MSc Introduction to Syntax

Lecture 5 Phrase structure: nonverbal projections

1. *Noun phrases*
In the previous lecture we discussed the structure of sentences in terms of the X'-schema for phrase structure. It was noted that the X'-schema is motivated by the observation that the structures of phrases of different lexical categories show certain parallels. In this lecture we will see what those parallels are, as we are going to discuss the structure of nonverbal phrases. We will note certain differences between projections of verbal heads (sentences) and projections of nonverbal heads as well. Let us start with noun phrases.

There are some clear similarities between the structure of a sentence with a verb like *distribute*, and the structure of the NP that can be built from a *nominalization* of this verb, the noun *distribution*:

(1) a. The company distributed the record
b. The company's distribution of the record

The arguments of the verb *distribute* are there in the nominalization as well. Moreover, they are expressed in a parallel way: the Agent argument is expressed in a subject-like position within the NP and the Theme argument is expressed in an object-like position within the NP. It therefore makes sense to claim that NPs contain a complement position and a specifier position just like VPs, in accordance with the X'-schema. We can then make the attractive assumption that the correspondence between semantics and syntactic structure works exactly the same way in NPs as it works in VPs: the Agent corresponds to the constituent in the specifier position and the Theme corresponds to the constituent in the complement position.

The parallel can even be taken a step further. We have seen that there are grammatical processes that can manipulate the correspondences between semantic arguments and syntactic positions. Recall that passivization was one such rule: it degrades the Agent argument to an optional *by*-phrase and promotes the Theme argument to subject. It appears that exactly the same process can apply in NPs. The passive of (1b), for example, is (2):

(2) The record's distribution by the company

Finally, modifiers can be added to NPs in a way that parallels the addition of modifiers to a VP or IP:

(3) a. The Normans invaded England *in 1066*
a'. The Normans' invasion of England *in 1066*
b. The company exploited child workers *to make more money*
b'. The company's exploitation of child workers *to make more money*

At the same time, we can note some clear differences between verbal projections on the one hand and nominal projections on the other. For a start, the form in which the

arguments of the head are expressed is different. In VPs we most often see ordinary NPs functioning as argument. In NPs, we see that the subject argument must have a special *possessive* form, expressed in English by the suffix *–s*:

(4) a. *Mary collection of mushrooms
b. Mary's collection of mushrooms

The object argument of a noun is not even expressed as an NP. Rather, it must be a PP, usually with the preposition *of* as head. (The asterisk placed outside the brackets around *of* in (5) is the conventional notation used to indicate that a structure is ungrammatical if the element between brackets is not included in it).

(5) Mary's collection *(of) mushrooms.

An even more drastic difference between VPs/IPs and NPs concerns the subject requirement. Recall that this condition stated that all sentences must have a subject. There is no parallel requirement for NPs, however. For example, it is no problem to leave out the Agent argument from a nominalization (also if we do not put the Theme argument in the specifier position instead, as in the nominal passive in (2) above):

(6) a. The distribution of the record
b. The invasion of England in 1066

As a consequence, there will never be a 'dummy' subject, i.e. a subject that is not motivated by semantics, in an NP. Recall that a VP can have a so-called expletive subject that is only there to fill the subject position. Since the subject requirement does not hold for NPs, such expletives will not occur here:

(7) a, There appeared three zebras around the corner.
a'. *There's apparition of three zebras surprised us.
b. There exists no proof of this conjecture.
b' *There's existence of a proof is disputed.

A similar observation can be made for objects. Although with a lot of transitive verbs it is possible not to express the object argument syntactically (see lecture 3), there are some that do not allow this and obligatorily take an object:

(8) a. They interrogated *(the suspect).
b. They destroyed *(the city).

But in the corresponding nominalizations, expression of the object argument is optional:

(9) a. The interrogation (of the suspect) took all day.
b. The destruction (of the city) was awful.

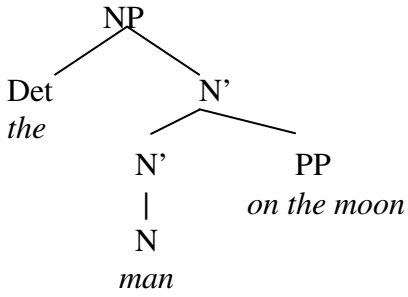
2. *The DP hypothesis*

In case there is no possessive NP in the specifier position, we usually see another element cropping up in English noun phrases: a determiner, such as *the, a, that* or *those*:

(10) a. [$_{NP}$ *(the) man on the moon] waved to us all.
b. [$_{NP}$*(an) elephant] has a long memory.

The question is which position in the structure a determiner occupies. Given that it precedes the noun, we might want to say it is in the specifier position of the NP, just like possessive NPs are:

(11)

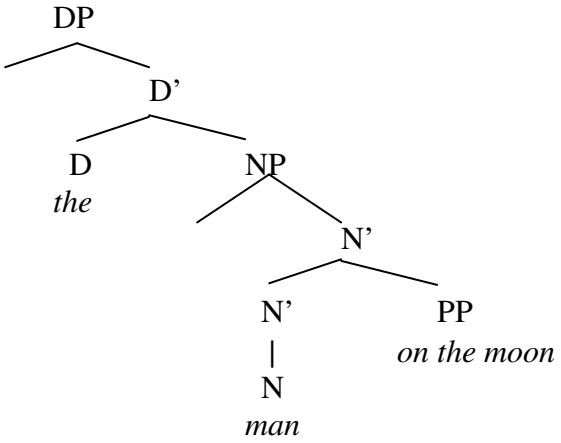


The assumption that determiners are specifiers is not unproblematic, however. The specifier position is a position that contains complete phrases – but determiners are just single words. It seems impossible to have a determiner that has the shape of a complete phrase:

(12) a. *[this the on the moon] man
b. *[many those with brown hair] men in the street

Taken together, (10) and (12) show that a determiner is a single lexical item, which cannot be left out of the phrase it appears in. That makes it sound as if a determiner is actually the *head* of the phrase it appears in. But if so, there is a paradox: both the noun and the determiner seem to be the head of the NP, whereas a basic tenet of the X' schema is that a phrase has a unique head which determines the syntactic properties of that phrase. This paradox disappears if we assume that the determiner heads a phrase of its own, a *Determiner Phrase* or DP, which takes the projection of the noun, the NP, as its complement:

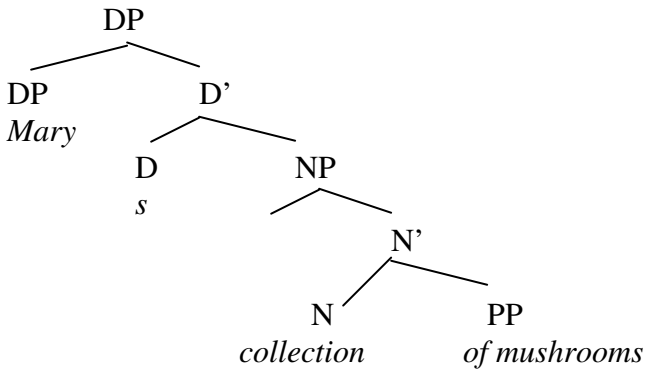
(13)



Note that, if the DP hypothesis is correct, the parallel between sentence structure and the structure of nominal phrases extends even further. In lecture 4 it was argued that a full sentence is not just the projection of the main verb, but rather the projection of a grammatical element (a so-called *functional projection*, that is, the projection of a functional head rather than a lexical head, functional heads being such grammatical elements like modals or complementizers). The projection of the grammatical element takes the projection of the element with lexical content, the main verb, as its complement. According to (13), the same holds for nominal phrases: these too are the projection of a grammatical rather than a lexical element, namely the determiner, which takes the projection of the lexical element, the noun, as its complement.

At this point, we should go back to the phrases that contained a possessive NP rather than a determiner. We analyzed these as NPs with the possessive occupying the specifier position. Does this mean that a nominal phrase is an NP when it contains a possessor, but a DP when its contains a determiner? That is not a very attractive hypothesis: as far as their syntactic distribution goes, nominal phrases containing a possessor behave exactly like nominal phrases containing a determiner. If there is no syntactic difference between the two, we would not want to say they belong to different categories. This implies that nominal phrases containing a possessive NP are DPs, too. But if they are determiner phrases, then what is the determiner in their case? A possible answer to this question is that the possessive affix, expressed by *–s* in English, functions as determiner:

(14)



The hypothesis that the possessive element is a D is attractive, since it accounts for the fact that this element is in *complementary distribution* with (other) determiners: you cannot have both a possessor and a determiner, as shown by (15). According to (14), this is because the possessive element occupies the same position in the structure as the one in which determiners go.

(15) a. *John's the collection of mushrooms / *The John's collection
b. *Mary's a hat / *A Mary's hat

Note that the element in the specifier-of-DP position in (14) can be a full phrase, as expected for specifiers:

(16) a. [The king of England]'s head
b. [My neighbour]'s new car

NB: SK assume that when the phrase in the spec-DP position is the Agent argument of the noun, as in *the company's distribution of the record*, it has moved to spec-DP from the spec-NP position, in analogy with subject raising from spec-VP to spec-IP in sentences.

NB2: Note that some determiners can be *silent* in English. Mass nouns and plural indefinites are not accompanied by an overt determiner (*wine is red, elephants have a long memory*). Nevertheless, the syntactic behaviour of phrases built around such nouns is not different from that of DPs with an overt determiner. SK therefore assume that such phrases are DPs as well, containing a null determiner.

3. *Adjective phrases*

We have now seen the parallels between verbal phrases and nominal phrases that have led to the postulation of the general X' schema for phrase structure. The next step is to consider whether phrases built from the two remaining main lexical categories, adjectives and prepositions, fit into this general scheme as well.

Looking at APs, let us first try to answer the question whether an A can have a complement. That does seem to be the case; at least some adjectives are optionally transitive:

(17) a. They are proud (of their daughter)
b. They are mad (about dogs)

And *fond* is even obligatorily transitive:

(18) They are fond *(of their daughter)

It can be shown that the *of*- and *about*-phrases in (17) are complements, rather than modifiers, on the basis of the constituent replacement test. (Note that the *of*-phrase in (18) must be regarded as a complement anyway if it is true that modifiers are never obligatory, see lecture 3). The A' constituent inside an AP can be replaced by the word *so* (see lecture 2). An adjective and its complement form an A' constituent that excludes modifiers. Hence, it should be possible to replace the constituent containing an adjective and its complement by *so*, while leaving a modifier unaffected by this

replacement. It should not be possible to replace the adjective while leaving the complement unaffected by the replacement (if indeed *so* can only replace an A' constituent, not an A). The sentences in (19)-(21) show, then, that *of their daughter* and *about dogs* are complements in (17), whereas, for example, *in 1980* in (21) is a modifier.

(19) a. She was *proud of her daughter* and he was *so*, too.
b. *She was *proud* of her daughter and he was *so* of his son.

(20) a. They are *mad about dogs* and we are *so*, too.
b. *They are *mad* about dogs, and we are *so* about cats.

(21) a. He was *proud in 1980*, and I was *so*, too.
b. He was *proud* in 1980, and I was *so* in 1990.

So, adjectives can have complements. Can they have specifiers as well? We can observe that, within an AP, the adjective can indeed be preceded by specific elements, especially by degree words such as *very*, *rather*, *extremely* or *too*:

(22) a. That shirt is [$_{AP}$ too red to go in the washing machine with the white shirt]
b. In winter the city is [$_{AP}$ very cold]
c. Sam is [$_{AP}$ rather fond of dogs]

The problem with treating these as specifiers is the same as the problem with treating determiners as specifiers of NPs, discussed above. Most of these degree expressions are not complete phrases themselves, but rather single words. Therefore, parallel to the DP hypothesis, it has been assumed that these degree words are heads of a phrase in their own right. In that case, APs are really DegPs (Degree Phrases) in which the Deg head takes an AP as its complement.

4. *Preposition phrases*
Finally, consider the phrases built from prepositions, PPs. Can we discern complements and specifiers in the structure of PPs? It certainly seems plausible to say that a P can take a complement. Many prepositions are in fact obligatorily transitive:

(23) a. This will last [$_{PP}$ until *(Doomsday)]
b. A piece [$_{PP}$ of *(cake)]
c. We'll go on [$_{PP}$ from *(here)]

As with the other lexical categories, there are members of the category that do not or not necessarily take a complement. Examples of (optionally) intransitive prepositions are:

(24) a. I've never met him [$_{PP}$ before (today)]
b. The paint came [$_{PP}$ off (the wall)]
c. They went [$_{PP}$ down (the hill)]
d. They went [$_{PP}$ downhill (*the mountain)]

Note that the complement of a P need not always be an NP, it can sometimes be a sentence (see (25)) and sometimes even another PP (see (26)).

(25) a. [$_{PP}$ After [$_{IP}$ they went to America]] they started a new trade
b. We have had no rest [$_{PP}$ since [$_{IP}$ our new neighbours started a pub]]

(26) a. [$_{PP}$ From [$_{PP}$ under the bridge]] came a herd of strange creatures.
b. This play lasts [$_{PP}$ until [$_{PP}$ after midnight]]

The following examples illustrate that Ps can be accompanied by a specifier as well, and thus fit in the general X'-schema for phrase structure:

(27) a. They went [$_{PP}$ [all the way] down the mine shaft]
b. They found it [$_{PP}$ [ten meters] under the ground]

5. *Headedness*
The examples above illustrate that in a typical English phrase, the head first combines with something to its right, the complement, after which the head-complement combination combines with something to its left, the specifier. This results in general specifier-head-complement order in English phrases.

This order is not universal. There is language variation, in particular with respect to the order between head and complement: in some languages the head follows rather than precedes the complement. Languages with complement-head order are often called *head-final*, and languages with head-complement order *head-initial*. (Note that in 'head-initial' languages the head need not be initial in its phrase, since the specifier can precede it. For some reason, there seems to be less language variation with respect to the position of specifiers, which tend to be phrase-initial. The terms head-final and head-initial therefore usually often just refer to the order between head and complement). Languages tend to be either head-initial or head-final in all their phrases, but this is not necessary. It even happens that a head of the same lexical category sometimes occurs before and sometimes after its complement. Such behaviour is shown, for instance, by the category P in Dutch (note that (28a) and (28b) have different meanings):

(28) a. Ze zwommen [in het kanaal].
they swam in the canal
'They were swimming in the canal.'
b. Ze zwommen [het kanaal in].
they swam the canal in
'They swam into the canal'.

Interestingly, the headedness of a language can change during its history. For example, Old and Middle English showed both complement-verb and verb-complement orders, rather than the consistent verb-complement order we see today. English is therefore said to have undergone a change 'from OV to VO' (where O stands for Object).

Exercises
SK exercise 5.2, 5.4A, 5.6, 5.7, 5.8C