

## Non-finite temporality & modality

It is a trivial observation that modal auxiliaries are disallowed in English infinitives. However, it is not that case that modality itself is disallowed: standard root and epistemic modal effects can be observed in non-finite clauses despite the lack of an overt modal.

A pretty clear case has been discussed by Bhatt (1998) — the English *have to/ought to* construction and its analogues in other languages. Bhatt goes in detail through the interpretation of the modality in such cases, and shows it is cross-linguistically characterized as a possessive marker plus a non-finite verbal form, the interpretation being ‘subject possesses an obligation to verb’ (1); in other words, *have* contributes only its usual possessive semantics (ditto *ought*, preterite of OE *agan* ‘own’ (Warner 1993)), and the infinitive contains a concealed, apparently root-interpreted, modal. Bhatt thus labels it the ‘obligational construction’.

However, Bhatt only looks at cases where the infinitive just contains a main V. If we take into account cases where it contains also (outer) aspectual auxiliaries like perfective *have*, the root-interpretation for the modality is no longer the only one — we find an epistemic interpretation too (2). This epistemic interpretation can’t be one that is derived from the modality taking matrix scope, since we can in at least some dialects also see an overt epistemic modal in the matrix clause, leading to a pair of ‘stacked’ epistemic judgements, one relating to the matrix clause and one to the non-finite embedded clause (3), the latter being the one contributed by the *have/ought to* construction.

In *have/ought to* constructions where an aspectual element is contained in the infinitive, then, two interpretations are available for the ‘concealed’ modality: a root and an epistemic.

The ambiguity, and the distinction between the aspectual and the non-aspectual versions of *have/ought to* constructions, are predicted in a theory like that of Butler (2003; to appear), where the root–epistemic distinction is derived from the interactions of temporal predicate elements like T, Perf, Prog (cf. Stowell 1996; Demirdache & Uribe-Etxebarria 2001, for extensive justification of aligning T and outer aspectual elements as temporal predicates) and modal operators. Essentially, epistemic readings are argued to derive from modal operators taking scope over temporally anchored situations, i.e. propositions, giving a propositional attitude-like reading, whereas root readings derive from modal operators scoping over temporally unanchored situations (i.e.  $\nu P$ ); root, then, is defined negatively as non-epistemic.

Butler notes that if Perf is equivalent to T in its temporal behaviour, then Perf on top of  $\nu P$  should give a propositional reading just like T on top of  $\nu P$ , since it will serve to anchor the  $\nu P$  situation in the same way. This means a modal operator on top of Perf should allow an epistemic reading just like one on top of T. That such a scope position for modality obtains in general is demonstrated in detail by Condoravdi (2001); Stowell (forthcoming), based on examples like (4). We see three readings for the modality in (4): (4a) a basic root reading, which expresses ability/permission at the event time E; (4b) a basic epistemic reading, which reports an epistemic evaluation made at the speech time S; (4c) another epistemic reading, which reports an epistemic evaluation relating to some *past* reference time R that Emma could *already* have bought the book at R. The claim made is that (4a) is modality scoping over the matrix proposition, (4b) is modality scoping over the  $\nu P$  situation, and (4c) is modality scoping over the intermediate proposition created by the anchoring of  $\nu P$  by Perf.

What is interesting to note here is that T is playing no role in deriving anything in the non-finite clause: the only temporal information that is provided seems to be coming from Perf, when it is there. Where there is no aspect, there is no temporality, and we only get a root reading for the modality as in Bhatt’s original examples.

That tense doesn't make its usual contribution is of course pretty generally true of non-finite clauses, but nevertheless recourse is often made to the idea of 'non-finite T' in infinitives, and one of the main justifications for positing such a non-finite T is Stowell's (1982) claim that infinitives actually can encode some temporal information at some level. Stowell's claims are based on data like (5), where the embedded infinitive seems to bear some kind of unrealized or 'possible future' relation to the matrix tense: i.e. at the point where Jenny did the remembering in (5a), she hadn't yet brought the wine; etc. for the other examples. Stowell therefore claims that this possible futurity is what is contributed by non-finite T in the embedded clause.

One troubling aspect of this idea is that futurity as a function of T, certainly for English and perhaps universally, is highly debated (cf. Enç 1996). However, if we think about the interpretation of the infinitives in (5) with regard to what has been said above about modality, we can see that this 'possible future' interpretation can actually be analysed as a modal interpretation, as overtly recognized in the finite paraphrases Stowell gives for his examples (6). Future-shifting effects of modals are well-recognized; and modality is classically defined in terms of possibility. It is therefore possible to analyse the data Stowell discusses in terms of a 'concealed modality' analagous to the data discussed by Bhatt and the extension of it to aspectual infinitives here. This takes us towards a position where we can argue that in fact infinitives don't contain any T at all, non-finite or otherwise (see Wurmbrand 2001 for other argumentation to this effect).

- (1) John has to read the book  
= 'John possesses an obligation to read the book' (root)
- (2) John has to have read that book  
= 'John possesses an obligation to have read that book (before he can start his course)' (root)  
= 'It is a necessary assumption that John has read that book' (epistemic)
- (3) Someone must have to have read that book  
= 'I am certain that it is certain that someone has read it'
- (4) Emma could have bought that book ...
  - a. ... when she was in the shop (root)
  - b. ... , possibly, but I can't say for sure (matrix epistemic)
  - c. ... , I didn't know if she had or not (past epistemic)
- (5)
  - a. Jenny remembered to bring the wine
  - b. The table on which to put your coat is in the next room
  - c. I don't remember who to visit
- (6)
  - a. Jenny remembered that she should bring the wine
  - b. The table on which you should put your coat is in the next room
  - c. I don't remember who we should visit

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