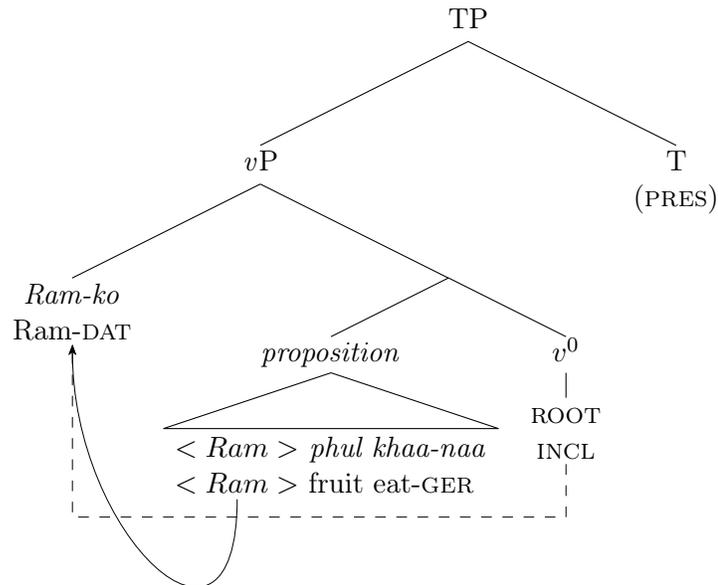
- Possessive modality, as in English, arises when the INCL feature of v^0 broadens semantically, being able to relate sets of worlds, and thus co-occurring with features expressing the modal base (i.e. ROOT or EPIST).
- More concretely, the underlying structure for (25a) would be as in (26), with (modal) ROOT and INCL features on v^0 , and a non-finite proposition as its complement:

(26)



- One further syntactic difference from English: modal v^0 attracts embedded subject to $\text{Spec-}vP$ and assigns it dative case:

(27)



- Unlike v^0_{poss} , modal v^0 does not introduce any argument.
- Nonetheless applicative-like in the sense of assigning oblique case to a DP that occurs in its specifier.

6.1 Evidence for Raising:

- The analysis outlined above requires raising into a position that is assigned oblique case.
 - An alternative analysis might be that the subject is base generated in the matrix clause – related to **dative experiencer** constructions.
 - Bhatt provides several pieces of evidence in favour of raising in Hindi-Urdu:
1. The subject of the possessive modality construction need not be the direct bearer of the obligation.

(28) illustrates this for Bengali: in (28) it is not the obligation of the room to clean itself.

(28) Ghor-ṭa-ke porijkar korte ho-be
 room-DEF-DAT clean do-INF be-FUT
 ‘The room has to become clean.’ [Bengali: Neil Banerjee p.c.]

2. In Hindi-Urdu, promoted subjects – i.e. passive and unaccusative subjects – can surface with (null) absolutive case marking. They do not permit ergative *-ne* (Mohanani, 1994):

(29) Ram(*-ne) giraa.
 Ram(*-ERG) fall.PERF
 ‘Ram fell hard.’ [Mohanani 1994, 71]

When an unaccusative verb occurs in a possessive modality context, the matrix subject can be similarly unmarked. This is predicted only if this DP moved to its surface position from within the embedded clause:

(30) yeh tehni kaṭ-nii hai
 this branch.FEM be.cut-GER.FEM be.PRES
 ‘This branch had/has to be cut.’ [Bhatt 1997, (24b-i)]

The same DP can also be marked with “dative” *-ko* – but this is ambiguous between “differential object marking” assigned in the embedded clause, and modal dative assigned in the matrix.

3. While gerunds elsewhere permit overt genitive subjects, this is not possible in possessive modality contexts:

(31) *Roumi-ko [Leela-ka seb khaa-naa] hai
 Roumi-DAT Leela-GEN apple eat-GER be.PRES
Intended: ‘Roumi has an obligation that Leela eat the apple.’ [Bhatt 1997, (21)]

This can be explained if the matrix subject raises from the position the genitive would occupy.

6.2 Remaining Puzzle: *Which* Oblique?

- We have suggested that modal v^0 in Indo-Aryan is applicative-like: it licenses (via oblique case) a DP in its specifier, but it does not introduce that argument.
- What determines the oblique assigned to this argument?
- In Hindi-Urdu, need to account for choice of dative rather than any other case that can mark possessors.
- In Bengali a more difficult problem: modal subjects are dative, though all possessors are genitive.⁷

(32) Bengali:

a. Possession: Subject marked with genitive

Amar bondhu-r akṭa boi aatʃhe
 my friend-GEN one book be.PRES
 ‘My friend has a book.’

b. Possessive modality: Subject marked with dative (genitive dispreferred).

Amar bondhu-ke je-te ho-be
 my friend-DAT go-INF be-FUT
 ‘My friend has to leave.’

[Bengali: Neil Banerjee p.c.]

- Relatedly, subjects of overt modals are uniformly marked with dative in these languages.

(33) Hindi-Urdu: Modal *chahiye* “should”

Ram-ko seb khaa-naa chahiye thaa
 Ram-DAT fruit eat-GER should be.PAST
 ‘Ram should have eaten the apple.’

[Bhatt 1997, (27b)]

(34) Bengali: Modal *utʃit* “should”

Ghor-ṭa-ke porijʃkar korta utʃit
 room-DEF-DAT clean do.VERBAL.NOUN should
 ‘The room should become clean.’

[Bengali: Neil Banerjee p.c.]

- Suggests that it is **other** properties of modal v^0 that result in dative case:
 - Modals share the presence of a feature encoding the modal base: ROOT, EPIST, etc.
 - This feature results in assignment of dative case to Spec- v P

$$\begin{array}{ll} v^0 \text{ [INCL]} & \longrightarrow \text{ GEN} \\ v^0 \text{ [INCL] [ROOT/EPIST]} & \longrightarrow \text{ DAT} \end{array}$$

- Different from English, where presence of INCL determines realization of v^0 , not its specifier.

⁷Bhatt (1997) reports that Bengali possessive modals such as (31b) optionally involve genitive case on the subject. Our consultant reports that though genitive case is not ungrammatical, dative case is strongly preferred in his variety of Bengali.

7 Conclusion

Began with the observation that the morphosyntax of possession is often used to express modality. Particularly interesting because modality is often the use “left over” in work unifying contexts for *have*.

The core of our proposal has been that possessive modality reflects an underlying semantic similarity between possession and necessity: a relation of **inclusion** between two arguments.

Differences between them arise:

- from the semantic type of the arguments (individuals vs. sets of worlds)
- and from the syntactic status of the first semantic argument (syntactic complement vs. feature on v^0).

A central aspect of the modal analysis was the featural decomposition of modality, building on robust typological work looking at lexical divisions among modal systems (Matthewson et al., 2005, et seq.).

Looking back at possession this suggests a source of evidence for work on grammatical systems of possession: the ways in which possessive morphosyntax extends should cast light on the formal properties underlying possession, perhaps differently in each language.

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