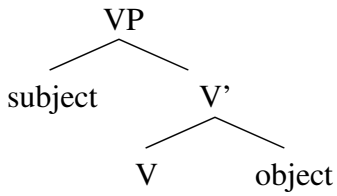
MSc Introduction to Syntax

Lecture 4 Phrase structure: Verbal projections

1. *The X'-schema for phrases*
We have seen that a transitive verb combines with two syntactic arguments, a subject that usually realizes an Agent role and an object that usually realizes a Theme role. Moreover, we have seen that (at least in English) there is a particular order in which the verb combines with these two arguments: it first combines with the object. The subject then combines with the verb-object combination as a whole. The verb forms a unit with the object that excludes the subject (recall exercise 1 of lecture 3). We can therefore represent a phrase that is headed by a transitive verb as follows:

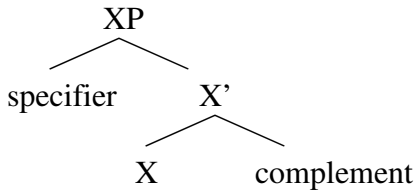
(1)



The properties of a phrase depend on what its head is: a phrase headed by a noun (an NP) shows different syntactic behaviour compared to a word group headed by a verb (a VP). To express this, syntacticians say that a verb or noun (or adjective or preposition) *projects* properties such as its lexical category onto the phrase it heads. Thus, in (1) V projects its properties to the constituent labelled V' (pronounced "V bar") and then further to the VP. The sequence of nodes V-V'-VP is called the *projection line* of the verb (SK also call it the *spine* of the tree), and V' and VP are said to be *projections* of V. Within the VP projection, we see that there are two positions which can contain an argument of the verb. The position that is dominated by V' and sister to the head V (where the object is in (1)) is called the *complement* position. The position that is dominated by VP and sister to V' (where the subject is in (1)) is called the *specifier* position.

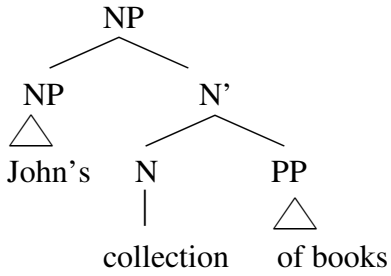
We will see below that phrases that have a head of a different category than V have a basic internal structure that is similar to that of VPs. It has been hypothesized, therefore, that all phrases have a basic structure as in (2), where X is a variable that ranges over all lexical categories (V, N, A, P, ...). This is the so-called *X'-schema* for phrase structure (pronounced "X bar schema" for reasons you can find in footnote 1 of SK's chapter 4).

(2)



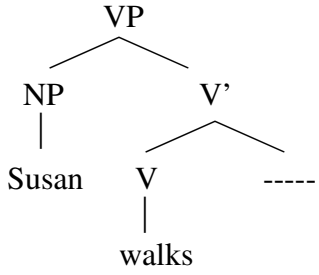
A head X projects to two higher levels: X' ("X bar") and X'' ("X double bar"), the latter corresponding to XP (the complete 'X Phrase'). (3) gives an idea of how the structure of an NP fits into this scheme (but more on this in the next lecture).

(3)



However, it is clear that not all possible phrases fit neatly into the structure scheme in (2). Sometimes (2) appears to provide too much structure. For example, in the case of an intransitive verb, there is no object to fill up the complement position in the VP. Just for convenience, we will assume here that in such cases the complement position is still there, but is just left empty, as in (4) (although it is also perfectly reasonable to assume the phrase has a different structure, without any complement position, in that case). The same holds, mutatis mutandis, for those phrases that do not contain anything to fill their specifier position.

(4)



On the other hand, (2) sometimes seems to provide not enough structure. For example, where can we put the second object of a ditransitive verb? And what do we do with the limitless number of modifiers we can add to a VP (see lecture 3)? On the former question we will remain silent in this course, but the latter issue is discussed below.

2. *What does a sentence look like*

Now that we have seen what a VP looks like, let us consider what the structure of an entire sentence may be. At first sight, it seems tempting to equate the sentence with the VP. After all, (1) and (4) suffice to provide a proper structure for simple sentences like *Jane saw Mary*, *The man read a book*, or *Susan walks*. But we run into problems if we consider more complex sentences, in particular, sentences containing not just the main verb, but also a modal or auxiliary verb:

(5) a. Donald can never remember Pauline's name.
b. The doctor will see the patient tomorrow.
c. The weather may always turn bad.

One way of dealing with these is to assume that they instantiate another case of recursion. Modals and auxiliaries are verbal in nature (they can carry tense inflection like other verbs), so perhaps the sentences in (5) involve a recursive VP-structure: the modal might project a VP and take another VP, headed by the main verb, as its complement. In that case, sentences could indeed be taken to be VPs.

Another approach to this problem is possible as well, however. This is based on the observation that, at least in modern English, modals also have some properties that make them different from ordinary verbs. For a start, modals can only occur as a finite form, that is, a form that expresses tense. They do not occur as non-finite verbal forms, such as infinitives, participles, or gerunds:

(6) a. *To can build a house is a great asset.
b. *The sun seems to will shine.
c. *Paul has never could do such a thing.
d. *John's maying to go to America is surprising.

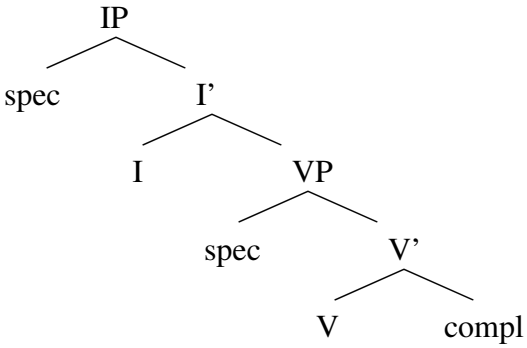
Second, modals can stand in front of certain adverbials in the clause, such as the sentential negator, whereas main verbs have to follow these same adverbials. This is shown in (7). (In case there is no modal or auxiliary verb in a sentence with negation, the dummy verb *do* has to be put in front of this adverbial, as in (7d)).

(7) a. Iris will paint the door.
b. Iris will not paint the door.
c. *Iris paints not the door.
d. Iris does not paint the door.
e. Arthur could quickly open the tin.
f. *Arthur opened quickly the tin.
g. Arthur quickly opened the tin

Both observations together have been taken to imply that modals are not ordinary verbs that head a VP, since an ordinary VP can be headed by any verb, non-finite ones like participles, infinitives or gerunds included. Rather, modals are regarded as a special category – special in the sense that, morphologically speaking, this category is associated with finite inflection and, syntactically speaking, it is associated with a particular position in the sentence, a position in front of sentential negation and some other adverbs.

Let us assume, therefore, that there is a distinct position in the structure of a sentence, in front of adverbs that modify the VP, which expresses finiteness (tense and agreement properties). Call it the *I* position, where *I* is a shorthand for tense/agreement *Inflection*. Modals then are of the category I, rather than V. In accordance with the X'-schema, which says that heads project phrase structures like (2), I projects an I' and IP. A sentence will then have a structure as in (8), where VP functions as the complement of I.

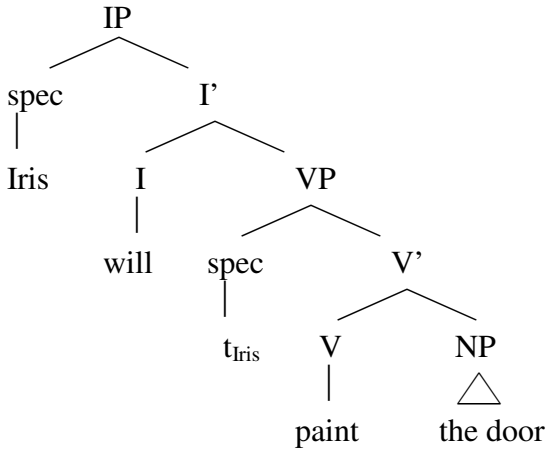
(8)



Consider now the sentences in (7) again. If these do indeed have a structure as in (8), it must be the case that the subject is in the specifier-of-IP position, rather than the specifier-of-VP position. After all, the subject appears in front of the modal in I. It is perhaps not so unexpected that the subject appears in the projection of I, rather than that of V, given that I is the position associated with finite inflection. After all, there is a 'special relationship' between the subject and finite inflection: the subject *agrees* with the finite verb (it determines which person/number ending the finite verb takes). At the same time, however, the subject also has a close relationship with the main verb: it functions as the Agent argument of the verb, which is why we put it inside the main verb's VP projection in (1) and (4). The subject thus seems to fulfil two distinct syntactic functions at the same time, and we would want to place it in two different syntactic positions at once therefore. To solve this problem, it is sometimes hypothesized that syntax contains an operation that can *displace* or *move* constituents from one position in the sentence to another. In the case at hand, the subject moves from the specifier position in the VP ('spec-VP') to the specifier position in the IP ('spec-IP'): it starts out in spec-VP (the position for the Agent argument of the main verb) but then it is moved to spec-IP (the position for the NP that controls the finite agreement inflection). In order to capture the fact that the subject still functions as the Agent of V after it has moved to spec-IP, it is further assumed that all instances of movement/displacement leave a *trace*. A trace is a silent element that shares all its properties (apart from not being pronounced) with the constituent that moved out of the position containing the trace. We will adopt this particular convention for representing 'displacements' here, and represent traces by the symbol *t* (to which we can add a subscript or index to indicate which displaced constituent it is the trace of). (Note that there are many alternative ways of dealing with such 'displacements', other than representing them by 'movement' that leaves a 'trace', including ways according to which there is never any actual displacement of a constituent).

Thus, the full structure of a sentence like (7a) is as in (9).

(9)



The constituent *Iris* is the grammatical subject of the sentence; it appears in front of modals and determines the form of the finite inflection. The trace *Iris* has left behind after moving out of the spec-VP position (indicated by t_{Iris} in (9)), which shares its properties with *Iris*, functions as the Agent argument of the verb *paint*.

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[bits of text between lines of asterisks, such as this one, will not be asked about at the exam]
Does the above mean that finite main verbs (in sentences without a modal or auxiliary) appear in I, rather than V? The answer seems to be that in some languages they do, and in some, including English, they don't. A sentence like *Mary will often kiss John* shows that an adverb like *often* can appear in between the I position and the V position. Now, in English, finite main verbs cannot occur before an adverb like this, but have to stay in a position after such an adverb (see also (7f-g) above): **Mary kisses often John* versus *Mary often kisses John*. But in French, for example, it is the other way around: *Marie embrasse souvent Jean* vs. **Marie souvent embrasse Jean*. From this it can be inferred that in English the main verb stays in the V position even when it is the finite verb in the sentence, whereas in French a finite main verb moves from the V position to the I position. The question how a main verb in V can come to be associated with finiteness features that are supposed to reside in I, without moving to that position, is a modern classic of English syntax, on which we will have to remain silent here.
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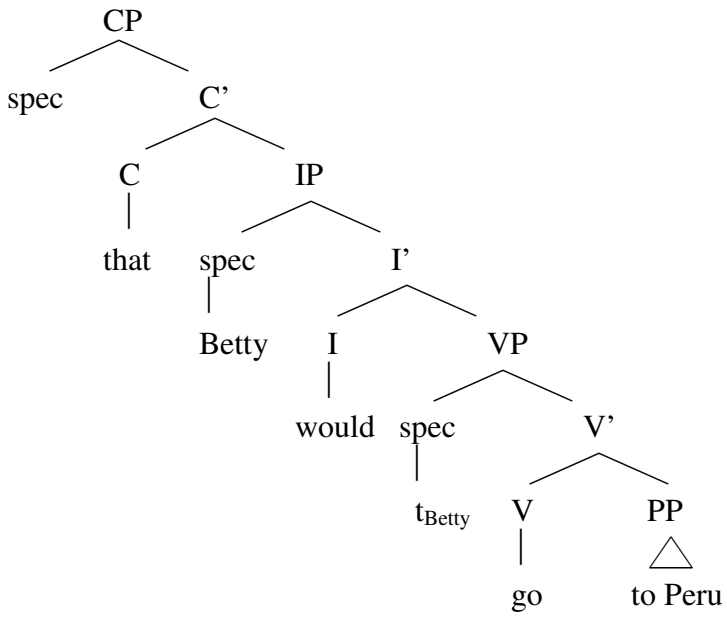
For main clauses, the structure in (8) often suffices. But when we consider embedded sentences, it turns out that (8) does not provide enough structure yet. This is because embedded sentences can contain an extra head-like element, besides the main verb and any modals/auxiliaries, that has the function of linking such sentences to the main clause. These elements express what kind of relation the embedded clause has to the main clause, for example, whether we are dealing with an indirect question, a condition for what is expressed by the main clause, a reason, etc. Such elements are called *complementizers*. Examples are *that*, *if* and *since* in the sentences in (10).

(10) a. Thomas knew [that Betty would never go to Peru]
b. Corinne asked [if she could stay in Argentina a bit longer]
c. Stella did not know what to make of the film [since she had not read the book]

In English, the complementizer always appears in front of all the verbal heads in the embedded sentence. (This is different in so-called 'head-final' languages, such as Japanese for example, where the complementizer appears at the very end of the embedded sentence). Accordingly, to accommodate complementizers in the sentence structure, we need another head position, call it *C*, which can contain a complementizer. This head projects a Complementizer Phrase (CP) in accordance with the X'-schema in (2), and takes the whole structure in (8) as its complement:

(11)



As you see, (11) makes available yet another specifier position as well, the specifier-of-CP position. There are indeed constituents that can appear in this position, as we will see in a later lecture.

3. *Adjunction*

For one particular type of syntactic element, the X-bar schema in (2) clearly does not provide enough structure, namely for modifiers. Recall from lecture 3 that there is no principled limit to the number of modifiers that can be added to a sentence. This means that any fixed structural scheme cannot accommodate modifiers. A more flexible means to integrate modifiers into the structure is required.

Moreover, modifiers differ from arguments in the following respect: whenever a modifier is added to some category, the result is a category of precisely the same type. If we add an object argument to a verb, the result is not another verb. This is apparent from the *do so* replacement test; *do so* can replace a combination of verb and object (that is, a V') but not a single verb without its object:

(12) a. John ate a banana, and Geraldine did so, too
b. *John ate a banana, while Geraldine did so an apple

Similarly, when we add a subject to a V', the result is something that is not a V', as shown by the fact that it cannot be replaced by *do so* again:

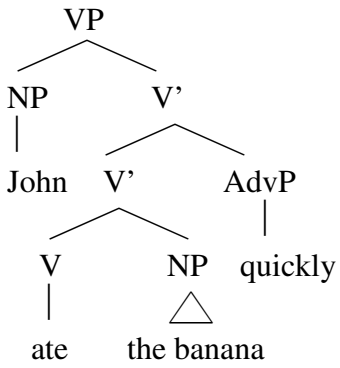
(13) John ate the apple. What about the pear? *Did so, too (intended meaning 'John ate the pear, too')

But when one or more modifiers are added to a V' the result is invariably something that can still be replaced by *do so*, so apparently it is just another V':

(14) a. John *ate a banana quickly*, and Geraldine *did so*, too
b. Danielle *read the paper at home with a cup of coffee while listening to a cd* and Arthur *did so*, too.

To accommodate these facts about modifiers, it is assumed that in the X-bar schema in (2) a bar level can be iterated when there is a modifier of the constituent at that level. Thus, for *John ate the banana quickly* we get the following structure:

(15)



This way of integrating modifiers into the structure is called *adjunction*. So, when a constituent *adjoins* to, for instance, V', this means an extra V'-node is created immediately above the original one, and the modifier is attached to this newly created node.

Exercises
SK exercise 4.1, 4.2, 4.4 (only (1a) to (1d), and you don't have to use the grammar tool SK refer to, just give the tree structures for these sentences), 4.5