

Problem set #5 (24.902): Verbs and auxiliary verbs

Part I: Trees

Draw a tree for the sentence *The student of linguistics must have lost his marbles*. Assume that *must* occupies T. Consider modal verbs an instance of I, label other auxiliary verbs as [V +aux], and make sure they take VP complements. Make sure the subject originates as the specifier of VP and indicate with an arrow how it becomes the specifier of IP.

Part II: Templates vs. Subcategorization [as promised in class on Wednesday]

Assume that modal verbs and the auxiliary verbs *have* and *be* have the following subcategorization properties:

- A. The head of the sister of a Modal verb must be a V in the bare form.
- B. The head of the sister of *have* must be a V in the *-en* (past participle) form.
- C. The head of the sister of *be* must be a V in the *-ing* (present participle) form.

Holding constant the truth of A-B-C, consider now the following two facts, discussed in class last Wednesday:

Fact 1: A sentence does not have to contain a modal verb, an instance of auxiliary *have*, or an instance of auxiliary *be*. Each one of these elements is optional. For example:

- (1) a. Mary will have been writing the letter. [all three]
- b. Mary will be writing the letter. [no *have*]
- c. Mary will have written the letter. [no *be*]
- d. Mary has been writing the letter. [no Modal -- assume *has* moves to I, to be discussed in class on Monday]
- e. Mary will write the letter [no *have* and no *be*]
- etc.

Fact II: When modals, *have* and *be* do occur in a sentence, their order is fixed as follows:

- (2) Modal < *Have* < *Be* < Main verb

By which we mean:

- (3) a. A Modal must precede *have* (if present), *be* (if present) and the Main verb.
- b. *Have* must precede *be* (if present) and the Main verb.
- c. *Be* must precede the Main verb.

Also, none of these elements may occur more than once:

- (4) a. *Mary might could write the letter. [ok in some Southern US dialects]
- b. *Mary is having written the letter.
- etc.

Consider now two hypothesis:

Hypothesis 1: Fact II may be accounted for by elaborating our theory of the subcategorization properties of Modals, *have* and *be*.

Hypothesis 2: Fact II is independent of subcategorization, and tells us that the theory of grammar includes a template that looks like (2) and simply prohibits any tree in which auxiliary verbs come in the wrong order.

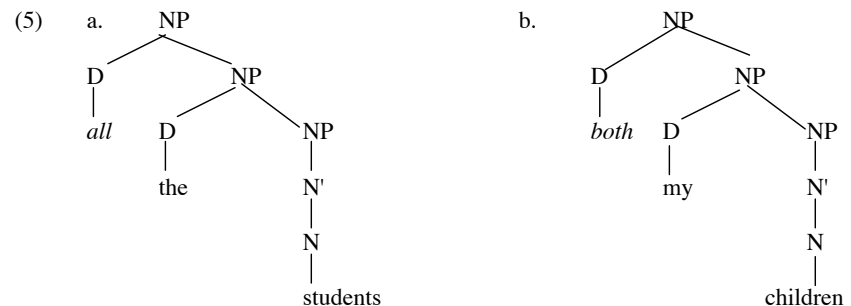
By the end of Monday's class, you will know that we will be assuming Hypothesis 2, so there's no secret there. But I will do my best to avoid telling you *why* Hypothesis 2 wins over Hypothesis 1. Instead, you tell me.

Hold constant the idea that subcategorization looks only at the head of a word's sister. Feel free to consider a variety of hypotheses about sentences in which an instance of *have* or *be* is missing -- including the hypothesis that when you don't hear *have* or *be*, there is a phonologically null (unpronounced) *have* or *be* sitting in the tree, and the hypothesis that this is not true.

Write your answer clearly, giving as much detail and supporting evidence as you need to make your point. I suspect that a good answer to this question will be about 1/4-1/2 page in length, plus whatever examples you want to add.

Part III: "Quantifier Float"

For the sake of this problem, assume that NPs like *all the students* have the structure seen in (5a). Likewise, assume that NPs like *both my children* have the structure in (5b). These structures are not generated by the NP rules we developed in class, and in fact we might want to reject the rules that would allow such structures on the basis of the unacceptability of **the the the students* and similar examples. Assume the structures are correct nonetheless, for the sake of this problem. (So sue me.)



Consider now the following data:

- (6) a. I think that all the students will have been reading a book.
b. *I think that the all students will have been reading a book.
d. I think that the students will all have been reading a book.
e. I think that the students will have all been reading a book.
f. I think that the students will have been all reading a book.
g. *I think that the students will have been reading all a book.
h. *I think that the students will have been reading an all book.
- (7) a. Bill arranged for both the children to have been visiting Disneyland.
b. *Bill arranged for the both children to have been visiting Disneyland.
d. Bill arranged for the children to both have been visiting Disneyland.
e. Bill arranged for the children to have both been visiting Disneyland.
f. Bill arranged for the children to have been both visiting Disneyland.
g. *Bill arranged for the children to have been visiting both Disneyland.

The phenomenon seen in the acceptable sentences of (6)-(7) is traditionally called "Q-float" (for "Quantifier Float" -- *all* and *both* are "quantifiers"). The name comes from an old analysis of the phenomenon, which we can call (surprise!) *Hypothesis I*:

Hypothesis I: An optional movement rule moves *all* and *both* rightward from an initial position like that illustrated in (5a-b).

Question 1: In light of (1) our discussion of Japanese numeral quantifiers, (2) our hypothesis that auxiliary verbs take VP complements, and (3) the hypothesis that VPs have a specifier position that may be occupied by an NP, formulate an alternative hypothesis ("Hypothesis II") about the phenomenon of Q-float. (Heavy hints: It should not involve quantifiers moving rightward, but it *should* involve movement of something somewhere. It might involve something occasionally moving more than once. The movement that you posit will have a well-defined "landing site" and should not be called scrambling, but you should be inspired by... Enough hints.)

Make sure you formulate a clear, well-defined hypothesis!

Question 2: Can you argue that Hypothesis II is better than Hypothesis I in light of the data in (6)-(7)? (I hope so.) If so, what argument or arguments favor Hypothesis II? In particular, does Hypothesis II do a better job distinguishing good from bad positions for "floated" *all* and *both*. Do any arguments favor Hypothesis I? (Possibly.) If so, what are they? Draw trees (or relevant tree fragments), with arrows etc. indicating movement, as necessary. Adding new facts of your own to the data set is not necessary, but is always welcome.

Question 3: It is not accidental or a typo (for once!) that I left out example "c" from (6)-(7). What should the missing examples be, given the overall layout of my examples? How might you analyze them? Do they pose any problem for one or another of the two hypotheses that you are considering, on the assumption that modals are instances of I?

Extra Credit: Suppose someone were to call "floated" *all* or *both* an "adverb" that modifies a VP, rather than a determiner inside an NP. Find a language in which words like *all* agree in gender (or other things) with an NP, and see if any data from this language bears on this possibility. A Romance language will work, as will many others.