Possession and necessity: from individuals to worlds

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1 Introduction

General question: Why, in a variety of languages, is modal necessity expressed with the same morphosyntax as possession?

Found not only in languages where possession is expressed by a verb like *have*, as in (1), but also in those where possession is expressed by *be* + a preposition, as in (2):

(1) a. English:
(i) The children have to do their homework now.
(ii) There has to be free food if the grad students are going to come.

b. Spanish:
Juan tiene que comer esta manzana.
Juan has that eat-inf this-f apple
'Juan has to eat this apple.'

c. German:
Der Hans hat rechtzeitig in Wien anzukommen
the Hans has in-time in Vienna to-arrive
'Hans has to arrive in Vienna in time.' (Bhatt, 1997, (6))

(2) a. Hindi:
John-ko seb khaa-naa hai
John-DAT apple eat-GER be.PRES
'John has to eat the apple.' (Bhatt, 1997, (8))

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

Proposed answer: There is a basic relation of inclusion or containment that is spelled out in clauses denoting possession. This same relation characterizes modal necessity.

The only difference is that with possession, the relation holds between individuals, while with modal necessity, it holds between sets of worlds.

Outline:

- Section 2: Meanings of possession, (non-modal) uses of *have* in English.
- Section 3: Overview of the semantics of modal necessity.
- Section 4: The semantic connection between possession and necessity.
- Section 5: Bringing together the syntax of *have* and the semantics of necessity.
- Section 6: Tentative extension to *be*-possession

2 Meanings of *have*

2.1 The syntax of possession

At its core, possession is a **relation**.

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

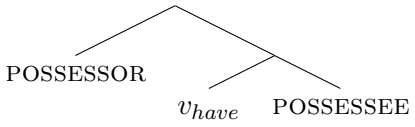
- As prepositional:
  - P_{loc}: Freeze (1992)
  - D/P: Kayne (1993)
  - P_{with}: Levinson (2011)
- As a flavour of v^0:
  - v_{have}: Harley (1995)
  - v: Ritter and Rosen (1997)

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}.

Okay, so *which* relation? Broad consensus for a structure like (3) for possession:

(3)



But especially if we think of v_{have} as being preposition-like in some way, we want to know *which* preposition.

What does this functional head *say* about the relationship between its two arguments?

Proposed answer: very little.

At least for verbs like *have*, the relationship between the two arguments of *have* is often simply inferred from properties of the arguments themselves, or pragmatically inferred.

Left to its own devices, v_{have} expresses a very general relation of inclusion or containment.

2.2 Starting big: clausal complements

Two interpretations of *have* when it takes a clausal complement (setting aside modal *have*):

- Causative *have:* The subject of *have* is an agent, and the subject of the complement clause is a causee. As argued by Ritter and Rosen (1997), this sentence denotes a single event.

(4) The manager had her assistant prepare the notes.

- Experiencer *have:* Here, the subject of *have* is an experiencer affected by the event, while the subject of the complement clause is the agent of the event.

(5) The manager had six assistants quit last year.

- All *have* does in these cases is introduce an external argument:
  - Kim (2011b,a): causative *have* is the spellout of a causative Voice head, which takes as a complement an ApplP whose specifier hosts the causee.

    Experiencer *have* spells out Kim (2011b)'s peripheral Appl head, which takes a VoiceP complement.[1]
  - In both cases, the head spelled out by *have* is a "flavour" of v^0

2.3 Getting smaller: nominal complements denoting events or states

- The interpretation of *have* with a nominal complement is determined largely by the complement itself (Cowper, 1989).
- Subject has a thematic relation to the event or state, but can be any pragmatically-available relation:

(6) 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)

(7) 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 pick up any role supplied by the event/state nominal.

[1] Kim proposes the same structure for the Japanese adversity passive construction.

- In a similar spirit: v_{have} imposes extremely minimal interpretive constraints on its subject – inherited from the event/state nominal.[2]
- ... but not *none*: the arguments of *have* are nonetheless asymmetrically related.

2.4 Yet smaller: nominal complements denoting individuals

- When the complement of *have* is an individual, relation is again one of a wide range of possibilities:

(8)
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)

- Here it is clear that the thematic interpretation of the subject cannot be *inherited* from the complement of v_{have}: individual-denoting nominals have no such relations to provide.[3]
- Here it seems that v_{have} must be doing more work: but still the interpretation it provides is extremely minimal, leaving the field open for the object argument to make a pragmatic contribution to the interpretation (as in Cowper, 1989).

So what **is** v_{have}'s minimal contribution?

- Should be able to see it when the nominals themselves are making no contribution, as in (9):

(9)
a. That snarf has two blorks.
b. That wug had a big frack.

- All native English speakers interpreted the object argument as being in a part-whole relation with the subject argument.

[2]Interestingly, exactly the same range of interpretations is available when a nominal denoting an event or state is possessed:

(i) Events:
a. Dr. Smith's operations always go well.
b. That patient's operation was a success.
c. I always enjoy Professor Jones's classes.
d. Katie's class was very interesting.
e. Mrs. Astor's parties are always well attended.
f. Aramark's dinners are usually well run.

(ii) States:
a. Sue's headache is getting worse.
b. Davey's measles kept him out of the class play.
c. Newt's beliefs amazed the electorate.
d. The company's position on that issue is unpopular with the workers.

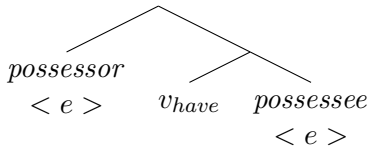
We assume that the interpretation of the possessor in these sentences happens in essentially the same way as it does in clauses with *have,* with the possessive determiner playing the same role in nominals as the v does in *have*-clauses.

[3]Excepting inherently relational nouns like *sister* or *friend*.

2.5 Proposal:

- The underspecified relation denoted by the v spelled out by *have* is an asymmetric 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* (or the functional head it corresponds to) as a basic transitive predicate: Hoekstra (1984); Cowper (1989); Harley (1995); Ritter and Rosen (1997); among many others.

(10)



In the remainder of this talk, this basic view of v_{have} is extended to the so-called "semi-modal" *have to.*

3 Meaning of necessity

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

Before we can identify that commonality, 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 ($\Box$) = in **every** possible world a proposition is true.

  But which worlds do "some" and "every" quantify over?
- Kratzer (1981, 1991, et seq.): Modals are generalized quantifiers that operate over two sets of worlds:
  - Modal Base ($B(w)$): set of worlds accessible (epistemically, deontically) from the actual world (w).
  - Proposition (P): set of worlds in which a proposition is true.
- Modals are thus functions that take one set of worlds ($B(w)$), and then another set of worlds (P) and yield a truth value.

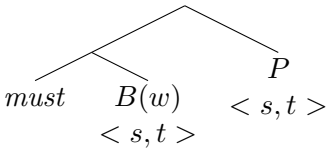
- Restating necessity and possibility as universal / existential quantification:
  - Possibility: **some** of the worlds in $B(w)$ are also in P

    → the Modal Base is a **superset** of the proposition worlds.
  - Necessity: **all** of the (best) worlds in $B(w)$ are also in P

    → the Modal Base is a **subset** of the proposition worlds.[4]
- For Kratzer the Modal Base is supplied contextually as part of a conversational background
- In view of the fact that the Modal Base has syntactic interactions (e.g. *if*-clauses), it can be represented via a silent pronominal in the syntax (von Fintel and Heim, 2011).

  On this view a modal (e.g. *must*) combines first with the Modal Base (syntactically a head-internal modifier), then with a proposition (syntactically a complement):

(11)



Key Points:

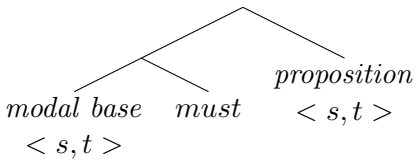
- Modals express a relation between two sets of worlds.
- Combine **first** with a Modal Base, **then** with a proposition.
- Necessity requires that the Modal Base be a **subset** of the proposition worlds.

4 Connecting possession to necessity

We can now see compositional similarities between possession and necessity:

- Section 2: the default meaning of possessive *have* is that the internal argument (possessee) is **included** in the external argument (possessor).
- Section 3: the semantics of necessity is such that the first argument of a modal operator (the Modal Base) is **included** in (i.e. a subset of) the second argument (the proposition).
- Differences are **syntactic**:
  - *must* is syntactically intransitive: first argument is a (silent) head modifier.
  - possessive *have* is syntactically transitive: first argument is a complement.

(12) a.



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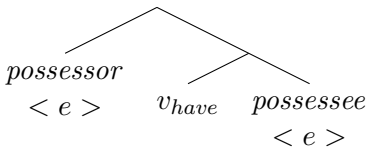


[4]This sets aside a third component of Kratzer's modal semantics: the ordering source, which ranks the worlds in B(w) from best to worst. The syntactic and semantic composition of the ordering source does not bear directly on our account here.

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

5 The syntax of modal *have*

So far we have established that there is a basic commonality between the compositional semantics of possession and modal necessity, and suggested that this forms the basis of grammaticalization from possession to necessity.

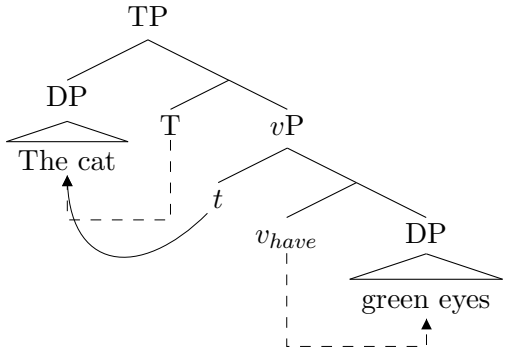
What remains is to demonstrate that the syntax of modal *have to* sentences can be derived from the same structure as their semantics.

A place to begin: the syntax of *have* in possession.

- We have proposed that possessive *have* is a functional head (v) that relates two individual-type arguments.
- This head licenses accusative Case of its complement (possessee).
- Specifier (possessor) must move to Spec-TP to receive nominative Case.

(13) a. The cat has green eyes.

b.

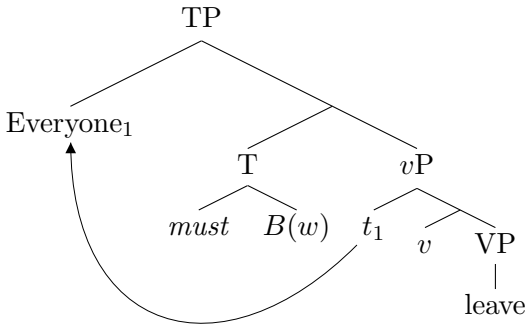


Adapting possessive syntax to modal *have*:

- Consider first the syntax of modal *must*
  - occurs in T^0 (at least approximately)
  - combines first with the Modal Base
  - takes a non-finite propositional complement (vP or larger)
  - subject of the non-finite complement raises to Spec-TP for both deontic and epistemic modals.

(14) a. Everyone must leave.

b.



Aside: It is sometimes claimed that deontic/root modals involve control rather than raising. Consider the following examples:

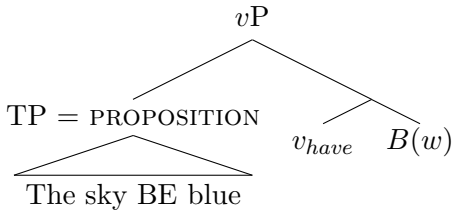
(15) There must be an answer by 5PM.

(16) The children must be in bed when we return. (instructions to a sitter)

- 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.
- This reasoning applies to modal *have* as well as to *must* → also against the view that modal *have* expresses the possession of an obligation.
- Recall from section 4 the syntactic difference between *must* and *have*:
  - *must*: first argument is a head modifier
  - *have*: first argument is syntactic complement
- If we map the first and second arguments of *must* from (14-b) onto the syntax of v_{have}, we arrive at the following:

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

b.



An issue: this structure predicts entirely the wrong word order.

English does not allow (18), or even (19):

(18) *The sky (to) be blue has.

(19) *For the sky to be blue has.

So the analysis faces at least two questions:

1. Why does the subject of the embedded proposition become the surface subject?
2. Why is modal *have* not clause-final?

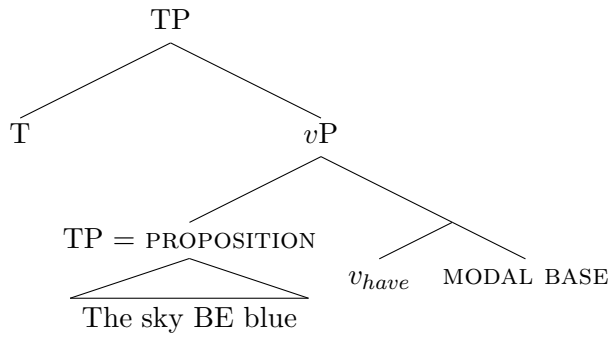
5.1 Deriving the surface subject

First question: Why does the subject of the non-finite proposition raise to matrix subject position?

Proposed answer: It raises as the only way to simultaneously its own need for licensing and the need of matrix TP for a specifier.

The structure for modal *have* in ((17-b)) will be embedded in a larger TP:

(20)

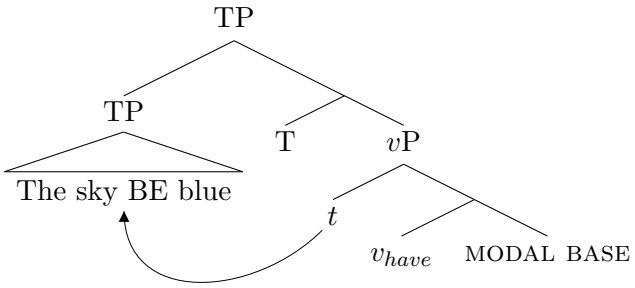


- In principle, we can imagine at least 3 ways to satisfy EPP requirement of matrix Spec-TP:
  1. Entire embedded non-finite TP raises to matrix Spec-TP.
  2. Merge an expletive subject.
  3. Subject of embedded non-finite TP raises to matrix Spec-TP.

Option 1: Move entire embedded TP

- Were this option chosen, note that it would be a **non-finite** clausal subject.
- Non-finite clauses have no way of licensing DP subjects – no ability to assign nominative Case.
- Movement of the embedded TP would prevent its own subject from being Case licensed: though v_{have} (by hypothesis) can license accusative Case, does so for its *complement*, not its specifier.

(21)



Why is the embedded TP non-finite? Were it finite, its subject could be licensed *in situ*.

Note, however, that finite clauses in English are always indicative – English lacks a productive subjunctive. Non-finite clauses are used in non-indicative and modal contexts.

This association between non-finiteness and modal contexts may explain the absence of finite propositions and modal *have*.

Option 2: Merge an expletive subject

- Alternatively, we could merge an expletive in Spec-TP and leave the embedded TP *in situ*.

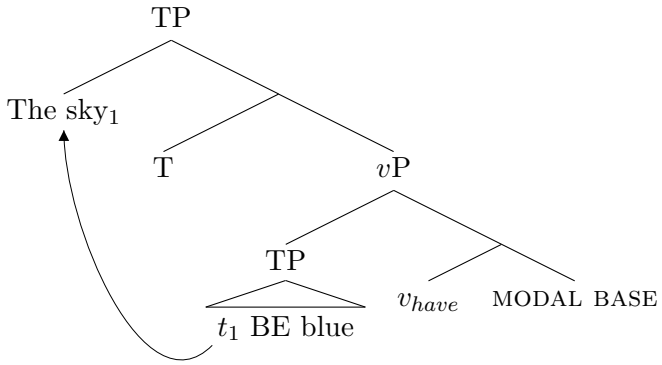
(22) *It the sky to be blue has.

- Again, however, this would prevent the embedded subject from being licensed: there is no way for [the sky] to receive either nominative or accusative Case.

Option 3: Raise embedded subject

- This parallels the raising analysis of *must*.
- DP subject extracted from the embedded TP, moved to matrix Spec-TP to receive nominative Case.
- This movement satisfies both the DP's Case requirement and TP's EPP requirement:

(23)



5.2 Reordering *have* and the proposition

Second question: We have claimed that the modalized proposition is not truly an embedded complement – it occurs in Spec-vP.

In that case, why is modal *have* not clause-final, as in ((24))?

(24) *The sky to be blue has.

Once again, we can imagine several possible answers – though here the choice between them is less clear:

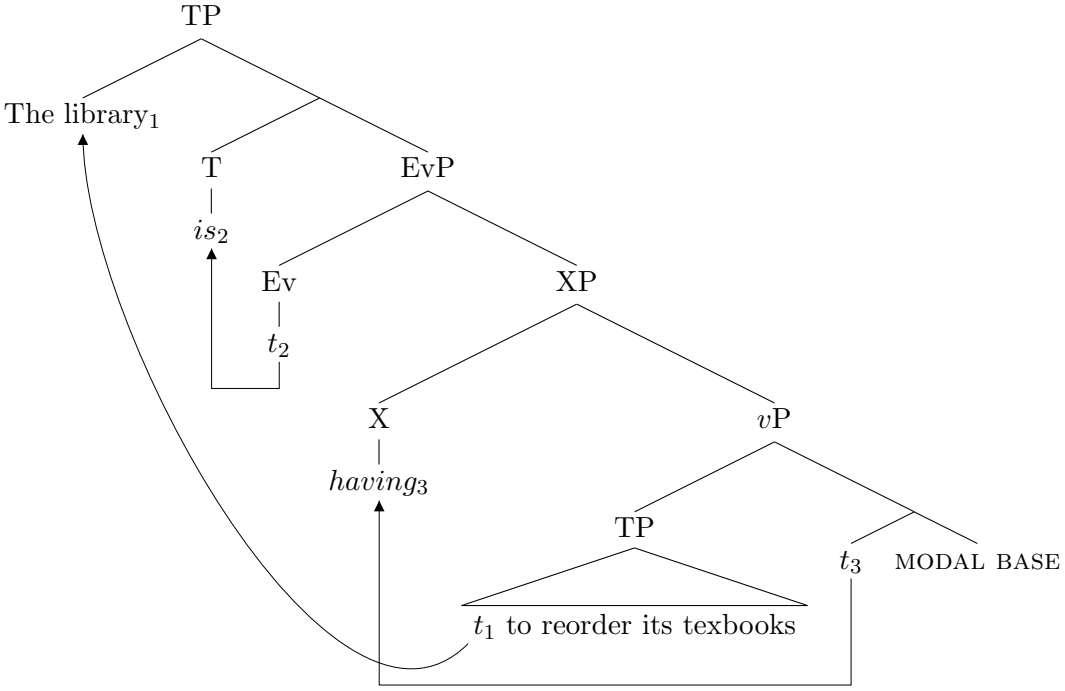
1. Head Movement of v_{have} past its specifier
2. PF reordering of v_{have} and its specifier
3. Revising proposed syntax for modal *have* back towards the syntax of *must*

Option 1: Head Movement

- If v_{have} moves to a higher head, it would occur before the clause in Spec-vP
- But *which* higher head could v_{have} move to?
- Must be lower than the head associated with progressive aspect:

(25) a. The library is having to re-order its linguistics textbooks.

b.

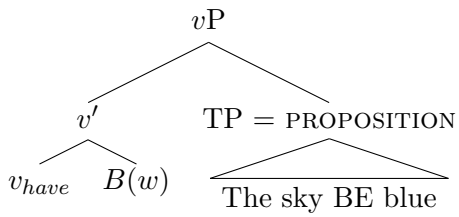


- There is no obvious candidate for such a projection, above vP but below the progressive.
- Such a projection would apparently have neither semantic nor morphological effects on the clause – proposed solely to provide a landing site for v_{have}.

Option 2: PF Reordering

- A striking property of the structure we have proposed for modal *have* is that the complement of *have* is always silent.
- We could imagine that this triggers a PF reordering of v_{have} and its specifier, in order to satisfy a prosodic requirement of *have* that it have an overt complement.

(26)

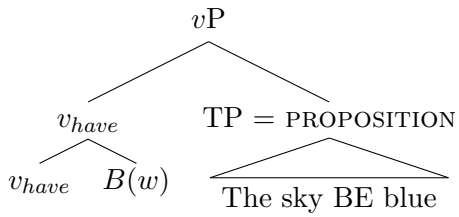


- This general type of re-ordering operation has been proposed by Richards (2011) as one way to derive head-final phrase structures.
- Applied as in (26), it has the advantage of deriving the surface order of v_{have} and the embedded proposition with no unmotivated structure.
- The drawback is that though some have postulated this kind of PF re-ordering between heads and their *complements* as a way to derive head-final word orders, if we allow heads to be reordered with respect to their specifiers we seem to predict that a language could uniformly exhibit right-hand specifiers – a typologically unattested prediction.

Option 3: Retreating back towards the syntax of *must*

- This linearization problem arises in the first place because we have proposed that though modal *have* shares the compositional semantics of *must*, it maintains the (transitive) syntax of other uses of *have*.
- We could abandon this move, and revise the proposed syntax of modal *have* back towards the model of *must*: assume that modal *have* takes its first argument (the Modal Base) as a head modifier, and takes its second argument as a syntactic complement.

(27)



- The advantage of this option is that we (think we) know that structures like this exist in language, because this is the structure of *must*
- It is also potentially links modal *have* to *perfect have*: Cowper (2010) proposes that *have* is morphologically inserted when the complement of an auxiliary / empty verb is a TP.
- The disadvantage is that it disrupts the link to possessive, causative, and experiencer *have*, which share *syntactic* (not just semantic) transitivity.

5.3 Interim Summary

- We have been able to account for the basic syntax of modal *have* by unifying the composition of *must* with the syntax of possessive *have*.
- As with *must*, the subject of modal *have* raises from an embedded proposition.
- Remaining question about where that embedded proposition is generated, such that it follows *have* on the surface. We have outlined several options, though all have drawbacks.

5.4 Against an Alternative Syntactic Approach

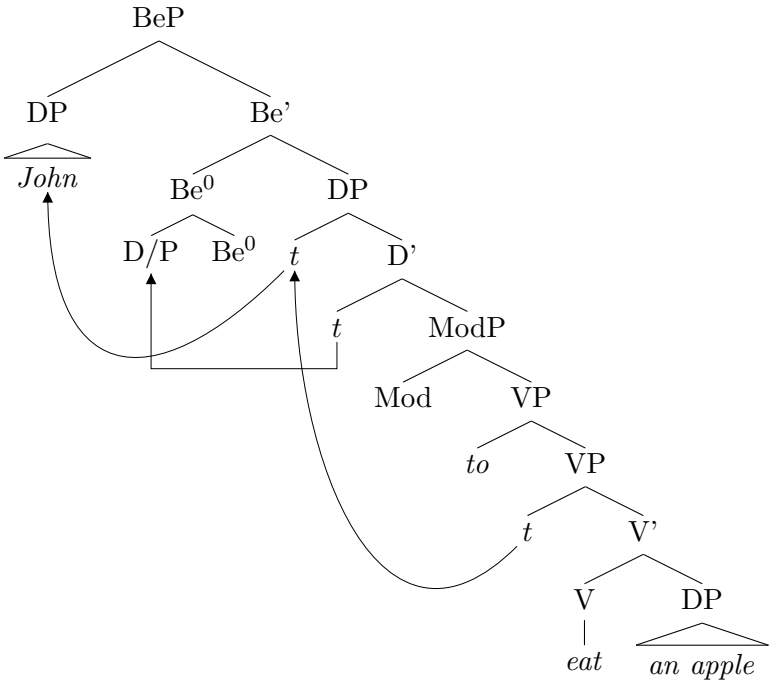
A quite different analysis of modal *have* is proposed by Bhatt (1997):

- Bhatt appearls to the idea that modal *have* expresses the possession/existence of an obligation.
- This analogizes (28-a) to more straightforward possession as in (28-b), or to an existential as in (28-c):

(28) 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.]

- Specifically, Bhatt argues that the modal meaning of sentences like (28-a) does not arise from *have* itself, but instead from the presence of a covert necessity operator.
- This covert modal is projected in the syntax as in (29) (adapted from Kayne (1993)'s syntax for possession):
  - A copular element (Be^0) takes a possessive DP complement headed by a nominal/prepositional element (D/P).
  - The subject of an embedded clause raises through Spec-DP to Spec-BeP in order to be Case licensed.
  - Movement from Spec-DP (an A'-position) to Spec-BeP (an A-position) would normally be illicit: this step of movement is repaired by incorporation of D/P to Be^0.

(29) (from Bhatt 1997, (39))



Accepting for the moment Kayne (1993)'s analysis of possession, Bhatt's extension of this analysis to modal *have* still leaves at least two questions unanswered:

- If modal interpretations of *have* are due to 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?

By contrast, the proposal developed here answers both these questions:

- By locating the modal meaning of *have* in *have* itself, we capture the absence of possibility readings: the necessity interpretation of *have* is due to the specific inclusion relation of possession.
- By acknowledging a semantic difference between possessive and modal *have*– they take arguments of different semantic types – we leave room for a role to be played by grammaticalization, and do not predict that possession can *automatically* express necessity.

We also avoid the more general pitfalls of Kayne's analysis of possession, and its difficulty extending to the other uses of *have* catalogued in section 2.

6 Extension to BE-possession

We have considered so far only the case of modal *have* in English, which in principle extends to other languages with HAVE-possession (i.e. German, Spanish).

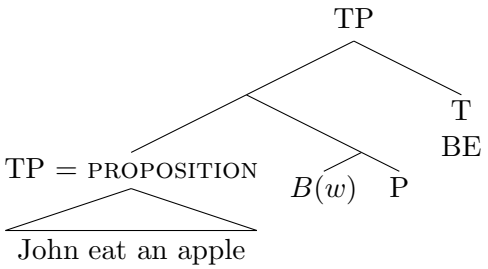
Possessive morphosyntax is used to mark possession also in languages with BE-possessives, however, as ((30)) shows for Hindi:

(30) 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.' (Bhatt, 1997, (8))

- In Hindi, as in other BE-possession languages, the possessor is marked with oblique case.
- The subject of a modal possessive receives the same marking (here dative).[5]

We might therefore propose a structure for Hindi exactly parallel to our structure for English, but with a prepositional head in place of v_{have} (also head-final):

(31)



But this raises an important question: how is P able to Case-mark the embedded subject, which it does not c-command?

In fact ((31)) does not reflect the kinds of structures proposed for BE-possession languages by people like Freeze (1992).

Freeze argued that the possessor starts out as the *complement* of the possession-expressing preposition.

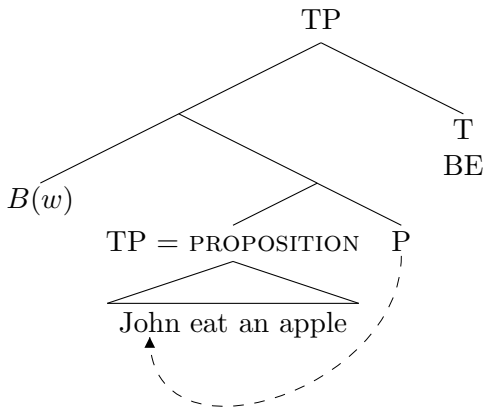
More recently Levinson (2011) has argued explicitly that there may be a fundamental structural difference between HAVE and BE possessives: while BE possessives are fundamentally locative, HAVE possessives express a non-locative inclusion/control relationship.

Suppose that the difference between the two types of possession is not in the fundamental semantics of the relation, but merely in the order of the two arguments.

In this case we could propose that languages like Hindi have a different possessive syntax that forms the basis for grammaticalization to necessity:

[5] In Hindi, as in some other BE-possession languages, the subject receives different marking to express different 'flavours' of possession. Dative is used for states, as in ((30)). A full account of BE-possession must account for this variability, and explain why modal meanings grammaticalize particular flavours of possession.

(32)



- This is a structure in which P could indeed assign oblique Case to the embedded subject, which it c-commands.
- A remaining question: does the embedded subject raise to matrix Spec-TP? Not obvious from word-order, given head-finality.

It is unsurprising that in both types of language, the morphemes that express possession can be used for modal necessity: the basic inclusion semantics of possession can remain constant, while the syntactic compositions of that semantics varies.

This extension remains to be fully worked out, but this provides a clear direction for understanding the typology of the grammaticalization from possession to necessity.

7 Conclusion

- Our central claim has been that the semantics of possession and the semantics of modal necessity can be viewed as two instantiations of the same relation: inclusion/containment.
- The difference between them lies in the semantic type of the arguments participating in the relation, individuals vs. sets of worlds.
- We have also provided a (partially incomplete) account of the syntax of modal *have*.

Remaining issues:

- Choosing among analyses of the surface word order.
- Extending to *be*-possession languages.

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