Fundamentals of English Syntax

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This text is a brief introduction to syntax, the study of the structure of sentences. It introduces the most important basic concepts, aiming to give readers an idea of syntactic phenomena and argumentation. Some analyses given below are simplified in order to make this text accessible to beginners. Readers wishing to know about the more sophisticated analyses are directed to the book-length introductions to syntax listed in the bibliography.

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1. Introductory Concepts

1.1. Syntactic categories

All words in a sentence belong to a particular **part of speech** or, in more modern parlance, **category** or **syntactic category**, like those in (1).

(1)

	Category	Abbreviation	Example
a.	**noun**	N	computer, city, stupidity, event, John, London
b.	**verb**	V	hear, think, disagree, shorten, eavesdrop, exist
c.	**adjective**	A	good, obscene, demented, lovely, schoolmasterly
d.	**preposition**	P	off, by, in, with, from, to, at, inside, despite
e.	**adverb**	Adv	slowly, often, now, mostly
f.	**determiner**	D (or Det)	a, the, this, those[1]

Here we will not try to give a set of completely failsafe criteria for determining the category a word, but will describe some issues arising in defining the various categories. One kind of criterion is *semantic*, i.e. based on meaning. Such criteria take the form of statements such as 'a noun denotes a person, place or thing', 'a verb denotes an activity or state' or 'an adjective denotes a property'. Such semantic generalisations are of limited use because they are only tendencies, not absolute rules. Thus, there are nouns which denote activities (*the hammering*), events (*recital*), states (*their love*) and properties (*silliness*).

More reliable evidence for determining the category of a word comes from morphological and syntactic criteria. Examples of morphological criteria would be that only nouns can take a plural affix (*tables, intervals*) and that most verbs change their morphological form according to the requirements of tense and agreement (*I talk, she talks, I talked*). If you can add *-ly* to a word to form an adverb, you know that word is an adjective (*slow>slowly*). Examples of syntactic criteria for various categories are given below. In each case, assume that the gap is filled by a single word.

(2) a. They have no [$_N$].
b. The [$_N$] is very [$_A$].
c. They can [$_V$]

1.2. Constituents

Identifying the syntactic category of each word in a sentence is crucial, but is only the first step in describing the mental processes which allow native speakers to create a sentence. Suppose we tried to do this for the sentence in (3). An analysis only based on categories would take the form in (4).

(3) That man likes that woman.

(4) S → D+N+V+D+N (Translation: A sentence can consist of the sequence determiner + noun + verb + determiner + noun.)

It is easy to show that the human brain does not use rules like (4) when it creates sentences. Suppose we want to give more information about the man spoken of in (3) and/or to say that he likes someone or something other than *that woman*. We could then replace *that man* and *that woman* with different, more complex expressions. A small selection of the infinite number of possible replacements is given in (5) and (6).

(5) a. that old man
b. that old man with the bottle of beer
c. that extremely old and decrepit man with a nearly empty bottle of cheap beer
d. that man over there near the window

[1] Determiners (some of which are often called 'articles') are discussed in more detail in sections 4.1 and 6.

(6) a. second-rate music by unknown bands
b. people with a flair for the unusual
c. paintings by certain fairly weird and decadent artists
d. his collection of photographs of Victorian guesthouses in Tasmania

The possibility of replacing *that man* in (3) with any expression in (5) and *that woman* in (3) with any expression in (6) gives us twenty-five sentences. We would thus need twenty-five different rules of the type in (4). Once we start adding further material to the sentence (say, *I believe that* at the beginning of the sentence, *obviously* before *likes*, and/or *and* plus any appropriate string of words you can think of at the end of the sentence), we would need an infinite number of rules of the type in (4). No scientist would be satisfied with the assumption that native speakers of a language create sentences using an *infinite* set of rules. It would be physically impossible for humans to learn all these rules. Also, such rules are purely *descriptive*: they just state observed empirical facts without explaining them.

A way out of this impasse emerges when we realise that what has been lacking in our analysis of sentences is the idea that words can combine with other words to form larger groups of words, called **constituents**. Constituents combine with other words or constituents to form yet larger constituents, until we eventually have a full sentence. The expressions listed in (5) and (6) were examples of constituents called *noun phrases* (NPs), expressions which include a noun and some material giving additional information about it. NPs can typically be replaced by pronouns: each NP in (5) and (6) can be replaced by *he, her, it, them* etc. as appropriate. We will define NPs and other types of constituents more precisely later. Our purpose now is merely to show how recognising constituents greatly helps us in analysing sentences. Now consider (7), which will be rejected later and should not be memorised, but is far better than (4):

(7) S → NP V NP (Translation: A sentence can consist of the sequence NP+V+NP.)

Even if we are only interested in describing the twenty-five possible sentences consisting of a NP from (5), a verb and a NP from (6), the benefits of recognising constituent structure should now be apparent. If we use rules of the type in (4), we would require twenty-five rules to describe these sentences, whereas (7) describes all twenty-five sentences with just one rule. We emphasise again that the rule in (7) is being used only as a way of showing the need for constituent structure. We will later show how this rule can be improved upon.

As another argument for the need for constituent structure, consider the following sentences containing the possessive '*s* morpheme:

(8) a. [That lady]'s husband left.
b. [That lady over there]'s husband left. (=the husband of that lady over there...)
c. [That lady near the door]'s husband left. (=the husband of that lady near the door...)
d. [That lady you talked to]'s husband left. (=the husband of that lady you talked to...)
e. [That lady you saw]'s husband left. (=the husband of that lady you saw...)

We cannot describe the behaviour of possessive *'s* in terms of the category of the words it attaches to: *'s* can appear immediately after a word of any category. Moreover, *'s* does not characterise the *word* to its immediate left as a possessor: the door in (8)c) does not have a husband. Rather, possessive *'s* attaches to a certain type of constituent (marked by square brackets in (8)), namely a NP. We cannot describe the behaviour of possessive *'s* without using the notion of NP. Thus, we cannot describe sentence structure without constituents.

1.3. Tests for identifying constituents

In all sciences, linguistics included, one should be able to assess the truth or falsehood of a claim by means of objective tests. We now introduce some tests for establishing whether a **string** (i.e. group of words) is a constituent or not.

a) Proform test. Proforms are expressions like *she, them, somewhere, do so, there* which have the function of representing a constituent which has already been mentioned, so that one need not pronounce/write the constituent twice. The best-known type of proform is a so-called *pronoun*, which replaces a NP, e.g. *she/him/they*. If you can replace a string with a proform, the string is a constituent. (9) illustrates the use of the proform test in finding constituents in (9)a).

(9) a. *The lady running the group handed in her resignation on Friday at noon.*
b. *She handed in her resignation on Friday at noon.* [Thus, *The lady running the group* is a constituent]
c. *The lady running it handed in her resignation on Friday at noon.* [Thus, *the group* is a constituent]
d. *The lady running the group did so on Friday at noon.* [Thus, *handed in her resignation* is a constituent]
e. *The lady running the group handed in her resignation then.* [Thus, *on Friday at noon* is a constituent]

b) Question test. If you can convert a sentence into a question using a *wh*-expression (e.g. *where/how/when/why/what/who(m)*, and phrases like *with whom?, at what time?, in whose house?*), the string that the *wh*-expression replaces is a constituent. (*Wh*-expressions are proforms.) The answer to the question is also a constituent. (10) illustrates this with reference to (9)a). In each case, A and B refer to different speakers, and B's answer is a constituent.

(10) a. A: What did the lady running the group hand in on Friday at noon?
B: *Her resignation*.
b. A: *Who handed in her resignation on Friday at noon?*
B: *The lady running the group.*
c. A: *When did the lady running the group hand in her resignation?*
B: *On Friday at noon.*

c) Movement test. If a string can be moved to some other position in the sentence, it is very likely to be a constituent. The following examples apply this test to identify constituents in the respective (a) sentences.

(11) a. *Egbert was reading a thick book about formal logic on the balcony on Sunday.*
b. *On Sunday, Egbert was reading a thick book about formal logic on the balcony.*
c. *On the balcony, Egbert was reading a thick book about formal logic on Sunday.*
d. *Egbert was reading on the balcony on Sunday a thick book about formal logic.*

(12) a. *Rover ran out of the house.* b. *Out of the house Rover ran.*

(13) a. *Ann is not a fan of mindless techno music.*
b. *A fan of mindless techno music, Ann is not.*

(14) a. *Gertrude wasn't interested in art.*
b. *Interested in art, Gertrude wasn't.*

(15) a. *Hortense didn't win the race.*
b. *Win the race, Hortense didn't.*

In these examples, the movement does not change the number of words in the sentence, but in more complex cases movement is combined with other operations like passivisation:

(16) a. *The people next door bought a large, tasteful statue of Elvis Presley.*
b. *A large, tasteful statue of Elvis Presley was bought by the people next door.*

d) Cleft test. (17)a) can be changed into the sentences in (b-d). These are **cleft sentences**. (*Cleft* is from *cleave* meaning 'divide'; cleft sentences are 'divided in two'.) The general form of cleft sentences is (17)e). In cleft sentences the material between *be* and *that*,

underlined in (17)b-d), is focussed, i.e. contrasted with some alternative that the hearer may have in mind. The relevant point for our purposes is that this material is always a constituent.

(17) a. *The guests from overseas visited the best parts of the city on Monday.*
b. *It was <u>on Monday</u> that the guests from overseas visited the best parts of the city.*
c. *It was <u>the best parts of the city</u> that the guests from overseas visited on Monday.*
d. *It was <u>the guests from overseas</u> that visited the best parts of the city on Monday.*
e. *It {was/is}* X *that ...* [where X is some constituent]

The following tests are given for completeness' sake. Some readers may prefer to skip them.

e) Pseudocleft test. Sentence (17)a) can also be changed into sentences like those in (18) and (19). In these *pseudocleft sentences*, a form of *be* divides the sentence into two parts, of which one is a focussed constituent from the original sentence (underlined in the examples below) and the other begins with *what*. The order of the two parts of the sentence is often flexible. Importantly, the strings appearing in the part of the sentence not containing *what*, i.e. the underlined strings in the examples below, must always be a constituent.

(18) a. *What the guests from overseas visited on Monday was <u>the best parts of the city</u>.*
b. *<u>The best parts of the city</u> were what the guests from overseas visited on Monday.*

(19) a. *What the guests from overseas did on Monday was <u>visit the best parts of the city</u>.*
b. *<u>Visit the best parts of the city</u> was what the guests from overseas did on Monday.*

f) Coordination test. Coordination is the operation of joining two words or phrases together using conjunctions like *and* and *or*. Strings of words joined by conjunctions must each be a constituent. To test whether the underlined strings in (20)a) and (21)a) are constituents, find another expression which you can coordinate with the underlined string. The string is a constituent if you can place the other expression with which it is coordinated either before or after it without any difference in meaning, as in (20)b,c) and (21)b,c).

(20) a. I <u>went to the post office to post a letter</u>.
b. I <u>went to the post office to post a letter</u> and <u>did the shopping</u>.
c. I <u>did the shopping</u> and <u>went to the post office to post a letter</u>.

(21) a. She spoke to <u>a small number of the students interested in the subject</u>.
b. She spoke to <u>a small number of the students interested in the subject</u> and <u>the staff</u>.
c. She spoke to <u>the staff</u> and <u>a small number of the students interested in the subject</u>.

g) *Though* test. In (22) we see that sentences beginning with *although* can (in relatively formal or elevated English) be transformed into structures where a focussed part of the sentence precedes *though*, followed by the rest of the sentence. This can be used as another constituent test because whatever stands in front of *though* must be a constituent.

(22) a. *Although she is <u>a defender of free will</u>... = <u>A defender of free will</u>* though she is...
b. *Although they are <u>annoyed at their son</u>... = <u>Annoyed at their son</u> though they are...*
c. *Though he <u>crossed the road with care</u>... = <u>Cross the road with care</u> though he did...*

General remarks on constituent tests: The constituent tests take the form of statements like 'If you can do such-and-such with a string, it is a constituent', not 'If you cannot do such-and-such with a string, it is not a constituent'. Put otherwise, we can say that passing a particular constituent test is a *sufficient condition*, but not a *necessary condition* for a string to be a constituent. This is because a string might be a constituent, but fails a constituent test due to some other factor which has nothing to do with constituency. For instance, the underlined string in *He read <u>the articles</u> today* is a constituent according to several tests, e.g. the proform test (*He read them today*) and the question test (*What did he read today? – The articles*). However, we cannot move *the articles* to the end of the sentence: **He read today*

the articles. This fact should not tempt us to deny that *the articles* is a constituent, since it is due to a completely independent principle of English grammar which favours the placement of NPs before other constituents after the verb. This shows that it is wise to apply more than one test when trying to find out if a string is a constituent. In particular, it is unwise to rely solely on the coordination test (for reasons we will see in exercise 3 below).

1. Apply two of the above tests to show that the underlined phrases are constituents.

a. *A lady in a blue dress sang the national anthem in the stadium some time after noon.*

b. *Someone saw a suspicious-looking man with a briefcase walking around in the foyer on Monday half an hour before the building blew up.*

2. Use constituent tests to find out if the strings given below are constituents in the passage at the end of this exercise. Remember that constituents can be parts of other constituents, and that a given string might be a constituent in one sentence but not in others.

a. *the novels*
b. *the book about the novels*
c. *the novels of Ethel P. Taylorson*
d. *the book about the novels of Ethel P. Taylorson*
e. *if you need something*
f. *for his wife*
g. *since he had no better idea*

The book about the novels of Ethel P. Taylorson is a waste of electrons. It would only be useful if you need something that puts you to sleep. Mervyn chose a case of beer instead as a birthday present for his wife, since he had no better idea.

3. The coordination test is sometimes unreliable. This is because, as seen in section 2 below, one can leave out material in a coordinated constituent if this material is identical to material in another coordinated constituent. This means that the underlined strings in (a) and (b) below might not be constituents, but abbreviated versions of larger constituents. Thus, *badly on Sunday* in (a) might be short for *played badly on Sunday* or *They played badly on Sunday*. It is thus unclear whether the underlined strings in (a) and (b) are really constituents. Do other constituent tests show that these strings are constituents?

a. *They played well on Saturday and badly on Sunday.*
b. *They played in Paris last week and in London this week.*

1.4. The notion 'head'

Every constituent has a **head**, a word which determines the nature of the whole constituent. Everything else in that constituent merely gives information about the head and/or is there because the head allows or forces it to be present. We can illustrate this with (23).

(23) [$_{NP}$ The young people in the theatre] were [$_{AP}$ rather fond of the music].

In (23) two constituents are enclosed in brackets, and their heads are underlined. The constituents are labelled 'NP' ('Noun Phrase') and 'AP' ('Adjective Phrase') because their heads are a noun and an adjective respectively. (The term **'**phrase' means roughly 'constituent'.) We can say that *people* is head of the NP since the whole NP names a kind of people (not e.g. a kind of theatre), since everything in the NP gives information about the people (e.g. their age and location), and since everything other than *people* can be omitted. We know that *fond* is head of the AP since everything in the constituent gives information about the fondness (*rather* tells us how strong it was, and *of the music* indicates what it was directed towards), and since *fond* appears with a constituent after it which begins with *of*.

These examples indicate that, just as individual words have categories like N, A, etc., larger constituents also have categories. We have mentioned two of these (NP, AP), but will see shortly that there are other kinds of constituents such as *verb phrase, prepositional phrase*. Each of these is named after the head of the constituent. We can also say that every

constituent is a **projection** of (or is **headed** by) one word in that constituent. The aim of the next few sections of this text is to introduce the most important kinds of constituents.

Readers may recall that the notion of 'head' is relevant in morphology as well as syntax. Many morphologically complex words have heads, morphemes which determine the grammatical properties of the whole word. For instance, we say that the word *overeat* has *eat* as its head because *eat* determines the category of the whole word (i.e. *overeat* is a verb, just like *eat* is), because *eat* determines the past tense form of *overeat* (we say *overate* because the past tense of *eat* is *ate*), and because *overeating* names a kind of *eating*. Morphological and syntactic heads differ in that, in English, the head of a word is nearly always at the right-hand edge of the word, while the head of a phrase is often not the right-hand element.

1.5. Identifying and motivating the various kinds of phrases

This section gives basic information about some of the most important constituents, the main aims being to explain why linguists assume that these constituents exist and to help readers to identify these kinds of constituents in a sentence.

1.5.1 Noun Phrase (NP)

Examples of various kinds of Noun Phrases (NPs) are given in in brackets in (24). In all cases, the noun functioning as head of the whole NP is underlined. (The NPs in (24)b-f) contain other NPs which are themselves parts of other constituents described later. These smaller NPs are not marked in order to improve legibility.)

(24) a. [$_{NP}$ The <u>woman</u>] read [$_{NP}$ a thick <u>book</u>] while drinking [$_{NP}$ some <u>coffee</u>].
b. [$_{NP}$ The renowned <u>experts</u> on basket weaving from Berlin] have gone home.
c. [$_{NP}$ A famous <u>dancer</u> of exceptional talent] got electrocuted.
d. [$_{NP}$ The most important <u>representatives</u> of workers' interests] were consulted.
e. [$_{NP}$ A <u>documentary</u> by a French journalist about Spain] was shown yesterday.
f. [$_{NP}$ Grandma's <u>destruction</u> of our house with a flame thrower] was inconvenient.

There are several reasons to view the underlined nouns as heads of the bracketed strings, and thus to view these strings as NPs.[2] First, the whole bracketed string refers to an instance of the entity/concept named by the noun acting as head of the whole NP. Thus, the NP marked in (24)b) names a kind of expert (not e.g. a kind of basket weaving). The NP marked in (24)f) might be uttered by someone who was asked to name an instance of destruction, but not by someone who was asked to name an instance of a flame thrower or a house. Second, all the material in the NPs is *dependent* on the underlined head noun in the sense that it gives information about the entity/concept named by the head noun. Third, some of the material that is dependent on the head noun can be omitted, but omission of the head nouns leads to unacceptability since one cannot have a NP without a noun.[3]

Some tests for identifying NPs in sentences are as follows:

A. You can be fairly sure that a string of words is an NP if you can insert it in one of the NP positions indicated in (25) (adding appropriate material at the points marked '…' to form a complete sentence). The point behind (25)a) is that NPs can be *subject* of a sentence, which we can define provisionally as an NP which appears in front of the verb and which can

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2 In section 6.2 we introduce a different, newer proposal that expressions like those in (24) are not NPs but Determiner Phrases (DPs), and are thus headed by determiners. Before section 6.2 we introduce the traditional NP analysis since it is easier to understand and since it is still assumed in many sources.

3 Rare apparent cases of NPs not containing nouns are seen in *They help* [$_{NP}$ *the poor*]. Here either *poor* has been turned into a noun by the morphological operation of conversion, or the head of the NP is an unpronounced noun meaning 'people'. German gives clear evidence that unpronounced nouns exist. The underlined endings in *Oma trank ein zweit<u>es</u> König und ein<u>en</u> Korn* make sense if the syntax works with the expressions *König Pilsner* and *Kornbranntwein*, which are not pronounced in their entirety.

determine how the verb is inflected (*I am cold* vs. *They are cold*). The leftmost NPs indicated in (24)b-f) are also subjects of the respective sentences. The idea with (25)b,c) is that verbs like *describe* and prepositions like *of* and *to* require NPs immediately after them.

(25) a. [$_{NP}$ …] is/are …
b. They described [$_{NP}$ …].
b. …of [$_{NP}$ …] , …to [$_{NP}$ …]

B. Most NPs can be replaced with pronouns like *she, him, it, them* etc., which is possible for all NPs indicated in (24). This is so because the task of pronouns is to act as proforms (substitutes) for previously mentioned NPs. Despite what the term *pro-noun* implies, pronouns stand for NPs and not merely for nouns, as is seen in (26).

(26) a. I had [$_{NP}$ a book about frogs], but never read it. [*it* = a book about frogs]
b. *I had [$_{NP}$ a book], but never read the it about frogs.

Since the pronouns replace NPs, **pronouns are themselves NPs**. Hence they can occur in the environments in (25) (*They are good; They described her; They are scared of it*).

These tests allow us to introduce a few more kinds of NPs.

(27) gives instances of **NPs consisting only of nouns**. There are several reasons why these expressions are considered to be full NPs and not simply nouns. They can appear in contexts where one otherwise finds NPs (see test A above). One can add more material to the nouns to make the status of these expressions as full phrases clearer (*These cows eat my grass; her beloved Bitterfeld*). The strings can mostly be replaced by pronouns (e.g. *they eat it*), so they must be NPs and not just nouns, as per test B above. (The place names in (b) resist pronoun replacement because *there* is a more economical proform than *to it*.) Finally, there are languages where at least some of these nouns require determiners: French requires determiners for both nouns in (27)a) and Greek requires them for proper names like *John*.

(27) a. [$_{NP}$ [$_{N}$ Cows]] eat [$_{NP}$ [$_{N}$ grass]].
b. [$_{NP}$ Mary] went to [$_{NP}$ Germany], but unfortunately didn't make it to [$_{NP}$ Bitterfeld].

A final point concerns NPs which contain material after the head noun, for instance the NP marked in (28) and others in (24)b-f). In such cases, beginners often forget to check whether there is material after the head noun which belongs in the NP. In (28), this would lead to the conclusion that the NP headed by *documentary* is *a documentary*. Although this string is an NP in other contexts (say *I saw a documentary last night*), it is not an NP (or even a constituent) in (28). This is verified in (29) using the pronoun test. In section 4.1 we will come back to such complex cases and analyse their internal structure.

(28) I saw [$_{NP}$ a documentary by a French journalist about Spain] yesterday.

(29) a. I saw it yesterday. [*it* = a documentary by a French journalist about Spain]
b. *I saw it by a French journalist about Spain yesterday. [*it = a documentary*]

4. Find all NPs in the sentences below. The tests for identifying NPs noted above will help.

a. *They invited a group of interesting people to the party, but the person with the machine gun was not on the guest list to my knowledge.*

b. *Three strange men in black suits were smoking cigars in the car park early in the morning, shortly before a very daring bank robbery occurred.*

c. *I am glad that you remembered to buy the children presents, but if you give six-year-olds Samurai swords, you're not fostering harmonious interaction at the playground.*

1.5.2 Verb Phrase (VP) and a preliminary analysis of sentence structure

The sentences in (30) consist of NPs ('subjects'), followed by strings marked as **verb phrases** (**VPs**), which contain verbs plus NPs and/or other constituents to be defined later.

(30) a. Her mother [$_{VP}$ read a book].
b. The experts [$_{VP}$ worked on the problem carefully].

c. They [$_{VP}$ sometimes blindly rely on suggestions in investment newsletters].
d. People [$_{VP}$ often regarded these documents as authentic].
e. She [$_{VP}$ sent an e-mail to the customers].

The concept 'VP' may not be intuitively self-evident to all readers, so we must show that the strings called VPs are constituents and are headed by verbs. In (31) we apply constituent tests from section 1.3 to show that the string labelled VP in (30)a) is a constituent. That other strings labelled as VPs in (30) are constituents can be verified in similar fashion.

(31) a. Her mother READ A BOOK. She did so last week. [Proform test]
b. A: What did her mother do? B: READ A BOOK. [Question test]
c. Her mother [READ A BOOK] and [did a crossword puzzle] [Coordination]
Her mother [did a crossword puzzle] and [READ A BOOK]
d. READ A BOOK was what her mother did. [Pseudocleft test]
e. READ A BOOK though she did, she was still bored. [*though* test]

There is thus clear evidence that the strings marked as VPs in (30) are constituents. In traditional grammar these constituents are sometimes called *predicates*, but this term is not needed. It makes more sense to call them 'verb phrases', since they are clearly headed by verbs. Evidence for this includes the fact that the material in these constituents gives us information about the situation named by the verb. Moreover, the kinds of material that these constituents can contain is determined by the verb, suggesting that the verb is the 'boss' (i.e. head) of the constituent labelled VP. For instance, in (32) the verbs *leave, abandon* and *depart* respectively allow, require and disallow NPs inside their VPs. Likewise, in (33) *pay* and *remunerate* differ in their whether they allow two NPs in their VPs.

(32) a. Elvis [$_{VP}$ left the building]. Elvis [$_{VP}$ left].
b. Elvis [$_{VP}$ abandoned the building]. *Elvis [$_{VP}$ abandoned].
c. *Elvis [$_{VP}$ departed the building]. Elvis [$_{VP}$ departed].

(33) a. They [$_{VP}$ paid us]. They [$_{VP}$ paid us the money]
b. They [$_{VP}$ remunerated us]. *They [$_{VP}$ remunerated us the money]

VPs consisting only of verbs: Just as some NPs consist solely of nouns (recall (27)), there are VPs that consist only of verbs. This is seen in the right-hand variants in (32)a,c), and analogous behaviour is possible with *arrive, die, sing, work, converse* and many other verbs. Reasons to assume that *Elvis left* contains not only a verb but a VP include that the VP could potentially contain more than just a verb (*Elvis left the building quickly; Elvis left quickly*).

Another indication for the existence of VPs consisting solely of verbs comes from the **proform *do so*** seen in (34). The expression *do so* is a proform for a VP, and not just for a verb. We know this because *did so* in (34)b) refers to the whole VP *read a book*. (The sentence is interpreted such that Bert denies that Keith read *a book*, with no necessary denial that he read some other text.) (34)c) attempts to use *do so* as a proform for a verb, yielding an unacceptable sentence. Since *do so* is a proform for VP, not merely for V, we conclude that *did so* refers to a VP in (34)a), and hence that there are VPs which consist only of a verb.

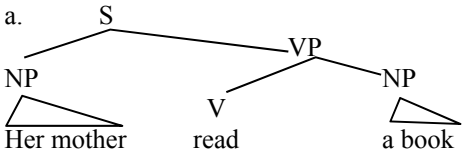
(34) a. Ann said Keith [$_{VP}$ [$_{V}$ left]], but Bert denied that he did so.
b. Ann said Keith [$_{VP}$ [$_{V}$ read] a book], but Bert denied that he did so.
c. *Ann said Keith [$_{VP}$ [$_{V}$ read] a book], but Bert said he did so a poem.

Identifying VPs in sentences: A simple trick for identifying VPs is to remove the subject NP at the start of the sentence. The remaining material is a VP. (It will begin with either the verb or one or more adverbs.) This trick works for the simple structures under discussion at this point. In section 5 we discuss more complex sentences for which this test yields wrong results, but by then identifying VPs will be second nature to you, and it will be easy to make the transition to the more complex sentence structures when these are introduced.

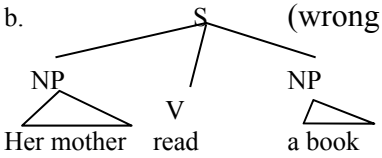
VPs and the description of the structure of sentences: A central conclusion to this section is that sentences consist minimally of a NP followed by a VP. To introduce a useful

way of visualising this, we can say that sentences have the structure indicated in (35)a) and not for instance that in (35)b).

(35) a.



b. (wrong structure!)



Diagrams like (35) are known as **tree diagrams** or **trees** (and sometimes as *phrase markers*). Trees are often used since they are easier to read than bracketing representations like (36). Some important notions associated with trees are as follows. Trees contain **nodes** (points where lines intersect or end) which have labels (e.g. S, VP, NP, V) indicating the category of a constituent or word. The S node in (35)a) branches down into two nodes, suggesting that the **immediate constituents** of a sentence are the subject NP and VP; the object NP *a book* in (35)a) is an immediate constituent of VP but not of S. Exploiting the metaphor of family trees, we say that the tree in (35)b) (wrongly, as seen above) treats V and the two NPs as **sisters** (i.e. as coming together at equal depths in the structural hierarchy), while the tree in (35)a) asserts that the subject NP and the VP are sisters, while *a book* is a **daughter** of VP (or that VP is the **mother** of a V and NP). Note finally that the triangles in (35) are used because the internal structure of the NPs is not relevant to the point at hand. (This kind of abbreviation is called **triangle notation**.)

(36) [$_{S}$ [$_{NP}$Her mother] [$_{VP}$ [$_{V}$ read] [$_{NP}$ a book]] (=(35)a))

5. Identify the NP and VP which combine to form the following sentences.
   a. *The lady over there and her friend know the son of the director of the company.*
   b. *Fred obviously believes the story about the Martian invasion.*
   c. *A big problem with the theory still gives the researchers cause for concern.*
   d. *He usually read or watched television.*

6. Find all the VPs and NPs in the following sentences.
   a. *Mary obviously reads the paper every day, but John also knows a lot.*
   b. *Someone sent a book to Mary's home, but she never received it.*

1.5.3 Prepositional Phrase (PP)

Examples of **prepositional phrases** (**PPs**) are seen in (37). These examples illustrate the commonest interpretations of PPs. They can indicate places (as in (a)), directions (b), times (c), but can have assorted other meanings, as in (d).

(37) a. [$_{PP}$ In the living room] there was a chair [$_{PP}$ near the fireplace].
   b. She went [$_{PP}$ to the hospital] and he walked [$_{PP}$ towards the supermarket].
   c. [$_{PP}$ During the meeting] we discussed the party [$_{PP}$ on Friday] [$_{PP}$ for ten minutes].
   d. [$_{PP}$ Without protests [$_{PP}$ from academics]] the bureaucrats will continue dictating [$_{PP}$ to us] and imposing pointless regulations [$_{PP}$ on us].

7. Before reading any further, formulate a rule that describes the internal structure of all PPs in (37). Hint: what do these PPs contain, apart from a preposition?

Beginners sometimes assume that the constituents labelled PP in (37) are a type of NP, perhaps guided by an intuition that prepositions are somehow 'less important' than nouns, and thus less worthy of being regarded as heads of these constituents. This reasoning misses the mark. We can tell for instance that the strings described as PPs in (38)a) are not headed by nouns (*in the car* is not a kind of car), and in (38)b,c) the pronoun test shows unambiguously that the PPs contain NPs, but are not themselves NPs.

(38) a. I was [$_{PP}$ in the car] [$_{PP}$ with the other people].
   b. I was [$_{PP}$ in IT] [$_{PP}$ with THEM]
   c. *I was IT THEM.

Identifying PPs in sentences is not difficult. Most PPs have the structure [$_{PP}$ P [$_{NP}$ …]]. Some exceptions to this are seen in (39). In (a) we see that some prepositions combine with other PPs to form a larger PP. It is also possible to string whole PPs together to form a larger PP, as in (b). The PPs in (c) contain material before the preposition which specifies the meaning of the preposition more precisely.

(39) a. The spider came [$_{PP}$ from [$_{PP}$ under/behind [$_{NP}$ the sofa]]].
b. I went [$_{PP}$ [$_{PP}$ out the door] [$_{PP}$ into the garden] [$_{PP}$ to the gate]].
c. [$_{PP}$ RIGHT near [$_{NP}$ them]]; [$_{PP}$ STRAIGHT towards [$_{NP}$ it]]; [$_{PP}$ BACK to [$_{NP}$ London]]
[$_{PP}$ TEN MINUTES before [$_{NP}$ the meeting]]; [$_{PP}$ TEN MILES into [$_{NP}$ the desert]]

In (40) we see examples of PPs consisting only of a preposition, paralleling the VPs and NPs that consist only of their heads. The elements in the PPs in (40) are often called **intransitive prepositions**, like *intransitive verbs* like *arrive* which project VPs containing no NP.

(40) a. They went [$_{PP}$ in/up/inside/downstairs/onwards/forwards].
b. They are [$_{PP}$ here/downstairs/overhead/ahead/outside].

Intransitive prepositions were traditionally called 'adverbs', but more recently it was noticed that they have more in common with prepositions than with the other main group of words referred to as 'adverbs', namely those related to adjectives (*badly, nicely*). Most intransitive prepositions describe directions and places, like many other prepositions. In (41) we see that intransitive prepositions can, and real adverbs cannot, be coordinated with normal PPs, and we will see in section 2 that coordination normally only works with constituents of the same kind. Consider next the elements underlined in (42), which can appear with or without NPs after them. Calling these 'prepositions' when they are followed by NPs and 'adverbs' when they are not has little more justification than calling *read* a 'verb' in *I read it* and an 'adverb' in *I read*. Finally, (43) shows that intransitive prepositions behave like other prepositions and unlike real adverbs with respect to the kinds of degree expressions that can appear before them. More arguments are given in Huddleston & Pullum (2002:612-617), but the points mentioned here suffice to show that the elements in (40) are prepositions and not adverbs.

(41) a. They walked [$_{PP}$ inside] and [$_{PP}$ down the hall].
b. They went [$_{PP}$ upwards] and [$_{PP}$ over the hill].
c. *They walked [$_{AdvP}$ slowly] and [$_{PP}$ over the hill].

(42) a. They are <u>inside</u> (the house).
b. We looked at the sky <u>above</u> (us) and the valley <u>below</u> (us).
c. I pulled the sticker <u>off</u> (the wall).

(43) a. I walked [$_{PP}$ {straight/right/*more/*very} inside].
b. I walked [$_{PP}$ {straight/right/*more/*very} inside the house].
c. I walked [$_{AdvP}$ {very/more/*straight/*right} slowly].

8. Find all the PPs in the following sentences.

a. *In the photo a man with a glass of wine whom I had never seen before was standing between Horst and his wife Edeltraud.*
b. *In the kitchen just near the door was a painting of a vase of flowers by a good artist.*
c. *Nearby there was a hole where a nail had been pulled out of the wall or fallen out.*
d. *In the book in every chapter it is claimed without specific evidence that most of the population cannot think for itself and will put faith in any frequently repeated claim.*

1.5.4 Adjective Phrase (AP)

(44) gives examples of **adjective phrases** (**APs**), with their heads underlined. APs minimally consist of an adjective. They may also contain PPs giving information about the property named by the adjective (these are obligatory with some adjectives like *fond, devoid*). In front of the adjectives there may be an optional *degree expression*, i.e. an expression like *very, too* which indicates the degree to which the property named by the adjective holds.

(44) a. He is [$_{AP}$ (very) fond of Ann] but isn't [$_{AP}$ (too) enthusiastic (about her singing)].
b. The book is [$_{AP}$ (soul-destroyingly) boring]. It is also [$_{AP}$ devoid of useful content].
c. He seemed [$_{AP}$ (totally) amazed (at their achievements)].
d. She became [$_{AP}$ interested (in history) (to some extent)].

APs can appear at a distance from the NP they describe, cf. (44), but may also occur inside the NP, cf. (45). (NP-internal APs mostly appear before the noun they describe, but appear after it if the AP contains material after the adjective, as in (45)b).)

(45) a. She talked to [$_{NP}$ a [$_{AP}$ very interested] client].
b. She talked to [$_{NP}$ a client [$_{AP}$ interested in the company's services]].

Notice from (45) that the AP does not contain the noun it describes. See exercise 9 on this.

9. Why is the structure in (a) below better than that in (b)? Hints: In what sense does the putative AP constituent in (b) contradict the labelling of the whole structure as an NP? Why do (c) and (d) speak for (a) and not for (b)? What does (e) tell us about the ability of determiners to combine with APs, casting further doubt on (b)?

a. [$_{NP}$ *a* [$_{AP}$ *very big*] *tree*] b. *[$_{NP}$ *a* [$_{AP}$ *very big tree*]]
c. *It is very big.* d. **It is very big tree.* e. **It is* [$_{NP}$ *a very big*].

10. In [$_{NP}$ *a big, black, very aggressive dog*] we have a sequence of three APs. Is this string itself an AP, analogous to the PP in (39)b) which contains three smaller PPs? Hint: think about the possible uses of these APs outside an NP.

11. Find the APs in the following sentences.

a. *I taught Jogi that a new tactical approach would be essential to a good performance.*
b. *Most European spiders are more or less harmless, but Australian spiders are much less benign and thus more interesting to people fond of scary conversation topics.*
c. *Because they are responsible for this, they are probably going to have a fairly long prison sentence, and the free accommodation should make them grateful.*
d. *Francine's idea of a luxurious Sunday afternoon is to have a very hot bath while consuming immoderately large amounts of affordably cheap French champagne or reading some articles relevant to her work.*
e. *It's totally unfair that that large an amount of mind-numbingly boring work gets assigned to her on an almost daily basis.* [Hint: the string *that that* is not a mistake]

1.5.5 Adverb Phrase (AdvP)

Examples of **Adverb Phrases** (**AdvPs**) are given in (46). AdvPs frequently consist of nothing more than an adverb, but may additionally contain optional degree expressions. AdvPs sometimes contain PPs, cf. (46)b), but this is rare.

(46) a. (very) slowly, (extremely) well
b. (completely) independently of the approval of his superiors

The main uses of AdvPs are seen in (47). They are used in VPs, describing the situation named by the verb. They are also used as degree expressions inside APs or other AdvPs.

(47) a. [$_{S}$ [$_{NP}$ Mary] [$_{VP}$ [$_{AdvP}$ quickly] memorised [$_{NP}$ the material] [$_{AdvP}$ perfectly]]]
b. [$_{AP}$ [$_{AdvP}$ very/incredibly/mind-blowingly] cool]]
c. [$_{AdvP}$ [$_{AdvP}$ amazingly/very/somewhat] skilfully]]

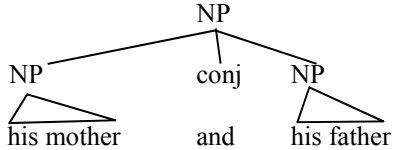
2. Coordination

We can now give a fuller description of **coordination**, which we defined in section 1.3 as the joining of constituents using **conjunctions** like *and* and *or*. As a first approximation, we can say that coordination obeys the following two principles:

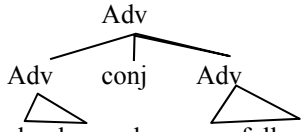
I. Coordination is generally possible only with constituents of the same category.
II. Coordination forms a constituent of the same category as the coordinated constituents.

Illustrations of this are given in (48). (For clarity's sake, we give the simplest possible trees here. More complex structures are arguably needed, as noted in exercise 14 and section 4.4.)

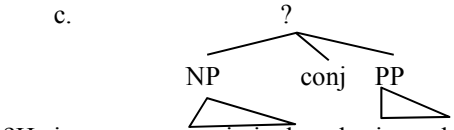
(48) a.



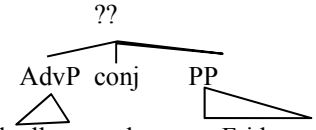
b.



c.



d.



We see in (48)b) that there is no problem with coordinating individual words. (48)b) could alternatively be written as two coordinated AdvPs. However, by principle II above we cannot treat the expression as two individual adverbs which become an AdvP by coordination.

A complication regarding coordination is that sometimes parts of coordinated constituents can undergo **ellipsis** (i.e. remain unpronounced) if they are identical to material in another coordinated constituent. Thus, *I read the paper and Mary a book* clearly entails that Mary read a book. If we assume that the second constituent is *Mary ~~read~~ a book* (with an elliptical, i.e. unpronounced, verb), then we can assume that coordination involves two identical constituents (here: two sentences) rather than assuming that the material after the conjunction is not a constituent. Further examples of ellipsis are seen in exercise 13. The question as to when ellipsis is (dis)allowed is too complex to treat in an introductory course, so we must content ourselves with noting that it exists.

12. Which categories are coordinated by the underlined conjunctions in the sentences below.
- a. *A cleaner and a professor of physics recently got married.*
- b. *She will sing and play a Beatles tune.* [Two answers are possible.]
- c. *He went to the restaurant for a pie and chips but only had a glass of wine there.*
- d. *We went to a party, but there was probably more happening at the graveyard.*
- e. *She held talks in Paris, London and several other European capital cities.*
- f. *The film was completely and utterly boring and harmful to my mental landscape.*

13. Try to find elliptical material in the following structures, and explain why these structures would be hard to describe without using ellipsis.
- a. *Every man, woman and child sees that*. (Also: Why does German disallow this?)
- b. *They sell pea and lentil soup*. (This has two meanings, one of which involves ellipsis.)
- c. *Fred lived in Berlin for a year and Bob for three*.
- d. *Quentin bought, and Cuthbert borrowed, a 600 page book about goldfish*.

14. For simplicity's sake, the trees in (48) use **ternary branching**, i.e. three branches descend from one node, suggesting that the two conjuncts and the conjunction are all combined at once. This is actually surprising. The human mind can only deal with two items at a time when performing other mental processes like arithmetic: a sum like 2+4+3 will be solved in binary fashion, e.g. 2+4 = 6, then 6+3 = 9. This arguably applies to the mental process of sentence construction. Some linguists argue that syntactic constituents are only ever created by merging two items at once, and thus that the trees representing them only ever use **binary branching**. How might the following data be used as an argument that this approach should be extended to coordination? (Some data are adapted from Progovac 2003.)

a. *I bought jam, bread, etc.* b. **I brought jam, bread and etc.*[4]
c. *He left. And he didn't say good bye.* d. **He left and. He didn't say goodbye.*
e. *I read a book today. And the paper.* f. **I read a book and today. The paper.*
g. *And the people have spoken* (article title) h. *And I love her* (Beatles song title)

15. Draw trees for the expressions below. Use triangles for each coordinated constituent.
a. *She seems very young and gifted.* b. *She read a book and went to bed.*
c. *You need a lawyer or notary.* d. *People sat outside and in the living room.*

3. Complements, Arguments and Modifiers

Section 4 will give more details about the internal structure of phrases. This will require us to understand two kinds of relations that a constituent in a phrase can have to the head of the phrase. This will be explained using the phrases in (49)-(52) (whose heads are underlined). We will see that there are important differences between the italicised expressions, called **modifiers**, and the expressions in capitals, called **complements** or **arguments**.

(49) VP: a. (*constantly*) relied ON HER (*throughout the crisis*)
b. (*secretly*) devoured THE LEFTOVERS (*in the kitchen*) (*before leaving*)
c. (*recently*) gave A BEGGAR SOME MONEY (*at the station*)

(50) AP: a. reliant ON HER PARENTS (*during the crisis*)
b. fond OF HIS WIFE (*in every way*)
c. proud (OF HER CHILDREN) (*above all justification*)
d. unable (TO KEEP THE APPOINTMENT) (*because of the accident*)
e. (*completely*) bereft/devoid OF INSPIRATION (=lacking it)

(51) NP a. his fondness/liking FOR STRONG DRINK (*during the Winter months*)
b. my (*unfortunate*) reliance ON OLDER SOFTWARE (*in writing this*)
c. the expert (ON PHYSICS) (*from London*) (*in an orange waistcoat*)
d. her (*profound*) faith (IN DIVINE BEINGS) (*during the crisis*)
e. a (*devoted*) (*young*) mother (OF THREE CHILDREN)
f. the (*left*) side (OF THE BUILDING)

(52) PP: a. towards THE FENCE
b. (*right*) inside (THE HOUSE)
c. despite STATE INTERVENTION

You may have the intuition that the arguments in these phrases are more closely related to the head of the phrase than the modifiers are. We will now make this intuition precise by describing some tests that distinguish modifiers from arguments/complements.

A. It is impossible to define the head of the phrase without referring to its argument(s). Take the verbs in (49). Any definition of *rely* must mention a person or thing relied upon, a definition of *devour* must mention food, and a definition of *give* must mention something that is given and a person who receives it. However, the definitions of the verbs in (49) need not mention the information expressed by the constituents in italics. (No dictionary would include the PPs in the following definition of *give*: 'let someone have something at some time and in some location'.) A definition of *expert* in (51)c) must mention that experts know about some specific subject (which can appear as the complement of *expert*), but would not mention what they wear or where they live. A particularly clear case of the semantic criterion for argumenthood comes from cases like *mother* and *side* in (51)e,f). These are called **relational nouns** since they cannot exist without their arguments (expressed by *of*-phrases in the examples): a *side* cannot exist without being part of some entity and a *mother* cannot be childless. Other examples of relational nouns are *hand, roof, friend, reputation*.

[4] The string **and etc.* is excluded even for speakers who do not know that *et cetera* means 'and the rest' in Latin. Thus, **and etc.* is not excluded for the same trivial reasons as **and and the rest* is excluded.

B. All modifiers are optional, but some complements are obligatory. In (49)-(52) we see several instances of items which take obligatory complements (verbs like *devour* and prepositions like *to* take obligatory NP complements, adjectives like *fond* require an *of*-PP as complement, etc.). This does not mean that all complements are obligatory. The capitalised NP in (53) is a complement for the same reasons as that in (49)b) is: one cannot define *eat* without mentioning food. However, one can say *she ate* as well as *she ate the leftovers*, so we must assume that *eat* has an optional complement. Even if the complement is not expressed, it is still present in the meaning of the VP: *She ate* means 'she ate something'. Here it is often said that *eat* has an **implicit argument**. Similar remarks apply to the heads of (50)c), (51)c) and (52)b): *John is proud* entails that he is proud of someone or something, *She is an expert* means that he is an expert on some particular subject and *They went inside* means they went inside some building present in the context.[5]

(53) ate (THE LEFTOVERS) (before she went to the pub)

C. The arguments of a word are mentioned in its **lexical entry**. A word's lexical entry is the information associated with the word in the **(mental) lexicon**, that part of a speaker's linguistic knowledge which is not predicted by systematic rules and is therefore memorised. The lexicon is essentially a mental dictionary. The lexical entry for a word must include, among other things, information about its syntactic category, its pronunciation and its meaning. It must also indicate how and whether certain parts of the meaning of a word are to be expressed in the sentence. Consider the verbs *eat, devour* and *dine*, all of which express some kind of food consumption. Apart from differences in pronunciation and meaning, the lexical entries for these verbs will differ in their specification of how the food consumed is expressed in the VP. Thus, the entry for *devour* specifies that the food *must* appear as a NP (*we devoured the chicken* vs. **we devoured*). The entry for *eat* says that it *may* do so, since both *we ate* and *we ate the chicken* are acceptable. The entry for *dine* specifies that the food can appear as an optional PP with *on* as head, but not as a NP: *we dined* (*on the chicken*), **we dined the chicken*. Similarly, the English speaker's lexical entry for *believe* mentions that something whose existence is believed in can appear in an *in*-PP (*he believes in unicorns*) while the German speaker's lexical entry for *glauben* specifies that the believed-in entity must appear in an *an*-PP (*er glaubt an Einhörnern*). Thus, a word's lexical entry must give information about the complements the word can take. By contrast, the modifiers that are compatible with an expression need not be mentioned in its lexical entry. For instance, temporal and local information like that provided by the PPs in *We dined on Sunday at Mary's house* can be added freely to any verb with an appropriate meaning. The possibility of such modifiers will not have to be mentioned in dictionary entries for verbs, although good dictionaries will mention the possible arguments of a verb.

D. Since modifiers are not constrained by the lexical entry of the head of the phrase, there is no syntactic limit to the number of modifiers a word can have within its phrase, cf. (54). Since complements of a head can appear only if the lexical entry for the head mentions them, the number and type of complements of a head is much more limited. Verbs have at most two complements, and other categories can mostly only have one.

(54) a. [sometimes] walked THE DOG [in the park] [on Fridays] [after work] [for hours]…
b. a [big], [black], [fluffy] , [slobbery], [smelly] dog [with no collar] [in the park]…

---

[5] It is not yet clear how optional complements should be analysed. Arguably the VP in *I ate* contains an unpronounced NP meaning roughly 'something'. If so, then we can say that *eat* always has a syntactic complement. An alternative is that there is what is called a *lexical rule* which alters the verb's lexical entry in such a way that it no longer requires a syntactic complement. Regardless of whether one uses lexical rules or unpronounced NPs, these devices must be assumed to be compatible with some verbs (e.g. *eat, read, write, sing*) but not others (*devour, disseminate, decry, disentangle*).

E. Normally the head of a phrase combines directly with its complement, and no modifiers can separate them. This is seen in all examples in (49)-(51), and it is easy to find examples where the order head-modifier-complement is unacceptable: **eat quickly the food* (cf. *eat the food quickly*), **a student with long hair of maths* (cf. *a student of maths with long hair*). There are cases where modifiers and other material intervene between an argument and the element selecting it, cf. (55), but it can be shown that such cases always result from movement of either the head of the phrase or of its argument to another position. A full discussion of this must be left for more advanced courses, but we will comment briefly on the cases in (55). (a) illustrates what is called *wh*-movement, where the NP complement of the verb is moved to the front of the sentence (see section 5.3.2). (b) illustrates *heavy NP shift*, in which long NPs are moved to the end of the sentence. (This movement is impossible with short NPs: **I read last year a book*.) Finally, German allows examples like (c) where the verb is separated from its complement. This is because the verb has moved away from its original position at the end of the sentence in a verb-final VP. Reasons for assuming this include that the elements most closely related to German verbs tend towards the end of the sentence, even so-called "separable prefixes" like *weg* in (55)c). (For more details we must refer to textbooks on German syntax such as Sternefeld 2007.)

(55) a. WHICH APPLICATION did they unfairly reject?
b. I read last year [$_{NP}$ AN ILLUMINATING DISCUSSION OF THE AFGHANISTAN WAR].
c. Sie wirft in ihrer Wohnung seit Jahren [$_{NP}$ KEINE ZEITUNGEN] weg.

Argument vs. complement: The term *complement* is narrower than the term *argument*. Complements must combine directly with the element that selects them, accounting for the cases where the head of a phrase and its complements cannot be separated by modifiers (point E). By contrast, arguments are exempt from this restriction. An argument can be separated from the item that selects it, and indeed need not even appear within that item's projection. The subject in *John [$_{VP}$ greedily ate the food]* is separated from *eat* and is not even inside VP, but is clearly an argument of *eat,* e.g. because it is obligatory (**The food ate; *Ate the food*) and because eating events cannot be defined without reference to people who eat.[6] We can also say that *complement* is a purely syntactic notion, while *argument* is semantic as well as syntactic. The verb *eat* has two semantic arguments, the food and the person eating it. The food argument is realised in syntax as a complement of *eat*, and thus combines directly with *eat*. The other argument of *eat* is realised in syntax as subject of the sentence.

16. Are the PPs in the examples below complements or modifiers? (Some examples allow two or more answers, depending on their meaning.) Give evidence for your decisions.

a. *the brother of Mary*
b. *the teacher of maths in flared trousers*
c. *a fondness for wine*
d. *the roof of the car*
e. *the car in the street*
f. *I wrote a letter in Berlin.*
g. *They decided on a boat.*
h. *He behaved in a bad way.*
i. *He left his wife in 1973 in Berlin.*
j. *He left his wife in Berlin in 1973.*
k. *Jim passed Ann the sugar.*
l. *Jim passed Ann at the corner.*
m. *Fred got a parking ticket near the shop.*
n. *Fred got the key into the lock.*
o. *Mandy finally lived in Glauchau.* (Hint: *Lebst Du, oder wohnst Du nur?*)

17. Are the phrases described in brackets after each sentence below complements or modifiers? What are they are complements/modifiers of?

a. *People loudly applauded the performance of the band in the next room.*

6 The fact that subjects need not appear within the VP is less surprising when we observe that linguists have discovered evidence favouring the *VP-internal subject hypothesis*, which says that subjects of sentences originate inside the VP but are moved to the subject position. This entails that all arguments of verbs are initially inserted in the VP. We review this idea briefly in section 4.2 below.

[the phrases headed by *loudly, in, performance*]

b. *Grandma introduced Mary to a fan of progressive industrial music at the party.*
[the phrases headed by *at, Mary, to*]

c. *The minister resigned because of the parliamentary decision on Friday*
[the phrases headed by *on, because of*]

18. Find **implicit arguments** (cf. point B above) in the sentences below. Describe their interpretations, i.e., say what kinds of entities they refer to.

a. *We saw a pub, but we didn't go in because John doesn't drink.*

b. *He found them rather dismissive, so he just put his coat on and left.*

c. *To be a successful author, you must write quickly. Support from publishers is crucial.*

19. Phrasal verbs (particle verbs) are combinations like *put in* which consist of a verb and a preposition-like element called a *particle*. They often involve implicit arguments. Describe the interpretations of the implicit arguments in the phrasal verbs seen below.

a. *She put her false teeth in.* b. *The protestors walked out.*

c. *I poured the water out.* d. *I poured the bucket out.*

e. *I wiped the dust off.* f. *I wiped the table off.*

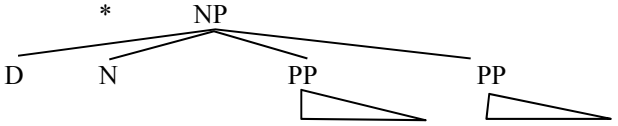
4. The internal structure of phrases

We now provide more details on the internal structure of the various kinds of phrases.

4.1. Noun Phrases

(56) is a simple proposal for the structure of NPs containing a complement and modifier.

(56) * [TO BE REVISED]



the	expert	on Mozart	from France
the	student	of maths	with long hair
the	defender	of human rights	from Africa
a	believer	in discipline	from the military academy

Unfortunately, (56) cannot explain data like (57). Here the proform *one* refers back to the underlined strings. This suggests that these strings are constituents, but the tree in (56) does not reflect this. These strings are not NPs. They can neither appear as subjects of sentences (**Expert on Mozart left*) nor be replaced with pronouns (**the him from France*). There is thus a kind of constituent which is smaller than NP but larger than N. This constituent is often called **N'** (pronounced 'N-bar'). N' is called an **intermediate projection** since it is intermediate between N and a full NP.

(57) a. the <u>expert on Mozart</u> from France and the ONE from Austria
b. the <u>student of maths</u> with long hair and the ONE with short hair

More evidence for the existence of such N' constituents comes from structures like (58), where the two underlined strings are coordinated.

(58) [$_{NP}$ A <u>defender of human rights</u> and <u>advocate of prison reform</u>] was on TV today.

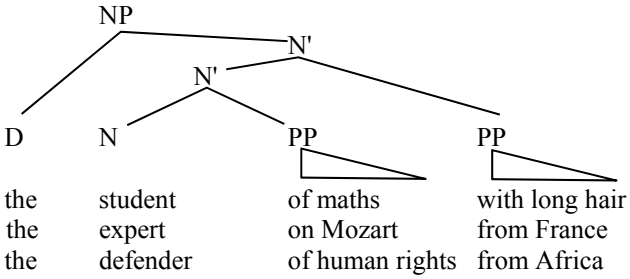
The instances of N' seen thus far consist of a noun and its complement. It can also be shown that modifiers are added to N' to form a larger instance of N'. Evidence for N' constituents containing modifiers includes the fact that they can be replaced by the proform *one*, cf. (59), and that such constituents can be coordinated, cf. (60).

(59) Which <u>student of maths with long hair</u> do you mean? The ONE near the window?

(60) a. A <u>defender of human rights from Africa</u> and <u>advocate of prison reform</u> is here.
b. An <u>expert on Mozart from France</u> and <u>composer of several symphonies</u> is here.

Putting all this together, we end up with structures like (61).

(61)



This structure correctly reflects that complements turn N into N', while modifiers turn N' into a larger N', and that complements of N are sisters to N while modifiers of N are sisters to N'. (61) also accounts for the finding in section 3, point E, that complements combine with the head of the phrase before modifiers do (cf. **the expert from France on Mozart, *the student with long hair of maths*). (61) also correctly predicts that all PPs (be they complements or modifiers) are added before the determiner is added. PPs are never added to complete NPs. Hence we cannot have **he with long hair* or **him from France* (cf. the discussion just above (28)).

Modifiers and adjunction: The fact reflected in (61) that modifiers (unlike complements) are added to N' to form a larger N' (and not some different type of constituent such as NP) instantiates the following extremely important notions in grammar:

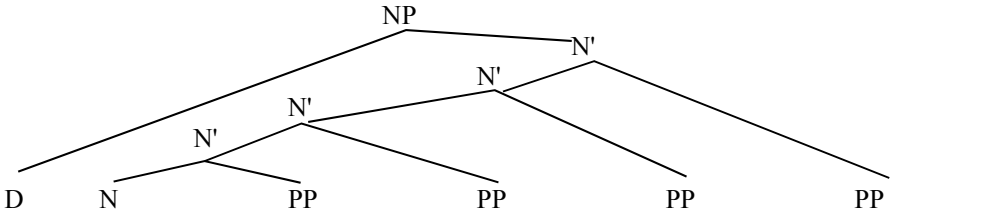
(62) The operation where a constituent X is added to another constituent Y such that the resulting constituent has the same category as Y is known as **adjunction**. X is referred to as an **adjunct**. We say that X is **adjoined** to Y.

(63) Modifiers are always adjuncts. (Thus the term 'adjunct' is often used as a synonym of 'modifier'.)

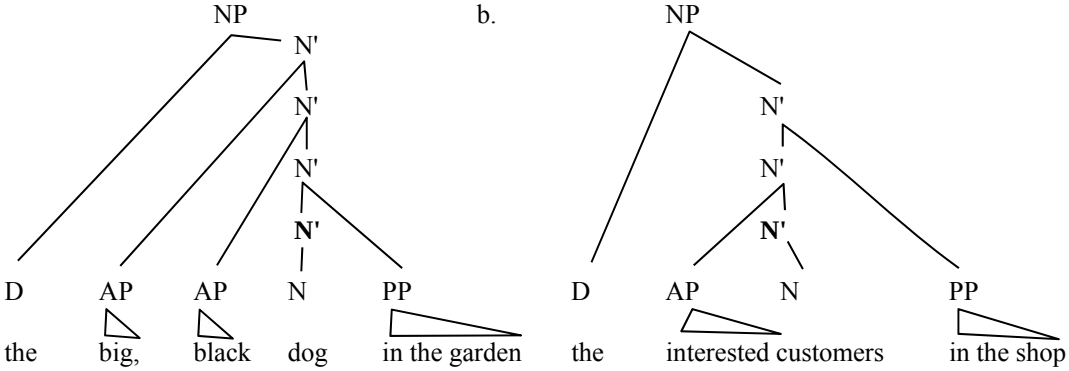
(64) Adjunction is a **recursive** process, i.e. it can apply to a constituent which was itself formed by adjunction. Thus, if a modifier adjoins to N' to form a larger N', then one can always add further modifiers to form a yet larger N' constituents.[7]

The trees in (65) and (66) illustrate the recursiveness of modification described in (64).

(65)



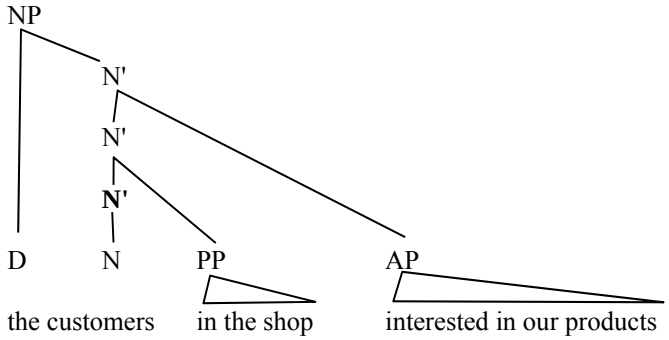
(66) a.



b.

[7] Recursion is seen in many other areas of grammar. One is compounding. Two nouns can combine to form a compound (*income tax*), which can then combine with other nouns to form larger compounds: [$_{N}$ [$_{N}$ [$_{N}$ [$_{N}$ *income tax*] *reform*] *proposal*] *proponents*]]]]. Another is coordination. One can coordinate structures which were themselves formed by coordination: [$_{NP}$ [$_{NP}$ *John and his sister*] *and* [$_{NP}$ *their friends*]] *left the party.*

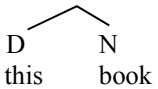
c.



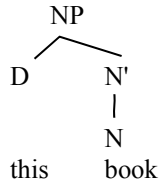
The trees in (66) contain modifiers but not complements. The N's in bold type in (66) are *non-branching* , i.e. they contain only one category, N. Why include these N's? One reason is that if we left them out, the trees would wrongly imply that the modifiers *in the garden, interested* and *in the shop* are complements of N. Moreover, we just saw that modifiers are adjoined to N', not N. Finally, the N' proform *one* can replace the bold-printed N' constituents in (66) (e.g. *The dog that bit me was the big, black ONE in the garden*).

Simpler types of NP. For NPs consisting only of nouns and determiners, the structure in (67)b) is preferable to that in (67)a). This is because one can refer to *book* with the proform *one* in (68), and we saw above that *one* refers to N' and not just N.

(67) a.



b.



(68) Do you want [$_{NP}$ this [$_{N'}$ [$_{N}$ book]]] and or that **one**? (*one* = [$_{N'}$ [$_{N}$ book]])

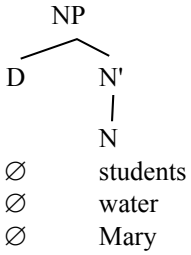
Now we turn to nouns which have no determiners, no complements and no modifiers. (69) indicates that these must be not only N, but N' (witness the use of the proform *one*) and NP (witness the pronoun *they*).

(69) a. The reporter uncovered [$_{NP}$ [$_{N'}$ [$_{N}$ scandals]]]. I mean big **ones**.

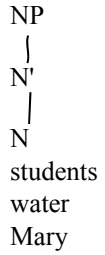
b. The reporter uncovered [$_{NP}$ [$_{N'}$ [$_{N}$ scandals]]]. **They** made her famous

This leaves the structures (70) as possibilities for NPs consisting solely of a noun. They differ in that (70)a) assumes that such NPs have unpronounced determiners (symbolised as ∅). At this point we will not try to determine which analysis is preferable.

(70) a.



b.



The determiner position in the NP, also called a **specifier** position, can be occupied by elements like those in (71). These specify which instance of the type of entity described by the N' is being referred to. They thus have a different function to that of modifiers, whose function is to describe the type (not the instances) of the entity concerned. Generally, determiners cannot co-occur with other determiners (**a this book, *her these books*).[8]

[8] The main apparent exception concerns *all* and *both*. These have uses where they appear in front of other determiners (*both the cars, all my books*). In these cases *all/both* are not squeezed into the D position with another determiner, but combine with a whole NP. This is seen in cases where they are separated from the NP: *The cars were apparently both stolen*; *My books are all in my flat.* We cannot discuss these cases further here.

(71) Articles: the definite article (*the*) and the indefinite article (*a(n)*)
Demonstrative (deictic) determiners: *this, that, these, those*
Quantifiers: *some, all, both, any, no, each, every, either, neither, a few, a little*
Possessive determiners: *my, your, its, her, his, our, their, John's*

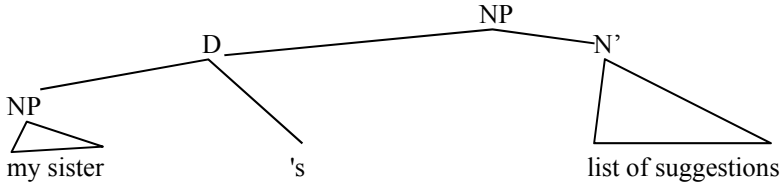
Finally, we briefly discuss **NPs with possessive *'s*** like those in (72).

(72) a. a child's books
b. the person behind me's remarks
c. the person responsible's conviction
d. the person over there's dog

Possessive *'s* is a suffix that attaches to full NPs, not to nouns. Evidence for this includes the fact that *'s* is not immediately adjacent to nouns in (72)c,d) and that the determiner in (72)a) belongs to *child*, not to *books* (witness **a books*). Notice also that the material in front of *'s* can alternatively appear as an NP complement of *of*. Thus, (72)b) can be replaced with *the remarks of* [$_{NP}$ *the person behind me*].

Thus, a structure for NPs with possessive *'s* should have an NP to the left of *'s*. A structure fulfilling this requirement is given in (73). It assumes that the possessor and *'s* together act like a determiner: in (73) *my sister's* helps us to identify a particular list just like *this* in *this list of suggestions* does. The structure in (73) also correctly predicts that the string NP+*'s* can be replaced by possessive determiners: *my sister's hat = her hat*.

(73)



Section 6 will present a different, more recent approach to the structure of noun phrases, but the traditional approach presented here is still adopted in many sources, and illustrates some principles which will be shown in the following sections to apply to other kinds of phrases. The most important of these are that the head of a phrase and its complement form a constituent, and any modifiers of the head will be adjoined to this constituent.

20. Draw trees for the NPs below. Use triangle notation for all PPs and APs.
a. *a French painter of abstract landscapes* b. *the man in the grey suit near the bar*
c. *the big, old car in the garage* d. *Mary's hatred of plastic teaspoons*
e. *the King of England's decision* f. *my friend's wife's car*
g. *John and Keith's friend* [as continued with …*is a loser* or …*are losers*]

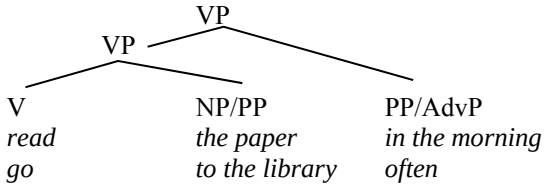
21. What could the (un)acceptability of *one*-pronominalisation in the examples below tell us about the underlined N-N strings, normally seen as compounds?
a. **Maybe I could become a taxi driver or a truck **one**.*
b. *A gold ring is a bit expensive, so I'll buy you a plastic **one** if you don't mind.*
c. *For some reason the winter semester is a fair bit longer than the summer **one**.*

4.2. Verb Phrases

We now turn to the internal structure of VP. In the trees in (74), the verb combines with its complement to form a VP, and modifiers of V adjoin to VP (here *adjoin* is used in the sense defined in (62)). The structure in (74) is consistent with what was witnessed with NP in the previous section: the head of the phrase combines first with its complement, and modifiers are adjoined to the resulting constituent. The main difference is that we are not assuming that there is a V' constituent parallel to N' here.[9]

[9] Many syntacticians assume that there is such a thing as V', consisting of V and its complement. Apart from brief remarks in section 4.4, we will bypass this analysis here for simplicity's sake.

(74)



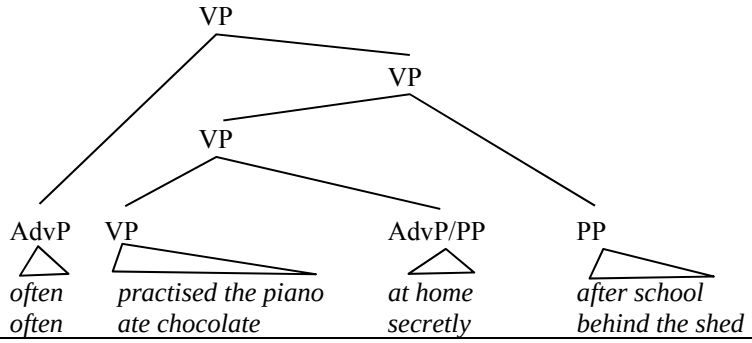
Empirical evidence for the structure in (74) comes from data like (75) and (76). As noted just above (34), *do so* is a proform for VP. In (75)a) and (76)a) we see that *do so* is interpreted identically to the bracketed VP constituents. (For instance (75)a) entails that Mary reads the paper, but not in the morning.) In (75)b) and (76)b) *do so* could potentially refer to either the smaller or the larger bracketed VP. Finally, (75)c) and (76)c) remind us that *do so* is not merely a proform for a verb.

(75) a. John [$_{VP}$ reads the paper] in the morning, and Mary DOES SO at night.
b. John [$_{VP}$ [$_{VP}$ reads the paper] in the morning] , and Mary DOES SO also.
c. *John [$_{V}$ reads] the paper in the morning, and Mary DOES SO magazines at night.

(76) a. Fritz [$_{VP}$ goes to the library] often, and Stan DOES SO sometimes.
b. Fritz [$_{VP}$ goes to the library often] , and Stan DOES SO also.
c. *Fritz [$_{V}$ goes] to the library often, and Stan DOES SO to the newsagent sometimes.

The tree in (77) illustrates recursive modification of V. It also illustrates that PP modifiers adjoin to the right of VP, while AdvPs may adjoin to the left of VP in some cases.

(77)



22. The tree in (77) is not the only correct analysis. *Often* could alternatively adjoin to the smallest or second smallest VP. In other cases the order in which modifiers are adjoined affects the meaning. How might this apply to the modifiers underlined below?
a. *Gary often plays in chess competitions. He always wins sometimes.*
b. *The singer sometimes had memory lapses in two successive concerts.*
c. *The first election of a female mayor in that town received much press attention.*

As noted in section 1.5.2, verbs can take (or *select, subcategorise for*) various types of complements, some common patterns being those in (78)[10]. Most verbs are compatible with more than one of these patterns, often corresponding to different meanings of the verb. For instance, *keep* has different senses in which it takes an NP complement (*I kept the book*), an AP (*I kept warm*), and both (*I kept them warm*).

(78) a. No complement: *They worked/laughed/hesitated.*
b. One NP complement: *They devoured/discussed/disinterred them.*
c. Two NP complements: *They gave/sent/bequeathed/showed us the books.*
d. PP complement: *I relied on them/baulked at that/dealt with them.*
e. NP and PP complement: *He interested me in it/subjected us to tests/gave it to us.*
f. AP complement: *It became/remained/seemed cold*.
g. NP and AP complement: *It made/kept/rendered them eligible.*

[10] These patterns partly correspond to the following terminology which readers may be familiar with: **intransitive verb** (V has no NP complement), **transitive verb** (has an NP complement), **ditransitive verb** (has two NP complements), **prepositional verb** (has a PP complement and no other complement).

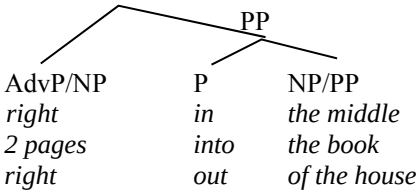
23. Draw trees for the VPs in the sentences below. Use triangle notation for constituents inside VP. Some examples are ambiguous and require two trees.

a. *She drinks coffee in the morning.* b. *She mostly works in the evenings.*
c. *They decided on a boat.* d. *They often railed against liberal ideas.*
e. *She hired a car in Berlin in 2010.* f. *I spoke about our problem with the boss.*

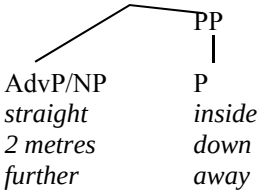
4.3. PPs, APs and AdvPs

We will discuss the internal structure of PPs, APs and AdvPs only briefly. (79) and (80) are examples of the simplest kind of structures that can be assumed for these. (The structure of AdvPs is not indicated. An AdvP like *completely independently (of her)* will have a structure analogous to that of the APs like those in (80).)

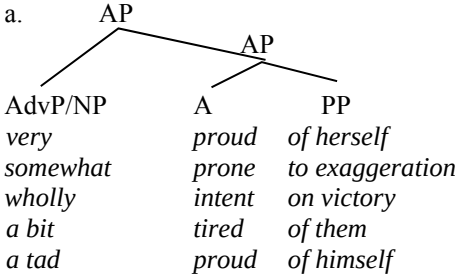
(79) a.



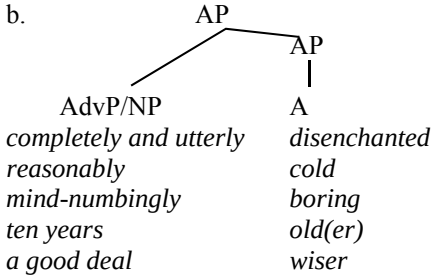
b.



(80) a.



b.



In (79)a) and (80)a), P and A combine with their complements to form PPs/APs. As always, modifiers, if present, are added after complements. They adjoin to PP/AP. (The modifiers of adjectives are often called *degree expressions*, because they indicate the degree to which the property named by the adjective holds.) In (79)b) and (80)b) we posit non-branching PP/AP nodes because we know from the (a) examples that the modifiers adjoin to PP/AP.[11]

(81) illustrates that some PPs can act as degree expressions that adjoin to the right of AP:

(81) a. He was [$_{AP}$ [$_{AP}$ proud of her] <u>beyond all reason</u>].
b. He was [$_{AP}$ [$_{AP}$ prone to exaggeration] <u>to some extent</u>].

24. In the examples below (which are all accepted by at least some speakers), the underlined expressions have arguably undergone conversion from one category to another. Use syntactic evidence to determine what category they have in these contexts.

a. *a very <u>out of style</u> approach* (similar: *up to date, off the wall, in your face*)
b. *a very interesting and <u>key</u> idea* (similar: *core, fun*)
c. *that's very <u>you</u>; that singing was too <u>Bob Dylan</u> for my liking*

25. The sentences below show **syntactic ambiguity**: they have more than one meaning, with different structures for each meaning. Use your knowledge of syntax to describe the

[11] With modifiers of nouns and verbs the decision to posit non-branching N' and VP constituents was supported by the fact that the proforms *one* and *do so* could refer back to these constituents, but there are no clear candidates for comparable proforms for the AP/PP constituents. Arguably *so* and *there* do this job in (i) and (ii) below, but these expressions are subject to various restrictions too complex to discuss here. For instance (i) is unacceptable if *even more* is replaced with *very*, and *there* cannot refer to PPs like *out of the house*.

(i) John was quite <u>proud of himself</u>, and Bill was even more <u>so</u>.
(ii) They told me to go <u>to the station</u>, and I went straight <u>there</u>.

ambiguities. Answers to the first two questions are given as examples. (You need only indicate the parts of the structure which are relevant to the description of the ambiguity.)

a. *Old men and women like this music.*
   (1): *old* modifies *men and women*: [$_{N'}$ old [$_{N'}$ men and women]]
   (2): *old* modifies *men* but not *women*: [$_{N'}$ old men] and [$_{N'}$ women]

b. *John gave her the flowers in the kitchen.*
   (1): PP modifies NP: [$_{VP}$ gave [$_{NP}$ her] [$_{NP}$ the flowers in the kitchen]]
   (2): PP modifies VP: [$_{VP}$ [$_{VP}$ gave her the flowers] in the kitchen]

c. *Cyril bought her books.*

d. *She has read many books on political affairs in recent years.*

e. *Gertrude frightened the man with the axe.*

f. *Do you have more interesting books?*

g. *The boss talked about the workers in the factory.*

h. *This TV station apparently only broadcasts bad films and talk shows.*

i. *Mavis said that Basil was a benighted loser at the party.*

4.4. General principles of phrase structure and the X' schema

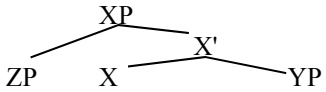
Comparison of the structures posited in the foregoing sections for the various types of phrases reveal that phrases are constructed according to the following general principles:

- The first thing that a head combines with is always its complement.
- Modifiers adjoin to the constituent consisting of the head and its complement.

Understanding these generalisations will make it easier to remember the individual properties of NP, VP, AP and PP.

The structure given for NP conforms to a pattern called the **X' schema**, illustrated in (82). The idea is that if X is some head (e.g. N), then it joins with its complement (=YP in (82)) to form an X'. A specifier (=ZP in (85)) joins with X' to form XP.

(82)



The X' schema is often taken to be pervasive in syntax. In later sections we will see that the X' schema applies to other kinds of phrases which we have not yet analysed. Some linguists have applied it to coordination, so that *John and Mary* has the structure [$_{\&P}$ [$_{NP}$ *John*] [$_{\&'}$ *and* [$_{NP}$ *Mary*]]], where &P inherits the category of the conjuncts, and is thus an NP (cf. exercise 14 and Progovac 2003). The X' schema has also been applied to VPs, APs and PPs. The relevant arguments cannot be covered in this short text, so we adopted simpler analyses which dispense with X' constituents for these categories. However, curious readers may appreciate the following remarks on analyses which assimilate these other categories to the X' schema. The analyses in (83)a,b) assume that the items analysed as modifiers in section 4.3 are specifiers (see e.g. Radford 1988, Haegeman & Guéron 1999). In section 4.3 we bypassed this analysis because a discussion about which items are specifiers and which are modifiers would have been too lengthy for the present text.

(83)	a. They walked		[$_{PP}$	[$_{NP}$ ten miles]	[$_{P'}$ into	[$_{NP}$ the desert]]]
	b. They are		[$_{AP}$	[$_{AdvP}$ very]	[$_{A'}$ fond	[$_{PP}$ of you]]]
	c. People	often	[$_{VP}$	~~[$_{NP}$ people]~~	[$_{V'}$ read	[$_{NP}$ books]]]
	d. There are	often	[$_{VP}$	[$_{NP}$ people]	[$_{V'}$ reading	[$_{NP}$ books]]]
	e. People	often	[$_{VP}$	[$_{NP}$ all]	[$_{V'}$ read	[$_{NP}$ books]]]

Examples of analyses using the V' constituent are seen in (83)c-e). These analyses are built on the assumption that subjects of sentences originate in the specifier of VP (the *VP-Internal Subject Hypothesis*). On this view, the subjects of sentences are initially inserted in the specifier of VP. In (83)c) the original position of the subject *people* is marked by the crossed

out NP. Evidence for this includes the fact that NPs that would otherwise move to subject position can remain in VP in certain contexts such as (83)d). Another argument comes from data like (83)e). Here *all* indicates the quantity of *people*, a fact which is explained if the specifier of VP initially contains a complex NP [$_{NP}$ all [$_{NP}$ people]], of which the smaller NP moves to subject position. Since we cannot do justice to these arguments in the available space, we must refer to summaries like those in Haegeman & Guéron (1999:227-235).

5. Functional categories and more on sentence structure

5.1. Auxiliaries vs. lexical verbs

In (35)a) we assumed that sentences consist of an NP followed by a VP. We will now see that the structure of sentences is more complex than this. This requires us to understand items like those underlined in (84)a,b), known as **auxiliary verbs** or **auxiliaries** (*Hilfsverben*).

(84) a. *Fred does not like the book, but Mary has bought it and I am already reading it.*
b. *Nobody can cook, so I might bring some food.*
c. **Modal auxiliaries**: *can, may, must, shall, will*
d. **Other auxiliaries**: *be*, and some uses of *have* and *do*

Intuitively, auxiliaries have purely grammatical functions, and thus differ from normal verbs, which are called **lexical verbs** since they are part of the *lexis* (=vocabulary) rather than the grammar. The two kinds of verbs are examples of the distinction between **lexical categories** (members of the vocabulary, including the vast majority of verbs, nouns and adjectives) and **functional categories**, purely grammatical words like auxiliaries, determiners, pronouns, conjunctions, complementisers (items like *if, although*) and certain prepositions (say *of* in *the destruction of the city*). The main differences between lexical and functional categories are as follows. Children gain adult-like competence in the use of many instances of lexical categories before they master the use of any functional categories. Functional categories are called *closed-class* items because they belong to small, finite sets ((84)c,d) is a fairly complete list of English auxiliaries), while lexical categories are *open-class* elements (one cannot hope to list all English lexical verbs). Changes to the membership of a closed-class category do not often occur, and significantly affect the grammar if they do. If we could be transported to some future time when English lacks one or more of the uses of auxiliaries in (84)a), our grammar books would need rewriting, but the possible future disappearance of the lexical verbs *bop, gainsay* and *dial* would only require changes to our dictionaries.

Apart from general differences between lexical and functional categories, we can list a number of systematic differences between auxiliaries and lexical verbs in English:

A) In questions, auxiliaries appear in front of the subject NP, while lexical verbs cannot:

(85) **Works she?* vs. *Has she worked? Can she work? Does she work?*

B) We can negate sentences with *not* or *n't* only if an auxiliary is present:

(86) *She can't/cannot work* vs. **She works not* vs. *She doesn't/does not work*

C) We find auxiliaries but not lexical verbs in **tag questions** (short questions added to the end of a sentence asking for confirmation that it is true):

(87) *She has worked, hasn't she? She worked, didn't she?* vs. **She worked, worked she?*

D) Lexical verbs can take an NP complement, auxiliaries cannot:

(88) *He needs/wants a computer.* vs. **He must a computer.*

E) Lexical verbs can be followed by a VP introduced by the **infinitive particle** *to*. Auxiliaries cannot appear with *to*:

(89) *He wants to read it, she tried to read it*; *he must read it, she did read it*

The phenomena mentioned in points A-C above require an auxiliary. If there is no auxiliary, the auxiliary *do* must be inserted, cf. (90). This operation is known as ***do* support**. Because *do* is meaningless in such contexts, this use of *do* is called **dummy-*do***.

(90) a. **Works she?* should be *Does she work?*
b. **She works not* should be *She does not work*
c. **She works, smokes she?* should be *She works, doesn't she*

Some verbs can be used either as lexical verbs or as auxiliaries:

♦ When ***have*** forms the perfect tense of a verb it is an auxiliary: *Have you eaten*? In other meanings, such as its possessive meaning, it behaves like a lexical verb in most varieties of English: *Don't you have a pencil?* (A decreasing set of older British speakers use possessive *have* as an auxiliary, cf. *I haven't the time* or *Have you a pencil?*)

♦ ***Do*** with NP complements (*do homework*) is lexical, as per point D above. Obviously, all cases of *do*-support involve the auxiliary *do*. We also find the auxiliary in cases like *Martians DO exist, I DID see one!* This is often seen as a special use of *do* ('emphatic *do*'), but is really just an instance of *do* support. If we want to emphasise that a sentence is true contrary to the hearer's expectations, we stress the auxiliary (*She WILL win; He IS a loser*). Since this is impossible without an auxiliary, we use *do* support in such cases.

♦ As point D suggests, ***need*** always behaves like a lexical verb when it is transitive (*I don't need it* vs. **I needn't it*). When *need* means 'must', it can be used either as an auxiliary or as a lexical verb. It never behaves like a cross between the two (**Need I to go? *Do I need go? *I need not to go*). When used as an auxiliary, *need* is uninflected: *he need not go* vs. **he needs/needed not go*. In this respect, *need* is like other modal auxiliaries (**he musted/musts*). An extra complication is that auxiliary *need* is confined to questions and negated contexts (*Need I go? I need not go. *I need go*.) It is thus what linguists call a *negative polarity item*, such as *anyone* (cf. *Did you see anyone? I didn't see anyone. *I saw anyone.*)

26. Is the use of *do* in the *do so* proform (section 4.2) a lexical verb or an auxiliary? Why?

27. Decide whether *need* is an auxiliary or lexical verb in the following sentences. Reformulate the sentences, changing *need* to a lexical verb if it is an auxiliary, or to an auxiliary if it is lexical. (Such a reformulation is not possible in all cases.**)**
a. You don't need to go to the bank. b. I don't need any help.
c. Nobody need do that. d. You need to go to the bank.

5.2. The sentence as IP

5.2.1 Auxiliaries as heads of the sentence

When we suggested earlier that sentences consist of a NP and VP as in (91)a), we were ignoring auxiliaries. A preliminary hypothesis for the structure of sentences with auxiliaries is given in (91)b).

(91) a. [$_S$ NP VP] b. [$_S$ NP Aux VP]

Neither option in (91) is desirable. These structures treat sentences as headless structures, despite substantial evidence that the human mind normally creates syntactic structures that have heads. Furthermore, judging by the evidence from coordination in (92), it appears that auxiliaries and VPs form a constituent, which is not reflected in (91)b).

(92) a. She [has already gone to France] and [may go there again]
b. She [should go to the doctor soon] and [will probably do so tomorrow]

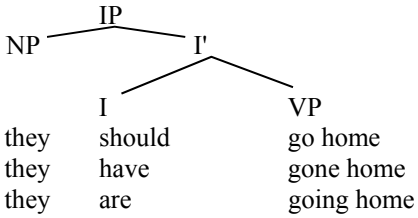
Moreover, contrary to what (91)b) suggests, it can be shown that auxiliaries take VPs as complement. To see this, note first that auxiliaries influence the form of the lexical verb:

(93) a. Modals go with verbs in the infinitive form (*she must/might sing a song*)
b. Auxiliary *have* goes with verbs in the perfect participle form (*she has sung a song*)
c. Progressive *be* goes with verbs in the *–ing* form (*she is singing a song*)
d. Passive *be* goes with verbs in the perfect participle form (*the song was sung*).

The fact that an auxiliary determines the form of the verb in VP suggests that VP is a complement of the auxiliary, since it is quite normal for an item to influence the form of the

head of its complement. For instance, verbs can demand complements that have particular prepositions as head (*rely on them* vs. **rely in them; trust in them* vs. **trust on them*), and German prepositions and verbs assign particular cases to their complements (*für ihn* vs. *mit ihm; ihn hören* vs. *ihm lauschen*). Moreover, if VP is complement of the auxiliary, we correctly predict that the VP is after the auxiliary (reflecting the typical head-complement order in English), and that the auxiliary and VP form a constituent (cf. (92)). These are among the facts which lead many syntacticians to assume that sentences with auxiliaries have the structure seen in (94). This analysis assumes that sentences are headed by an item referred to as I, for reasons revealed shortly. As an added bonus, (94) conforms to the X' schema found with other kinds of phrases (section 4.4).

(94)



5.2.2 Arguments for empty I

There are grounds for assuming that I is present even if there is no auxiliary in the sentence. Consider (95). Recall that coordination is only possible with equal categories (section 2). If the left-hand conjunct were just a VP, we would not be able to coordinate it with an I'. (In (95) *e* stands for 'empty', i.e. not pronounced.)

(95) She [$_{I'}$ [$_{I}$ *e*] [$_{VP}$ read the book]] and [$_{I'}$ [$_{I}$ will] [$_{VP}$ watch the video]].

A second piece of evidence (from Radford 1997a) for empty I concerns the fact, seen in (96), that auxiliary *have*, but not lexical *have*, can undergo cliticisation (contraction) with the subject. If we assume that there is an empty I between lexical *have* and the subject, we can explain why the cliticisation is impossible with lexical *have*.

(96)
a. she [$_{I}$ **had**] repaired the car; I [$_{I}$ **had**] cut my hair [auxiliary *have*]
b. she [$_{I}$ **'d**] repaired the car; I [$_{I}$ **'d**] cut my hair [auxiliary *have*]
c. she [$_{I}$ *e*] [$_{V}$ **had**] the car repaired; She [$_{I}$ *e*] [$_{V}$ **had**] long hair [lexical *have*]
d. *She [$_{I}$ *e*] [$_{V}$ **'d**] the car repaired; *She [$_{I}$ *e*] [$_{V}$ **'d**] long hair [lexical *have*]

5.2.3 The nature of I

'I' stands for a functional category called 'Inflection'. The sentence is seen as an **inflection phrase** or **IP**. ('I' is also written as **Infl**.). The thinking behind this terminology is complex and is presented in simplified form here. The 'inflection' referred to in the term 'inflection phrase' refers to the information expressed by inflection on verbs, which has two aspects:

(97) **Tense**: the distinction between present (*you talk*) and past (*I talked*). (Because Infl is associated with tense, many linguists use 'T' or 'Tense' instead of 'I'.)

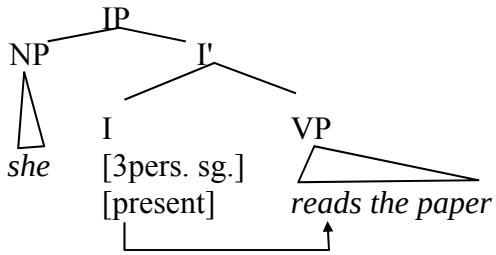
(98) **Agreement**: person/number information about the subject (*you talk* vs. *she talks*).

In calling sentences IPs, we are assuming that I is the head of the sentence. This correctly implies that tense/agreement features are crucial in determining the nature of the whole sentence. If tense and agreement are absent, we do not have a complete sentence. If there are no tense/agreement features we end up with an infinitive, a structure like *to read the book*, which is not a freestanding sentence. In such cases, the absence of tense/agreement features is expressed by inserting the **infinitive particle** *to* in the I position, as in (99).

(99) Stan promised [$_{IP}$ [$_{I}$ to] [$_{VP}$ carefully read the book]]

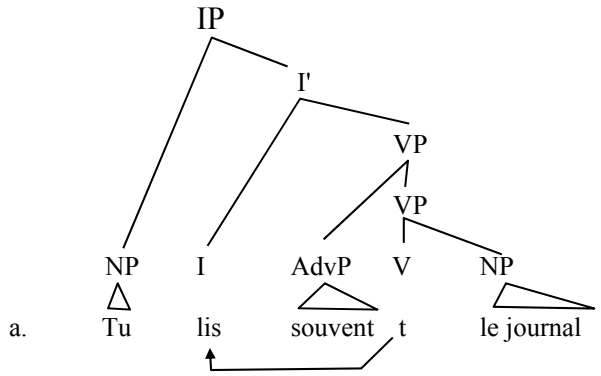
If there is an auxiliary, it expresses the tense and agreement features. If there is no auxiliary, tense and agreement features of Infl are expressed on the verb in the VP. The features in Infl influence the choice of the morphological form of the verb, as seen in the following diagram.

(100)



Here it is helpful to compare English to other languages. In many languages, inflection is always expressed directly in the I position. Adger (2003:165f) notes that in certain languages tense and agreement are always expressed by auxiliaries in I. In other languages, all inflected verbs move to I. One such language is French. Consider (101). French and English IPs and VPs have identical structures, except that French lexical verbs move to I. In (101) this is expressed using an arrow and the symbol ***t***, short for **trace**, which marks the original position of the verb. That *lire* 'read' moves out of the VP to the I position in (101) can be shown by comparing the position of the verb relative to the adverb. English *often* and its French counterpart *souvent* can adjoin to the left of VP and thus indicate the VP's left boundary. The English verb comes after the adverb, while the French adverb precedes it. This makes sense if French lexical verbs move out of the VP to the I position. This movement also explains why the French adverb intervenes between the verb and its complement, while English adverbs cannot separate verbs from their complements (cf. the paragraph above (55)).

(101)



28. The sentences below are from Early Modern English (roughly 1500-1700). Translate them into current English. Bearing in mind the preceding discussion, describe the differences between current English and Early Modern English word order.

a. *The violets… withered all when my father died.* (Shakespeare, Hamlet, Act IV)
b. *He seeth not the pit.* (King James Bible, Psalm 49:9)
c. *…he understandeth not the queen's affection* (Francis Bacon, letter, 1596)

5.2.4 VP-ellipsis as evidence for the IP analysis of the sentence

The idea that sentences are IPs is supported by the phenomenon in (102). The crossed-out VPs have undergone ellipsis, i.e. are not pronounced. This (like the *do so* proform seen earlier) is a way of avoiding the repetition of VPs.

(102) a. John will go to France and Mary **may** ~~go to France~~
b. He said he would help me but I don't know if he **will** ~~help me~~.
c. Juan is seeing the film and Ann **has** ~~seen the film~~ already.
d. Grandma likes Gothic music but I don't know if Grandpa **does** ~~like Gothic music~~
e. He played the sonata faster than anybody else **does** ~~play the sonata~~.
f. John reads poetry and Mary said she **does** ~~read poetry~~. **Do** you ~~read poetry~~?
g. They said they would get there before I **do** ~~get there~~, but they never **did** ~~get there~~.

In (102), elements in Infl immediately preceding the elliptical VPs are written in bold type. Note that VP ellipsis is impossible without a *pronounced* Infl element. Hence we find *do* support in (102)d-g). This can be explained if we make the following assumptions:

A. The I position is associated with the sorts of (tense and agreement) information that is expressed in verbal inflection, as in the previous section.
B. The tense and agreement features that Infl contains must be expressed by a pronounced element.
C. If the VP undergoes ellipsis, this information cannot be expressed by inflection on the lexical verb, since this verb is not pronounced.
D. Since inflectional affixes are bound morphemes, they cannot be pronounced alone in the Infl position: **Mary didn't study maths but John* [$_{I'}$ [$_{I}$ *–ed*] [$_{VP}$ ~~*study maths*~~]].
E. To reconcile points B, C and D, English inserts the dummy auxiliary *do* in Infl in order to provide a stem capable of expressing inflectional features.

This explanation for *do*-support relies on assumption A. To the extent that the explanation is satisfying, it supports assumption A.

Further evidence for assumption A comes from the fact that, although elliptical VPs must be identical to the pronounced ones in most respects, nothing forces the inflection on the pronounced verb to be identical to the inflection the elliptical verb would have had if it had been pronounced. Thus, in (102)c) we have pronounced *seeing* and elliptical *seen*, and analogous examples are furnished by (102)d-f). If we assume that the inflectional information comes from the Infl position and not from the lexical verb itself, this is precisely what we would expect. The elliptical and underlined VPs are identical in all respects. It is only the features of Infl that differ between the clauses with pronounced and elliptical VPs.

Recall from earlier that the infinitive particle *to* is seen as an instance of I. It is thus no surprise that VP ellipsis is possible if *to* occupies the I position:

(103) a. He said he would help me but he may not be able **to** ~~help me~~.
b. Juan is seeing the film and Stan is going **to** ~~see the film~~.

29. VP ellipsis is commoner in English than in many other languages. Can you find examples of VP ellipsis in German? Can you name contexts where English allows VP ellipsis but German does not? (For inspiration, try translating examples seen above.)

30. Draw the trees for the following sentences, using the IP notation for sentences. Use triangle notation for NPs and for constituents inside VP.

a. *Fred has forgotten his book.* b. *Jane has a dislike of spiders.*
c. *She helped me and I must thank her.* d. *She will sing and dance.*
e. *I should go and will go.* f. *Ann never reads poetry but John does.*
f. *I can.* (in answering the question *Can you fix this?*)

5.3. The functional category C

5.3.1 Complementisers and subordinate clauses as CPs

(104) gives examples of **complex sentences**, sentences which contain sentences.

(104) a. Wayne inquired of Sybil **if** she likes car racing.
b. Someone mentioned to me **that** Quentin has a massive social problem.
c. Jane enjoys life **because** she has a lot of work.
c. Jane enjoys life **although** she has a lot of work.

The underlined strings are called **subordinate clauses** or **embedded clauses** (*Nebensätze*). The term **clause** means roughly 'sentence', but can additionally be used of a constituent which contains a VP but which cannot be used as a freestanding sentence (this includes the underlined strings in (104) and *to*-infinitives like *to go home*). The underlined clauses in (104) are said to be 'subordinate' or 'embedded' because they are part of larger sentences,

called **main clauses** (*Hauptsätze*). In (104)a,b), the underlined clauses are complements of the verbs *inquire* and *mention*, witness the fact that they are obligatory (**Wayne inquired of Sybil*; **Someone mentioned to me*). The underlined constituents in (104)a,b) thus function like the underlined complement NPs in *Wayne asked Sybil* <u>*the time*</u> and *Someone mentioned* <u>*the problem*</u> *to me*. In (104)c,d), the subordinate clauses introduced by *because* and *although* are modifiers of VP. They could be replaced with similarly functioning PP modifiers like [$_{PP}$ *because of her work*] and [$_{PP}$ *despite her work*].

The items in bold type in (104) which introduce subordinate clauses are called **complementisers** (or *subordinators, subordinating conjunctions* in older terminology). These items should not be confused with conjunctions. Unlike real conjunctions (*and, or*), complementisers do not join two full sentences on an equal basis. Rather, complementisers turn an IP into a constituent which can be part of a larger sentence. They also indicate how the content expressed by their complement IPs is to be interpreted in relation to the larger context. Thus, *if* in (104)a) indicates that the following IP is not an affirmation that Sybil likes car racing, but a statement whose accuracy is being inquired about. In (104)c,d) *because* and *although* characterise the following IPs respectively as a reason for the situation described in the main clause, and as a factor which does not prevent this situation.

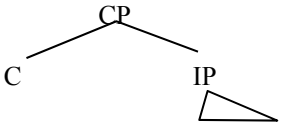
In (105), no complementiser appears, but the underlined strings are still subordinate clauses. They are obligatory complements of the verbs *think* and *say* (**Mervyn thought* and **Agatha said* sound incomplete). Since (105) and (106) are equivalent, the underlined strings in (105) are often taken to be introduced by an unpronounced variant of *that*. (*That* is the only complementiser which can perform such a disappearing act.)

(105) a. Mervyn thought <u>Georgiette was a good drummer</u>.
b. Agatha said <u>Egbert should go home</u>.

(106) a. Mervyn thought <u>that Georgiette was a good drummer</u>.
b. Agatha said <u>that Egbert should go home</u>.

The internal structure of subordinate clauses is seen in (107). The complementiser heads its own phrase, a **Complementiser Phrase** (**CP)**. 'Complementiser' is standardly abbreviated as **C** or **Comp**. (In (107)d), the symbol ∅ indicates an unpronounced complementiser of the kind implicated in examples like those in (105).)

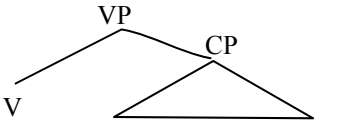
(107)



a.	whether	she left
b.	because	she left
c.	that	she left
d.	Ø	she left

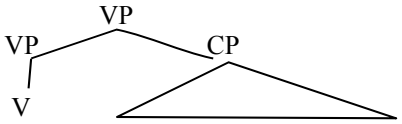
The following trees illustrate the commonest uses of CPs, as complements of verbs in (a), as modifiers of verbs in (b), as complements of nouns/adjectives in (c,d).

(108) a.



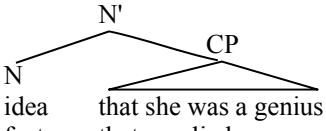
said	(that) she should go
asked	whether she should go

b.



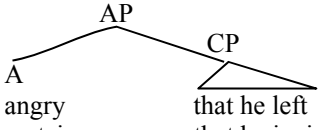
left	because he hated the music
left	after he had said goodbye

c.



idea	that she was a genius
fact	that you lied
question	whether to go

d.



angry	that he left
certain	that he is right
unsure	whether to leave

31. Draw trees for the following sentences. Use triangle notation for all NPs.

1. *He thinks that cows can sing.* 2. *He thinks that cow can sing.*
3. *She left before John did.* 4. *I like it although other people say they hate it.*

32. Prepositional complementisers are complementisers which can also be used as prepositions (cf. *He left after we ate* vs. *He left after dinner*). Give examples illustrating the uses of *until, since, except* as complementisers and as prepositions.

33. Sometimes a preposition and conjunction differ formally but are semantically similar. German *weil* (complementiser) and *wegen* (preposition) are semantically similar in that both introduce reasons for situations (*Die Straße ist nass, weil es regnet/wegen des Regens*). It is thus unsurprising that some languages use the same word for *weil* and *wegen* (e.g. English *because*). What are the prepositional counterparts of the complementisers *although* and *while*?

34. What type of constituent is *so* acting as a proform for in each sentence below?
a. *I hope/think/said so.* b. *He was once fond of her but doesn't seem so now.*

5.3.2 Another use of the C position: The syntax of questions

The C position is also involved in the syntax of questions, which we will briefly analyse. There are two types of questions. There are ***yes-no* questions** like (109), which can be answered with *yes* or *no*. There are also ***wh*-questions** like (110). These are introduced by a ***wh*-phrase** such as *who, where, when, what, how, why, whose book, which book, at what time*. The *wh*-phrase asks for information about a particular constituent in the question, which is why *wh*-questions are also called 'constituent questions'.

(109) a. Are you the boss? b. Can you dance? c. Do you collect books?
(110) a. Where are you? b. What book did you buy? c. How did you know that?

Both types of question involve **subject-auxiliary inversion** in that an auxiliary appears before the subject, and not after it as in normal IPs. If there is no auxiliary, we need *do* support, cf. (109)c) and (110)c).

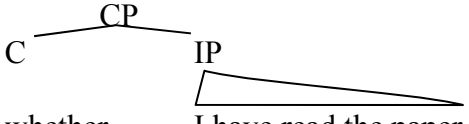
5.3.2.1 I-to-C movement and *yes-no* questions

As a first approach to subject-auxiliary inversion, consider the following variants.

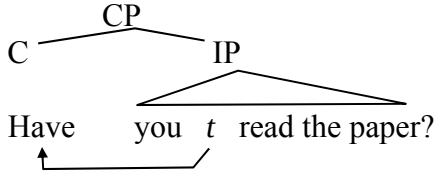
(111) a. She asked <u>whether I have read the paper</u>.
b. She asked <u>'Have you read the paper?'</u>
c. *She asked <u>whether have I read the paper</u>.
d. *She asked <u>whether 'Have you read the paper?'</u>

The underlined parts of (111)a,b) are two kinds of *embedded questions* (questions which are part of larger sentences). These respectively involve a complementiser and subject-auxiliary inversion. Notice from (111)c,d) that the complementiser and subject-auxiliary inversion are in complementary distribution: we cannot have inversion and the complementiser *whether* in the same clause. This is commonly explained by assuming that *whether* and inverted auxiliaries both occupy the C position, but this position cannot be occupied by both elements at once. The following trees bring out the parallels in the two constructions.

(112) a.



b.



In (112)a) C is occupied by a complementiser of the kind seen above. *Yes-no* questions have a similar structure, given in (112)b). This time the C position is filled by **I-to-C movement**: an auxiliary moves from the I position to the C position (as indicated by the arrow and a trace marking the original position of the auxiliary). It is worth noting that some languages form

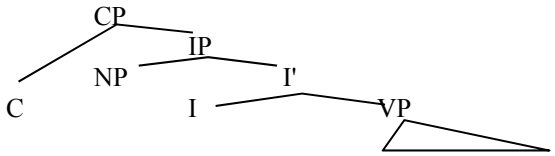
yes-no questions using a strategy more like (112)a): the C position is filled with a *question particle*, glossed as Q in (113). Standard English lacks a question particle, but achieves the same effect by the movement in (112)b).

(113) a. [$_{CP}$ [$_{C}$ ***lú***] [$_{IP}$ *tûu* *à* *sîi*]]? [!Xóõ, spoken in Botswana;
Q people past come example from Dryer 2005]
'Did the people come?'

b. *Is I can go? Is you should eat it?* [child using *is* as a form of Q; Radford 1997a:11]

Why does English require *do*-support questions like (114)a)? Part of the answer is that English has no question particle and must therefore signal that a clause is a question by moving I to C. This is simply accomplished if we wish to form a question out of a statement containing an auxiliary, say *You have read the paper*: the auxiliary moves from I to C, as we saw in (112)b). Now consider what happens if we form a question out of a statement containing no meaningful auxiliary and no other pronounced element in I, such as *You read the paper*. It would avail us nothing if we moved an unpronounced I element to the C position, as the resulting question would be pronounced identically to the corresponding statement. Therefore, the I-element moved to the C position must be a *pronounced* element, and we have seen in other cases that when English requires I to be pronounced, it resorts to the dummy auxiliary *do* (recall the cases of VP ellipsis in (102)d-g) and the emphatic use of *do* mentioned below (90)).

(114)



a. Do you *t* read the paper?

b. *Read you Ø *t* the paper?

c. *Read you *t* *t* the paper?

d. Lis- tu *t* *t* le journal? [= (c) in French]

This explanation for *do*-support assumes that English specifically forms questions using I-to-C movement. Evidently it is not possible to fill the C position by moving an element other than I. We cannot for instance move a lexical verb from the V position directly to C, yielding questions like (114)b). This is excluded because, as research on movement has discovered, heads of phrases quite generally cannot move such long distances in one step.[12] The only way that lexical verbs can appear in the C position is if they move to the I position first. This is depicted in (114)c,d) for English and French. The English variant is unacceptable since English lexical verbs quite generally do not move to I. By contrast, the equivalent question in French in (114)d) is possible since, as we saw in (101), there is good independent evidence that French lexical verbs move to the I position.[13]

Why does question formation rely so heavily on C? Recall from section 5.3 that the job of C is to indicate how its complement IP relates to the larger context. With normal complementisers the larger context is the clause of which the CP is a part. With questions the larger context is the discourse. By indicating that a clause is a question and not a statement, C signals that the discourse to be continued with an answer from the addressee of the question.

[12] For details we must refer to discussions of the *Head Movement Constraint* in longer introductions to syntax. See for instance Radford (1997: ch. 6) or Carnie (2007: ch.9).

[13] German also allows lexical verbs in C (*Liest du die Zeitung?*), but a proper discussion of this would require us to treat several other differences between German and English syntax, which would take us too far afield.

35. Draw trees for the following structures.
a. Can you drive? b. Do you know the answer? c. Do you know if he left?

36. Form *yes-no*-questions from *He should not leave* and from *He shouldn't leave*. What do these questions tell us about the differences between *not* and *n't*? (You need not draw trees for these structures, as the syntax of negation is a complex and controversial topic.)

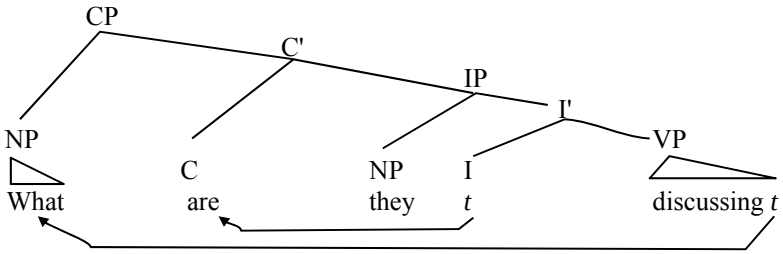
37. How do the Early Modern English questions below differ from current English questions? Describe this difference as precisely as possible in view of what was said in the present section and section 5.2.3 (including exercise 28).

a. *Saw you my master?* (1592, Shakespeare, The Two Gentlemen of Verona, Act I, Scene I)
b. *Lovest thou me?* (1611, King James Bible, John 21:17)

5.3.2.2 *Wh*-questions

We will not attempt a complete treatment of the syntax of *wh*-questions here. The aim will be to show how they relate to some other points which were made above. An example of a tree for a *wh*-question is (115). The tree shows I-to-C movement of the kind also seen with *yes-no*-questions. Additionally, the *wh*-expression *what* occupies the specifier of CP. (C can thus also project a structure conforming to the X'-schema, just like I and other heads can.)

(115)



The tree indicates that *what* reaches the front of the sentence by movement. As indicated by the trace in VP, *what* originates as complement of *discuss*. This makes sense since the verb *discuss* cannot otherwise be used without a complement: **They are discussing*. The movement analysis also makes sense of the fact that *what* is not adjacent to *discuss* in (115), whereas the object of *discuss* normally cannot be separated from its complement (**They are discussing carefully the problems*). The trace of *what* in the VP in (115) allows us to uphold the generalisation that complements are always the first thing with which the head selecting them combines (see point E in section 3, and section 4.4). Finally, the assumption that *what* starts inside the VP is reasonable given that there are contexts where *wh*-expressions are pronounced in their original positions, e.g. questions containing more than one *wh*-expression, cf. (116), and exclamations like that uttered by the second speaker in (117).

(116) a. *Who said <u>what</u>?*
b. *Which person did you meet <u>when</u>?*

(117) SPEAKER 1: *She is reading a book on the benefits of talking to vegetables.*
SPEAKER 2: *She is reading <u>WHAT</u>?!*

38. Draw trees for the following structures. To work out the position of the trace of the moved *wh*-constituent, devise a full sentence which answers the question (e.g. *I consulted the boss* as an answer to (a) below). The trace of the *wh*-expression will appear in the same position as the constituent answering the question (e.g. *the boss* in the example just given).
a. Which person did you consult? (Assume that *which* is a determiner)
b. Where did you buy it? (Assume that *where* is a PP)
c. Who did you talk to?
d. To whom did you talk?

6. The functional category D: Determiners, pronouns and the DP hypothesis

The foregoing sections focussed on the functional categories I and C, which are implicated in the construction of clauses. We now turn to a functional category associated with nouns, viz. D (Determiner), which is also clearly functional in the sense that expressions like *the, a, some* belong to the grammar of a language rather than its vocabulary. We will review arguments for two initially surprising conclusions: that pronouns as well as determiners belong to the category D (section 6.1), and that what we have hitherto called NP is really a DP, and thus headed by D rather than N (section 6.2).

6.1. Pronouns and determiners

There is clear evidence that pronouns and determiners are closely related to each other. First, we can see from (118) that various items usually called 'pronouns' are either formally identical to determiners or are at least morphologically related to them.

(118) a. I want THOSE/BOTH. *vs.* I want THOSE/BOTH books.
b. That is MINE/HERS. *vs.* That is MY/HER book.
c. I have NONE/SOME. *vs* I have NO/SOME water.
d. I don't have ANY/ENOUGH. *vs.* I don't have ANY/ENOUGH water.

The semantic parallels between the pronoun-determiner pairs in (118) are easy to verify: the pronouns on the left are interpreted exactly like the determiners on the right, except pronouns are not accompanied by nouns, so that the hearer must deduce from the context what kind of entity is being referred to. In this respect, pronoun-determiner pairs like those in (118) resemble verbs and prepositions with optional complements such as those in *I made a proposal and they* ***accepted*** *(it)* or *I went* ***inside*** *(the house)*. Parallel to arguments in section 1.5.3 that so-called 'directional adverbs' are prepositions without complements, we can say that the pronouns in (118) are determiners used without nouns.[14]

A second argument in support of the pronouns-as-determiners position is that some items called 'pronouns' can be followed by nouns just as other determiners can, cf. (119).

(119) a. You morons!
b. We linguists are unimpressed by most self-appointed defenders of 'good language'.
c. them books [non-standard variant of *those books*]

Finally, consider the utterances produced by children in (120). Here the children have not yet acquired the constraints found in adult language whereby *it* and *welch-* are only used as pronouns in the relevant senses: *Get it! Hast du welche(n)?* However, the fact that children produce such utterances without hearing them in adult language suggests that the innate cognitive faculties that lead to the development of grammar in human beings treat determiners and pronouns as the same kind of entity.

(120) a. *Get it ladder!* (uttered by a two-year-old child, Radford 1997a:155)
b. *Hast du welchen Saft/welche Zaubertabletten?* (the author's daughter, age 4 to 5; *welch-* means roughly to 'some' in these contexts, not 'which')

Thus, determiners and pronouns are closely related. This follows if they both belong to the same category, D. They differ only in whether they can be used with nouns immediately following them or, as we see shortly, whether they take projections of nouns as complements.

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[14] Not all pronouns are morphologically related to determiners: *the* is never a pronoun and *she, he* and *it* have no accompanying nouns. However, these pronouns are interpreted analogously to *the*-phrases, witness examples like (i) below, and there are languages where personal pronouns are formally identical to definite determiners (cf. French *le* 'the[masculine] or him/it', *la* 'the[feminine] or her/it') The formal discrepancies between *the* and *he/she/it* could thus be legitimately treated as a case of *suppletion*, the phenomenon in which forms of the same lexeme bear no formal relation to each other (cf. *go/went, good/better, one/first*).

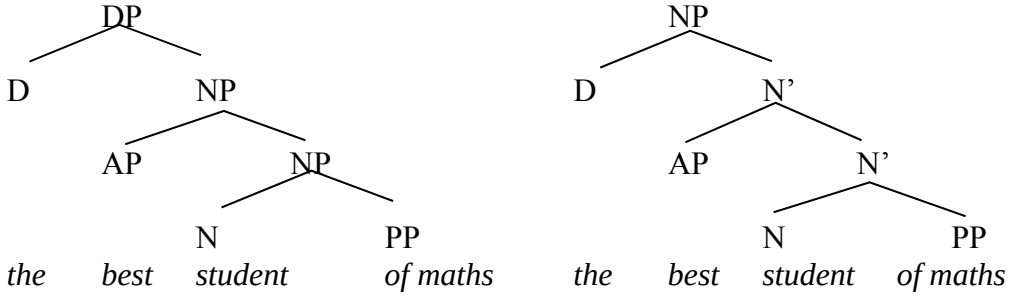
(i) a. John was so obnoxious that they tried to get the guy arrested. [*the guy = him*]
b. She hated the dress she made so much that she tore the thing up. [*the thing = it*]

6.2. Determiners, pronouns, NPs and the DP hypothesis

6.2.1 Introduction

Until now we have adopted the traditional assumption that expressions like *the car* are NPs, and are thus headed by nouns. This proposal is an intuitively plausible starting point for the analysis of these expressions, and familiarity with it is essential given its use in many sources, including essential works like Huddleston & Pullum's (2007) grammar of English. However, we now discuss a more recent alternative proposal, called the **DP hypothesis**. It asserts that what we have called NPs are really **Determiner Phrases** (**DP**s), which means that the head of *the car* is *the* and not *car*.[15] Before discussing the evidence for the DP hypothesis, consider the following trees, which contrast the DP hypothesis with the traditional NP approach assumed until now.

(121) a. The DP Hypothesis: b. The traditional NP Hypothesis:



The NP and the DP analyses assume largely parallel structures. The main difference is that the head of the structure in (121)a) is *the*, not *student*, so what was formerly called NP is now DP. Another difference is that the label NP in (121)a) corresponds to all constituents formerly labelled N'. The logic here is that strings like *(best) student of maths* are now seen as the largest kinds of constituents of which N is head. The label N', which describes intermediate (incomplete) projections , can thus go into retirement. (Recall from section 4.1 that modifiers are adjuncts, which means that they combine with a particular category to form a larger instance of the same category, so it would be incoherent to assume that *best* in (121)a) combines with N' to form an NP.)

In what follows, we will use the abbreviation **NP/DP** as shorthand for "the kind of constituent which was traditionally called 'NP' but is called 'DP' in the DP hypothesis".

6.2.2 Arguments for the DP hypothesis

We now run through some of the simpler arguments for the DP hypothesis.

Argument 1: Most categories seen thus far, including N, V, P, A, I and C, can take complements. Under the old NP analysis, no candidate was found for a complement of D, and it was unclear why D should differ from other categories in this respect. Under the DP hypothesis, this mystery vanishes: D *does* have a complement, namely NP.

Argument 2: As noted in section 6.1, determiners differ in their ability to be used as pronouns, i.e. without accompanying projections of nouns. Some determiners must occur with nouns (*I need the car/*I need the*), some never do so (**She genius solved the problem*) and others can be used in either way (cf. *I want those (books)* and others in (118)). There do not seem to be reliable semantic rules which can predict which of these three classes a given D-element will belong to. If there were, we would expect such rules to be operative in other languages, contra what we see in (122). We must thus assume that an English speaker's knowledge about individual determiners includes not only information about its meaning, but

[15] Carnie (2007) and Haegeman & Guéron (1999) give other introductions to the DP analysis. Alexiadou et al. (2007) is an advanced textbook on NP/DP. One of the first advocates of the DP hypothesis was Abney (1987).

also information about whether or not it can be accompanied by a noun (or N'/NP).

(122) a. **I idiot forgot the key.* - *Ich Idiot habe den Schlüssel vergessen.*
b. **I left the at home.* - *Ich habe den zuhause liegen lassen.*

The fact that every determiner 'decides' whether or not it can be accompanied by (the projection of) a noun is expected under the DP hypothesis, since normally it is the head of a phrase which decides what other entities can appear in that phrase. The fact that different determiners require, allow or disallow projections of nouns is analogous to the fact that different verbs, adjectives and prepositions require/allow/disallow complements in (123).

(123) a. OBLIGATORY COMPLEMENT: [$_{VP}$ *hit it*], [$_{AP}$ *fond of it*], [$_{PP}$ *to the house*]
b. OPTIONAL COMPLEMENT: [$_{VP}$ *eat* (*it*)], [$_{AP}$ *proud* (*of it*)], [$_{PP}$ *inside* (*the house*)]
c. NO COMPLEMENT: [$_{VP}$ *dine* (**it*)], [$_{AP}$ *dead* (**of the cold*)], [$_{PP}$ *here* (**the house*)]

Astute readers might ask whether considerations like those just discussed could equally well be used to argue *against* the DP hypothesis. One might take the facts in (124) below to show that nouns 'decide' whether they require/need determiners, much as the verbs, adjectives and prepositions in (123) 'decide' whether they allow, disallow or require complements. In reply, note that the generalisations in (124) apply to *whole classes of nouns*, not to *individual nouns*. The fact that *book* must be used with a determiner in the singular is not a fact specific to the noun *book* which must be mentioned in its lexical entry. It is entirely predictable on the basis of the statement about the English determiner system in (124)b). By contrast, the behavioral patterns seen in (123) cannot be fully predicted from general principles of grammar. They must be stated in the lexical entries for individual verbs, adjectives and prepositions. Similarly, whether determiners allow or require nouns after them is an unpredictable fact which is part of the memorised information associated with every individual determiner. Thus, the compatibility of determiners and nouns with each other argues more strongly for the DP hypothesis than for the NP hypothesis.

(124) a. Determiners do not appear with proper names (names of people or places):
Marie left France. / **The Marie left the France.*
b. Determiners obligatorily appear with singular countable nouns:
**Student read book.* vs. *The student read a book*.
c. Determiners are optional with singular uncountable nouns and plurals:
(*The*) *students read (the) poetry and (some) plays*.

Argument 3: The next argument starts with the observation that pronouns have the same category as full NPs/DPs like *the teacher*. We know this because pronouns and NPs/DPs appear in the same environments and have the same functions: Any item that can take NPs/DPs as arguments can also take pronouns, cf. (125).

(125) a. *The teacher gave the book to the student.*
b. *She gave it to him.*

By consequence, if expressions like *the teacher* are NPs, then pronouns must be NPs. We have adopted this time-honoured assumption until now, but it is actually quite puzzling. A phrase of category XP contains a head of category X (e.g. VP must contain V). However, section 6.1 showed that pronouns are a species of determiner, so the pronoun itself is not an N which legitimates the label 'NP'. If we treat pronouns like those in (125)b) as NPs, we will have to assume that pronouns are determiners which combine with *unpronounced nouns* (cf. Postal 1969). Accordingly, *they* would be [$_{NP}$ *they* X], where X is an unpronounced noun, perhaps a silent *one* comparable to what is seen in pronoun-like expressions like *them'uns* 'they' (i.e. 'them-ones') found in some dialects. However, X does not seem to exist. Unlike normal nouns, X cannot be modified with adjectives: We do not find **I kept they good* (meaning 'I kept the good ones'), in contrast to what we find with pronominal expressions that really do contain nouns (*them'uns – them good'uns; herself – her good self*).

In the DP approach, no such problems arise. *The teachers* and *they* are both DPs, since both

are headed by D. We need not posit a problematic silent N with *they* in this analysis.

Argument 4: Further support for the DP hypothesis is based on parallels between NPs/DPs and sentences. In (126) and (127), the (b) examples involve nominalisations (nouns derived from verbs) which retain the arguments of the nominalised verb. We see from these examples that nominalisations, like clauses, have subject positions, and these can be occupied by the same kinds of arguments as in (active and passive) sentences. The DP hypothesis maximises the parallels between nominalisations and clauses in that in both kinds of structure we find that lexical phrases (VP and NP) appear as complements of functional heads (I and D respectively).

(126) a. [$_{DP}$ The enemy [$_{D'}$ [$_{D}$'s] [$_{NP}$ complete destruction of the building last Friday]]]
b. [$_{IP}$ The enemy [$_{I'}$ [$_{I}$] [$_{VP}$ completely destroyed the building last Friday]]]

(127) a. [$_{DP}$ The building [$_{D'}$ [$_{D}$'s] [$_{NP}$ complete destruction by the enemy last Friday]]]
b. [$_{IP}$ The building [$_{I'}$ [$_{I}$ was][$_{VP}$ completely destroyed by the enemy last Friday]]]

6.2.3 The interpretation NP/DP and potential objections to the DP analysis

Despite the evidence just seen, it would be understandable if readers are sceptical towards the DP hypothesis. If it were intuitively self-evident, linguists would have embraced it long before the 1980s. A source of scepticism towards the DP analysis is that many people have a strong intuition that the head of a NP/DP like *the car* must be the noun.[16] This intuition seems to stem partly from the intuition sometimes voiced by students that nouns are somehow 'more important' than determiners. This idea has superficial support in the fact that a child's utterance *Go sandpit* has some chance of being understood in the sense "We should go to the sandpit", while ***We should to the*** is unintelligible. This shows that we can communicate better without determiners than without nouns. But it does not show that *sandpit* is head of *the sandpit*. If it did, it would also show that *sandpit* is head of *to the sandpit*, but this cannot be right given that PPs are not a kind of NP/DP (sect. 1.5.3).

Students have voiced other reservations about the DP hypothesis which require more discussion. These can be expressed in terms of the following two points:

(i) We were told in morphology classes that a compound like *water bed* is headed by *bed* because it names a kind of bed, but this seems to have been forgotten in the DP analysis. Why do we not say that the NP/DP in (128) names a kind of bed, and is thus headed by *bed*? Does the DP analysis entail the surreal-sounding idea that (128) names 'a kind of *the*'?

(128) *the big bed in the upstairs room*

(ii) Normally everything in a phrase gives information about the head. In (128) the AP and PP give information about *bed* (by describing its size and location). Can we not also say that *the* gives information about *bed* (say by characterising the bed as a specific bed that the hearer can identify)? Does the DP hypothesis entail that *bed in the upstairs room* in (128) is giving information about *the*? If so, this seems weird.

To meet these objections, we must firstly examine some basic facts about the interpretation of determiners and nouns. The commonest function of determiners is to indicate which specific instance(s) of an entity or individual the speaker wishes to refer to. Different determiners (including pronouns) do this in different ways, for instance as follows:

(129) a. I bought this bed. [=a specific bed present in the context, often near the speaker]
b. I bought the bed. [=a specific bed that can be uniquely identified, e.g. since it has already been mentioned or is the only visible bed, etc.]
c. I bought her bed. [=a specific bed identified with reference to its former owner]
d. I bought a bed. [=a specific bed which was not previously mentioned]

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16 The intuition is often exploited to explain the concept of headship in introductions to syntax, a practice followed in in sections 1.4 and 1.5.1 above.

e. I bought both beds. [=two specific beds that are the only two beds in the context]
f. I bought it. [=a specific entity that was already mentioned]

By contrast, **nouns are non-referential**: they do not in themselves refer to specific entities or individuals. Nouns only describe *properties of entities/individuals*, and thus only contribute sufficient information to name *a kind of entity*. If someone says *the bed*, the determiner points to a specific entity identifiable from the context, while *bed* facilitates the identification of this entity by indicating that it is has properties of the kind of entity known as a *bed* (e.g. the property of being an object made for sleeping on).

The non-referential nature of nouns comes to the fore in contexts like (130). The nouns in bold type lack determiners. Notice that it is hard (if not completely impossible) to refer to such nouns with pronouns. This is because pronouns by preference refer to contextually present specific entities, but the bold-printed nouns do not refer to specific entities. For the pronouns to be usable in these contexts, the bold-printed nouns must be provided with determiners (*in the bed, on the stage, a teacher at the school, a driver of a taxi*). This is our first indication that reference to specific entities is achieved by determiners and not by nouns.

(130) a. *I was in **bed**. Then I noticed it was damaged.* [*it ≠ bed*]
b. *The actors were already on **stage**. It was ornately decorated.* [*it ≠ stage*]
c. *Edith likes being a **school** teacher. It is a pleasant place to work.* [*it ≠ school*]
d. *Wayne was a **taxi** driver until he drove it into a fence.* [*it ≠ taxi*]

Since nouns do not in themselves refer to specific instances of entities, they could apply to an unlimited number of entities fitting the description provided by the noun. Thus, *the ten guests were in bed* does not tell us how many beds they occupied, even though the noun is singular, while *the ten guests were in the bed* implies that they were all in one bed.[17]

(131) is another illustration that reference to specific entities/individuals is the job of determiners and not of nouns. The underlined constituents are instances of a determinerless NP (or N' in the traditional NP analysis). Such NPs are only found with verbs like *be* and *become* which characterise their subjects as instances of the kind of individual named by the underlined NP. We know that the underlined NPs refer to kinds of individuals/entities and not to specific instances of them since *president* and *head* are singular, although we are dealing with multiple presidents/heads in the context, and since we cannot refer to the underlined NPs with pronouns. (We cannot continue (131)a) with *but he was admired in both cases*, or (131)b) with *It determines the properties of the whole phrase.*)

(131) a. Two people younger than 45 have become President of the USA.
b. Words in a sentence are nearly always head of a phrase.

To sum up, determiners (including pronouns) have the function of referring to particular entities. The nouns (or NP/N' constituents) found with determiners do not refer to specific entities. They only refer to *kinds of entities*, thus helping us to identify the entity which the determiner is intended to refer to. This can be expressed in terms of the DP hypothesis by saying that NP names a kind of entity, and D turns this NP into an expression which refers to a specific instance of this kind of entity.

We can now return to the potential objections to the DP hypothesis noted above. Objection (i) was that *the bed* must be headed by the noun since it names a kind of bed, not a kind of *the*. We can now see that this objection is based on an imprecise use of the expression *kind*

[17] We are not claiming that NPs/DPs with determiners always refer to specific entities. The NPs/DPs underlined in *They read the newspaper* and *They go to the pub* need not refer to a single, specific paper/pub. However, such non-specific uses do not involve the normal use of *the*, and are excluded in many cases (*they read the book, they go to the café* must refer to a single specific book/café). We also find that non-specific uses of determiners do not have a consistent distribution between languages and varieties. The non-specific reading of *They read the paper* can be *Sie lesen Zeitung* in German. In American English *They went to the hospital* has a non-specific reading involving multiple hospitals which must be *They went to hospital* in British English.

of. A full NP/DP like *the bed* does not strictly speaking refer to *a kind of entity*, but to a specific *instance of an entity* of the kind that the noun *bed* refers to.

Objection (ii) was that the constituents in a phrase normally give information about the head of the phrase, but it seems intuitively more plausible to say that determiners give information about nouns than vice-versa. However, this objection also suffers from terminological imprecision. The DP analysis does not entail that 'nouns give information about determiners'. What it does claim, in full accord with the observations about the semantics of NP/DP just reviewed, is that nouns provide information about the entities/individuals referred to by determiners: in *the bed*, the noun indicates that the entity referred to by the determiner has the properties of a bed.

We have now seen that some common, largely intuition-based objections to the DP hypothesis are not compelling. It should not go unmentioned that some syntacticians have argued against the DP hypothesis (e.g. Bruening 2009), raising issues that cannot be addressed in an introductory text. This is one reason why the term 'DP *hypothesis*' is used even by its proponents. However, the evidence for this hypothesis makes it equally justifiable to refer to the traditional NP analysis as the 'NP hypothesis'. Whether it is better to assume the DP or the NP hypothesis (or, perhaps, some kind of compromise between them) is an important question with interesting consequences for the study of syntax in general, but until this question is resolved it is important to understand both analyses, especially since both are well-represented in the literature.

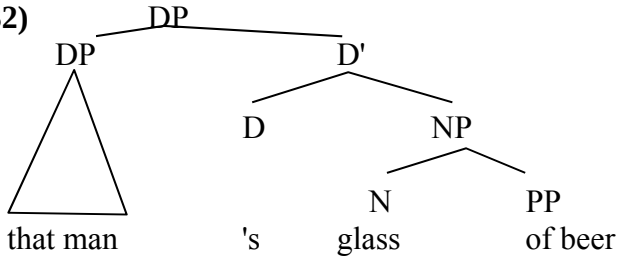
6.2.4 More details on the structure of DP

Readers who can draw trees using the traditional NP analysis can easily make the transition to drawing trees that reflect the DP hypothesis. The main differences are that the constituents formerly known as NP and N' now become DP and NP respectively. We now say that N and any complement it has form NP, and that modifiers adjoin to NP. Apart from this, we need only discuss two further points: possessive *'s* and DPs that can be shown to have unpronounced determiners.

This section will assume the DP hypothesis. We will drop the theory-neutral term 'NP/DP'. The label 'NP' will now longer refer to a constituent containing a determiner, but to the constituent formerly called N'.

Possessive 's: The simplest treatment of possessive*'s* in the DP analysis is to treat *'s* as a type of determiner which obligatorily introduces a DP in its specifier, as in (132) (here DP also conforms to the X' schema). This analysis reflects the observation made below (72) in section 4.1 that possessive *'s* is not an affix added to a noun, but combines with what we now call a DP (recall examples like [$_{DP}$ [$_{DP}$ *the person over there*]*'s car*]).

(132)



Treating *'s* as a determiner makes sense in view of the fact that other languages have items otherwise used as possessive determiners in the D position, consider Early Modern English *the man his books* and non-standard German *dem Mann seine Bücher*.[18] Like other determiners, the job of *'s* is to point to a specific entity of the kind described by its NP complement. *'s* differs from other determiners in that it identifies the referent of NP by

[18] Allen (2008: ch. 5 and 6) gives examples of such possessive structures in earlier English and other languages.

characterising it as an instance of NP that the DP in its specifier *possesses* or *has*. Thus, the instance of *glass of beer* referred to in (132) is the one which *that man* has.

Unpronounced determiners: The last section mentioned contexts like *go to bed* or *be president* where nouns/NPs are used without determiners and do not refer to specific entities/individuals, cf. (130), (131). Such NPs are called **bare NPs**. We will now see that these differ from the underlined expressions in (133)/(134), which are called **bare DPs** since there is evidence that they are not just NPs, but DPs with unpronounced determiners.

(133) Proper names (names of people or places):
Marie left France, although she regarded it as her favourite country.

(134) Mass (uncountable) nouns and indefinite plurals:
a. *Children like ice cream. They prefer it to healthy food.*
b. *People walked out because they don't like boring music.*
c. *Example sentences are crucial. You can't teach syntax without them.*

A difference between bare NPs and bare DPs is that bare DPs are normal uses of the nouns in question, whereas bare NPs are not. Bare NPs like those in (130)/(131) only occur in a highly restricted set of contexts (certain PPs, compound nonheads, certain uses of verbs like *be, become*). Bare NPs like those in *go to bed* or *become president* are unusable in most contexts where DPs are found. They cannot be subjects of sentences or objects of most verbs (**Bed was comfortable; *President was popular; *I bought bed; *He liked President*). By contrast, bare DPs are possible in all contexts where other DPs appear. Bare DPs can be subjects of sentences and complements of any verb or preposition that otherwise takes DP complements, as is for instance seen in (133)/(134). If we change the nouns underlined in (133)/(134) to singular countable nouns, determiners become obligatory. We can change (133) into *The woman likes the country* but not **Woman likes country*. Thus, the subject and object of *like* must be DPs, not NPs. This in turn entails that the underlined expressions in (133)/(134) must be DPs (hence the term 'bare DP'), and must therefore have unpronounced determiners.

Another difference between bare DPs and bare NPs concerns pronouns. We saw that pronouns cannot easily refer back to bare NPs like those in (130)/(131), but there is no problem in referring back to bare DPs with pronouns (we see several instances of this in (133)/(134)). Bare DPs behave like most other DPs in this respect, so we have another indication that bare DPs really are treated like DPs for syntactic purposes, and must thus have unpronounced determiners.

Another argument for unpronounced determiners in bare DPs (inspired by Radford 1997:95ff) starts with the fact seen in (135) that pronouns which refer to bare DPs can only be third person pronouns. First or second person pronouns are disallowed, even if the utterances are directed at a group of linguists. Some factor forces bare DPs to be interpreted as third person expressions. The most plausible candidate for this factor is an empty determiner which is specified as third person, since person features are usually specified by determiners, not nouns, cf. *We linguists underrate ourselves/*yourselves/*themselves* vs. *You linguists underrate yourselves/*ourselves/*themselves*.

(135) a. Linguists read a lot, don't they (*don't you/*don't we).
b. Linguists sometimes underrate themselves (*ourselves/*yourselves).

The empty determiners posited for English have pronounced counterparts in other languages. Romance languages like French must use pronounced determiners for names of countries and for all plurals and mass nouns in contexts like (134). Determiners occur with personal names in Greek and some colloquial German varieties (*der Hans, die Merkel*). This does not prove that English *must* have silent analogues of these determiners, but it fits well with the other evidence for silent determiners.

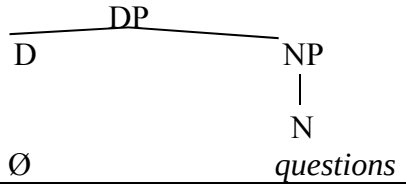
A related point is that at least some children pronounce determiners which they do not hear in adult language in the same contexts. As noted earlier, the author's daughter around the

ages four and five used *welch-* as a determiner for indefinite plurals and singular mass nouns (*Hast Du welchen Saft? Wir brauchen welche Steine*), where no determiner is pronounced in adult German. Child language is often thought of as 'less complex' than adult language, but here we have a case where a child produces a structure which (at first glance) is 'more complex' than adult language. It is interesting that this putative greater complexity consists in the overt manifestation of an item which linguists assume to exist for completely independent reasons, despite its lack of effect on phonology.

While empty determiners are not assumed by all linguists, we have seen that they have considerable evidence in their favour. They are practically unavoidable if one accepts the DP hypothesis. They should thus be included in trees that reflect the DP hypothesis. The tree in (136)b), which represents the underlined bare DP in (136)a), illustrates a common way of representing empty determiners in trees. In lieu of the zero symbol Ø, other texts use the symbol *e* (for 'empty') or simply write nothing under D.

(136) a. *Contact me if you have questions or if you find the above arguments implausible*.

b.



39. Draw trees for the following phrases. Assume the DP hypothesis.

a. *a student of history* b. *the student in the car*
c. *that old house* d. *Sweden and the other Scandinavian countries*
e. *Ann and her secretary* f. *for religious people and their beliefs*
g. *the workers' wages* h. *Grandma's list of underrated rock guitarists*
i. *I liked Mary's performance, but Jane liked Fred's.* [Hint: compare this with VP ellipsis]
j. *Liszt's piano arrangement of Beethoven's third symphony*

7. Bibliography

Of the works below, the English grammar in Huddleston/Pullum should be noted as a comprehensive source of facts about English which incorporates insights from modern linguistics. Most other works cited are introductions to syntax. They all have their virtues, but perhaps Carnie (2007) can be suggested as the first port of call for students wanting a reader-friendly book-length introduction to recent syntactic research.

The works marked # below are cited in the text above as sources of specific ideas. They are technical works which presuppose more background in syntax than can be provided here.

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