

Possession and necessity: from individuals to worlds*

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Abstract

This paper investigates the use of possessive morphosyntax to express modal necessity, as in the English use of *have to*. We claim that possessive modality constructions arise because both possession and necessity express a relation of inclusion between two arguments of the same semantic type: possession involves a relation of inclusion between two $\langle e \rangle$ -type arguments, while necessity involves inclusion between sets of worlds. Differences between the two arise from their different syntax: possessive *have* expresses possession via syntactic transitivity, while modals conceal one argument within the modal head. The similarities and differences are captured within a realizational approach to morphology, in which vocabulary items like *have* and *must* are inserted to spell out structures consisting of formal features. The proposal is then extended from *have*-possession languages such as English to *be*-possession languages, focusing on possessive modality in Hindi-Urdu and Bengali. We argue that the possessive/modal head can be “applicative-like,” licensing oblique case on an argument that raises to its specifier.

This account explains why possessive morphosyntax uniformly is used to express modal necessity, and not other modal meanings: the universal force of elements like *have (to)* follows from the inclusion relation expressed by possession. Possessive modality thus sheds light not only on the semantics of possession but also on the compositional syntax of modal operators.

Keywords: possession, necessity, modality, morphosyntax, grammaticalization

1 Introduction

In a variety of languages modal necessity can be expressed with the same morphosyntax used to express predicative possession. This is true not only for *have*-possession languages like English, Spanish, and German, as in (1), but also apparently for *be*-possession languages like Hindi and Bengali, 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)]

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- 32 (2) a. John-ko seb khaa-naa hai
 33 John-DAT apple eat-GER be.PRES [Hindi-Urdu: Bhatt, 1997, (8)]
 34 ‘John has to eat the apple.’
 35 b. Ghor-ta-ke porijkar korte ho-be
 room-DEF-DAT clean do-INF be-FUT [Bengali: Neil Banerjee p.c.]
 ‘The room has to become clean.’

36 We argue in this paper that the use of possessive morphosyntax to express modal necessity—
 37 which we refer to as *possessive modality*—reveals something about the syntactic representation
 38 of both predicative possession and necessity. Specifically, we argue that this morphosyntactic
 39 repurposing is best explained in terms of a semantic relation common to both possession and
 40 necessity. This common relation—which we argue should be represented syntactically as a
 41 feature—provides the basis for a common morphology. It also provides a new source of evidence
 42 for the semantic analysis of possession. Considerable work has been done on the formal semantics
 43 of modality, certainly in comparison with possession; our analysis requires that whatever relation
 44 is expressed by possession, it must closely resemble a relation involved in the composition of
 45 modal necessity.

46 One proposal that has been made for possession is that it expresses a relation of inclusion or
 47 containment in which the possessor includes the possessee, most obvious in sentences describing
 48 part-whole relations. We show that this analysis of possession can explain the extension to
 49 necessity: while possession involves inclusion between individuals, modal necessity involves the
 50 same relation between sets of worlds.

51 We thus propose that modal uses of possessive morphosyntax, of the types seen in (1)
 52 and (2), result from two changes. The first is a broadening of the semantic interpretation
 53 of a morphosemantic feature expressing inclusion, which we call INCL. This feature originally
 54 encodes a possession relation between individuals, but applied to sets of worlds it encodes modal
 55 necessity. The second change is that a feature contributing a modal base (ROOT, EPIST, etc.) is
 56 optionally added to the head hosting INCL. The result is a shift from a fully transitive structure
 57 (possessive *have*) to a raising structure (modal *have*).

58 Central to this account is a realizational view of morphology in which the syntax manip-
 59 ulates formal features and vocabulary items are inserted post-syntactically, as in Distributed
 60 Morphology (DM: Halle and Marantz, 1993, 1994). Auxiliary verbs like *have* and *be*, as well as
 61 modals like *must* and *may*, are represented in the syntax solely in terms of formal features. They
 62 differ from more “lexical” verbs (e.g. *dance*), whose syntax includes an additional root element
 63 (which in DM is associated with richer Encyclopedic knowledge). What this means is that the
 64 meanings expressed by functional elements, including auxiliary verbs, derive entirely from the
 65 interpretable formal features they spell out. Further following the assumptions of realizational
 66 morphology, functional vocabulary items can be underspecified, so that a single vocabulary item
 67 can spell out more than one featural representation. As we will see, the English vocabulary item
 68 *have* spells out not only the verbal head involved in predicative possession (INCL), but also a
 69 more complex verbal head that expresses modal necessity (INCL + EPIST or INCL + ROOT).

70 In section 2, we discuss the possession relation, reviewing the range of meanings associated
 71 with possessive *have*. Among these is a relation of inclusion, which we show in section 3 is a
 72 relation centrally involved in modal necessity. Section 4 brings possession and modal necessity
 73 together, showing how the same features can account for the semantics of both constructions.
 74 Then, section 5 provides an account of the syntax of modal *have*, relating it both to the syntax of
 75 possessive *have* and to the syntax of true modals like *must*. Finally, in section 6, we extend the
 76 account to *be*-possession languages. We show that the differences between possessive modality in
 77 *have*- and *be*-possession languages can be understood entirely as a difference in the morphological
 78 realization of essentially identical syntactic representations. In other words, the apparently
 79 different forms that the construction takes in *have*-possession languages and in *be*-possession
 80 languages are superficial, and do not reflect any crosslinguistic difference in the underlying
 81 syntax of modality.

2 The syntax and semantics of possession

The semantic analysis of possession faces a persistent challenge from the wide range of interpretations available to possessive verbs like *have*, a range that makes it difficult to choose any single core meaning expressed by possession. Possessive modality constructions, however, offer a new source of evidence for the analysis of possession simpliciter: whatever relation is expressed by possessive *have*, it must be a relation that also holds in modal necessity.

In this section we begin by reviewing the basic syntax of predicative possession, before addressing the range of meanings available to possessive *have* in English. We identify *inclusion* as a basic meaning of predicative possession; in section 4 we show that inclusion can form the basis of extension to modal necessity, strengthening the claim that it is the core relation expressed in possession.

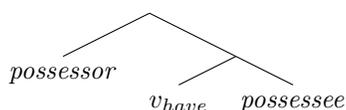
2.1 The syntax of predicative possession

There is a broad consensus in the literature that the syntax of possession involves a functional head that relates two arguments, though the head itself has been identified in a variety of ways. Various authors treat it as prepositional, either locative (Freeze, 1992) or as a version of *with* (Levinson, 2011). Kayne (1993) identifies it as a hybrid D/P head. Others take it to be verbal, implementing it as a flavour of v^0 : Harley (1995) calls it v_{have} , while Ritter and Rosen (1997) call it simply v^0 .

The question of whether the syntactic head at the core of possession is prepositional or verbal is orthogonal to the main focus of this paper. In the case of predicative, or clausal, possession, however, which is our focus here, verbal morphology will ultimately be required, and so either the head in question is itself verbal, or it will need to incorporate into a verbal head. We abstract away from this distinction here, and for concreteness will call the relevant functional head in English v_{have} . Nothing in this paper hinges on whether the head in question might, at a more abstract syntactic level, be better identified as a prepositional element.

This yields a structure as in (3) for predicative possession. The possessor and the possessee are arguments of v_{have} , with the possessor in the specifier position, c-commanding the possessee.

(3) **Structure of *have*-possession:**



The structure in (3) reflects the common view of *have* as spelling out a basic transitive head: Hoekstra (1984); Cowper (1989); Harley (1995); Ritter and Rosen (1997); among many others. As stated earlier, we claim that on its own, v_{have} expresses a very general relation of inclusion or containment. The external argument—the possessor—is the inclusive or containing member of the relation, and the internal argument—the possessee—is the included or contained member.

Henceforth, we refer to the head that appears in clausal possession and is spelled out by *have* as v_{have} . However, it must always be borne in mind that v_{have} is not the same thing as the Vocabulary Item *have*, which may also spell out other syntactic elements. The central claim of this paper will be that the Vocabulary Item *have* also realizes a v^0 head that occurs in a different syntactic configuration than (3), one that is involved in the composition of modal necessity.

2.2 Interpretations of *have*

The interpretation of *have* is, to a significant extent, contextually determined by the arguments it links, as proposed for example by Cowper (1989).¹ In this section we propose, however, that

126 when the arguments of *have* provide no pragmatic information to determine the interpretation,
127 the inclusion / part-whole interpretation appears as a default.

128 When *have* takes a nominal complement that describes an event or a state, the subject may
129 be thematically or pragmatically related to the complement, in a variety of different ways, as
130 can be seen in (4) and (5).

131 (4) Events:

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

138 (5) States:

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

143 Given a realizational approach to morphology, it is not necessary to provide a lexical item
144 *have* that fully determines this range of interpretations. We can instead simply say that *have*
145 is the morphological realization of a functional head (v_{have}) that encodes an underspecified
146 relation between two arguments.²

147 When the nominal complement of *have* denotes an individual, again the range of possible
148 interpretations is very wide, as illustrated in (6).

- 149 (6) a. Mr. Romney has several houses and many cars. (ownership)
- 150 b. The university has a farm outside of town. (ownership, abstract part-whole relation)
- 151 c. I couldn't do my homework because I didn't have my notebook (with me). (physical
152 possession)
- 153 d. Freddie has two sisters. (inalienable possession)
- 154 e. The car has a red roof. (part-whole)
- 155 f. That dog has three legs. (part-whole)
- 156 g. Katie has a new favourite song. (affinity)

157 In these cases it is clear that the thematic interpretation of the subject cannot be “inherited”
158 from the complement of v_{have} since individual-denoting nominals lack thematic roles to assign
159 (with the exception of inherently relational nouns like *sister* or *friend*). Here it seems that v_{have}
160 must be the sole source of the formal semantic relation between its two arguments. Whatever
161 that relation is, though, it must still be very minimal, allowing the object argument to make a
162 pragmatic contribution (as discussed in Cowper, 1989).

163 However minimally specified the relation encoded by v_{have} , it differs in at least one key way
164 from more general relations of predication: its arguments are always asymmetrically related.³
165 For example, when v_{have} expresses possession, the possessor is always the external argument,

¹For a superficially similar phenomenon, see Grimshaw and Mester 1988 on the Japanese light verb *suru*. In this paper we do not directly discuss causative or experiencer uses of *have*, which resemble modal uses in that the complement of *have* is clearly larger than a single DP. Bjorkman and Cowper (2013) take a somewhat different approach to these other non-possessive uses of *have*, arguing that causative and experiencer interpretations arise due to the presence of a second “shell” of inflectional structure, in which *have* heads a second Voice⁰ or Appl⁰ head.

²This can be compared with Cowper’s (1989) earlier proposal that *have* is lexically specified as having two θ -roles to assign, but that these are radically underspecified and can thus inherit any content pragmatically supplied by the event/state nominal.

³Similar observations have often been made in the typological literature, for possession constructions more broadly, as in Heine 1997 and Stassen 2009, among others.

166 and the possessee the internal argument. In this *v_{have}* contrasts with equative uses of the
167 copula, another “light” or “functional” verb, where the two arguments appear to have a much
168 more symmetric relationship.

169 The question, then, is exactly what content *v_{have}* contributes, and how that content is to be
170 represented. Consider the sentences in (7), where both arguments of *v_{have}* are nonce words.

- 171 (7) a. That snarf has two borks.
172 b. That fring had a big shrack.

173 An informal consultation with several native speakers of English revealed that when the nominals
174 themselves made no pragmatic contribution to the interpretation, the object argument was
175 interpreted as being in a physical part-whole relation with the subject argument.

176 Though *inclusion* or *part-whole* seems to be a reasonable relation to postulate in the domain
177 of inalienable possession, it may not be immediately obvious that it could form the basis for
178 a broader semantics for predicative possession more generally. It is an open question whether
179 more abstract cases, such as alienable possession and kinship relations, could usefully be seen
180 as involving some kind of inclusion.

181 One possibility, entirely compatible with our proposals in this paper, is that INCL occurs
182 on *v_{have}* only in structures corresponding to inalienable or part-whole possession. From this
183 perspective, there would be several “flavours” of *v_{have}*, distinguished syntactically by the formal
184 features they bear, but all realized post-syntactically as *have*. It would be this INCL-bearing
185 *v_{have}* that (as we argue below) forms the basis of extension to modal contexts.

186 A potentially more interesting possibility is that more abstract possession relations, such
187 as alienable possession and kinship relations, can also be usefully seen as involving some kind
188 of inclusion or containment. Though not broadly pursued in the literature, the idea that such
189 relations should indeed be viewed as a kind of inclusion is nonetheless sometimes expressed in
190 work on possession. A clear statement of this type of intuition can be found, for example, in
191 the following lines from Boneh and Sichel (2010):

192 “We take Part-Whole to be broader than inalienable possession and to include also
193 social relations and inanimate Part-Whole” (pp. 2-3)
194 “[T]he complement of the applicative head [=a subset of possessee] can be understood
195 as **falling within the sphere** of the applied argument.” (p. 28, emphasis ours)

196 The idea of containment within a sphere of influence, expressed in the second of these two
197 quotes, suggests a possible link between inclusion and the notion of *control*, discussed in the
198 context of typological work on possession by authors such as Heine (1997) and Stassen (2009).

199 It is notable that alienable possession or ownership, sometimes regarded as the canonical
200 instance of possession, is available only with animate or potentially agentive subjects. What
201 it means to be potentially agentive is obviously more than having a particular physical extent
202 in the world, to which literal inclusion could apply. Animacy can instead be viewed in terms
203 of the capacity to influence the world within a particular, pragmatically constrained, domain.
204 What we suggest here is that it is inclusion within this domain that is expressed by alienable
205 possession. Whether this can be extended to accommodate the use of possession in kinship
206 relations (as in (6d)) we leave for future work focusing on semantics of possession.

207 In summary, in this section we have reviewed a range of interpretations available to *have*
208 in its possessive use, and have identified *inclusion* as a plausible core relation across these
209 interpretations. We now turn to the question of how this core semantic relation is syntactically
210 represented.

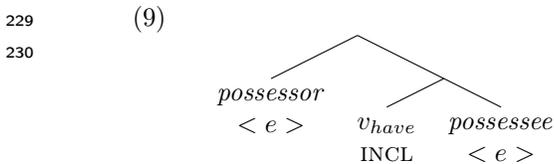
211 2.3 The syntactic representation of inclusion

212 So far we have suggested that the semantic content of the possessive head *v_{have}* is a relation of
213 inclusion. Here we suggest that this core semantics should be encoded by an interpretable formal
214 feature on *v_{have}*, a feature we abbreviate as INCL. In this paper we are primarily concerned with

215 the syntactic contexts in which this feature can occur—specifically with the idea that it is this
 216 feature that forms the basis of extension to possessive modality. For this reason, we do not
 217 provide a detailed semantics for INCL, but we know that it must have the properties listed in
 218 (8).

- 219 (8) a. It expresses an asymmetric relation between two arguments.
 220 b. That relation is highly sensitive to the semantic and pragmatic properties of the
 221 arguments themselves.
 222 c. Where both arguments denote individuals, the higher argument may be interpreted
 223 in a variety of ways; e.g., as (the holder of) a sphere of influence, or as (the creator
 224 of) a body of work.
 225 d. When the two arguments provide no pragmatic information relevant to the relation
 226 between them, the default interpretation is that of a physical part-whole relation.

227 In predicative possession, the head v_{have} bearing this feature relates two individual-type argu-
 228 ments, as shown in (9).



231 It is this INCL feature, we assume, that distinguishes v_{have} from other v elements in the functional
 232 lexicon. Assuming a realizational approach to morphology, as in DM, a head bearing this feature
 233 is spelled out postsyntactically by the vocabulary item *have*.

234 Very little formal semantic work has been done seeking to unify the broad range of meanings
 235 available to possession constructions in natural language. For the purposes of this paper, we
 236 set aside several semantic and pragmatic questions, such as what, in formal terms, the various
 237 relations expressed by the sentences in (4)–(6) have in common, and exactly how the semantics
 238 and pragmatics of the two arguments determine the content of the relation between them.

239 We focus instead on the idea that the part-whole interpretation for possession, as observed
 240 in (7), can form the basis for its extension to other contexts, in particular to modality. The view
 241 that possession expresses *inclusion* (at least in part), will be shown to provide a better expla-
 242 nation for the existence of possessive modality constructions than has otherwise been available,
 243 with modal uses of INCL developing from its earlier possessive use. Such a move is supported
 244 by the history of English *have* constructions. As Visser (1963–73) points out, constructions like
 245 (10-c), with a pure necessity meaning, developed from constructions like (10-b), whose meaning
 246 combines possession and necessity, and (10-a), which has only a possessive meaning:

- 247 (10) a. They have no food to eat.
 248 b. They have several books to read.
 249 c. They have to read several books.

250 According to Visser, “the development of this construction [(10-c)] from the older constructions
 251 [(10-a) and (10-b)] was very slow... [T]here are no examples before about 1200... the usage
 252 was fairly rare in Middle English and... became firmly established in Modern English.” (Visser,
 253 1963–73, section 1401, p. 1478).

254 At the same time, we make a specific proposal about how a syntactic representation in terms
 255 of formal features, particularly a feature INCL, can provide the basis for a single morphological
 256 realization (as *have*) despite syntactic differences in argument structure and semantic differences
 257 in argument type.

3 Necessity as inclusion

We now turn to the question of whether modal necessity can reasonably be treated as deriving from a basic relation of inclusion. If it can, then we can say that both constructions have at their core the same basic semantic relation, which we encode via the interpretable feature INCL.

Modal necessity, as well as modal possibility, has long been understood in terms of quantification over sets of possible worlds (Kripke, 1963; Lewis, 1973; Stalnaker, 1975, et seq.). In the case of modal possibility (\diamond), a proposition is true in some relevant possible worlds, while in the case of modal necessity (\square), a proposition is true in all relevant possible worlds. This raises the question of which worlds the modal quantifies over: how is the relevant set of possible worlds determined?

The now-standard view developed by Kratzer (1981, 1991, 2012b, et seq.) holds that modals are generalized quantifiers built from three elements: a proposition (P), a modal base ($B(w)$), and an ordering source that orders the ($O(w)(B(w))$). A proposition denotes the set of worlds in which it is true. The modal base is the set of worlds accessible (epistemically, deontically, dynamically, circumstantially, etc.) from the actual world w . Finally, the ordering source is a function that ranks the accessible worlds in the modal base, according to some set of criteria (e.g. the law, the speaker’s preferences, probability, etc.), and returns the set of ‘best’ worlds. For simplicity, we refer to this set of ‘best’ worlds as $BB(w)$ —mnemonically, the “best base worlds accessible from w ”.

Modals are thus functions that take one set of worlds ($BB(w)$) and then another set of worlds (the proposition) and yield a truth value. This makes it possible to restate necessity and possibility in terms of universal and existential quantification, as Kratzer does.

- (11) a. Possibility: **Some** of the worlds in $BB(w)$ are also in P . \rightarrow
 The set of ‘best’ worlds in the modal base overlaps with the proposition worlds.
 b. Necessity: **All** of the worlds in $BB(w)$ are also in P . \rightarrow
 The set of ‘best’ worlds in the modal base is a **subset** of the proposition worlds.

For Kratzer the modal base is supplied contextually as part of a conversational background, without any direct syntactic representation. In subsequent work, however, the modal base has sometimes been represented as a pronominal element, as for example in von Stechow and Heim (2011). This representation has not, to our knowledge, been the subject of much explicit argumentation, but it receives support from the fact that the specification of the modal base can involve overt syntactic elements clause-internally, as in the case of *if*-clauses, modelled in Kratzerian semantics as directly restricting the modal base.

If the modal base is indeed represented in the syntax, we have to consider how it composes structurally with both the modal operator and the proposition. Semantically, a modal operator (e.g. Op_{nec}) combines first with $BB(w)$, then with a proposition, as shown in (12).



We might think that in English, only the modal operator and the proposition are realized overtly, while $BB(w)$ remains silent. There is an intuition, however, that in English a specific modal auxiliary like *must* or *can* carries information not only about modal force but also about the modal base.⁴ Were we to adopt a lexicalist view of syntax and semantics, this intuition would be wholly incompatible with the view that the modal operator and $BB(w)$ are represented separately in the syntax, and composed in the semantics. Under a realizational view of morphology,

⁴For example, sociolinguistic work by Tagliamonte and D’Arcy (2007) demonstrates that in 21st-Century colloquial Canadian English, *must* and *may* are used only epistemically—they are not used with deontic modal bases. *Can* retains both dynamic and epistemic uses, but the epistemic use is now restricted to negated clauses.

301 however, a single vocabulary item can spell out a non-atomic structure created in the syntax
 302 (cf. Marantz, 1997); this type of approach allows us to say that vocabulary items like *must* and
 303 *can* spell out syntactically complex constituents. This is done by saying that not just the modal
 304 operator, but rather the constituent containing both the modal operator and $BB(w)$, is spelled
 305 out by the modal auxiliary.

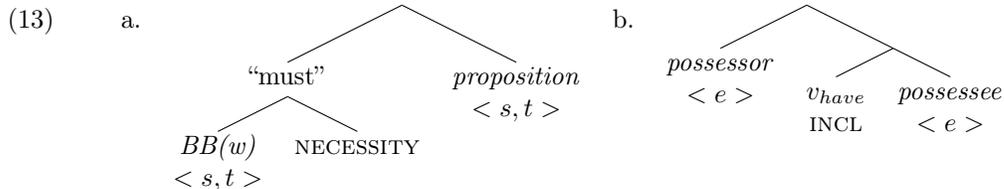
306 Note, though, that from a morphosyntactic perspective, $BB(w)$ and Op_{nec} compose within
 307 a single head,⁵ while the proposition P is the syntactic complement of the modal. Semantically,
 308 however, $BB(w)$ is the first argument of the modal operator, and P is the second argument.

309 Essentially, then, modal operators express a relation between two sets of worlds. They
 310 combine first with $BB(w)$, and then with a proposition. With modal necessity, $BB(w)$ is a
 311 *subset* of the proposition worlds. In terms of semantic composition, this is precisely the relation
 312 of inclusion discussed above for predicative possession.⁶

313 4 Connecting possession to necessity

314 We argued in section 2 that the default meaning of possessive v_{have} is that the first, or internal
 315 argument (possessee) is *included* in the second, or external argument (possessor). In section 3,
 316 we discussed the standard formal treatment of modal necessity, which similarly proposes that
 317 the first semantic argument of the modal operator (the set of ‘best’ worlds in the modal base)
 318 is *included* in (i.e. a subset of) the second argument (the proposition).

319 It is this semantic similarity that forms the basis of the extension from possession to neces-
 320 sity in possessive modality. Despite these parallels, however, there are nonetheless significant
 321 structural differences between the syntax of predicative possession on the one hand and the
 322 syntax of modals on the other. A modal like *must* is syntactically intransitive: its first semantic
 323 argument composes head-internally, from the perspective of syntax, as in (13a). In contrast,
 324 possessive *have* is syntactically transitive: here, the first semantic composition occurs between
 325 the head and the syntactic complement, as in (13b) (repeated from (9)).



327 There is also a significant semantic difference between the two constructions: even if we under-
 328 stand both possession and necessity in terms of a relation of inclusion, the two involve arguments
 329 of different syntactic types, sets of worlds in (13a), and individuals in (13b).

330 It is the similarities between possession and necessity that make an extension from one to the
 331 other possible in the first place—and as is common in cases of grammaticalization, the extension
 332 is in the direction of relating arguments of a more complex type (von Stechow, 1998). But it is their
 333 differences that explain why not all languages automatically extend possessive morphosyntax to
 334 express modal necessity. Because their structures are not identical, a broadening of the contexts
 335 in which a feature such as INCL can occur, and the types of arguments it can relate, is necessary.⁷

⁵The status of $BB(w)$ and Op_{nec} as a single head is necessary to capture the fact that P behaves syntactically as the complement of the modal head. This is the case not only in English (where modals are functional elements in T^0 or a similar position), but also in languages where modals are main verbs that embed the proposition as a complement clause. Viewing them as a single head is also necessary if heads are the units to which vocabulary insertion applies, as standardly assumed in Distributed Morphology (though not, e.g., in the realizational theory of Nanosyntax: Starke, 2010).

⁶A reviewer observes that one crucial difference between the part-whole relation of inclusion in possession and the subset relation found in Kratzerian necessity is that the latter is reflexive, while the former clearly is not. The relation required for necessity could, as far as we can tell, be expressed instead as a proper subset, a relation that (like part-whole) is irreflexive.

⁷The idea that a single relation can semantically relate arguments of different types can be traced in formal

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In the next section we look more closely at the syntax of both possession and necessity structures realized in English with *have*, in order to identify more clearly what extension of INCL can explain the use of *have* in modal contexts.

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5 The syntax of modal *have*

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So far, we have argued that there are similarities between the compositional semantics of possession and that of modal necessity, and that these similarities form the basis of extension from possession to necessity. What remains is to account for the syntax of modal *have* sentences, deriving it from the same structure as their semantics.

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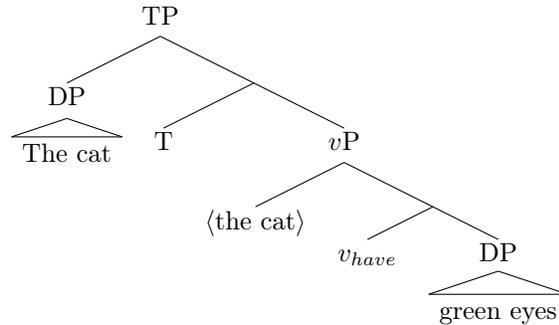
5.1 From the syntax of *have* to the semantics of *must*

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We begin the syntax of possessive *have*. Assuming that *have* realizes a functional verbal head v_{have} , a sentence like (14a) has the syntactic structure shown in (14b).⁸

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



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A sentence with a true modal, by contrast, has a structure like that in (15b).⁹

semantics at least to the treatment of coordination in Partee and Rooth (1983); a more recent proposal in a related area of quantification can be found in Ebert and Hinterwimmer (2010).

⁸To simplify the relevant structures, we omit projections that would intervene between T^0 and v^0 , e.g. Asp^0 .

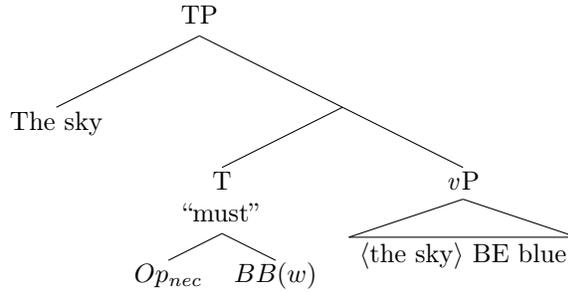
⁹We assume a raising structure for both epistemic and deontic modals. Though it is sometimes claimed that deontic/root modals involve control (i.e. that they have thematic subjects), consider the following types of examples:

- (i) a. There must be an answer by 5PM.
- b. 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) and Hall (2002) for further discussion of the raising analysis of modals like *must*. The same reasoning applies to modal *have* as well as to *must*, as observed by Bhatt (1997).

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



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These structures illustrate the syntactic difference described in section 4: the first argument of possessive *have* is a syntactic complement, while the first (semantic) argument of a true modal composes head-internally.

Let us now consider the syntactic structure of (16).

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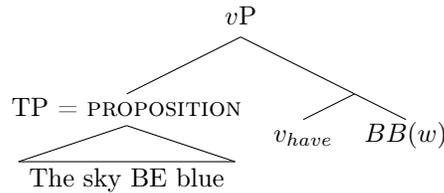
- (16) The sky has to be blue (when we film this scene).

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What is the syntactic structure that underlies this type of sentence? Were we to simply map the first and second semantic arguments from (15b) onto the syntax of possessive *v_{have}*, we would arrive at the structure in (17a). The most plausible realizations of such a structure are given in (17b) and (17c); in neither case is the result a grammatical sentence of English.

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- (17) a.



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

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Clearly the brute-force approach of combining the syntactic structure of possession with the semantic arguments of a modal operator is not the way forward. Let us therefore take a different tack, and try to model the syntax of modal *have* more directly on the syntax of *must*.

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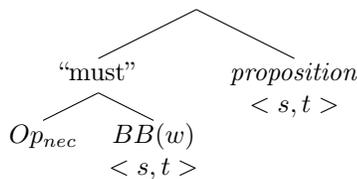
Specifically, suppose that as with *must*, the first step of semantic composition for modal *have* occurs head-internally. This would allow the second semantic argument, the proposition, to occur as the complement of *v_{have}* (i.e. as its first syntactic argument).

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This move is promising from the perspective of accounting for the syntax of modal *have*, but it requires some further consideration of how, from a syntactic perspective, the first argument of a modal operator—*BB(w)*—can compose head-internally, assuming the compositional semantic structure in (18).

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- (18) **The compositional semantic structure of modals:**



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Compositional theories assume that the input to semantics is the structure built by syntax, and within Minimalist theory syntactic structures are built via the operation Merge. But (ex-

ternal) Merge cannot create complex structures within a head: heads are instead the smallest unit to which Merge applies.

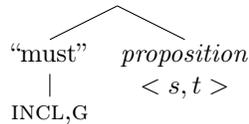
If all semantic composition depends on syntactic structure, and if complex syntactic structures are created by an operation such as Merge (as in Minimalist theory), the structure in (18) presents a puzzle. By definition, the first element that undergoes Merge with a head is the head’s complement; there is no way for (external) Merge to create heads with internal structural complexity.¹⁰

How, then, could semantic composition take place inside a head, given Minimalist assumptions about syntactic structure building? At least two options present themselves. First, a complex head could be the result of head movement, and thus result from the combination of what entered the syntax as two distinct, semantically atomic, heads. Second, if we take seriously the idea that interpretable syntactic features are subject to literal semantic interpretation at LF, then the presence of multiple interpretable features on a single head could give rise to semantic complexity even in the absence of concordant syntactic head-internal structure.

Under the first approach, $BB(w)$ would merge as the head of a lower projection, and undergo head movement to adjoin to the modal operator.¹¹ Though this would provide a syntactic way to derive a structure such as (18), there is no evidence that modal operators enter the derivation separately from the modal base. The modal base in English is not realized separately from the modal operator, and its only semantic import is the set of worlds denoted by the head, $BB(w)$. Crosslinguistically, we have found no evidence for two separate syntactic heads in modal constructions in any single language, one corresponding to the modal base and the other to modal force. Such evidence might come in the form of a language in which modals consistently correspond to two separate morphemes, or indeed two words, realized separately in the clausal spine. If modal meanings were necessarily generated as two separate heads, it should surprise us that they are so universally realized as a single unit.

In the absence of such evidence, we prefer a simpler structure with a single syntactic head. We therefore pursue the second option, whereby modals involve head-internal semantic composition by virtue of bearing multiple interpretable formal features. From this perspective, the semantic compositional structure in (18) is better represented syntactically along the lines in (19), with G standing in for a feature that will be interpreted as providing $BB(w)$:

(19) **The syntactic representation of modals:**



Once we assume that multiple interpretable—and thus interpreted—features can occur on a single head, we have to consider how those features can semantically compose with one another. Two bottom-up modes of composition suggest themselves: multiple features on a head could each compose in turn with the head’s complement, or multiple features could compose first with one another, with the output of that composition applying to the head’s complement. We adopt the latter view, at least in the case of modality, so that the features that represent $BB(w)$ and Op_{nec} in the syntax compose with each other before composing with the complement of the modal head.

This general approach to the composition of features within heads is in line with much recent work in which interpretable syntactic features define systematic semantic contrasts within a particular category (Harley and Ritter, 2002; Béjar, 2003; Harbour, 2007; Cowper, 2005, 2011,

¹⁰If we accept this conclusion, we are led eventually to an extreme version of the cartographic hypothesis, so that in a given representation each head is associated with exactly one semantically interpretable feature (cf. Cinque and Rizzi, 2008).

¹¹This 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.

a.o.). Indeed, from a Minimalist perspective, a syntactic head is simply a collection of formal features, and so its interpretation can only be the product of the feature or features from which it is composed. Independent of theory-internal considerations, there is precedent for the idea that an argument of a head can be supplied within that head. A proposal of this kind can be seen in the influential analysis of passive constructions by Baker et al. (1989), who argue that the external argument in passive clauses is directly saturated by the passive morpheme *-en* itself.¹² From a realizational perspective, there is no sense in which the morpheme *-en* occurs in the syntactic derivation, or could saturate an argument, but Baker et al.’s proposal can be expressed in realizational terms by saying that the external argument of a transitive predicate can be saturated by the [PASSIVE] feature of a v^0 or Voice⁰ head. That feature both semantically saturates an argument and is spelled out as passive morphology.

The components of modal meanings, like the feature systems characterizing domains like voice, tense, person, number, and definiteness, can be fruitfully decomposed into multiple interpretable features. Across natural languages, modal systems track at least two dimensions of meaning: modal force (possibility and necessity), and modal flavour (epistemic, deontic, circumstantial, etc.). The morphosyntactic expression of modality can be sensitive to either of these dimensions: Matthewson et al. (2005) argue that while the vocabulary items spelling out modal heads in languages like English are primarily distinguished by modal force (i.e. *must* uniformly expresses necessity, while *may* uniformly expresses possibility), the corresponding vocabulary items in St’át’imcets are instead distinguished by modal type, as illustrated in (20) and (21). Any given modal particle in St’át’imcets is compatible with both necessity and possibility readings.

(20) Epistemic¹³ modality, either necessity or possibility: [Matthewson et al. 2005:3]

a. t’ak k’a tu7 kents7á ku míxalh
go.along **EVID** then DEICTIC DET bear

‘A bear must have gone by around here.’

b. wa7 k’a séna7 qwenúxw
IMPF **EVID** CF sick

‘He may be sick.’ (Context: Maybe that’s why he’s not here.)

(21) Deontic modal, either necessity or possibility: [Matthewson et al. 2005:3]

a. wa7 ka s-lep’ i k’ún7-a ku pála7 máqa7
IMPF **DEON** STV-bury DET.PL fish.egg-DET DET one snow

‘The eggs have to stay in the ground for a year.’

b. lán-lhkacw ka áts’s-en ti kwtámsts-sw-a
already-2SG.SUBJ **DEON** see-TR DET husband-2SG.POSS-DET

‘You must/can/may see your husband now.’

The different alignments of English and St’át’imcets modal vocabulary items are illustrated in (22), from Matthewson et al. (2005, 12).

(22) a. English:

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

¹²This contrasts with simple intransitives, for example inchoatives, which have no syntactically-introduced external argument. Baker et al. use this to account for the fact that passives are interpreted with an “implicit agent” (e.g. *The ship was sunk (by pirates).*), while inchoatives are incompatible with syntactically represented agents (e.g. *The ship sank (*by pirates).*).

¹³The relevant morphemes are glossed as “evidentials”, but Matthewson et al. (2005) argue that many evidential systems should be understood instead in terms of epistemic modality.

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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>	

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We discuss this type of morphosyntactic variation because it supports the view that modal meanings are syntactically represented in terms of two cross-classifying formal features, one corresponding to the (ordered) modal base and the other to the modal force.

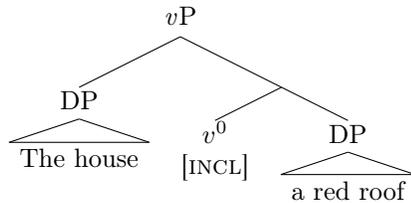
We use the familiar terms NECESSITY and POSSIBILITY as the values for a modal force feature. On the Kratzerian approach, NECESSITY would be interpreted as *x includes y*, where *x* is the set of P-worlds, and *y* is *BB(w)*. POSSIBILITY, not discussed further here, would be interpreted as *x overlaps with y*.¹⁴

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This featural account permits a straightforward account of the syntax of modal *have*. Compare the structures in (23) and (24). (In (24) the feature [ROOT] appears for the purposes of illustration, but note that modal *have* can occur with either root or epistemic interpretations.)

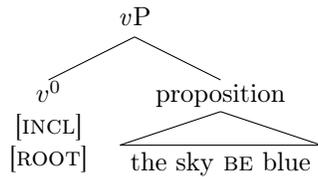
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(23) Possessive *have*:



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(24) Modal *have*:



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In (23), *v*⁰ carries the feature INCL and takes two syntactic arguments denoting individuals. The external argument (*the house*) includes the internal argument as a subpart (*a red roof*).

In contrast, in (24), *v*⁰ has no syntactic external argument, and its syntactic complement is a non-finite clause rather than a DP. Both of these differences are accounted for by the presence of the modal type feature—in this case [ROOT] on *v*⁰. This feature provides *BB(w)*, the set of best deontically accessible worlds in the modal base. Since interpretable features on a single head compose with each other before the result composes with the syntactic complement, the composition of [ROOT] and [INCL] happens first. This saturates the internal argument position of INCL, giving a monadic predicate requiring a second argument denoting a set of worlds. The clausal complement of *v*⁰ supplies this second argument, saturating the argument structure of *v*⁰ and precluding the possibility of a syntactic external argument.¹⁵

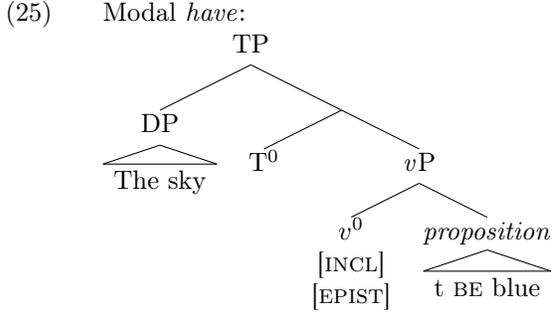
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Just as with the non-finite complements of verbs like *seem*, the subject of the proposition will raise to the matrix clause for reasons of Case, yielding the structure in (25):

¹⁴The features shown here are placeholders; it remains to be shown, for example, whether the distinction between necessity and possibility is best represented by the presence or absence of a single privative feature, two values of a binary feature, or two equipollent monovalent features Cowper and Hall (2015). It is also not clear exactly how many features are required to represent the various modal types, or indeed how many modal types are required.

¹⁵We assume that the propositional argument is nonfinite for whatever reason the complement of other modals in English are non-finite. This may be linked to incompatibility between modality and deixis, as in the feature system of Cowper (2005).

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5.2 Interim summary

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We have used a formal feature INCL, semantically interpreted as expressing a relation of inclusion, and morphologically realized as a verb *have*, to account for the use of possessive morphosyntax to express modal necessity. Initially, INCL occurs as the sole interpretable feature on a v^0 head, and is semantically restricted to take only individual-type arguments. From this initial state, two changes are necessary for the development of possessive modality. First, the semantic interpretation of INCL must broaden to allow it to relate other (higher) types of arguments, not only individuals but also sets of worlds. Second, INCL must be able to co-occur on v^0 with a second feature, a modal base feature whose semantic interpretation provides $BB(w)$.¹⁶ When both INCL and this modal base feature are present, INCL takes two arguments of type $\langle s, t \rangle$; i.e., sets of worlds. The first argument, $BB(w)$, is provided by the new feature on v_{have}^0 , and the syntactic complement provides the second argument.

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Despite changes in the semantic interpretation of INCL, and in the syntactic contexts in which it occurs, the morphological realization of this feature remains constant, via a Vocabulary Item along the lines of (26). Underspecification of Vocabulary Items ensures that (26) will apply even if other features (e.g. those supplying the modal base) co-occur with INCL on v^0 .

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$$(26) \quad v^0 \text{ [INCL]} \leftrightarrow [\text{h}\text{æ}\text{v}]$$

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The modal use of *have* arises directly from the extended semantic content of the feature INCL. This proposal contrasts with those of Bhatt (1997) and Cattaneo (2009), in which modal *have* expresses the possession or existence of an obligation, but the actual semantics of obligation arise from the presence of a covert modal operator. In the next section we consider this alternative account of possessive modality constructions, and argue against it directly.

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5.3 Against Possession of Obligation

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Previous work on possessive modality constructions, especially Bhatt (1997) and Cattaneo (2009), has treated sentences like (27a) along the lines of either (27b) or (27c). Setting aside some technical details, *have* expresses only the possession or existence of a proposition; the semantics of obligation or necessity comes from a covert necessity operator in the complement of *have*.

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- (27) 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.]

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Bhatt (1997) projects this covert operator in a structure adapted from Kayne (1993). The details of this structure are not relevant here: the key feature of Bhatt's analysis is that an

¹⁶Since v_{have}^0 is still used in ordinary predicative possession, we assume that this modal force feature is optional.

523 unpronounced modal head Mod^0 occurs below the head realized as *have* (a copular head Be^0
524 to which a nominal/prepositional head has incorporated).

525 This approach to possessive modality raises two questions. First, if the modal interpretations
526 of *have* arise from a covert modal operator, why is it always a necessity (rather than possibility)
527 modal? Second, given the plausible universality of covert modal operators, why do all languages
528 not exhibit a modal use of their possessive morphosyntax?

529 Bhatt's answer to the first of these questions is that the modal operator found in non-finite
530 clauses is universally a necessity operator, not only in possessive modality but in other contexts
531 as well. This proposal is further developed in Bhatt (2006), who argues that the same range of
532 modal readings are available to subject reduced relatives and non-finite complements of BE, as
533 in (28a-b), and that these are always necessity readings.

- 534 (28) a. John is [to read a book.]
535 b. The book is [to be read for tomorrow.]
536 c. The book [to be read for tomorrow] is kept on the lectern.

537 (cf. Bhatt, 2006, p. 16)

538 If a covert necessity operator is always available in non-finite clauses, we might ask why
539 necessity readings fail to arise in the non-finite complements of canonical raising verbs, such as
540 *seem* and *appear to*. Perhaps more seriously, though, if the necessity reading for both (28a-b)
541 and (27a) is due to a silent modal in the non-finite clause, why does modal *have* occur at
542 all? Setting aside their modal uses, the distinction between *have* and *be* is attributed to both
543 structural and semantic differences between the clauses in which they occur. The use of *have*
544 in (29a) reflects a different relation between the two arguments than the use of *be* in (29b):

- 545 (29) a. Allison has a good friend.
546 b. Allison is a good friend.

547 Why, then, is *have* necessary in (27a)? If the semantics of necessity are due to a covert modal
548 operator, then there is no need for *have* from the point of view of interpretation. And given the
549 grammaticality of (28a), there can be no need for *have* in order to license either the subject or the
550 non-finite complement.¹⁷ In following Kayne's (1993) analysis of possession, Bhatt adopts the
551 view that *have* results from the syntax of copular *be* with some additional nominal/prepositional
552 element. Given this, it is necessary to explain what syntactic or semantic role is played by that
553 nominal or prepositional element, in order for its presence to be possible—but given the other
554 features of Bhatt's analysis of possessive modality, it is unclear what additional role it could
555 play.

556 The second question raised by Bhatt's account is why possessive modality constructions do
557 not exist in all languages that allow non-finite embedded clauses. Precisely because his account
558 attributes no modal semantics to *have* in possessive modality, it seems to predict that the use
559 of possessive morphosyntax to express necessity should be essentially automatic, as opposed to
560 a common but by no means universal parametric possibility.

561 The account developed in this paper provides a more satisfactory answer to both questions,
562 by attributing the modal meaning of sentences like (27a) directly to the head realized by *have*.
563 We predict the absence of possibility readings, because necessity is the automatic result of
564 applying the feature INCL to sets of worlds. We also leave room for a role to be played by
565 language change, by recognizing that the extension from possession to necessity requires a
566 change in the types of arguments that can be related by INCL.

567 We do not deny a possible role for a covert modal operator in sentences like those in (28).
568 What we mean to suggest here is that the presence of a possessive verb *have* requires further ex-
569 planation, and that this explanation should be judged in part on its success in unifying necessity
570 with the other uses of *have*. Though in one sense Bhatt does entirely unify possessive modality

¹⁷The subject is not thematically introduced by *have*: Bhatt explicitly argues that the matrix subject originates within the non-finite clause, and raises for reasons of licensing.

571 with possession *simpliciter*, he does this by reducing modal possession to an abstract case of
 572 predicative possession, an approach that in some ways only deepens the mystery surrounding
 573 the breadth of interpretations available to possessive syntax, rather than shedding light on its
 574 modal uses. The approach we have adopted here provides a more elegant unification of posses-
 575 sive modality with the other uses of *have* catalogued in section 2, by probing the interpretive
 576 featural content underlying syntactic possession.

577 By attributing a contentful semantics to *have* (or rather, to the syntactic head it realizes), it
 578 is possible to use possessive modality to illuminate the semantics of possession more generally, a
 579 domain of meaning that has remained persistently obscure to semantic analysis in both linguistic
 580 and philosophical traditions. To the extent that the resulting unification is successful, it provides
 581 indirect support for the idea that possession and necessity both involve an abstract semantic
 582 relation of inclusion.

583 6 Extension to BE-possession

584 So far, we have considered only possessive modality in English. Our account can be extended
 585 fairly straightforwardly to other languages that express possession with a verb like *have*, and in
 586 this section we show that the account also provides an elegant treatment of possessive modality
 587 in at least one class of languages that express possession with a copular verb, including Hindi-
 588 Urdu and Bengali. These languages were also discussed by Bhatt (1997), along with Gujarati
 589 and Sindhi.

590 Consider the examples in (30) and (31):

- 591 (30) a. John-ko sirdard hai
 592 John-DAT headache be.PRES
 593 ‘John has a headache.’
 b. John-ko seb khaa-naa hai
 594 John-DAT apple eat-GER be.PRES
 595 ‘John has to eat the apple.’ [Hindi-Urdu: Bhatt 1997, (8)]
- 596 (31) Bengali:
 a. Amar bondhu-r akṭa boi aatʃhe
 597 my friend-GEN one book be.PRES
 598 ‘My friend has a book.’
 b. Amar bondhu-ke je-te ho-be
 599 my friend-DAT go-INF be-FUT
 ‘My friend has to leave.’ [Bengali: Neil Banerjee p.c.]

600 The (a) sentences in each example are straightforward possession constructions, with the oblique
 601 (dative or genitive) nominal expressing the possessor and the unmarked nominal the possessum.
 602 The (b) sentences express obligation, and are superficially very similar to the possessive con-
 603 structions in (a). We argue that they are indeed cases of possessive modality, and that they can
 604 be accounted for in a fashion similar to the account of modal *have* presented above.¹⁸

¹⁸Jung (2011) suggests that Russian—another *be*-possession language—also exhibits possessive modality, based on examples such as the following. On this basis she 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)]

Elsewhere this type of sentence in Russian has been discussed as a “dative infinitive” construction (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

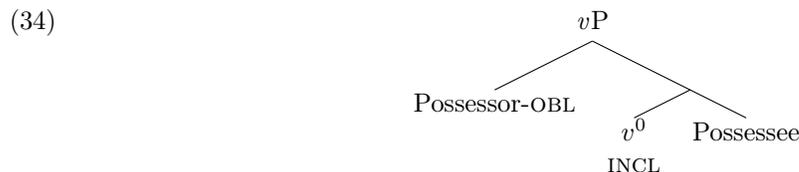
In Indo-Aryan languages like Hindi-Urdu and Bengali, as in other *be*-possession languages, predicative possession is expressed with a copular verb whose subject is an oblique-marked possessor. In Hindi-Urdu the specific oblique marking on the possessor is determined by the “flavour” of possession involved, as shown in (32).

- (32) 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.iyāā 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” (-*mē*) = Possession of properties? (Bhatt calls this simply “possession”)
 Ram mē pratibhaa hai
 Ram in talent be.PRES
 ‘Ram has talent’ [Bhatt 1997, (42)]

The structure that we claim involves possessive modality, illustrated in (30b) above and in (33), exhibits dative case on the subject. This is the case used for “experiencer possession”, as in (32a).

- (33) 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)]

Let us now turn to how our account of possessive modality with *have* can be extended to account for these cases, beginning as before with predicative possession. We propose the structure shown in (34), very similar to the one proposed earlier for possessive *have*, for predicative possession in both Hindi-Urdu and Bengali.¹⁹



Here, a light verb v_{poss}^0 , bearing the feature INCL, takes the possessee as a complement and the possessor as a specifier, as before. The differences between v_{poss}^0 and v_{have} are that v_{poss}^0 also assigns oblique case to the DP in its specifier, and that in Hindi-Urdu v_{poss}^0 does not trigger a more specific realization of v^0 , rather being spelled out by the ordinary copular verb. v_{poss}^0 is thus essentially an applicative head, introducing an argument and licensing it via oblique case, as in the analysis of predicative possession in Myler (2013, 2014).

The extension from predicative possession to possessive modality is the same here as proposed

for me to stay there?”. For this reason we do not further consider Russian data here.

¹⁹This similarity is not novel: since at least Freeze (1992), it has been usual to assume that BE-possession and HAVE-possession reflect the same underlying syntax.

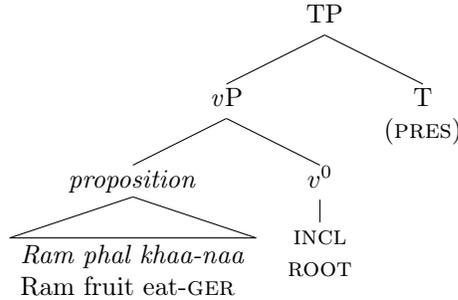
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for modal *have*, consisting of two changes: the INCL feature of v^0 broadens semantically, so as to relate not only individuals but also sets of worlds; and in addition, v_{poss}^0 comes to be able to bear a feature expressing the modal base (i.e. ROOT or EPIST), and this allows the first argument of INCL to be saturated within the v_{poss}^0 head itself.

The underlying structure for (33)a would therefore be as in (35), with (modal) ROOT and INCL features on v^0 , and a non-finite proposition as the syntactic complement of v^0 .

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(35)

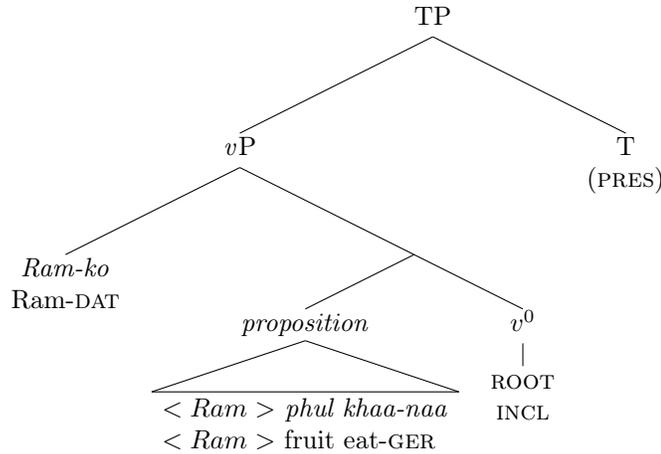


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The central difference between the English v_{have} and the Hindi-Urdu v_{poss}^0 remains, in that v_{poss}^0 assigns oblique case to its specifier, and does not have a special realization as a possessive verb like *have*. In (35), the subject of the nonfinite clause is thus attracted to the specifier of v_{poss}^0 , and receives dative case, as shown in (36).

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(36)



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While this account treats v_{poss}^0 as applicative-like in the sense that it assigns oblique case to a DP in its specifier, in this case that DP arrives in the specifier via Raising rather than external Merge. Under this analysis, possessive modality clauses in Hindi-Urdu must therefore be raising constructions. Bhatt (1997) provides several arguments that sentences like (33) are indeed derived via raising, rather than having the subject base-generated in the matrix clause, as in dative experiencer constructions.

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The first argument has to do with meaning: the subject of the possessive modality construction need not be the direct bearer of the obligation. This is illustrated for Bengali in (37), where clearly it is not the obligation of the room to clean itself. A raising analysis more clearly captures the fact that the matrix subject is thematically related only to the embedded clause, and does not serve as the modal correspondent of an experiencer.

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(37) Ghor-ṭa-ke porifkar korte ho-be
 room-DEF-DAT clean do-INF be-FUT

664 'The room has to become clean.' [Bengali: Neil Banerjee p.c.]

665 The second argument is syntactic, and has to do with the case that surfaces on the subject.
666 In Hindi-Urdu, promoted subjects, such as the subjects of passive and unaccusative clauses,
667 can surface with (null) absolutive case marking. They cannot be marked with the ergative *-ne*
668 (Mohan, 1994), as shown in (38).

669 (38) Ram(*-ne) giraa.
Ram(*-ERG) fall.PERF
670 "Ram fell hard." [Mohan 1994, 71]

671 When an unaccusative verb occurs in a possessive modality context, the matrix subject can
672 bear dative case, as in (37) above. However, it can also be unmarked, as shown in (39). This
673 would be completely unexpected if the DP had merged as a matrix "experiencer", but can be
674 accounted for if it moved to its surface position from within the embedded clause:

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

677 The third argument is a classic "no extra DP" argument for raising (Soames and Perlmutter,
678 1979, 416). The embedded clause in this construction is a gerund, and gerunds in other contexts
679 permit overt genitive subjects. However, an overt genitive subject is completely impossible in
680 possessive modality contexts, as shown in (40).

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

683 This follows automatically if the matrix subject raises from the position occupied by the genitive
684 in (40).

685 The final issue to be settled in extending our account of possessive modality with *have* to
686 possessive modality with the copula in Hindi-Urdu and Bengali has to do with the oblique case
687 that appears on the matrix subject. In Hindi-Urdu, we must account for the fact that with
688 possessive modality, the subject is marked with dative rather than with any of the other cases
689 that can mark possessors. As dative is one of the cases that can appear on possessors in Hindi-
690 Urdu, however, this reduces to the question of why different "flavours" of possession trigger
691 different subject marking.

692 In Bengali, by contrast, accounting for subject case in modal possession seems more difficult,
693 at least at first. Ordinary possessors in Bengali are consistently genitive, as shown in (41a). In
694 contrast, the subject in possessive modality is consistently dative, as in (41b).²⁰ This systematic
695 morphological difference between predicative possession and possessive modality might appear
696 to cast doubt on the proposal that the latter arises from the same structure as the former.

697 (41) Bengali:
698 a. Possession: Subject marked with genitive
699 Amar bondhu-r akṭa boi aatʃhe
my friend-GEN one book be.PRES
700 'My friend has a book.'
701 b. Possessive modality: Subject marked with dative (genitive dispreferred).
702 Amar bondhu-ke je-te ho-be
my friend-DAT go-INF be-FUT

²⁰Bhatt (1997) reports that Bengali possessive modals such as (40b) optionally involve genitive case on the subject. Neil Banerjee (p.c.) reports that though genitive case is not ungrammatical, dative case is strongly preferred in his variety of Bengali.

703 ‘My friend has to leave.’ [Bengali: Neil Banerjee p.c.]

704 We claim that the solution to this problem is to be found in the fact that the subjects of overt
 705 modals are uniformly marked with dative in both Hindi-Urdu and Bengali, as shown in (42)
 706 and (43).

707 (42) Hindi-Urdu: Modal *chahiye* “should”
 708 Ram-ko seb khaa-naa chahiye thaa
 Ram-DAT fruit eat-GER should be.PAST
 709 ‘Ram should have eaten the apple.’ [Bhatt 1997, (27b)]

710 (43) Bengali: Modal *utjit* “should”
 711 Ghor-ta-ke porifkar korta utjit
 room-DEF-DAT clean do.VERBAL.NOUN should
 712 ‘The room should become clean.’ [Bengali: Neil Banerjee p.c.]

713 This consistency suggests that the case assigned to the subject of the applicative v^0 may depend
 714 on a property that the modal light verb shares with the true modals, rather than on a property
 715 that originated with the possessive light verb. Recall that the extension of the possessive head to
 716 modal necessity involves the addition of a second formal feature, whose semantic interpretations
 717 supplies the modal base (i.e. ROOT, EPIST). The same feature also occurs on true modals, as
 718 discussed above for English *must*. We suggest that it is this feature that controls the assignment
 719 of dative case, both with overt modals and with possessive modality. In both (41b) and (43),
 720 then, it is the modal base feature that triggers the assignment of dative case to the subject.

721 The morphosyntactic conditioning of case assignment we propose for Bengali is given in (44).
 722 The more specific statement in (a) takes precedence when it is applicable; i.e., when a modal
 723 base feature is present. In the absence of a modal base feature, the more general statement in
 724 (b) applies, marking the subject as genitive.

725 (44) a. v^0 [INCL][ROOT/EPIST] → DAT
 b. v^0 [INCL] → GEN

726 For Hindi-Urdu, where the case on possessors is dependent on the type of possession relation
 727 expressed, we assume that the representation of possession is more highly specified than in
 728 Bengali, or in English. Given the framework we have adopted here, it is natural to assume
 729 that the different flavours of possession are encoded in terms of formal features, and that these
 730 features contribute to determining the case of the possessor.

731 The differences between *have*-possession languages like English and *be*-possession languages
 732 like Bengali and Hindi-Urdu, as regards predicative possession and possessive modality, are
 733 thus primarily morphological. In English, the presence of INCL on a light verb determines the
 734 realization of the head itself, not the case assigned to its specifier, while the modal base feature
 735 has no morphological effect. In Bengali, both the inclusion feature and the modal base feature
 736 affect the case assigned to the specifier of the light verb, while the light verb itself is consistently
 737 realized as the default copula.

738 7 Conclusion and Discussion

739 We began with the observation that the morphosyntax of possession is often used to express
 740 modality. This is particularly interesting to those working on constructions containing *have*,
 741 because the modal *have to* construction is often set aside in attempts to unify the constructions
 742 in which *have* appears. The core of our proposal is that possessive modality reflects an under-
 743 lying semantic similarity between possession and necessity: a relation of inclusion between two
 744 arguments, syntactically encoded by a formal feature INCL.

745 This formal feature makes an extension from possession to necessity possible, but still requires

746 two significant changes. The first is in the semantic type of the arguments related by INCL:
747 possession involves two arguments of type $\langle e \rangle$, while modal necessity requires INCL to relate
748 sets of worlds. The second is the structure in which INCL composes with its first argument: in
749 possession this argument is a syntactic complement, while in necessity it can only be a second
750 interpretable feature on a head, whose interpretation supplies the modal base.

751 Unifying modal *have* with possession in terms of INCL naturally explains why possessive
752 modality always expresses necessity, rather than possibility. Under our account, when INCL is
753 applied to sets of worlds, the semantics of modal necessity arise automatically. We are also
754 able to explain why not all languages have possessive modality constructions, even if they have
755 a robust predicative possession construction. On our account, there is a semantic difference
756 between possessive and modal light verbs, whether the light verb is realized by a verb like
757 *have* or by an ordinary copula: they take arguments of different semantic types, and arrange
758 those arguments differently in the syntax. Possession therefore does not automatically extend
759 to modality; there remains a role for language change to play.

760 If our account is correct, it suggests a new source of evidence for work on grammatical sys-
761 tems of possession: the ways in which possessive morphosyntax is extended in a given language
762 should help to reveal the formal properties underlying possession in that language. In particu-
763 lar, the analysis in this paper makes a number of predictions for the distribution of possessive
764 modality across languages. Such constructions should only arise in languages where possession
765 expresses a relation of inclusion, and where that relation is expressed by a head whose comple-
766 ment is the possessee and whose specifier is a possessor; if there are languages with the reverse
767 relation (as proposed, for example, in Freeze (1992)), we do not predict that possessive modality
768 constructions will arise in those languages. By identifying inclusion as the basis for extension in
769 possessive modality, we also predict that in languages that distinguish alienable from inalienable
770 possession, it will be only inalienable possession (literal part-whole) that extends in possessive
771 modality. Finally, our analysis does not predict that nominal possession (e.g. *my book*) will
772 extend to express necessity, a prediction that appears to be borne out.

773 The range of crosslinguistic variation in possessive modality is yet to be fully determined,
774 but the proposals developed here predict clear interactions between the structure of predicative
775 possession and the availability of possessive modality. If these predictions are borne out, then
776 the central claim of this paper—that the existence of possessive modality sheds light on both the
777 semantics of possession and the syntactic composition of modality—receives further support.

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