

The Syntax of Questions in English

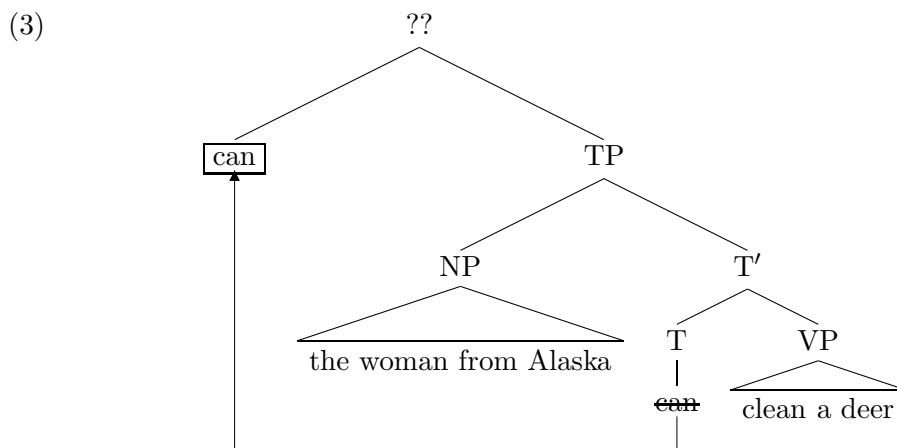
November 30, 2008

The phrase structure rules that we built up before the second midterm allow us to generate and analyze a large number of English sentences, but there are many gaps remaining in our grammar. One big gap is that our phrase structure rules only generate *declarative* sentences, but do not generate *interrogative* sentences (that is, questions). Since interrogative sentences are also a normal part of English, we need to fill this gap somehow.

One way of doing so might be simply to make a new set of phrase structure rules that will allow us to generate interrogatives in addition to declaratives. But when we look closely at interrogatives and corresponding declaratives, we notice a pattern. For example, consider the following *yes-no questions* and the corresponding declarative sentences:

- (1) a. John **will** eat the sushi.
b. **Will** John eat the sushi?
- (2) a. The woman from Alaska **can** clean a moose.
b. **Can** the woman from Alaska clean a moose?

What we see in these examples is that the modal verb in the declarative sentence seems to *move* to the beginning of the sentence in the interrogative. This is our first piece of evidence that our grammar should consist not just of phrase structure rules, but also of some mechanism that lets us *move* certain parts of the sentence from one place to another in certain circumstances. We can add this movement operation to our basic phrase structure tree for declarative sentences to produce the corresponding yes-no interrogative as in the following tree:



As this tree shows, we are assuming that the modal verb *can* starts off underneath T, just as it does in the declarative version of the sentence. But if the sentence is interrogative, the modal verb leaves T and moves to another position. The question is, where?

To answer this question, we first need to expand our phrase structure rules a bit to handle a class of verbs that we have not yet dealt with. Some examples are given below:

- (4)
- a. The professor knows **that** *the students cheated*.
 - b. The students wonder **whether** *the professor saw them*.
 - c. The dean will decide **if** *the students can stay*.

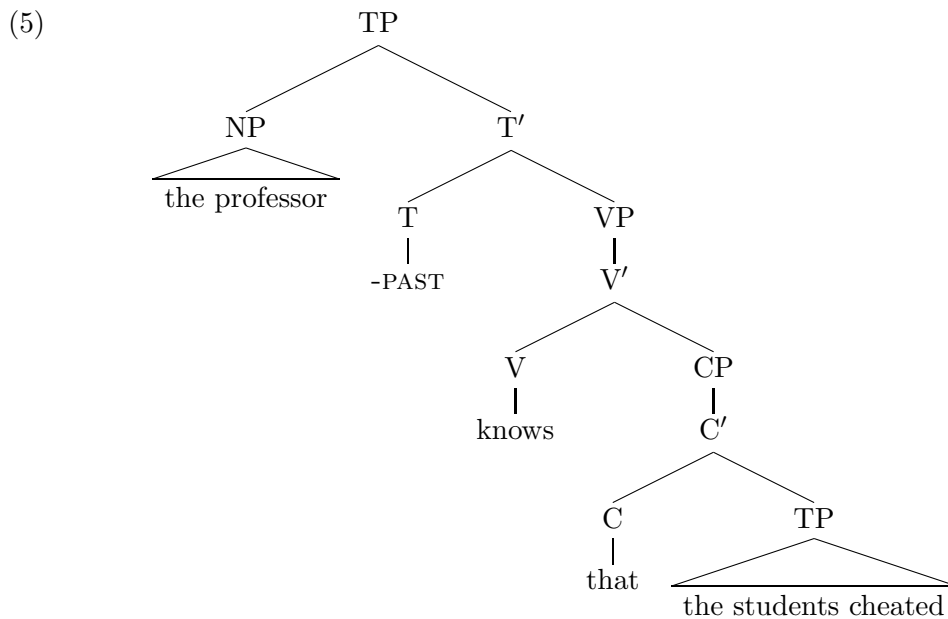
The words in bold (*that*, *whether*, *if*) belong to a class of words called **complementizers**. The words in italics following the complementizer in each of the above sentences form TPs. I argued in class that the complementizer and the TP to its right form a unit. I argued that the complementizer is the head of this unit, and thus that the entire unit is a CP. The following phrase structure rules will let us build CPs.

$$\begin{aligned} \text{CP} &\longrightarrow \text{C}' \\ \text{C}' &\longrightarrow \text{C TP} \end{aligned}$$

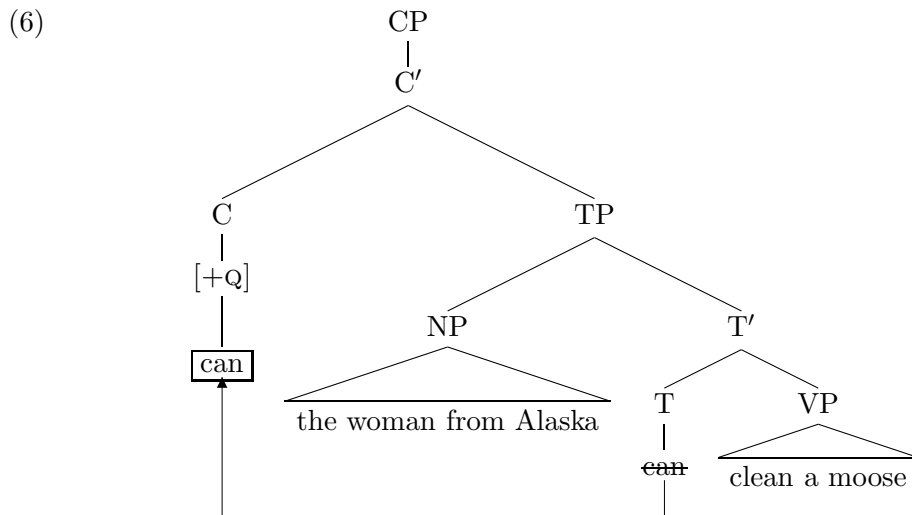
Now that we have analyzed the complementizer and the TP to its right as a CP, we can see that each of the verbs in (4) must have a CP complement. This is handled by adding the following phrase structure rule to our grammar:

$$\text{V}' \longrightarrow \text{V CP}$$

We can now use these rules to analyze the sentences in (4), as shown in the following tree:



So now we know there is another layer above TP, namely CP. We argued for the existence of CP in embedded sentences, but what about unembedded sentences? Well, if we look back at the structure we gave to yes-no interrogative questions in (3), we see that we need a place for the modal to move to. The CP layer provides a place. In particular, if we imagine that a matrix sentence is actually a CP, rather than just a TP, then the modal verb *can* can move from T to C. The CP layer provides a ‘landing site’ for the modal verb that is moved. This is illustrated in the following tree:

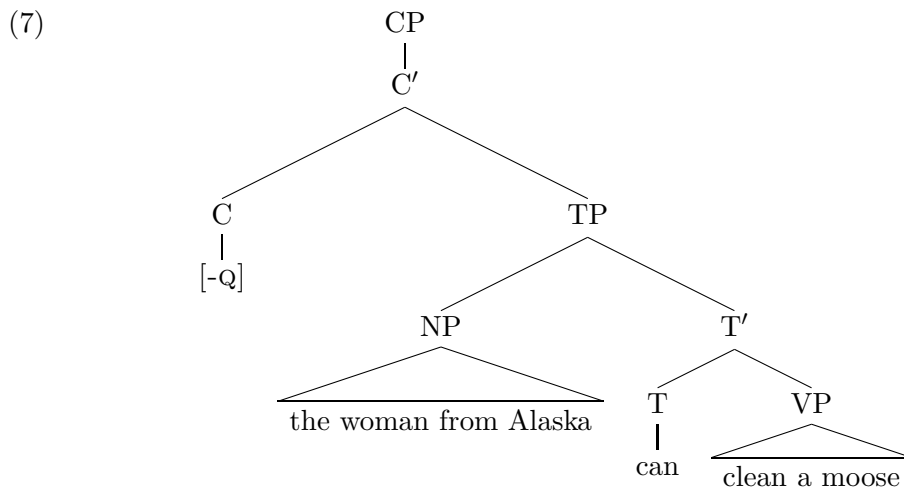


The tree in (6) illustrates how the modal verb *can* starts off in T, and subsequently

moves to C.

Notice that the C node in (6) has a [+Q] below it. What is this all about? Recall how we argued that when a sentence does not have a modal verb like *can* or *will*, it still has an abstract element in T that is responsible for telling us the tense of the sentence as a whole. We argued that T could have one of two abstract elements inside of it, either a [+PAST] or [-PAST]. This idea is now extended to C. Just like T tells us the tense of the sentence, C tells us what *type* of sentence it is. In the case at hand, C is telling us that the whole sentence is a question. This is indicated by the abstract feature [+Q] in C. What we can now see is that it is actually the [+Q] feature in C that is responsible for the modal *can* moving out of T and into C. You can imagine the [+Q] as a kind of magnet that attracts whatever is in T up into C. In this case, it attracts *can* out of T and into C.

Since we have argued that interrogative sentences are actually CPs, rather than TPs, it makes sense to assume that declarative sentences are actually CPs as well. The difference between a declarative sentence and an interrogative sentence is simply whether or not C contains a [+Q] or a [-Q]. If it contains a [-Q], then the entire sentence is declarative. Unlike the [+Q] feature, the [-Q] feature does not attract whatever is in T up to C. This is why the modal does not move to the left edge in a declarative sentence. The structure for a declarative CP is given below:



The above arguments mean that we should no longer analyze simple declarative sentences as simply TPs, but as CPs with an abstract [-Q] in C.

We can now see that our grammar for the syntax of English has two components: phrase structure rules and **transformations**. The operation whereby the modal in T is moved to C is called a movement transformation, because it *transforms* the sentence by *moving* the thing in T up into C. Our sentence-building procedure is now a bit more complicated: We first build a tree structure using our phrase structure rules. Then, *if necessary*, we apply movement transformations. We have

now seen that when C contains a [+Q] feature, we have to apply a transformation in which the lexical item in T is moved to C.

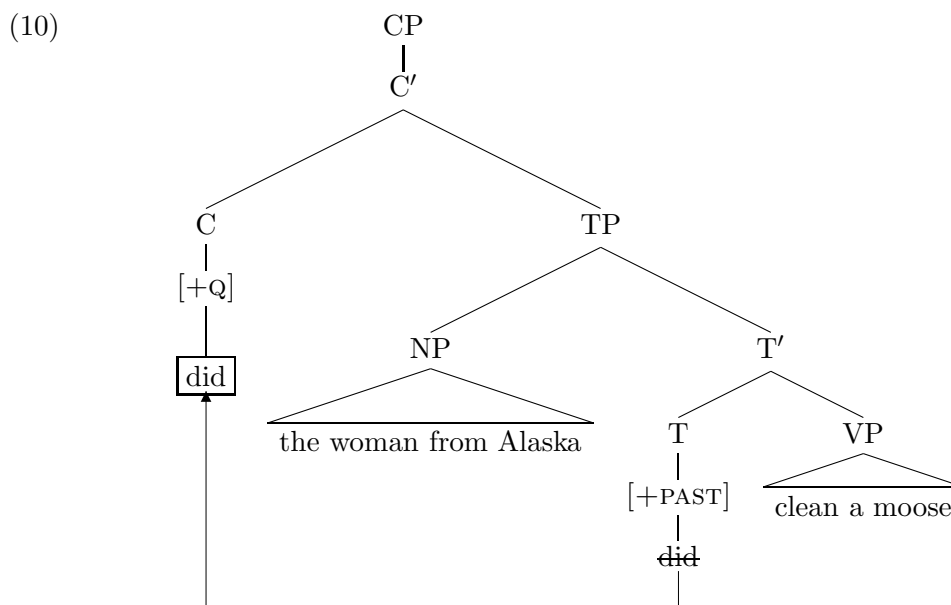
So far so good. But what about cases where there is not a lexical item in T? In other words, what if T is filled with the abstract feature [+PAST] or [-PAST]? Consider the following examples:

- (8) a. The woman from Alaska cleaned a moose.
 b. **Did** the woman from Alaska clean a moose?
- (9) a. John eats sushi.
 b. **Does** John eat sushi?

We see that, when we make an interrogative from a sentence that has no modal verb in T, the verb *do* is inserted instead, and that it is the verb *do* that moves to C. Notice also that the tense is expressed on *do*, rather than on the main verb of the sentence.

This phenomenon is called **do-support**. We can understand it as follows: In an interrogative sentence, there is a [+Q] feature in C. This feature attracts the contents of T. But if T contains only an abstract [+PAST] or [-PAST] feature, then we first have to *insert* the ‘dummy’ verb *do* into T. Once we do this, the dummy verb *do* receives the tense that is in T. Finally, this dummy verb moves into C.

This step-by-step process is illustrated in the tree below:



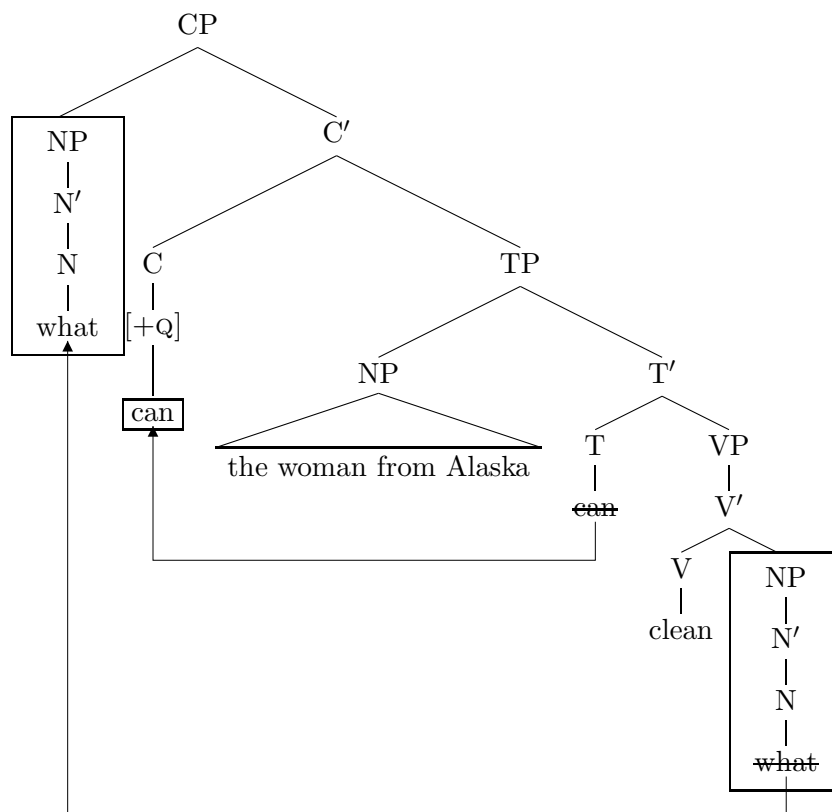
The final step in our goal of understanding the syntax of interrogative sentences is dealing with *wh-questions*. These are questions that include a so-called *wh-word*, like *what*, *where*, and so on. It is actually rather straightforward to extend our analysis to *wh-questions*. First, take a look at the following examples.

- (11) a. John **will** eat *the sushi*.
b. **Will** John eat *the sushi*?
c. *What will* John eat ?
- (12) a. The woman from Alaska **can** clean *a moose*.
b. **Can** the woman from Alaska clean *a moose*?
c. *What can* the woman from Alaska clean?

What we see in these examples is that, just like yes-no questions, the wh-questions involve movement of the modal in T to a position near the beginning of the sentence. We have already argued that this position is C. We also see that one of the noun phrases (*the sushi, a moose*) is missing in the wh-question, and instead a wh-word is found sitting at the very beginning of the sentence.

We can analyze this situation using a movement transformation as well. We can assume that the wh-word *what* is a noun in these sentences. We also know that this wh-word is somehow substituting for the noun phrases *the sushi* and *a moose*, which are complements of the verb. So, let's assume that the noun phrase consisting of *what* also starts out as the complement of the verb. In order to end up at the beginning of the sentence, it has to move. Move where? Notice that we don't yet have a specifier of CP. This means that we have an empty 'slot' for the wh-phrase to move into. Putting all this together gives us the analysis of wh-questions illustrated by the following tree.

(13)



Exercise: See if you can provide an analysis of the following wh-question. Hint: look at the section on do-support.

(14) What did the woman from Alaska clean?