

Topics in English Syntax: Auxiliary Verb

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1 Introduction

English Auxiliary verbs include the modals (*will*, *would*, *can*, *could*, *must*, *might*, etc.), the tense and aspect auxiliaries *be* and *have*, and the passive auxiliary *be*.

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2 Properties

2.1 'NICE' Properties, and Other Properties

Negation Auxiliaries can be immediately followed by sentential negation:

- (1) a. They will not go home.
- b. *They went not home.

Cf. phrasal negation is different:

- (2) They went [not home], but [to church].

It's not always easy to tell the difference – (3) is ambiguous:

- (3) We could not go to the party.
 - a. NOT [we could go to the party] (it was impossible)
 - b. We could [not go to the party] (it's possible)

Only sentential negation allows contraction, and gives a negative sentence:

- (4) a. We couldn't go to the party (unambiguous, =(3a))
- b. We [could not] go to the party, could we? (unambiguous, =(3a))
- c. We could [not go to the party], couldn't we? (unambiguous, =(3b))

Inversion Auxiliaries can precede the subject in interrogatives, and other inversion structures:

- (5) a. Will they go home?
b. *Went they home?
- (6) a. Seldom does he take so much trouble over an assignment.
b. *Seldom takes he so much trouble over an assignment.

Contraction Auxiliaries have 'contracted' forms with *n't*:

- (7) a. They won't go home.
- b. *They wentn't home.

Ellipsis Complements of auxiliaries can be elided.

- (8) a. They went home because they could ____.
- b. *They went home because they wanted ____.
- c. (cf They went home because they wanted *to* ____).

- Optionality, but no iteration;
 - (9) a. They (may) take substances.
 - b. *They may may take substances.
 - c. *They may can take substances.
- Strict restrictions on form of following verbs (see below).
- Strict ordering restrictions (see below)
- The subject of any auxiliaries is interpreted as the subject of the main verb (i.e. the downstairs verb).

Exercise 2.1 On the basis of the above properties, classify the following verbs as auxiliaries or non-auxiliaries (you will need to construct examples, and may need help from a native speaker informant):

- (10) a. *can, may, will, must*
b. *begin, expect, persuade, make*

Exercise 2.2 Do the same with these, which are potentially more problematic (based on Kim and Sells (2008, p178)):

- (11) a. Sam got sent to prison. (*got*)
b. He ought to leave his luggage here. (*ought*)
c. They needn't take this exam. (*need*)
d. You'd better not leave it here. (*better*)
e. He dared not argue with his parents. (*dared*)
f. She used to go there very often. (*used*)

2.2 Ordering, Form of Complement

If we ignore passive, we have the following data.

(12) They may have been taking substances.

- (13) a. Sam takes substances.
b. Sam *may take* substances.
c. Sam *has taken* substances. *(took, take, taking)
d. Sam *is taking* substances. *(took, take, taken)

- Finite verb must come first.
- Modals are followed by “base” (uninflected) forms.
- *have* . . . *en* (past participle).
- *be*_{prog} . . . *ing* (pres. participle).

■ Order Constraints:

(14) They must have been taking substances.

(15) *They have must been taking substances.

(16) *They must been have taking substances.

(17) *They must be having taken substances.

(18) etc, etc.

(19)	(Tns)	(Mod)	Perf	Cont
		may	have	been

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3 Approaches

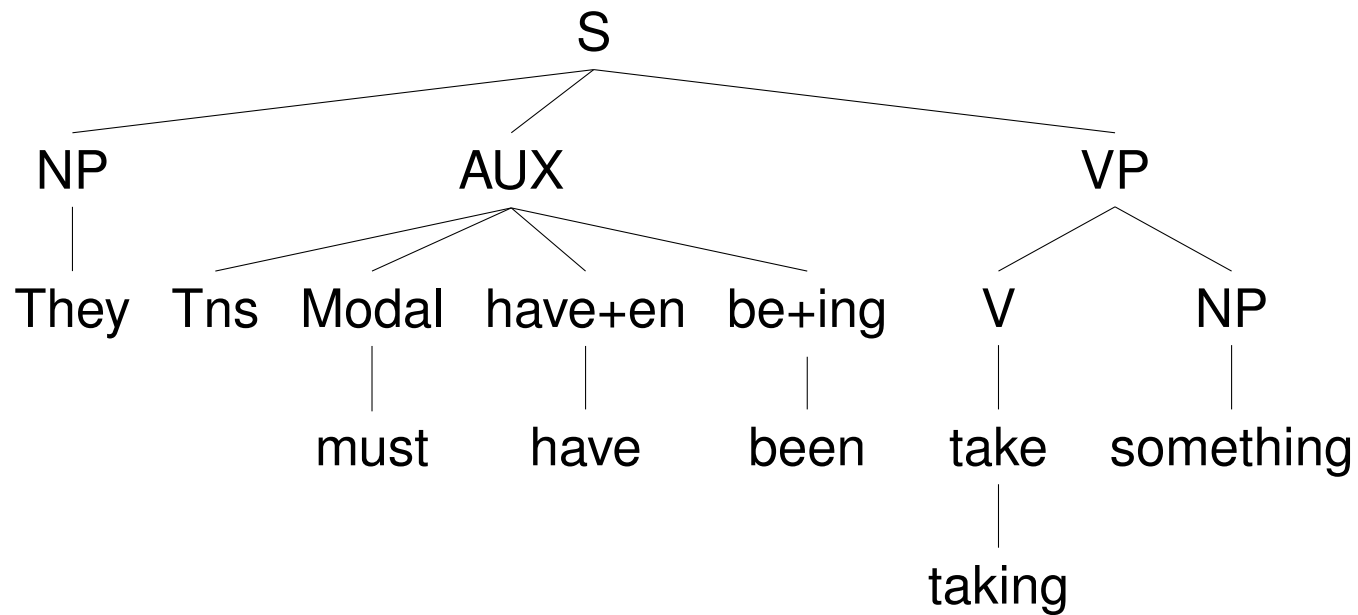
3.1 Affix Hopping

Based on Chomsky (1957):*

- Auxiliaries are not lexical verbs;
- Their order is stipulated by rule;
- Auxiliaries are generated with the inflectional ending they require on what follows them;
- ‘Affix hopping’ moves the inflectional endings to the right places.

- (20) a. $S \rightarrow NP \text{ AUX } VP$
b. $AUX \rightarrow (Tns) (Modal) (have+en) (be+ing)$

* This is not Chomsky’s exact analysis, e.g. Chomsky has $\text{Verb} \rightarrow \text{Aux} + V$, so that the main verb forms a constituent with the auxiliaries, rather than the object NP.

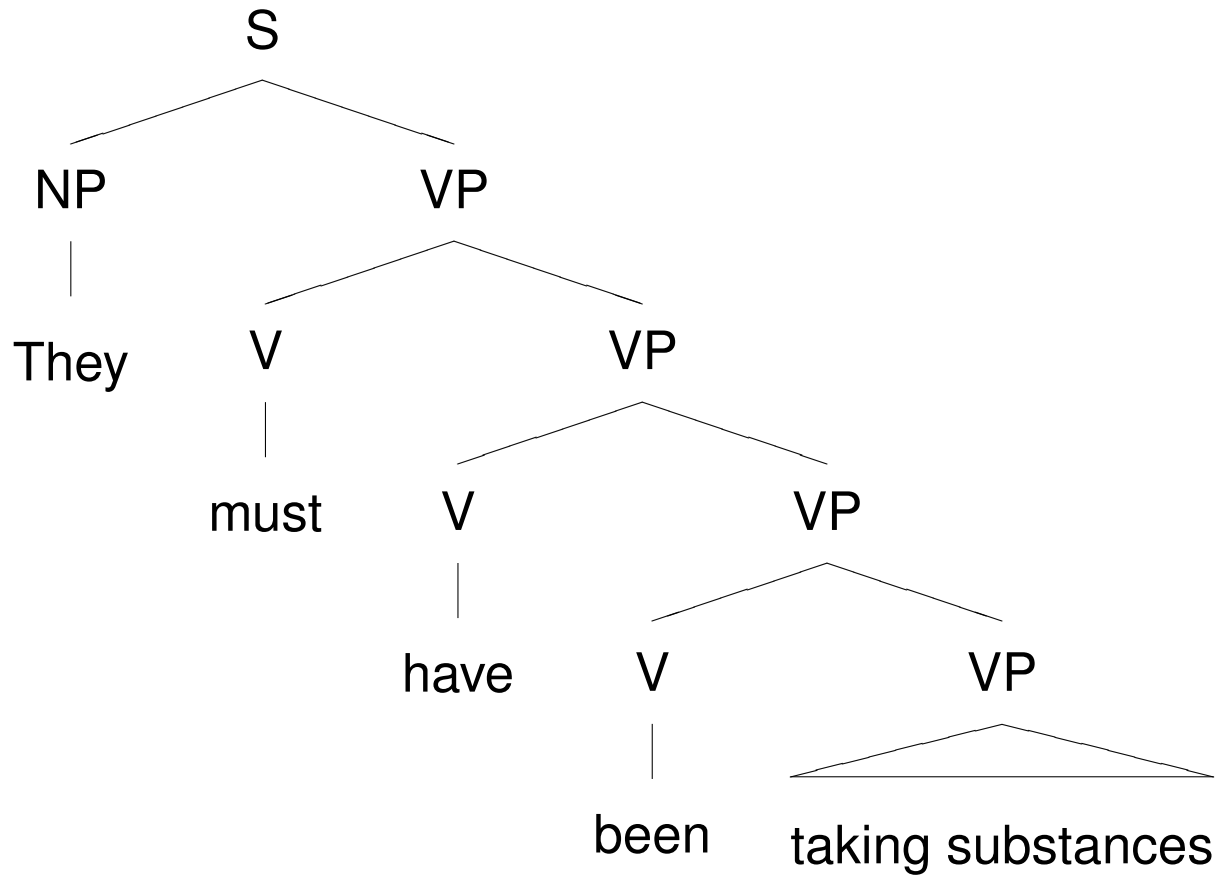


3.2 Auxiliaries as main verbs (GPSG)

Originally proposed in Pullum and Wilson (1977), this became standard in GPSG (Gazdar et al., 1985).

- ‘Auxiliaries’ are more or less normal lexical verbs (typically, raising verbs) that determine the form of (the head of) their sister VP:

- (21) a. $S \rightarrow NP VP$
b. $VP \rightarrow V VP$



Roughly:

- (22) a. $S \rightarrow NP \ VP_{fin}$
 b. $VP_{fin} \rightarrow V_{fin} \ VP_{nonfin}$
 c. $VP_{nonfin} \rightarrow V_{nonfin} \ VP$
 d. $VP_{perf} \rightarrow \text{have} \ VP_{en}$ (en=past-participle=psp)
 e. $VP_{prog} \rightarrow \text{be}_{prog} \ VP_{ing}$ (ing=present-participle=prp)

In general, if features like *en*, *fin*, *pass*, etc. appear on VP, they appear on the head V (and vice versa).

The general idea is that each auxiliary determines the form of the sister VP, which determines the form of the V in that sister. Thus, *en* shows up on the verb after aspectual *have*.

■ We will pursue this approach here.

3.3 Some Machinery

- The idea of HEAD features.
- Some properties are shared between the syntactic head and its mother, for example:
 - ▶ category (PPs are headed by prepositions, NPs are headed by Ns, etc.)
 - ▶ number (plural NPs contain plural nouns, etc.)
 - ▶ etc.
- But not all:
 - ▶ Mothers are phrases, head daughters are sometimes lexical items (words)
 - ▶ COMPS and SUBJ values are different in some kinds of construction (e.g. head-complement constructions).

- It makes sense to group the shared features together, so we get a very simple statement of the generalisation. All headed phrases will look like (23), which is basically what people mean when they write (24):

(23) $[\text{HEAD } \boxed{1}] \rightarrow \dots, [\text{HEAD } \boxed{1}], \dots$

(24) $XP \rightarrow \dots, X, \dots$

- It is not always clear whether something should be a head feature (i.e. part of the HEAD value) or not.

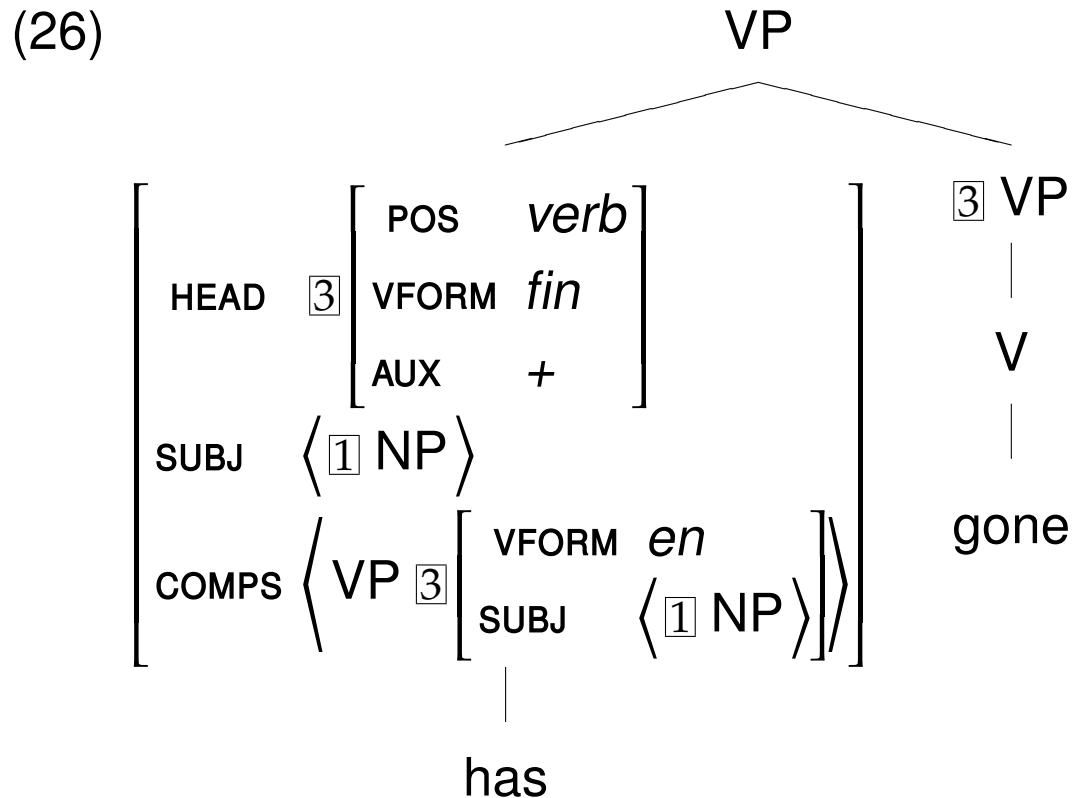
- But it is clear that we want ‘part-of-speech’ (pos) to be a head value, and
- we want the feature that carries information about whether a verb or VP is *ing*, *fin*, *bse*, etc. to be a head feature. Let’s call this the vFORM feature.
- We will also assume that aux is a head feature.

Suppose each auxiliary says what its complement's HEAD|FORM feature must be.

For example, *has*:

$$(25) \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{ll} \text{POS} & \text{verb} \\ \text{VFORM} & \text{fin} \\ \text{AUX} & + \end{array} \right] \\ \text{SUBJ} \left\langle \boxed{1} \text{ NP} \right\rangle \\ \text{COMPS} \left\langle \text{VP} \left[\begin{array}{ll} \text{VFORM} & \text{en} \\ \text{SUBJ} & \left\langle \boxed{1} \text{ NP} \right\rangle \end{array} \right] \right\rangle \end{array} \right]$$

- This will give us structures like (26)



Exercise 3.1

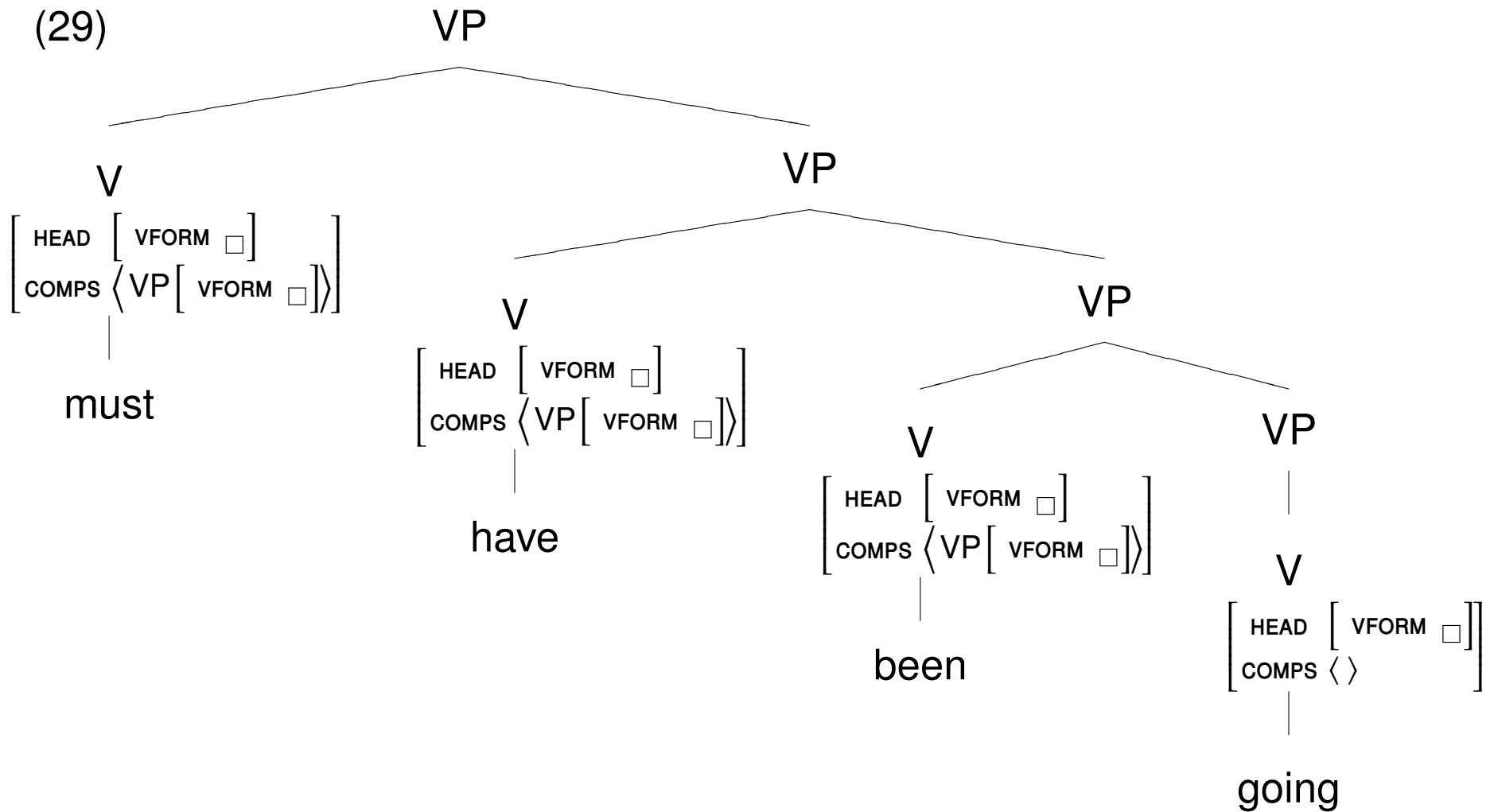
- What is the vFORM value of the mother VP? Why?
- What is the vFORM value of the VP complement of *has*? Why?
- What is the vFORM value of *gone*? Why?
- How can you explain the following contrast?
(27) a. Sam has gone.
 b. *Sam has went.

Exercise 3.2 Explain what the lexical entry in (25) says.

Exercise 3.3 Compare the entry for *has* (a.) with the entry for *seems* (b.):

(28) a.	$\left[\begin{array}{l} \text{HEAD } \boxed{3} \left[\begin{array}{ll} \text{POS} & \textit{verb} \\ \text{VFORM} & \textit{fin} \\ \text{AUX} & + \end{array} \right] \\ \text{SUBJ } \langle \boxed{1} \text{ NP} \rangle \\ \text{COMPS } \left\langle \text{VP } \boxed{3} \left[\begin{array}{ll} \text{VFORM} & \textit{en} \\ \text{SUBJ} & \langle \boxed{1} \text{ NP} \rangle \end{array} \right] \right\rangle \end{array} \right]$	b.	$\left[\begin{array}{l} \text{HEAD } \boxed{3} \left[\begin{array}{ll} \text{POS} & \textit{verb} \\ \text{VFORM} & \textit{fin} \\ \text{AUX} & - \end{array} \right] \\ \text{SUBJ } \langle \boxed{1} \text{ NP} \rangle \\ \text{COMPS } \left\langle \text{VP } \left[\begin{array}{ll} \text{VFORM} & \textit{nonfin} \\ \text{SUBJ} & \langle \boxed{1} \text{ NP} \rangle \end{array} \right] \right\rangle \end{array} \right]$
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Exercise 3.4 Fill in the vFORM values in the following:



Exercise 3.5 Explain why in (30) *Sam* is understood as the subject of *going*:

(30) Sam must have been going.

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4 Explaining the 'NICE' (and other) properties

- We have assumed that auxiliary verbs have a (HEAD) feature `AUX`, which distinguishes them from main verbs.

Auxiliary verbs are `AUX +`, main verbs are `AUX –`

- There is a `VFORM` feature (also a head feature).
- Auxiliaries select the `VFORM` of their complement VP.

4.1 Modals Come First

- Why do modals come first?
 - Suppose the sentence rule is:
(31) $S \rightarrow NP VP [v_{FORM} \textit{fin}]$
Then finite verbs will always appear under the topmost VP (assuming no other rule introduces the value).
 - Suppose modals have only finite forms.
 - Don't be confused here, *morphologically* modal verbs are defective – they don't show the full range of inflected forms that normal finite verbs have, but:
 - ▶ some of them show tense alternation (*will/would*, *can/could*)
 - ▶ they cannot appear after *to* (which is typically where non-finite forms appear):
 - (32) They want to go. (**went/*goes*, etc)
 - (33) **They want to be able to leave.*
 - (34) **They want to can leave.* (similarly **could*, etc.)

4.2 Inversion

Auxiliaries can precede the subject in inverted constructions:

- (35) a. Will they go home?
 b. *Go/Went they home?
- (36) a. $S \rightarrow V[\text{HEAD} \mid \text{AUX } +] \text{ NP VP}$
 b. $S \rightarrow \text{Aux NP VP}$

4.3 Negation

Auxiliaries can be immediately followed by sentential negation:

- (37) a. They will not go home.
b. *They go/went not home.

A simple idea might be that sentential negation cares about what it modifies (e.g. it will only modify [Aux +] verbs.

A relatively recent analysis is that auxiliaries allow an extra complement — the adverb *not* (e.g. Kim and Sag, 2002). This is a plausible analysis, though it stretches the idea of complement somewhat.

4.4 Contraction

Auxiliaries have 'contracted' forms with *n't*:

- (38) a. They won't go home.
b. *They go/wentn't home.
c. *They go/wentn't home but to church.

- Here one idea might be that these are separate lexical items – perhaps produced from the non-negated forms by some lexical process: this process only works on aux + items.

4.5 Ellipsis

Complements of auxiliaries can be ellided.

- (39) a. They went home because they could.
b. *They went home because they wanted.
c. (cf They went home because they wanted to).

- How this is handled depends on how you think ellipsis works. The following might be one approach:

(40) $VP \rightarrow V[HEAD | AUX +, COMPS \langle VP \rangle]$

That is, a VP can consist of just an auxiliary verb (even though that verb usually requires a VP complement).

Another idea might be a lexical rule that takes an [aux +] entry and creates a new entry which is [comps < >].

4.6 Other properties

- Non-iterability may be a consequence of the semantics, e.g. *be...ing* creates a state from an event or an activity, and this can only occur once.

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- We have not dealt with passive, but the approach extends easily.
- What part of speech is *to*?
- There is dialect variation in the Auxiliary system
 - ▶ (e.g. AAVE, which allows copula drop); can this be accounted for naturally? (cf Sag et al. (2003)).
 - ▶ There are dialects which allow two modals:
(41) I thought you might could help me.
See <http://artsandsciences.sc.edu/multimo/>

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Pollard and Sag (1994, Ch3 and Ch7); Sag and Wasow (1999, Ch12, Ch13, Ch14); Sag et al. (2003, Ch12); Borsley (1996, Ch8); Börjars and Burridge (2010, Ch6); Kim and Sells (2008, Ch8); Falk (1984); Warner (2000). Warner (1993) is a book length study.

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