

## Possession and necessity: from individuals to worlds

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This paper investigates the use of possessive morphosyntax to express modal necessity, illustrated in (1) and (2) for the English “semi-modal” *have (to)*. This phenomenon is found not only in languages with a possessive verb like *have*, such as English, German, Spanish, and Catalan, but also in those that express possession with *be* together with prepositional or oblique subject marking, including Hindi (Bhatt, 1997) and Russian (Jung, 2011).

- (1) Cyclists have to obey traffic laws. (necessity)  
(2) That cyclist has a helmet. (possession)

Our central claim is that possessive modality constructions arise because both possession and necessity express a relation of inclusion or containment between two arguments of the same semantic type. This contrasts with previous accounts, which have proposed that sentences like (1) express abstract possession or existence of an obligation (Bhatt, 1997; Bybee and Pagliuca, 1985). Possession expresses inclusion between two individual-type arguments, while necessity expresses inclusion between sets of worlds. This relation arises in different configurations, however: with a possessive verb like *have* it is expressed via syntactic transitivity, while the inclusion relation in modality is hidden, resulting in apparent syntactic intransitivity, with one of the two arguments being part of what is spelled out by the modal head.

The semantics of predicative possession are the subject of much current investigation and disagreement, but one core use of possession is to express part-whole or inclusion relations (Aikhenvald, 2013, a.o.). Levinson (2011) suggests that *have*, at least in Germanic languages, is the verbal realization of a head with the semantics of (non-locative) WITH, expressing inclusion or containment between its internal and external arguments, as in the phrases in (3).

- (3) a. the tree with branches  
b. coffee with milk

The formal analysis of necessity operators is strikingly similar to this view of possession, but where possession relates individuals, necessity involves inclusion between sets of worlds. Since Kratzer (1981, 1986), work in formal semantics has proposed that modal interpretations are built from (at least) three elements: a modal operator (universal or existential), which composes first with a modal base (i.e. a set of epistemically or deontically accessible worlds), and then with a proposition (also modelled as a set of worlds). A universal modal operator requires that the proposition be true in all accessible worlds—i.e. it requires that the set of worlds corresponding to the modal base be included in the set of worlds corresponding to the proposition.

This semantic similarity, we argue, is the basis of the extension of possessive morphosyntax to express modal necessity. Assuming a realizational morphological framework such as Distributed Morphology (Halle and Marantz, 1993, et seq.), we assume that insertion of *have* is underspecified, conditioned only by an interpretable formal feature expressing inclusion. The extension of *have* to modal necessity reflects a reanalysis of the contexts in which this feature can occur; more precisely, it reflects a semantic reanalysis of this feature, allowing it to relate not only individuals but also arguments of higher semantic types.

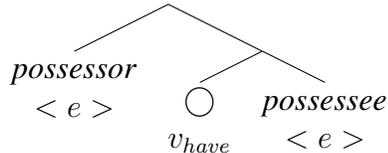
What remains to be explained are the substantial structural differences between possession and necessity: while both are semantically transitive relations between two arguments of the same type, only possession is also syntactically transitive. Indeed, syntactic transitivity has been argued to be the defining characteristic of possessive *have* (Hoekstra, 1984; Cowper, 1989, a.o.). By contrast, modal operators like *must* or modal *have (to)* are intransitive propositional operators with raising syntax, demonstrated by their ability to combine with expletive subjects,

as in (4). While the first argument of possessive *have* composes as its complement, as in (5-a), the first argument of modal *have* composes head-internally, as in (5-b).

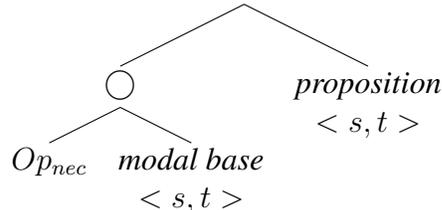
(4) a. It has to be raining.

b. There has to be a better solution.

(5) a.



b.



We argue that this apparent compositional mismatch can be resolved by considering more carefully the syntactic representation of modal heads. Semantic work often assumes a structure like the one in (5-b), where a modal realizes a head that itself is semantically complex. A syntactic operation such as Merge, however, cannot create sisterhood relations within a head: the first-merged argument of an element is by definition its syntactic complement. We suggest instead that the head-internal structure of modals reflects the presence of more than one interpretable feature: modal heads thus bear two types of interpretable features, corresponding to modal force or to modal base. Either of these features can be the basis for morphological realization: while modals in languages like English primarily express modal force, Matthewson et al. (2005) demonstrate that modals in other languages primarily express the choice of modal base.

If the modal force and the modal base are systematically encoded by features of a single head, then their semantic composition cannot be via a syntactic sisterhood relation: the semantic transitivity of modal operators must instead arise because two interpretable features compose semantically within a single head. This introduces another configuration that can give rise to semantic composition: Function Application can apply not only to structures created by Merge, but also to heads bearing more than one semantically interpretable feature.

The advantage of this proposal over previous analyses, particularly the one developed by Bhatt (1997), is that it directly explains why possessive morphosyntax is always extended to express necessity, not possibility. Bhatt proposes that possessive expressions of necessity assert the existence of an obligation, expressed by a silent necessity operator. What remains unexplained on this type of account, however, is why there is no corresponding silent possibility operator. By contrast, the universal force of elements such as *have (to)* is an automatic result of the inclusion relation expressed by possession, on the proposal developed here.

Looking at possessive modal constructions thus gives us insight not only into the semantics of possession but also into the compositional syntax of modal operators. It supports the idea that inclusion is at least an aspect of the semantics of possession – and also highlights possible mismatches between cases of syntactic and semantic transitivity.

**References:** Aikhenvald, A. 2013. Possession and ownership: a cross-linguistic perspective. In *Possession and ownership: a cross-linguistic typology*. OUP; Bhatt, R. 1997. Obligation and possession. MITWPL 32; Cowper, E. 1989. Thematic underspecification: The case of *have*. Toronto Working Papers in Linguistics 10; Freeze, R. 1992. Existentials and other locatives. *Language* 68; Halle, M., and A. Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The View from Building 20*. MIT Press; Hoekstra, T. 1984. *Transitivity: Grammatical relations in government-binding theory*. Foris Publications; Jung, H. 2011. *The syntax of the BE-possessive: parametric variation and surface diversities*. John Benjamins; Kayne, R. 1993. Toward a modular theory of auxiliary selection. *Studia Linguistica* 47; Kratzer, A. 1981. Partition and revision: the semantics of counterfactuals. *Journal of Philosophical Logic* 10; — 1986. Conditionals. In *Papers from the Parasession on Pragmatics and Grammatical Theory*, CLS 22; Levinson, L. 2011. Possessive WITH in Germanic: HAVE and the role of P. *Syntax* 14; Matthewson, L., H. Rullmann, and H. Davis. 2005. Modality in St’át’imcets. In *Papers for the 40th international conference on Salish and neighbouring languages*.