

2 Diagnostics for Syntactic Structure

Discussion

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0 Introduction

In this chapter we start our systematic analysis of the structure of sentences. We will first elaborate some techniques for discovering sentence structure, so that, whenever we formulate a hypothesis about a particular structure, we can test this hypothesis using a well-defined set of analytical tools. We will decompose English sentences and demarcate their core constituents. The current chapter mainly concentrates on the position of the verb in the structure of the sentence. In the next chapters, we also turn our attention to the relation of the subject to the sentence and to the verb. Once we have determined what the components of the sentence are, we can formulate a hypothesis concerning the derivation of the sentence, that is, the way sentences are built up from such components. This will be further worked out in Chapters 3, 4, and 5.

Throughout the discussion, two kinds of data will be used. On the one hand, we use attested examples. Sometimes, we will manipulate these examples to clarify structural relations. In order to test our hypotheses we will often also create our own examples. When using attested data, we are acting like scientists doing field-work. We discover phenomena and we examine them in their natural settings. When creating our own examples, we are like scientists who conduct experiments in their laboratories.

On the basis of our observations and of our experiments, we will formulate a number of general hypotheses about how sentences are internally organized and how they are put together. These hypotheses will guide us in later sections.

The chapter is organized as follows: Section 1 develops a series of tests for identifying strings of words inside a sentence as units or constituents. Section 2 focuses on constituents containing a verb and examines two competing hypotheses about the composition of verbal constituents or, to introduce the technical term, verb phrases. According to one hypothesis, the verb phrase contains the verb and the auxiliaries of the sentence; according to the alternative hypothesis, the verb phrase contains the verb, its complements, and its adjuncts. We will show that the second hypothesis is both empirically and theoretically preferable.

While discussing the structure of sentences, we will elaborate the far-reaching theoretical proposal that all syntactic constituents are the result of combining or merging two constituents, and that constituents are hierarchically organized around a head. The head first combines with its complement. The resulting constituent then combines with the specifier. The need to postulate a specifier as one essential part of the constituent will initially be motivated on the basis of our analysis of the structure of the noun phrase in section 3. Head, complement, and specifier are the three core components of the phrase. Phrases may be further augmented by means of adjoined constituents. Section 4 summarizes the chapter.

1 Diagnostics for Structure

1.1 Structure and meaning

The discussion of the first chapter of this book was based on the hypothesis that language is two-faced: it unites form and interpretation (“meaning”). This hypothesis is trivially correct in the sense that words have a form and a meaning, but we have also seen that the arrangement of words into a sentence in itself is meaningful in that it also contributes to the interpretation of the sentence. Consider the underlined string of words in (1). What kind of information (“meaning”) does it contribute to the sentence? Could you replace the underlined words by just one word?

- (1) Mr Straw decided to appoint a panel of independent doctors to examine General Pinochet on January 5. (*Guardian*, 13.1.2000, p. 1, col. 3)¹

The string of words *on January 5* provides information about a date, or, in more general terms, about ‘time’. The date given, *January 5*, refers to the time of some action or event. Which event is this? In fact, upon reading our example carefully, it seems that there are three possible ways of relating *on January 5* to the sentence: (i) *on January 5* may denote the time of Mr Straw deciding, (ii) it may denote the time of appointing, or (iii) it may denote the time of examining. (1) is three ways **ambiguous**: one string of words has three interpretations. The ambiguity does not reside in a lexical ambiguity of any one of the individual words in the string *on January 5*. These words have a constant meaning in this example, whichever the interpretation chosen. Let us look more closely at each of the three readings.

In the first reading, Mr Straw decided to do something, and his decision was taken on January 5. On January 5, what did Mr Straw decide to do? The answer to this question is that he decided to appoint a panel of independent doctors to examine General Pinochet. The string of words *to appoint a panel of independent doctors to examine General Pinochet* is a unit that functions as the object of the verb *decided*. The string of words *on January 5* itself is not part of the answer to the question as to what Mr Straw decided, it is not part of the object of *decide*:

- (1) a Mr Straw decided
 WHEN? – [on January 5]
 WHAT? – [to appoint a panel of independent doctors to examine GP]

In the second reading of the sentence, Mr Straw decided to do something and this activity would take place on January 5. To the question what Mr Straw decided to do, the answer would now be “to appoint a panel of independent doctors to

¹ Cf. sentence (2) in Exercise 3 of Chapter 1.

examine General Pinochet on January 5.” In this reading of (1), the string *on January 5* is part of the answer to the question of what Mr Straw decided, in other words it is part of the object of *decide* and it specifies the time of appointing. The time of Mr Straw’s decision-making itself is now not specified. In this reading, the object of *decide* is the string *to appoint a panel of independent doctors to examine General Pinochet on January 5*. To the question when he will appoint the panel the answer is that he will appoint them on January 5. To the question who Mr Straw will appoint on January 5 the answer is: “a panel of independent doctors to examine General Pinochet.” For this second interpretation, we can represent the relations between the elements of the sentence informally as in (1b). In (1b) *on January 5* is part of the object of *decided*. Recall that in (1a) above, the string *on January 5* was not part of object of *decided*.

- (1) b Mr Straw decided
 WHAT?
 [to appoint a panel of independent doctors to examine GP on January 5]
 to appoint
 WHEN? – [on January 5]
 WHO? – [a panel of independent doctors to examine GP]

Finally, in the third reading, the string *on January 5* specifies the time of the examining. We are not told when Mr Straw took his decision, nor are we told when the appointment will take place, but we are told on which date the appointed panel will examine General Pinochet. In this reading, Mr Straw again decided to do something. To the question what Mr Straw decided to do, the answer would again be “to appoint a panel of independent doctors to examine General Pinochet on January 5.” In the third reading of (1), the time of the decision-making is not specified. The direct object of *decide* is the string *to appoint a panel of independent doctors to examine General Pinochet on January 5*. The string *on January 5* is part of the object of *decide*, but in the third interpretation it does not specify the time of appointing. *On January 5* specifies on which date the panel will examine General Pinochet. The answer to the question who Mr Straw will appoint is “a panel of independent doctors to examine General Pinochet on January 5.”

- (1) c Mr Straw decided
 WHAT?
 [to appoint a panel of independent doctors to examine General Pinochet on January 5]
 to appoint
 WHO? – [a panel of independent doctors to examine General Pinochet on January 5]
 to examine
 WHO? – [General Pinochet]
 WHEN? – [on January 5]

(1) thus has three interpretations which arise from the three different relations that the string *on January 5* can have with the remainder of the sentence. As mentioned, the string *on January 5* itself does not change its meaning in the three interpretations. *On January 5* denotes a temporal specification, the fifth day of the month of January. What changes is the way this temporal specification is integrated into the sentence. In (1c) *on January 5* specifies the timing of *examine General Pinochet*; in (1b) it specifies the timing of *appoint a panel of independent doctors to examine General Pinochet*; in (1a) *on January 5* specifies the timing of *decided to appoint a panel of independent doctors to examine General Pinochet*. The different meanings come about by the way the unit *on January 5* is hooked onto the sentence; in other words, the different meanings come about by the various ways by which the sentence can be assembled. The three readings of *on January 5* are due to the structural relations in the sentence, its **syntax**. Ambiguities which arise through different structural relations are **structural ambiguities**.

The ambiguity that arises in (1) is not an exceptional phenomenon. This type of structural ambiguity is fairly frequent in actual usage, even though it rarely leads to problems of communication. In a particular communicative setting, the reader/hearer of ambiguous sentences will be able to pick out the appropriate reading easily.² Sometimes, though, a writer/speaker may deliberately exploit the potential for ambiguity created by the syntax. The following extract illustrates this point:

- (2) I went to the National Gallery today, but it brought back painful memories of B., so I went back to Soho and paid two pounds to watch a fat girl with spots remove her bra and knickers through a peephole. I watched her through a peephole. She didn't remove her underclothes through a peephole. Query: are there night classes in syntax? (Sue Townsend, *Adrian Mole: The Wilderness Years*, 1993: 248–9.)

Let us look at (1) once again. Our discussion of this example implies that a sentence is not put together at one go but that it is assembled step by step from smaller units. The different readings of (1) can directly be related to the way the sentence is assembled. In particular, we can relate the ambiguity of (1) to the timing of hooking the unit *on January 5* onto a particular part of the sentence. In (1c), the string *on January 5* belongs with *to examine General Pinochet*. We could say that when assembling the sentence, the string *on January 5* is hooked onto the string *to examine General Pinochet*, creating a unit *to examine General Pinochet on January 5*. The resulting unit is then hooked up to *a panel of independent doctors*. In turn, the resulting unit *a panel of independent doctors to examine General Pinochet on January 5* is hooked onto *appoint*, and finally the result is itself hooked up to the verb *decided* and its subject *Mr Straw*.³ (3a) schematizes the steps of the assembly process to create the reading in which *on January 5* modifies *examine*.

² See Sperber and Wilson (1986) for an account of this type of disambiguation.

³ This sketch is provisional. We return to the various steps in this chapter and in Chapters 3 and 4.

- (3) (i) to examine General Pinochet + [UNIT1 on January 5]
 \Rightarrow [UNIT2 to examine General Pinochet [UNIT1 on January 5]]
- (ii) a panel of independent doctors + UNIT2
 \Rightarrow [UNIT3 a panel of independent doctors [UNIT2 to examine General Pinochet [UNIT1 on January 5]]]
- (iii) appoint + UNIT3
 \Rightarrow [UNIT4 appoint [UNIT3 a panel of independent doctors [UNIT2 to examine General Pinochet [UNIT1 on January 5]]]]
- (iv) Mr Straw decided + UNIT4
 \Rightarrow [UNIT5 Mr Straw decided [UNIT4 to appoint [UNIT3 a panel of independent doctors [UNIT2 to examine General Pinochet [UNIT1 on January 5]]]]]

In order to achieve the reading in (1a), we assemble the sentence rather differently. When we link the string *to examine General Pinochet* with the string *a panel of independent doctors* we do not yet integrate *on January 5*. The temporal specification only comes in later, when we are putting together *decide* with the remainder of the sentence.

- (4) (i) a panel of independent doctors + [UNIT1 to examine General Pinochet]
 \Rightarrow [UNIT2 a panel of independent doctors [UNIT1 to examine General Pinochet]]
- (ii) appoint + UNIT2
 \Rightarrow [UNIT3 appoint [UNIT2 a panel of independent doctors [UNIT1 to examine General Pinochet]]]
- (iii) Mr Straw decided + UNIT3
 \Rightarrow [UNIT4 Mr Straw decided [UNIT3 to appoint [UNIT2 a panel of independent doctors [UNIT1 to examine General Pinochet]]]]
- (iv) UNIT4 + [UNIT5 on January 5]
 \Rightarrow [[UNIT4 Mr Straw decided [UNIT3 to appoint [UNIT2 a panel of independent doctors [UNIT1 to examine General Pinochet]]]] [UNIT5 on January 5]]

In representation (3), the unit *on January 5* is deeply integrated into the sentence; it is combined early on (in step (i)) with the verb *examine*. In representation (4), the same unit is added at the final stage of the construction of the sentence (in step (iv)). The brackets used in the schematic representations above reflect the level of integration: in (3) *on January 5* is followed by 5 right-hand brackets; in (4) by only 2 such brackets.

The displays in (3) and in (4) are imprecise. For one thing using labels such as UNIT1, UNIT2 suggests that all these entities are similar in nature, though they make different contributions to the interpretation of the sentence. Also the representations are very difficult to read. They are a complex ways of showing the history of how the sentence is put together and how the interpretations are arrived at. In the remainder of this chapter we will elaborate a more precise and transparent way for representing the structure of sentences and we will also provide tools to determine the structural units.

1.2 Intuitions about structure

In section 1.1 we talked about structure in a fairly intuitive and loose way. We appealed to our linguistic awareness as speakers of English to informally represent some of the structural units that build the sentence with the different interpretations associated to the sentence. We indicated these units by bracketing, [. . .]. Units of form, i.e. sequences of words, such as *on January 5*, are taken to correspond to units of meaning, the string *on January 5* is a time specification.

Consider a sentence such as (5a). Going by your intuitions as to who does what and when, how would you identify the major meaningful units in this sentence? Represent each unit by using square brackets ([_{UNIT} . . .]).

(5) a The customer in the corner will order the drinks before the meal.

Probably, you will have bracketed the string as in (5b):

(5) b [_{UNIT} The customer in the corner] will order [_{UNIT} the drinks] [_{UNIT} before the meal].

Square brackets will from now on be used to demarcate units of structure. We don't have to label each set of brackets as "UNIT": the very presence of the brackets means that the string of words contained in the brackets is a unit.

(5) c [The customer in the corner] will order [the drinks] [before the meal].

In (5c) the brackets identify three units or **constituents**: (i) *the customer in the corner*, (ii) *the drinks*, (iii) *before the meal*. There is no indication as to how the auxiliary *will* and the verb *order* are integrated into the sentence. In Chapter 1, section 2.2.1, we saw that auxiliaries tend to associate with a verb. We might propose that the auxiliary *will* in (5) forms a unit with the verb *order*. On this assumption, we could formulate the hypothesis that the assembly of the sentence is as in (5d).

(5) d **Hypothesis A**
[The customer in the corner] [will order] [the drinks] [before the meal].

But others might say that the bracketing in (5d) is counter-intuitive because the verb *order* should first be assembled with the string *the drinks*, which is the direct object of the verb and which refers to the entity affected directly by the action expressed by the verb. If you use the verb *order* you expect to find a direct object: 'order what?' 'Ordering' is an activity that implies there will be some entity being ordered. This relation between *order* and *the drinks* is independent of the presence of the auxiliary *will*: we can use the string *order the drinks* also in the absence of an auxiliary such as *will*:

(5) a' The customer in the corner orders the drinks before the meal.

The close relationship between *order* and *the drinks* is not revealed in the bracketing in (5d). How could we represent this relationship between the verb and its object? The bracketing in (5e) is meant to show that the verb *order* and the unit *the drinks* are first assembled to form a unit.

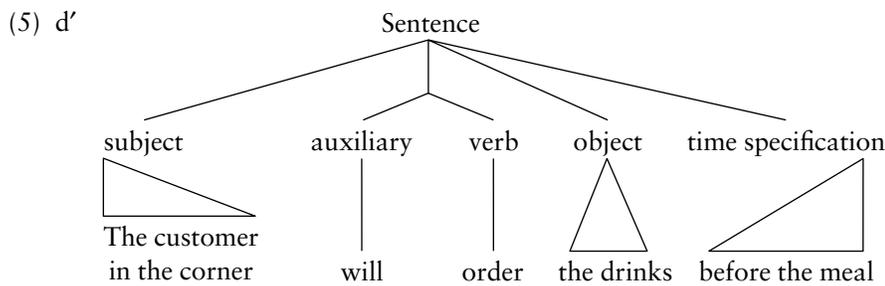
(5) e **Hypothesis B**

[The customer in the corner] [will] [order [the drinks]] [before the meal].

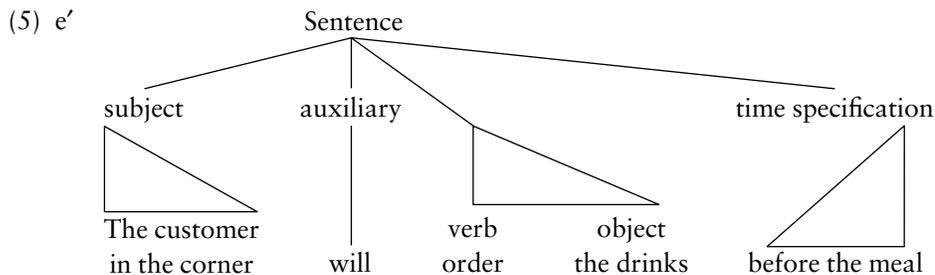
Let us compare (5d) and (5e) and try to make more explicit the claims that the two alternative bracketings make. Having clarified this issue, we will examine the predictions of these claims more carefully.

In the diagrams below we use another format to represent how sentences are built up. This format is called the **tree diagram** format: like bracketing, it schematizes how sentences are formed from smaller units. The tree diagrams below correspond to the bracketed representations above, but they allow us to read off more easily how the various parts of the sentence are put together.

According to one representation, (5d)/(5d'), when assembling the sentence, we first assemble the auxiliary *will* and the verb *order*, and then we combine the resulting unit with the other constituents: the subject *the customer in the corner*, the direct object *the drinks*, and the time specification *before the meal*. In the tree, a triangle associated with a constituent is a device to show that the internal make-up of the unit in question is not relevant to the current discussion.



According to the alternative in (5e), the assembly proceeds differently. Here, the verb *order* is first assembled with its object, *the drinks*. Then we combine the resulting unit with the auxiliary *will*, with the time specification *before the meal*, and with the subject *the customer in the corner*.



These structural representations have different implications. For instance, starting from the root of the structure “Sentence,” to reach the object *the drinks* in (5d’) you go directly from the root to the unit *the drinks*. This means that, starting from Sentence, the subject *the customer in the corner* and the object *the drinks* are both equally accessible. On the other hand, to reach the object *the drinks* in (5e’), we first have to enter into the unit *order the drinks*. In (5e’) the subject *the customer in the corner* is more readily accessible from the root “Sentence” than the object. From Sentence it takes one single step to reach the subject; it takes two steps to reach the object. The subject is presented as an **immediate** constituent of the sentence, the object is presented as an **ultimate** constituent of the sentence: it is a component of the sentence by virtue of being a component of the unit *order the drinks*, which is itself an immediate component of the sentence. (5e’) introduces a subject-object asymmetry, it suggests that the relation between the sentence and the subject is more immediate than that which exists between the sentence and the object. Conversely, according to (5e’) the object has a closer relationship with the verb than the subject, since verb and object together form a constituent that excludes the subject.

In what follows we will evaluate the two hypotheses by examining their consequences. Intuitively, both have some appeal, so we cannot simply rely on intuitions to discard one or the other. We will investigate whether there are any criteria that could be used to distinguish between the two ways of integrating the verb into the sentence. In other words, we are trying to elaborate diagnostics for syntactic structure.

In order to elaborate diagnostics for structure, we will look at attested examples to see if the language itself perhaps provides any indications that a particular string of words acts as or is perceived as a unit.

1.3 Substitution

Anaphoric elements, such as, for instance, pronouns, are elements that can be used to replace strings of words.⁴ This is illustrated in (6). The pronoun *he* in (6b) refers to the subject, *the customer in the corner*, in (6a), and the pronoun *them* refers to the object *the drinks*. The constituent that is replaced by a pronoun is its **antecedent**.

- (6) a The customer in the corner will order the drinks before the meal.
 b He will pay for them later.

The fact that the string of words *the customer in the corner* can serve as the antecedent of a pronoun suggests this string is conceived of as a unit; it is a constituent. At first sight, the most important element of this constituent is the noun *customer*. The noun *customer* denotes the entity that we are talking about. A constituent whose most important element is a noun is called a **noun phrase**, abbreviated as **NP**. Typically, noun phrases can be replaced by pronouns. The string *the drinks* is also

⁴ See Chapter 1, Exercises 9 and 10.

a constituent: it can be replaced by the pronoun *them*. Because the most important element of the constituent is *drinks*, the plural form of the noun *drink*, the constituent *the drinks* is also a noun phrase.

Before the meal is another constituent, it can be replaced by a word such as *then*. The string *before the meal* contains a noun phrase, *the meal*, which can be replaced by *it* (cf. *before it*). *Before the meal* combines a preposition, *before*, with an NP; it is a **prepositional phrase** (PP). Other examples of prepositional phrases are *in the garden*, *for his brother*, *after the war*, etc.

Depending on their core elements, constituents will be of different types: constituents belong to **categories**. The core element of the constituent, which determines its category, is called the **head**. An NP contains a noun (N) as its head, an NP is **headed** by an N.

Based on this conception of constituency, a **verb phrase** is a constituent whose head is a verb. For our test sentence we have elaborated two hypotheses for the identification of the verb phrase (VP): according to (5d) the VP is *will order*, according to (5e) the VP is *order the drinks*. Let us see if substitution of strings containing a verb can help us choose between these hypotheses. Examine how substitution affects verbal units in the examples in (7):

- (7) a If I had wanted to hurt someone, believe me, I would have done. (Elizabeth George, *Missing Joseph*, 1993/1996: 172)
 b If Sir Alex wants to sign somebody he can do. (*Guardian*, 31.12.2002, p. 14, col. 1)⁵

In these examples the verb *do* serves to replace a verb and its object. In (7a) *done* = *hurt someone*; in (7b) *do* = *sign somebody*. If a verb and its object can be replaced together, this suggests that the relevant string of words is a unit, a constituent.

Consider (8). What does the pronoun *he* refer to? What does the string *do so* stand for?

- (8) The home secretary is under an obligation to examine any evidence of discriminatory treatment. He can only do so through assessment, examination of facts, communication with people and rational arguments and actions. (*Guardian*, 9.9.2002, p. 11, col. 3)

In (8) the pronoun *he* refers to *the home secretary*, an NP. *Do so* stands for *examine any evidence of discriminatory treatment*, i.e., a verb + its direct object.⁶

With the examples in (7) and (8) as your models, try to replace a string of words containing the verb *order* in our test sentence (6a) above. In (9), we give some possible results.

⁵ Note that the substitution illustrated in (7) may not be accepted by all speakers of English. In particular, speakers of British English accept it more easily than American speakers, and even among British speakers there is variation.

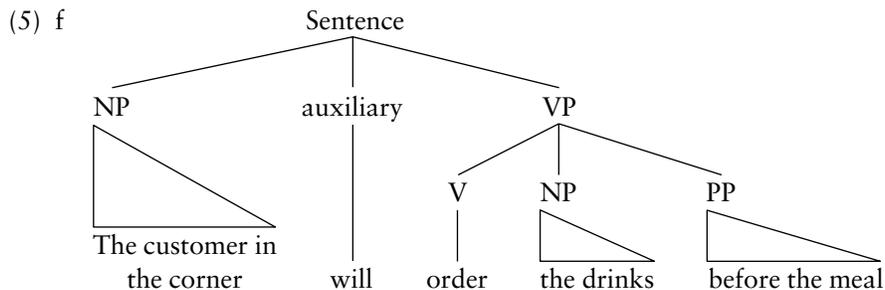
⁶ See also Chapter 1, Exercise 9.

- (9) a The customer in the corner will order the drinks before the meal but in order to do so before the meal he will first need a wine list.
 b The customer in the corner will order the drinks before the meal but in order to do so he needs a wine list now.
 c If the customer in the corner wants to order the drinks before the meal he can do.

Do so in (9a) stands for *order the drinks*. Let us return to the representations for the sentence which we are examining. Representation (5d'), based on hypothesis (5d), is not really compatible with the substitution in (9a). According to (9a) the string *order the drinks* acts as one constituent: it can be replaced by *do so*. But in (5d') the verb *order* does not form a constituent with the object *the drinks*. The constituent that contains the verb is the string *will order*, it is composed of the verb and the auxiliary. On the other hand, representation (5e'), based on hypothesis (5e), represents the verb and the object *order the drinks* as forming a unit. The most important element in this unit is a verb (*order*): it tells us what kind of action is going on. A constituent whose most important element is a verb is a **verb phrase** or **VP**.

Compare (9a) with (9b) and (9c). Which constituents are substituted for in (9b) and in (9c)? In these examples, the substitution process also affects the time specification *before the meal*. *Do so* in (9b) and *do* in (9c) stand for *order the drinks before the meal*. Is this type of substitution predicted by hypothesis (5d) and representation (5d')? Clearly not, since, as we have just seen, according to (5d) the auxiliary *will* and the verb *order* are taken to form a constituent, but the object *the drinks* and the time specification *before the meal* are not represented as being part of that constituent.

However, hypothesis (5e) and its representation (5e') also do not predict that the substitutions in (9b, c) are possible. If substitution identifies constituents, i.e. strings of words that act as units, then the string *order the drinks before the meal* must be a constituent. (5e') does not offer a basis for this substitution: the time specification is not part of the constituent containing the verb. In order to ensure that the unit containing the verb, or the VP, contains the time specification as well, we should integrate the time specification into the constituent headed by the verb, the VP. What we want is something like (5f). We have labeled all constituents according to their category.



In this representation, the string *order the drinks before the meal* as a whole is represented as a VP. From the point labeled VP, three lines link down to three constituents: the verb *order*, the object *the drinks*, and the PP *before the meal*. In the tree diagram representation, a point in which a number of lines come together is called a **node**; nodes are given labels to indicate their category. The lines linking nodes in a tree to their constituents are called the **branches** of the tree.

Compare (5f) with (5d') and with (5e'). Does (5f) have more of the properties of (5d') or is it closer to (5e'). To answer this question you should assess the implications the tree would have for the relations of the various constituents to the sentence.

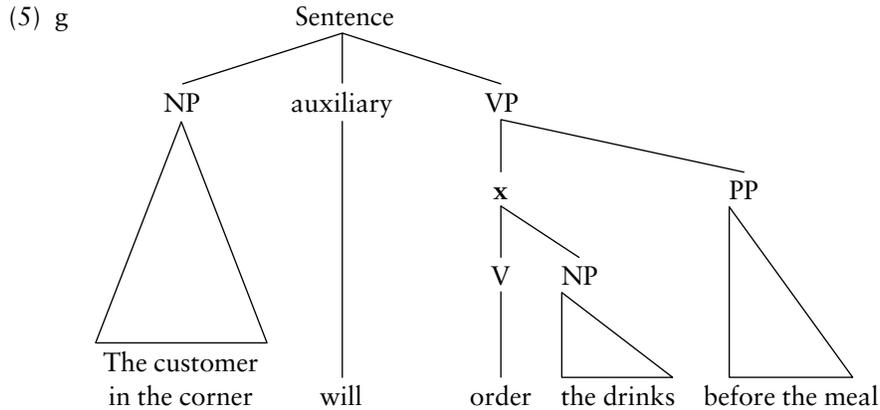
You will probably conclude that like (5e'), (5f) establishes an asymmetry between the subject and the object, linking the object more closely to the verb than the subject, and conversely, relating the subject more directly to the sentence as a whole. The trees (5e') and (5f) differ in the way in which they treat the time specification, that is, the PP *before the meal*. According to (5e'), the time specification remains completely outside the VP (*order the drinks*); in (5f) the PP *before the meal* is fully integrated into the VP. We can ask ourselves what the advantages of (5f) are. And also: does it have any drawbacks?

Recall that we assume that syntactic structure determines interpretation. Let us consider the claims made by the different representations above for the interpretation of the relevant strings. When comparing (5f) and (5e'), we observe that in (5e') the verb is assembled with the object, the temporal PP is not part of the resulting verb-object unit. (5e') represents the verb and its object as having a closer relationship than that which holds between the verb and the time specification. Such an asymmetry between the object NP and the temporal PP seems intuitively plausible: the action described by the sentence is 'ordering drinks'. The time of that action is additional information that does not alter the nature of the action: ordering drinks before a meal or during a meal remains the same kind of activity. (5f) suggests that the verb is assembled with its object and with the time specification at the same time. Such a representation of the structure of the sentence fails to reflect any asymmetry between the object NP and the time PP. In (5f) the hypothesis seems to be that the time PP is automatically part of the VP.

What predictions do the representations make for substitution? One prediction of (5f) is that whenever you replace a constituent containing the verb (= a verb phrase), this will automatically affect the PP *before the meal*. Or, phrasing the prediction differently: it should not be possible to simply replace a unit consisting of the verb *order* and its object *the drinks*. Is this prediction correct? If you turn back to the examples of substitution in (9), you will conclude that (5f) is incompatible with (9a), while (5e') is compatible with this example.

Having already discarded (5d'), we still have a problem to define what should be the appropriate representation of the sentence. We find ourselves in a sort of paradox. To account for the substitutions in (9b, c), we would favour (5f). To account for the substitution in (9a), we would favour (5e'), because the latter representation captures the closer relation between verb and object. What we need then is a more articulated representation with a VP that singles out the verb and the

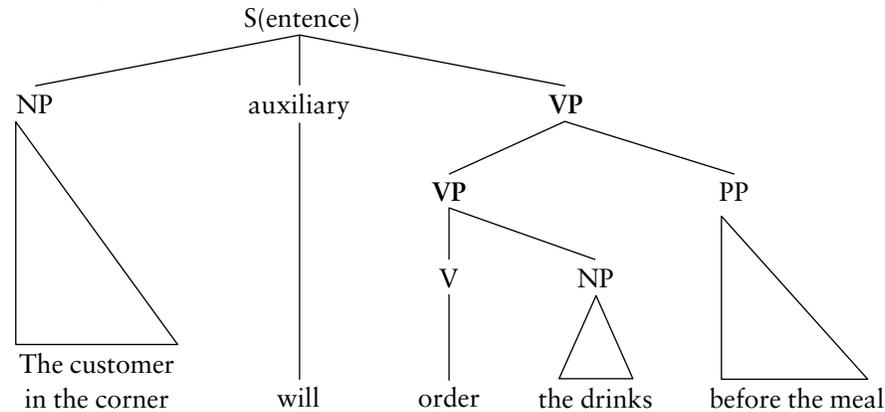
object, excluding the PP, and which at the same time allows the verb, the object, and the PP to be a unit. This can be achieved if we assemble the VP step by step: first we assemble the verb and its object, then we assemble the resulting unit with the time specification:



(5g) combines the good points of (5e') with those of (5f). Substitution can pick either the unit *x*, composed of [V + NP], (as in (5e')) or the unit labeled VP, composed of [V + NP + PP], (as in (5f)). (5g) introduces a **hierarchy** internally to the VP: the object is “closer” to the verb than the time specification.

What kind of label should we give to the constituent *order the drinks*? Its core element is a verb, and substitution is by means of *do* or *do so*, typically verb phrase substitutes. This suggests that this constituent is also a VP. The structure we end up with has what is called a **layered VP**. First, we construct the **core VP**, the central layer containing the verb and its object. Then we extend this layer with a time specification by adding the PP *before the meal*, creating a larger constituent. If we assume that the structure of a sentence is related to its meaning (as we have to do in order to account for structural ambiguity), then the layered VP should feed into the interpretation. Such a layered structure implies that a time specification is less central to the activity expressed by the verb than the object. This consequence of the structure mirrors our intuitions about interpretation: a time specification such as *before the meal* does not define the kind of activity denoted by the VP, but it merely provides accessory information on the timing of that activity.

In (5h) we provide both the tree representation and the labeled bracketing representation for the structure of the sentence. In the latter, the labels in the left-hand corners identify the category of the constituent. (5h) contains two nodes labeled VP, one immediately above the other. What is the head of the lower VP? What is the head of the higher one? For both constituents, the related head is the verb *order*. It is not the case that there are two distinct VPs in this structure. Rather, we have one core VP augmented with an extra constituent, the time specification. The time specification is not central to the information conveyed by V. It can be omitted.

(5) h **Hypothesis B (revised)***The diagram**Labeled bracketing*

[_S [_{NP} The customer in the corner] [will] [_{VP} [_{VP} order [_{NP} the drinks]] [_{PP} before the meal]]].

The argumentation above introduces two kinds of motivations for adopting the layered structure with the double VP node. On the one hand, the representation is motivated on **empirical** grounds: we have shown the need for introducing the layered structure by looking at substitution data. The structure is also motivated by the general hypothesis that the structure of a sentence is related to its interpretation. The latter is a **theoretical** hypothesis; we could also say that the second argument is **conceptual**, since it follows from the way we have conceived our theory. Both types of argumentation contribute to the analysis. When formulating an argumentation, it is important to be able to identify which type of reasoning has been used.

1.4 Movement

In a neutral sentence, the subject typically precedes the verb and the object follows it. The preverbal position of the subject and the postverbal position of the object are called their **canonical** positions. Identify the direct objects in the sentences in (10). You will observe that objects do not always occupy their canonical positions. Some objects have been moved to a different position. Try to restore any displaced objects to their canonical positions.

- (10) a Baxter said that he had been using a *Sinex* liquid decongestant . . . but then spotted the *Vicks* inhaler when shopping in Park City, and bought it since he preferred to use it. “The British one, I have been using since I was about nine.” (*Guardian*, 22.3.2002, p. 3, col. 1)
- b The news, when it comes, he seems to take well enough. (*Guardian*, G2, 26.7.2002, p. 2, col. 1)

As you can tell, two direct objects have been shifted to the beginning of the sentence.⁷ If we restore them to their canonical positions we arrive at the following:

- (10) a' I have been using the British one since I was about nine.
 b' When it comes, he seems to take the news well enough.

The underlined strings of words in the primed (10a, b) are constituents. They can be replaced by pronouns.

- (10) a'' I have been using it since I was about nine.
 b'' When it comes, he seems to take it well enough.

Typically, constituents can be moved around in the sentence. Consider (11a). What is the subject related to the verb *think*? What is the subject of *are just a vast conspiracy to divorce you from ordinary life*? Do these subjects occupy their canonical positions?

- (11) a A lot of the elements that surround you in the job, you sometimes think are just a vast conspiracy to divorce you from ordinary life. (*Guardian*, 26.4.2002, G2, p. 6, col. 4)

In (11a) the subject of the verb *think* is the pronoun *you*; it occupies its canonical preverbal position. The subject of *are a vast conspiracy* is the noun phrase *a lot of elements that surround you in the job*. This subject is not in the expected position, to the immediate left of *are*. It has apparently been shifted leftward. We can restore it to its canonical position as follows:

- (11) b You sometimes think a lot of the elements that surround you in the job are just a vast conspiracy to divorce you from ordinary life.

Identify the displaced constituent in (11c), identify its category, and restore it to its canonical position:

- (11) c Our dustmen arrive too early for me to check, but our fishmonger and his staff in Petersfield all wear ties (Letters, October 22) and very smart they look too. (*Guardian*, 23.10.2002, p. 9, col. 5, Letter to the editor from David Dew, Horndean, Hants)

In this example the string *very smart* has been fronted, its canonical position is to the right of the verb *look* (*they look very smart too*). *Very smart* has as its main component the adjective *smart*. A constituent headed by an adjective is an **adjective phrase** or **AP**.

⁷ For the interpretive effect of preposing constituents see Ward (1988) and the references cited there. See also Reinhart (1981), Authier (1992), Rizzi (1997).

Let us return to our initial example (5a). Is it possible to displace the direct object or the time specification?

- (12) a The drinks, the customer in the corner will order before the meal (but the dessert, they will order later).
 b Before the meal, the customer in the corner will order the drinks.

In English, the order in which the subject precedes the verb and the object follows it is the unmarked word order.⁸ Fronting of a constituent gives rise to a special or **marked** word order, i.e. an order that deviates from the neutral order. We assume that creating a pattern that deviates from the normal neutral word order is an additional operation. Recall that we proposed that language is guided by a principle of economy. In Chapter 1, section 2.2.3, we proposed that units are only inserted if they have some impact on the interpretation of the sentence. We illustrated this hypothesis by the discussion of the use of the auxiliary *do*. We could extend the application of the principle of **economy** by proposing that operations that rearrange constituents also have to be associated with some particular interpretive effect. If they were not, then, by virtue of the principle of economy, there would be no point in performing the operation. In other words, a non-neutral or marked order will be associated with some difference in interpretation. For instance, the fronted object in (12a) gives rise to some contrasting effect: we contrast *the drinks* and *the dessert*. When we front a time specification (12b), we organize the information in the sentence according to temporal information. In the following examples, the authors are exploring the possibility of fronting constituents. Identify the fronted constituents. Restore them to their canonical position. What is the category of the fronted constituents?

- (13) a “They must talk about it, and talk about it they must,” he said. Food for thought, there! It’s a phrase that could add a measure of gravity to any press conference. “We must do this, and do this we must.” (Simon Hoggart, *Guardian*, 29.1.2003, p. 2, col. 5)
 b But I was still a long way from figuring out what my goal was. I told the governor [of the prison] that I wasn’t sure how I was going to manage it – but manage it I would. (*Guardian*, G2, 15.5.2003, p. 7, col. 4)

⁸ The unmarked order is the neutral word order. Marked word orders are less neutral in that they carry some specific communicative effect. For instance, the word order in sentence (ia) is unmarked: the object NP *this book* follows the verb *like*. In (ib) fronting of the object NP *this book* gives rise to a marked word order. This example could be used, for instance, if the speaker wants to contrast the book under discussion with another book.

- (i) a I didn’t like this book very much.
 b This book, I didn’t like very much (but that one I really enjoyed).

For discussion of the concept of markedness and its relation to interpretation see de Hoop, Haverkot, and van den Noort (2004). For the interpretive effect of preposing constituents see Ward (1988).

In (13a) the author fronts *talk about it* and *do this*, and in (13b) *manage it* is fronted. Since these strings are constituents whose most important element is the verb, they are verb phrases:

- (13) a' "They must talk about it, and [_{VP} talk about it] they must," he said. Food for thought, there! . . . "We must do this, and [_{VP} do this] we must."
 b' I told the governor [of the prison] that I wasn't sure how I was going to manage it – but [_{VP} manage it] I would.

Let us return to our test example, (5a). On the basis of the structural representation of the sentence, we should be able to predict how VP fronting will apply. In representation (5h), there are two nodes labeled VP: the core VP and the augmented VP including the temporal specification. Try fronting either of these. You will find that both operations give an acceptable result:

- (14) a Order their drinks before the meal, they will.
 b Order their drinks, they will before the meal.

The data in (14) provide empirical support for the structure in (5h). Would the fronting data in (14) be compatible with the other representations that we had envisaged, that is (5d'), (5e'), and (5f)? Adopting (5d') would pose a problem: in that representation there is no constituent containing the verb and the object (14a) or the verb, the object, and the time specification (14b). (5e') fares slightly better in that it allows (14b) but it does not allow (14a). Conversely, (5f) allows (14a) but not (14b). So (5h) represents a better hypothesis about the structure of the sentence.

1.5 Question formation

Invent an answer to the questions in (15):

- (15) a Who have you invited to the party?
 b Who has invited you to this meeting?
 c What have you bought?
 d An Indian meal or fish and chips. Which do you prefer?

When you think up answers to the questions above, it is quite possible that you will come up not just with one word but with a string of words. The relevant string of words functions as a unit in the communicative exchange: it provides the answer to the question. An answer to a question will fill in the missing information that is represented in the question by words such as *what*, *who*, *which*. As discussed in section 1.3, strings of words that are replaced by one word are constituents. For instance, take (15a). A possible answer could be:

(16) a My friends from college.

Question (15a) implies that ‘you have invited someone’, and it signals that the speaker doesn’t know who the invitee was. (16a) supplies the missing information: it supplies a replacement for the interrogative word *who*. Questions which ask for a replacement of an interrogative constituent, are called **constituent questions**: the answer to such questions supplies the missing constituent. Because most interrogative words in English begin with *wh*, such questions are also called ***wh*-questions**, and interrogative constituents such as *who*, *what*, etc. are called ***wh*-constituents**.⁹

(16b) inserts the answer to (15a) into the sentence. Compare the form of question (15a) and the form of the answer (16b):

(16) b I have invited [my friends from college].

(15a) differs from (16b) in a number of ways. (i) In (15a) the direct object is realized as a *wh*-constituent, *who*. (ii) This (interrogative) direct object of the verb *invited* does not occupy its canonical position but it takes up an initial position. (iii) There is an application of subject auxiliary inversion (SAI, see also Chapter 1, section 2.2). Of particular relevance to the current discussion is the observation that in the answer the interrogative constituent of the question is replaced by the constituent (here *my friends from college*). We can conclude that another technique for identifying constituents is to examine whether the strings of words that are taken to be constituents can serve as answers to questions.

Formulate constituent questions to target each of the underlined constituents in our test sentence:

(17) a The customer in the corner will order the drinks before the meal.

Recall that we also identified a constituent centered around the verb. How is the VP questioned in (18)?

- (18) a I think that would be the worst thing in the world for him, a family holiday. What’s he going to do? Sit on the beach? (Based on *Guardian*, G2, 29.7.2002, p. 4, col. 3)
 b What is Sylvia to do? What are we all meant to do? Hang our cars from the trees? Throw them away? (*Guardian*, G2, 28.4.2003, p. 9, col. 3)
 c “We need fewer people.” “What would you do? Eliminate people?” (Based on a cartoon in *Washington Post*, 29.4.2003, p. C12)

As you can see, verb phrases can function as targets for *wh*-questions. In our test sentence (5a), repeated in (17a) above, we identified a core VP (*order the drinks*)

⁹ We look more carefully at the fronting process involved in the formation of *wh*-questions in Chapter 5.

and what we called an augmented VP (*order the drinks before the meal*). Using the examples in (18) as a model, try to formulate questions targeting either of these VPs. Based on (17a) you could form either of the following questions:

- (17) b What will the customer in the corner do before the meal?
 c What will the customer in the corner do?

Wh-questions confirm that the strings *order the drinks* and *order the drinks before the meal* are constituents: each string can be the answer to a *wh*-question.

1.6 Deletion/ellipsis

Consider the following fragments. In the second part of each extract some material has been omitted. The site of the ellipsis is to the right of the underlined words. Supply the words that have been omitted. On what basis can you recover the omitted material?¹⁰

- (19) a It is up to us other teams to take steps to rectify our performance deficiency, and we will. (*Guardian*, 8.10.2002, p. 15, col. 7)
 b When he first ran for office four years ago, Gov. Gray Davis vowed to save California's old-growth forests. He hasn't, as Moloney sees it. (*Los Angeles Times*, 26.11.2002, p. B7, col. 2)
 c After all, Francesca's hardly news any more. We are all trying to forget her. As if we could. Although we should. I can't. (Francis Fyfield, *Undercurrents*, 2001: 50)
 d I saw Mr Clark stand up, throw a punch at Mr McAlpine, kick the table over, jump at him on the ground, and start choking him, before two chefs came out of the kitchen and pulled them apart . . . We have an open-plan kitchen, and so my staff jumped in and separated them; I wouldn't like to think what would have happened if they hadn't. (*Guardian*, 11.11.2002, p. 9, col. 4)
 e All in the name of a pretence that, with just a little bit more time passing, all obstacles will miraculously recede. They won't. (*Guardian*, 6.5.2003, p. 16, col. 2)
 f Only those who were in the room know the absolute truth of this story. No one else probably ever will. (*Washington Post*, 25.3.2004, p. D3, col. 5)
 g If we could charge more money, we would. (*Wall Street Journal*, 29.3.2004, p. A6, col. 6)
 h Everyone says you can't be scientific and fun, but we think you can. (*New York Times*, 8.3.2004, p. C5, col. 2)

¹⁰ See also Chapter 1, Exercise 8.

In these examples a constituent that is recoverable from the preceding context has been omitted. For instance, in (19a) we can recover the string *take steps to rectify our performance deficiency* from the preceding sentence. In each of the examples, the auxiliary is retained and a constituent centered around the verb is omitted. We restore the omitted strings in (19’):

- (19’) a We will [_{VP} take steps to rectify our performance deficiency].
 b He hasn’t [_{VP} saved California’s old-growth forests].
 c As if we could [_{VP} forget her]. Although we should [_{VP} forget her]. I can’t [_{VP} forget her].
 d I wouldn’t like to think what would have happened if they hadn’t [_{VP} jumped in and separated them].
 e They won’t [_{VP} miraculously recede].
 f No one else probably ever will [_{VP} know the absolute truth of this story].
 g we would [_{VP} charge more money].
 h you can [_{VP} be scientific and fun].

Let us once again turn to representations (5d’) and (5h). By adopting (5h), we can straightforwardly describe the processes applying in (19) as an illustration of verb phrase ellipsis. If we adopt (5d’) we cannot describe the process in (19) as VP ellipsis: in (5d’) the auxiliary and the verb form a constituent and the object remains outside this constituent.

Taking (20a) as a basis, how could VP ellipsis be applied to B’s reply?

- (20) a Speaker A: The customer in the corner will order the drinks before the meal.
 Speaker B: Actually, I wouldn’t be so sure that he will order the drinks before the meal.

The application of VP ellipsis to (20a) is given in (20b), where the symbol [_{VP} Ø] stands for the omitted VP.

- (20) b Speaker A: The customer in the corner will order the drinks before the meal.
 Speaker B: Actually, I wouldn’t be so sure that he will [_{VP} Ø].

1.7 Focalizing a constituent

1.7.1 THE CLEFT SENTENCE

In the following examples, a special word order pattern is used which has the effect that one constituent is promoted to the foreground while the remainder of the sentence is backgrounded.

- (21) a It was the prison chaplain's wife who first gave me an inkling that I might have a talent for writing. (*Guardian*, G2, 21.4.2003, p. 2, col. 1)
 b Ford directed many films but it is for Westerns that he will be remembered. (*Guardian*, 21.4.2003, p. 310, col. 4)

Both examples contain the pattern *it is X who/that Y*. In this pattern, the element in the position of X is highlighted. It is presented as prominent information. The elements in Y are backgrounded. Consider for instance (21a). We can paraphrase it with (21a').

- (21) a' The prison chaplain's wife first gave me an inkling that I might have a talent for writing.

The word order in (21a') is neutral. (21a') does not give the same prominence to the constituent *the prison chaplain's wife* as the original example, (21a). The information conveyed by the two variants is similar: both sentences communicate that at some point in the past the prison chaplain's wife gave the speaker the idea that he might be a good writer. Sentences (21a) and (21a') describe the same event. Could you imagine a situation in which (21a) is true and (21a') is false? This is not possible. If (21a) is a true statement, then (21a') will also be true and vice versa. The effect of the rewording in (21a) is "presentational": we reorganize the way the information is presented. In (21a) the writer highlights that the initial trigger for the speaker's writing was the chaplain's wife.

The wording of (21a) serves to focus on a particular constituent and to background the remainder of the sentence. The pattern where we focus on a constituent using the *it is X who/that Y* pattern is called a **cleft** sentence. Clefting is a way of reorganizing the information in a sentence, backgrounding some information and foregrounding the focal information. As you can see, clefting foregrounds or focuses on a constituent: in (21a) the NP *the prison chaplain's wife* is singled out or focused on; in (21b) the PP *for Westerns* is focused on.

Given that clefting promotes one constituent to the foreground, we can use the pattern to identify constituents. Apply clefting to our test sentence. Again you will find that it serves to isolate constituents: in (22a) the NP *the customer in the corner* is focused, in (22b) the PP *before the meal* is focused on, and in (22c) the NP *the drinks* is focused on.

- (22) a It is [_{NP} the customer in the corner] who will order the drinks before the meal.
 b It is [_{PP} before the meal] that the customer in the corner will order the drinks.
 c It is [_{NP} the drinks] that the customer in the corner will order before the meal.

Recall that we have been entertaining two hypotheses for the representation of the sentence: either the auxiliary and the verb form a constituent (23a), or else the verb forms a constituent with its object. On the basis of additional evidence, we elaborated the latter option and proposed that the VP was layered (23b).

- (23) a **Hypothesis A**
 [_S [_{NP} The customer in the corner] [_{VP} will order] [_{NP} the drinks] [_{PP} before the meal]].
- b **Hypothesis B (revised)**
 [_S [_{NP} The customer in the corner] [_{AUX} will] [_{VP} [_{VP} order [_{NP} the drinks]] [_{PP} before the meal]]].

The cleft patterns in (22) do not bear on (23a) and (23b), because clefting of the type illustrated here does not affect the VP.¹¹

1.7.2 THE PSEUDO-CLEFT SENTENCE

Consider the effect of the rewordings in the paired sentences in (24)–(27).

- (24) a I don't need the equivalent of another car loan.
 b What I don't need is the equivalent of another car loan. (*Chicago Tribune*, 22.12.2002, section 15, p. 3, col. 1)
- (25) a You are seeing the biblical law of reciprocity in Prince George's Country.
 b What you are seeing in Prince George's Country is the biblical law of reciprocity. (*Washington Post*, 29.4.2003, p. A7, col. 2)
- (26) a She needed someone to talk to.
 b What she needed was someone to talk to. (*Washington Post*, 29.4.2003, p. B1, col. 2)
- (27) a They will force them underground.
 b What they will do is force them underground. (*Guardian*, 9.7.2002, p. 8, col. 8)
- (28) a Contacting his relatives will cause mayhem in his family.
 b What contacting his relatives will do is cause mayhem in his family. (Adapted from *Guardian*, G2, 11.4.2003, p. 11, col. 3)

As was the case for the clefting paraphrases discussed in section 1.7.1, the content of the paired sentences is near identical. Both sentences in (24), for instance, convey that 'there is no need for the equivalent of another car loan'. As was also the case for the clefting paraphrases, the two sentences have the same truth conditions. If (24a) is a true statement, then (24b) will also be a true statement. The difference is again one of presentation and focus. (24b) serves to highlight one informational

¹¹ This is not quite correct: in Hiberno English, the variant of English spoken in Ireland, VPs can be clefted. (Cottell 2002: 111)

- (i) Q. What are the women doing?
 A. It's playing backgammon that they are.

unit, here the NP, *the equivalent of another car loan*, and it does so by splitting this constituent off from the remainder of the sentence using a paraphrase with *what*. The pattern displayed here is referred to as **pseudo-clefting**. Identify the focused constituents in the (b)-examples (26)–(28). What is their category?

(26) b' What she needed was someone to talk to.

(27) b' What they will do is force them underground.

(28) b' What contacting his relatives will do is cause mayhem in his family.

In (26) the focused constituent is an NP. In (27) and (28) it is a constituent centered around a verb, a VP (*force them underground*, *cause mayhem in the family*). Do examples (27) and (28) bear on the choice between representations (23a) or (23b)? What would (23a) predict with respect to pseudo-clefting of a VP? And what would be the predictions of (23b)?

Using examples (27) and (28) as models, let us also apply pseudo-clefting to our test sentence. Could (23a) constitute a basis for pseudo-clefting of a verb-centered constituent? That is, can we use pseudo-clefting to highlight the VP as represented in (23a)? The answer is that it is not possible to pseudo-cleft the VP as represented in (23a):

(29) a *What the customer in the corner will do the drinks before the meal is will order.

On the other hand, (23b) has two constituents labeled VP: *order the drinks*, the core VP, and *order the drinks before the meal*, the augmented VP including the time specification. Try pseudo-clefting either of these. Either VP can be focused by pseudo-clefting.

(29) b What the customer in the corner will do before the meal is order the drinks.

c What the customer in the corner will do is order the drinks before the meal.

Once again, the layered VP hypothesis of (23b) allows us to predict that pseudo-clefting will affect a constituent centered around the verb, containing the direct object and possibly the time PP. If we adopt representation (23a), it is hard to account for the fact that the verb and the constituents to its right can be treated as one constituent and undergo pseudo-clefting. In (23a), the verb is taken to form a constituent with the auxiliary and the object and the time PP are separate constituents.

Identify the highlighted constituent in the following examples. Do the examples bear on the choice between (23a) and (23b)?

(30) a In the Lower 48 states, people consider reindeer as pets, so the last thing they would do is eat them. (*Chicago Tribune*, 22.12.2002, section 1, p. 16, col. 1)

- b All Pastor Edgar Chacon wanted to do, he says now, was protect the children. (*Los Angeles Times*, 26.11.2002, p. B4, col. 4)
- c All we can do is do it well. (*Guardian*, 1.11.2002, G2, p. 9, col. 2)

As before, in (30) we focus on a verb-centered constituent, containing the verb, its object, and an additional specification of manner in (30c). The sentences in (30) are again best compatible with a representation like (23b).

1.8 Co-ordination

As units of structure, constituents can be manipulated in various ways. So far we have illustrated that we can replace a constituent by a shorter form (1.3), that we can move a constituent around (1.4), that a constituent can function as the answer to a question (1.5), that we can omit a constituent (1.6), and that we can highlight a constituent by clefting (1.7.1) or by pseudo-clefting (1.7.2). Sometimes, we may decide to link two constituents together. To do this we **co-ordinate** them, i.e. we link them by means of a **co-ordinating conjunction** (*and, or, but*).

(31a) contains two sentences. There is some redundancy in this passage. Identify the overlapping parts between the sentences. Reword the passage to express the information in (31a) in a more compact way, using only one sentence.

- (31) a The customer in the corner will order the drinks before the meal. He will also order the dessert before the meal.

We can condense the information in (31a) into one sentence by co-ordinating the object of the first sentence, the NP *the drinks*, and the object of the second sentence, the NP *the dessert*, thus turning these two NPs into one constituent: *the drinks and the dessert*. To do this, we use the conjunction *and*. As a result of the co-ordination, the constituents form one single constituent, as represented by the outer brackets surrounding the co-ordinated NPs:

- (31) b The customer in the corner will order [[_{NP} the dessert] and [_{NP} the drinks]] before the meal.

What type of evidence could we provide that the string *the dessert and the drinks* in (31b) is one constituent? One way of showing that the string *the dessert and the drinks* is one constituent is by asking a constituent question targeting just this string (31c). The string can also be replaced by a pronoun (31d).

- (31) c What will the customer in the corner order before the meal?
- d The customer in the corner will order them before the meal.

Since the co-ordinated constituent can jointly be replaced by a pronoun, *them*, this suggests that the string is an NP, which is the result of co-ordinating two NPs.

How could (32a) be expressed more economically by using co-ordinated structures?

- (32) a The customer in the corner will order the drinks before the meal. He will also order the dessert before the meal. He will also order the coffee before the meal.

In (32a) there are three constituents that function as the object of *order*: *the drinks, the dessert, the coffee*. They can again be co-ordinated. When we have more than two elements to co-ordinate there are two options, illustrated in (32b) and (32c).

- (32) b The customer in the corner will order the drinks and the dessert and the coffee before the meal.
 c The customer in the corner will order the drinks, the dessert, and the coffee before the meal.

Underline all the co-ordinated constituents in the examples in (33), and identify the category of each of the co-ordinated constituents.

- (33) a Det. Insp. Smith told lies in one of his reports and to the enquiry. (*Guardian*, 15.7.2003, p. 1, col. 7)
 b Being in Europe does tend to mean that public transport is functional, that public health care is not considered a dangerous pipe-dream, and that education is valued. (Adapted from *Guardian*, 9.12.2002, p. 12, col. 3)
 c Among the larger issues here are why this happened at all, who allowed it to happen and why the law reinforcement establishment refused to intervene even after it was clear that a great injustice was occurring. (*New York Times*, 28.4.2003, p. A25, col. 1)
 d Many parents with children in these schools have felt the impact and seen the point. (*Guardian*, 17.7.2002, p. 2, col. 3)
 e They are also re-equipping six Iraqi hospitals that were looted and building a plant in Basra. (*New York Times*, 28.4.2003, p. A11, col. 6)
 f He has made its programs newsworthy and kept the institution afloat. (*New York Times*, 28.4.2003, p. A25, col. 4)
 g Jones said urban sprawl and heightened environmental concerns were imposing increased limits on U.S. military activities in Western Europe and driving up costs. (*Washington Post*, 29.4.2003, p. A6, col. 3)
 h Boyle testified that she told Malvo four times that he could be silent or see an attorney but that Malvo continued to talk about the shootings in a relaxed, almost convivial way, laughing about Buchanan's slaying and other shootings. (*Washington Post*, 29.4.2003, p. B1, cols 3–4)

In (33) we find the following illustrations of co-ordination:

- (33) (i) PP co-ordination
- [_{PP} in one of his reports] + [_{PP} to the enquiry] (a)
- (ii) NP co-ordination
- [_{NP} urban sprawl] + [_{NP} heightened environmental concerns] (g)
 - [_{NP} Buchanan's slaying] + [_{NP} other shootings] (h)
- (iii) sentence co-ordination
- [_S that public transport is functional] + [_S that public health care is not considered a dangerous pipe-dream] + [_S that education is valued] (b)
 - [_S why this happened at all] + [_S who allowed it to happen] + [_S why the law reinforcement establishment refused to intervene even after it was clear that a great injustice was occurring] (c)
 - [_S that she told Malvo four times that he could be silent or see an attorney] + [_S that Malvo continued to talk about the shootings in a relaxed, almost convivial way, laughing about Buchanan's slaying and other shootings] (h)
- (iv) VP co-ordination
- [_{VP} felt the impact] + [_{VP} seen the point] (d)
 - [_{VP} re-equipping six Iraqi hospitals that were looted] + [_{VP} building a plant in Basra] (e)
 - [_{VP} made its programs newsworthy] + [_{VP} kept the institution afloat] (f)
 - [_{VP} imposing increased limits on U.S. military activities in Western Europe] + [_{VP} driving up costs] (g)
 - [_{VP} be silent] + [_{VP} see an attorney] (h)

Do the co-ordination data in (33) bear on the choice between Hypothesis A (23a) and (revised) Hypothesis B (23b) for the structure of the VP? In particular, would Hypothesis A in (23a) lead us to expect the patterns of VP co-ordination displayed in (33)? The answer is negative. In (33d), for instance, co-ordination affects two constituents consisting of a verb and the object. Crucially, the auxiliary remains outside the co-ordinated structure.

Recall that the revised hypothesis B in (23b) allows for layering inside the VP: the verb and the object form a core VP, which then combines with less central material, the time specification in our earlier example. If VPs can co-ordinate, then we predict that for our test example two types of VP co-ordination are possible, one affecting the augmented VP, one affecting just the core VP. Discuss the relevance of the co-ordinations in (34) for this prediction.

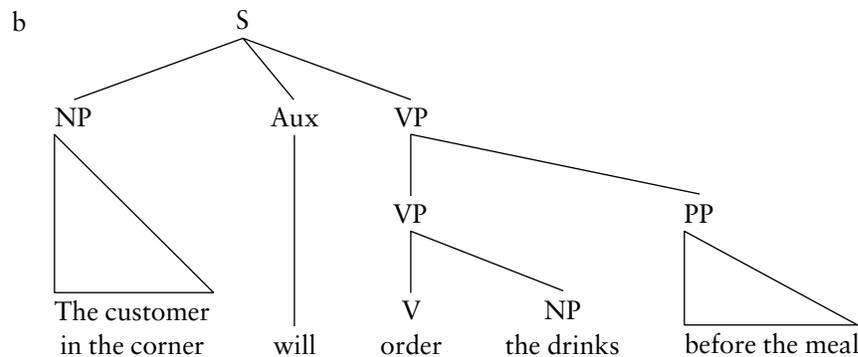
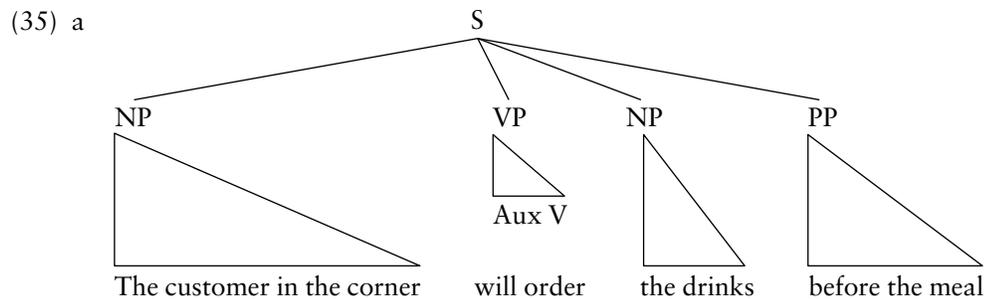
- (34) a The customer in the corner will order the drinks before the meal and accompany his guests into the dining room.
- b The customer in the corner will order the drinks and choose the dessert before the meal.

In (34a) the co-ordinated strings are *order the drinks before the meal* and *accompany his guests into the dining room*. Once again, the first co-ordinated constituent contains the verb, the object, and the time specification. This confirms that the string *order the drinks before the meal* is a constituent. (34b) confirms that the string *order the drinks* is also a constituent, since it is co-ordinated with *choose the dessert*. The data in (34) offer further support for the layered VP in (23b).¹²

2 The Verb Phrase and the Sentence: A First Exploration

2.1 Starting point

Recall that in the previous section we were led to choose between two representations of sentence structure, repeated in (35). The label S abbreviates the label “Sentence.”



While (35a) is “flat,” (35b) introduces hierarchical levels of structure. The structure in (35b) is more “articulated”: the constituents of the sentence have different

¹² Exercises 1A, 3, 4, 5, 6, 8, 9, 19.

relations between each other. There are two important differences between the representations:

- (i) (35a) presents the subject NP and the object NP as being on equal footing; (35b) creates a **subject/object asymmetry**. From the root S it takes one single step to reach the subject NP, it takes three steps to reach the object NP.¹³
- (ii) Conversely, in (35b), the object is contained in the VP, the subject is outside it. This means that in (35b) the object has a closer relationship with the verb than the subject.
- (iii) (35a) presents the direct object and the temporal PP as being on equal footing. In (35b) the object and the verb form a separate unit, the core VP; the temporal PP is added to the periphery of that same VP.

2.2 *The relation between the auxiliary and the VP*

Representation (35a) follows from the intuition that there is a close relationship between the auxiliary and the verb. This relationship is not captured in (35b), in which the auxiliary has a symmetric relation with subject and VP. Consider the underlined co-ordinating conjunctions in (36). For each conjunction, identify the co-ordinated constituents. Does either of the structures in (35) allow us to predict the co-ordinations in (36)?

- (36) a Parents of the 53 Dartmouth swimteam members are pressing administrators and college trustees for the team's reinstatement, and are asking for help from Dartmouth alumni and donors. (Adapted from *Boston Globe*, 4.12.2002, p. A3, col. 3)
- b Stop and search isn't working and won't work. (*Guardian*, 9.11.2002, p. 11, col. 6, letter to the editor from Marc Cohen)
- c State officials say Massachusetts may eliminate a prescription drug program that covers 80,000 elderly, and is considering a variety of other cuts and restrictions. (Based on *New York Times*, 28.4.2003, p. A21, col. 2)
- d Three high-rise towers would wall off the stadium from the skyline and would drastically shrink the center field park. (Based on *New York Times*, 28.4.2003, p. A22, col. 1)
- e We believe that such a proposal could seriously undermine the voucher program and could potentially harm the millions of low-income people assisted with housing vouchers. (*Washington Post*, 29.4.2003, p. A8, col. 2)

¹³ In Chapter 5, sections 3.2.3.1, 3.2.3.2, 5.2.2, and 5.3.2.2, we will discuss a number of subject/object asymmetries in connection with question formation and relative clause formation.

The constituents co-ordinated by the underlined conjunctions in the above examples are isolated in (37):

- (37) a [are pressing administrators and college trustees for the team's reinstatement]
 + [are asking for help from Dartmouth alumni and donors]
 b [isn't working]
 + [won't work]
 c [may eliminate a prescription drug program that covers 80,000 elderly]
 + [is considering a variety of other cuts and restrictions]
 d [would wall off the stadium from the skyline]
 + [would drastically shrink the center field park]
 e [could seriously undermine the voucher program]
 + [could potentially harm the millions of low-income people assisted with housing vouchers]

The problem arising for both representations in (35) is that the co-ordinated constituents in (36) correspond to the combination of the auxiliary, the verb and its complements and other specifications. But in neither of the representations in (35) do these strings form a constituent: (35a) does combine the auxiliary with the verb, but neither the direct object nor the temporal specification is part of the VP. In (35b) the auxiliary and the VP do not form a constituent.

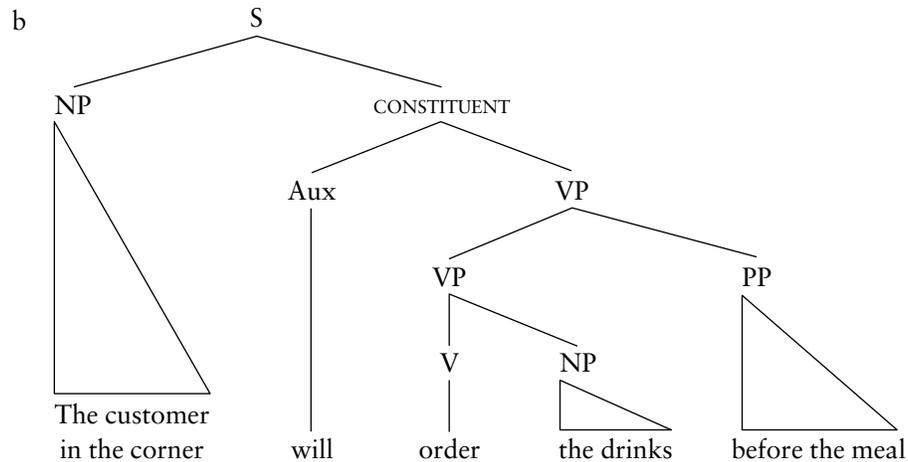
Based on our test sentence we can create sentences such as the following, raising a similar problem for the representations in (35):

- (38) a The customer will order the drinks before the meal but may pay for them later.
 b The customer will order the drinks before the meal and is waiting for the wine list.
 c The customer in the corner has just taken his seat and will order the drinks before the meal.

According to representation (35a), to be able to operate on a constituent that contains the auxiliary, the verb, and the additional material, we would have to take the complete sentence (S). The sequence VP + NP + PP is composed of three autonomous constituents, but these constituents do not exhaustively form a bigger constituent. In (35b), the problem is identical: the sequence Aux + VP does not form a constituent without the subject NP.

The attested data in (36) and the experimental data in (38) both lead to the conclusion that Aux and the components of the VP in (35b) must also form a constituent together. Let us adjust the tree accordingly. Rather than having the ternary structure in (35b), in which three branches start from the S node, we need a **binary** branching structure, as in (39): for the time being we do not give a specific label to the constituent formed by the auxiliary and the VP. We return to this point in section 3.1 and also in the next chapter.

- (39) a [S [NP The customer in the corner] [CONSTITUENT [AUX will] [VP [VP order [NP the drinks]] [PP before the meal]]]].



This structure splits the sentence into two parts, the subject and a second constituent, which we could loosely refer to as the “predicate.”¹⁴ The subject “specifies” or delimits the domain of application of the predicate. That is to say: the predicate tells us what kind of action is taking place, and the subject says to which entity this action is applied. The role of the auxiliary is to link the VP and the subject. The auxiliary also qualifies the validation of that link: for instance, the auxiliary may specify that the link will only be validated in the future (*will*), or that the validation is situated in the past (*has*), etc.

The structures in (39a, b) give rise to an immediate question. Not every English sentence contains an auxiliary. We will have to devise a way of representing the structure of sentences such as (39c).

- (39) c The customer in the corner ordered the drinks before the meal.

We return to this issue in Chapter 3, section 1.2.

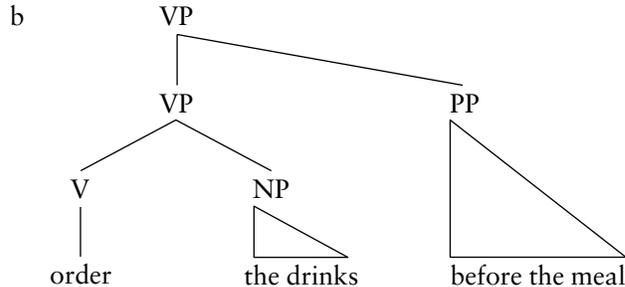
2.3 Layered structures

2.3.1 COMPLEMENTS VS. ADJUNCTS IN THE VP

Recall that we proposed that the structure of the VP is layered. In (40) we repeat the structure we arrived at based on our experimental sentence.

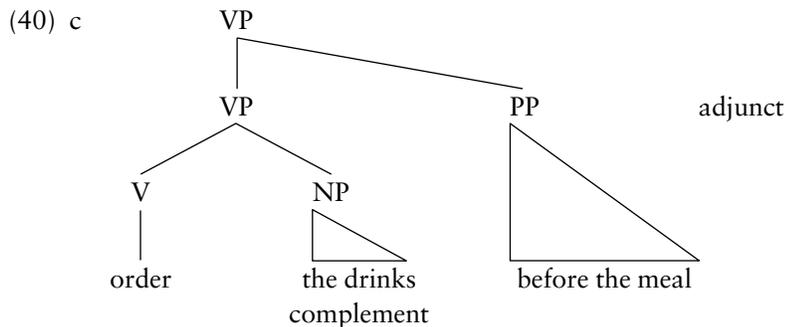
¹⁴ Exercises 2 and 10.

(40) a [VP [VP order [NP the drinks]] [PP before the meal]]



Let us assume we start building the sentence from the verb, which denotes the activity that will be reported in the sentence, here *order*. If we proceed from the bottom of the structure to the top, (40b) seems to suggest a certain ordering in the assembly of a sentence. First we assemble the core VP, containing the verb and its object (*order the drinks*); then we augment this core by adding a temporal PP (*order the drinks before the meal*). This structure reflects the intuition that the temporal PP is interpretively less central to the activity expressed in the sentence than the direct object. The PP *before the meal* does not serve to define the kind of activity expressed by the VP; it simply provides accessory information on the timing of that activity. The PP is more peripheral to the VP: the core VP consists of the verb and the object. That core VP is assembled first.

In traditional terms the verb *order* is a **transitive** verb. The verb *order* **selects** the object *the drinks*, in that it requires that there be a complement and it determines the type of complement that is required, here an NP. We call the constituent selected by the verb a **complement**. The time PP is not a complement of *order*; the verb *order* does not select a time specification, it does not require that there be a time specification, nor does it require that a time specification in the sentence be of a particular category. Material that is not selected is attached outside the core VP. The temporal PP is said to be **adjoined**; a constituent that is adjoined to another constituent is also called an **adjunct**.

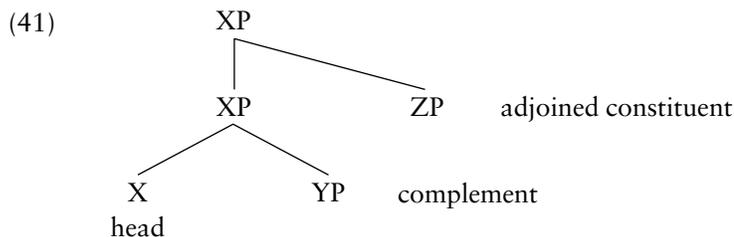


The nature of the process that puts together the core VP is slightly different from that of adjoining the time PP to it. When we assemble the core VP we combine a

head, the verb, which is one word, with a phrase, the NP object. The resulting unit denotes a particular type of action. The head selects the complement. When we adjoin the adjunct, we assemble two ready-made phrases: the “finished” core VP and, in our example, the adjunct PP. The adjunct, though part of VP, is not fully integrated into its core and it does not serve to differentiate a particular action from another one. Verbs do not select time specifications, and if there is going to be a time specification this can be expressed in different ways.

To use a metaphor: we can compare adjoined constituents to, for instance, the garage that is built next to a house. Garages are “external” to a house. If you say that you are “in” the house, you will not normally be thought to be in the garage. On the other hand, if you sell a house you will also sell the garage with it. And moreover, the presence of a garage will mean that the house is worth more. But garages remain extras: in order to qualify as a house, a building does not need a garage; if you demolish the garage that goes with a house, the house itself remains a house.

The structure in (40c) is elaborated for the VP. We can generalize (40c) to all constituents, proposing that for each type of head we distinguish its complements, the constituent selected by the head in question, and which, together with the head, forms the core constituent, from the adjoined constituents, peripheral elements which may but need not be added. We use the labels X, Y, and Z as variable labels that stand for any category type (N, V, P, etc.). In (41), the constituents YP and ZP will be formed according to the same schema: they will have a head (Y, Z), and may have a complement and/or an adjoined constituent.



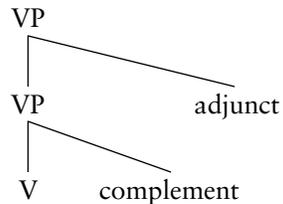
2.3.2 DIRECTION OF ADJUNCTION

Identify the VPs in (42). Do the verbs select a complement? Are there any adjoined constituents? What is the category of the adjoined constituents? Discuss the difference between (42a) and (42b). Draw the structure for the VPs.

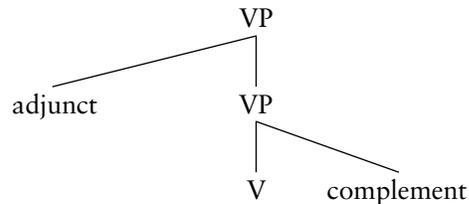
- (42) a One of the most controversial takeovers in British sporting history was awaiting a government decision last night. (Based on *Guardian*, 13.3.1999, p. 1, col. 1)
- b One of the most controversial takeovers in British sporting history was last night awaiting a government decision. (*Guardian*, 13.3.1999, p. 1, col. 1)

In (42a) *last night* is an adjoined constituent; it follows the verb and it is realized by an NP. In (42b) the same constituent precedes the verb. To allow for both the order adjunct – verb and the order verb – . . . – adjunct, we can enrich our structure by allowing both **left-adjunction** and **right-adjunction**. Using our earlier architectural metaphor, garages may be built to the right of a house or to its left.

(40) d Right-adjunction



Left-adjunction

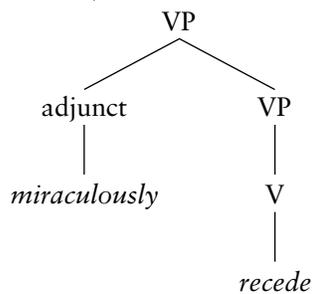


Among our earlier examples, (19e) also illustrated left-adjunction. We repeat it for convenience in (43a). We can reword the example and replace the left-adjoined adjunct by a right-adjoined one as in (43b).

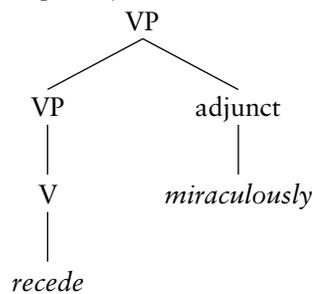
- (43) a All in the name of a pretence that, with just a little bit more time passing, all obstacles will [_{VP} miraculously [_{VP} recede]].
 b All in the name of a pretence that, with just a little bit more time passing, all obstacles will [_{VP} [_{VP} recede] miraculously].

This example is of interest because the core VP does not contain any complement. This is so because the verb *recede* does not select a complement. *Recede* is an **intransitive** verb. Adopting the format in (40d) we assign the structures in (43c) and (43d) to the VPs in (43a) and (43b). Though *recede* is just one word, we represent it as constituting a core VP, because we want to show that the adjunct *miraculously* is not part of the core VP but is adjoined to it.

(43) c Left-adjunction



d Right-adjunction



Identify the co-ordinated VPs in the following example:

- (43) e We budget for shows with the expectation that it will increase the gaming revenue and in turn pay for the show. (*New York Times*, 28.4.2003, p. B5, col. 4)

As you can see, the second co-ordinated VP *in turn pay for the show* contains a left-adjoined PP, *in turn*.

(43) f [VP in turn [VP pay for the show]]

Finally, exploiting our metaphor once again, it is also possible to build a garage both to the right and one to the left of a house. In the same way, we can also adjoin constituents both to the right and to the left of a VP. (43g) is a constructed example with one adjunct to the right and one to the left, both adjuncts can also appear on the left (43h) or on the right (43i).

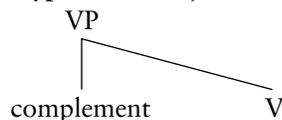
(43) g They will carefully analyze the financial situation of the company later on.
 h They will later on carefully analyze the financial situation of the company.
 i They will analyze the financial situation of the company carefully later on.

Our hypotheses of VP-layering and of adjunction can account for these word orders. Observe that examples such as those in (43g–i) also show that a VP may be augmented by more than one adjunct.¹⁵

2.3.3 OV ORDERS?

The data we have encountered lead to the hypothesis that adjunction may either be to the right or to the left of the VP. When the object of a verb was located in the VP,¹⁶ then it was always found to the immediate right of the verb. This follows from our structure: the complement of a head appears to its right. We may however wonder whether this is the only option. Having introduced both left-adjunction and right-adjunction, should we also allow for the complement to occur either to the right or to the left of the verb in the VP? In other words, do we also have to allow for the following structure for the core VP?

(40) e Hypothesis: Object-Verb patterns in English



How do we find the evidence for or against this hypothesis? We could look for examples of this type in which the object remains in the VP but occurs to the

¹⁵ Exercise 14. We will return to multiple adjuncts in Chapter 3, section 2.1, and in Exercise 3 of Chapter 3.

¹⁶ The object can be moved out of the VP to an initial position, as shown in section 1.4. This fronting operation is also used for forming constituent questions that bear on the object. Clefting (section 1.7.1) and pseudo-clefting (section 1.7.2) may also rearrange the position of the object with respect to the verb. For a discussion of movement see Chapter 5.

immediate left of the verb. Now, suppose we do not find any such examples, even after an intensive search using sophisticated computer technology. Would that definitely mean that such structures are to be excluded on principled grounds? Though the total absence of relevant examples could well be taken to suggest that certain structures are ill conceived, we cannot be totally sure about this conclusion. It could also be that the relevant data are rare for other reasons, for instance, because they are stylistically extremely marked. Not finding the relevant example is suggestive but not conclusive. Recall from the discussion in Chapter 1, section 2.3.2 that the fact that we have never seen a black swan would not mean that they cannot exist.

To check the validity of a hypothesis we can also try to conduct an experiment. To do this, we create our own examples, corresponding to the pattern in (40e) and check their status. We either simply create new sentences out of the blue that illustrate the pattern that we are interested in, or we modify the examples that we are currently working on. Find the NP complement in (42) and place it to the immediate left of the verb – is the result good or bad? Try the same using our test sentence. What do you conclude? It seems to be the case that in English the complement of the verb cannot be inserted to the immediate left of the verb.

- (44) a *One of the most controversial takeovers in British sporting history was
 [_{VP} [_{VP} [_{NP} a government decision] awaiting] [_{NP} last night]].
 b *One of the most controversial takeovers in British sporting history was
 [_{VP} last night [_{VP} [[_{NP} a government decision] awaiting]]].
 c *The customer in the corner will [_{VP} [_{VP} [_{NP} the drinks] order] before the
 meal].

We decide that such sentences “are not English.” The word orders illustrated here are not allowed by the structure of the language. The grammar of English does not allow the structure in which the object occurs to the immediate left of the verb. When an unacceptable structure is ruled out because the grammatical system of the language does not allow it then we call it **ungrammatical**. In the preceding discussions we have often labeled strings as unacceptable, without saying that they were ungrammatical. This was mainly because at the point of discussion we were simply interested in observing that these strings were not correct. When we say that an unacceptable string is ungrammatical, we suggest an explanation for why it is unacceptable. In what follows we will use the labels unacceptable and ungrammatical indiscriminately. This is because we are interested in unacceptable sentences precisely because they give us an insight into the grammar.

2.3.4 BASE POSITIONS AND MOVEMENT

While adjuncts may apparently be left-adjoined and right-adjoined to the VP, the complements of V are inserted to the immediate right of V.¹⁷ Does this mean that a

¹⁷ Exercise 18.

direct object of a verb will always be found to the immediate right of the verb? Recall the examples in (10), repeated here as (45):

- (45) a The British one I have been using since I was about nine. (*Guardian*, 22.3.2002, p. 3, col. 1)
 b The news, when it comes, he seems to take well enough. (*Guardian*, G2, 26.7.2002, p. 2, col. 1)

In these examples the objects *the British one* and *the news* do not occupy a position next to the selecting verb. Restore these “dislocated” objects to their canonical position. Could the objects appear in a position immediately preceding the verb?

- (45) c I have been using the British one since I was about nine.
 d When it comes, he seems to take the news well enough.

Once again you would not be able to put the object in a position to the left of the verb.

- (45) e *I have been the British one using since I was about nine.
 f *When it comes, he seems to the news take well enough.

We have to allow for constituents such as the direct object to occupy various positions in the sentence. On the other hand, the object is closely related to the verb. We proposed that the object must first combine with V to form a core VP before adjoined constituents are added to the VP by the assembly process. One possible way of thinking about the sentence-initial position of the object illustrated above is to say that the object is first inserted in the position to the right of V but that it may subsequently be moved away from that position. To allow for the construction of sentences such as (45a, b), while at the same time excluding patterns such as (45e, f), we will have to restrain the **landing site** of a moved constituent: movement of constituents apparently targets designated positions.¹⁸

2.4 Deductive approaches

2.4.1 HEAD AND PROJECTION

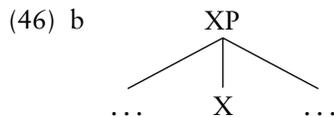
So far we have encountered constituents belonging to various categories: NP, VP, AP, PP. The label of the constituents (NP, VP, etc.) was determined by the category of the head (N, V, etc.). Let us formalize this procedure by explicitly defining the category of the constituent in terms of the category of its head:

¹⁸ We turn to some aspects of this issue in Chapter 5.

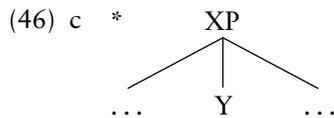
(46) a **Head hypothesis**

The category of a constituent is determined by the category of its head.

(46a) is a general hypothesis about structure: it applies to all the material we have discussed so far and, being general, it will also apply to new material. If we discover a new type of head X, then by (46a) we deduce that this head will project a constituent of type XP:



(46) is thus not simply a summary of our findings so far. It goes beyond the observations and generalizes what we have found to all constituents. The effect of the generalization is to **restrict** the way we will analyze any new data we may come across in future; following (46a) we assume that all structure is headed. In postulating (46a), we draw the bounds of possible representations more narrowly. Based on (46a) we **predict**, for instance, that there will never be any structures of the type in (46c):¹⁹



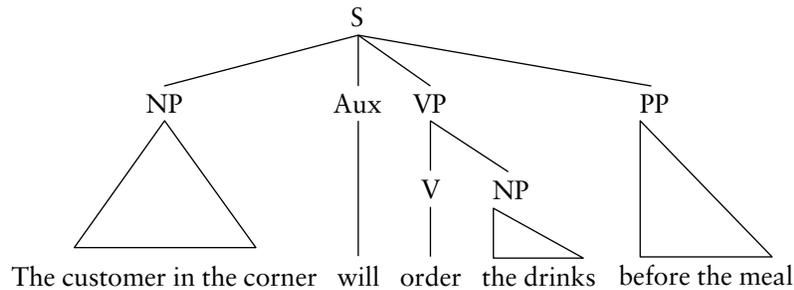
This also means that if we did come across a constituent that seems to require representation (46c), we should rethink our analysis of that particular constituent or, alternatively, we would have to rethink our theory.

2.4.2 BINARY BRANCHING

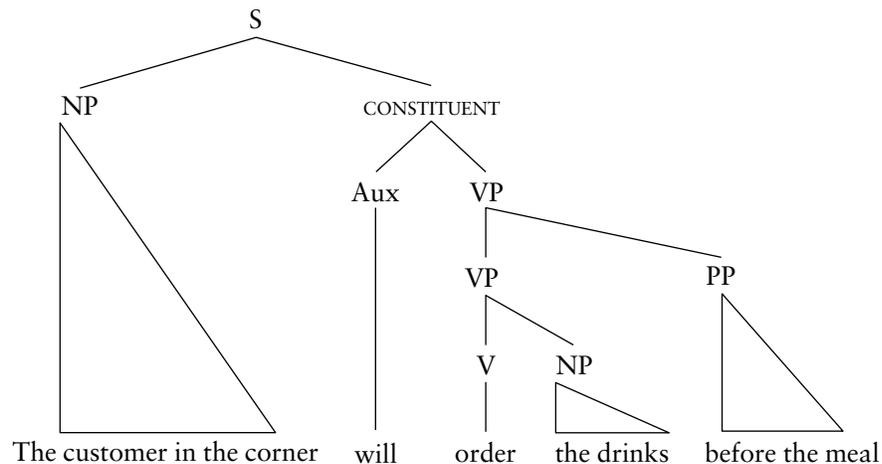
Let us compare some of the tree structures discussed so far, focusing simply on the geometry of the **branches**, the lines that compose the trees. For instance, let us compare the way these lines are organized in (5e'), repeated here as (47a), with the organization in (39b), repeated here as (47b).

¹⁹ There is a huge literature concerning the general format for syntactic structure known as “X-bar theory.” For first proposals see Chomsky (1970), see also Jackendoff (1977) for a first fully elaborated account. For a critical evaluation of various implementations see also Kornai and Pullum (1990).

(47) a



b

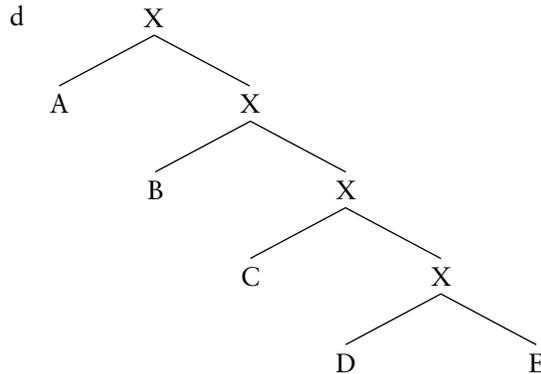


(47a) and (47b) display different types of combinations. In (47a) the root **node S** splits up into four separate branches. **S dominates** four immediate constituents: (i) the subject NP, (ii) the auxiliary, (iii) the VP, and (iv) the PP. The same tree also contains instances of a node dominating just two constituents; for instance, the VP node dominates the verb and the object NP. If we removed the time specification from the sentence, we would end up with yet another type of composition, since the root S would then dominate only three constituents. (47a) suggests that the types of nodes in a tree are unconstrained: we can have binary branching nodes (V + NP in (47a)), or ternary branching nodes (if we omit the time PP from (47a)), or even four-way branching nodes (S in (47a)). This wealth of options is in sharp contrast with the restricted branching pattern in (47b): here all the nodes dominate just two constituents. (47b) only has **binary branching** nodes. (47b) is more **restrictive**.

Let us think about the branching patterns in more general terms. What we are concerned with in this book is “syntax,” that is: putting units (here units of language) together, or assembling units. It is trivially true that in order to assemble elements, you need at least two of them. In fact, in order to assemble elements, you do not need more than two of them. If you do have more than two elements to put together, you can still use a binary combination system to assemble them. Consider

(47c). We have five elements to assemble. We can assemble these five elements into a simple structure, using the binary branching system:

(47) c List of elements: A, B, C, D, E



The tools needed to form (“generate” to use a technical term) (47b/d) are more restrictive than those needed to generate (47a). Or, putting it differently, (47a) is more permissive. In (47b/d) we only allow combinations of two constituents; in (47a) we also have admitted combinations of three or of four. (47b/d) is preferable on theoretical/conceptual grounds, because it requires fewer assumptions about what is possible. By restricting branching patterns to binary branching as in (47b), we define more narrowly what is possible in language, we narrow down the options for combining constituents to combinations of just two constituents, or binary combinations. (47b/d) thus once again will correspond better to Einstein’s description of the goals of scientific research given in Chapter 1, section 1.2.3:²⁰

The grand aim of all science is to cover the greatest possible number of experimental facts by logical deduction from the smallest number of hypotheses or axioms. (Einstein 1954, cited in Abraham et al. 1996: 4)

For (47a) we need at least three types of branching. For (47b) we only need binary branching: each constituent grouping, each syntactic unit, combines two constituents. Thus a theory including (47b) is more elegant and economical than one that includes (47a), the latter having more tools available.

(47b) is supported both by empirical evidence (the evidence provided by applying the constituency tests to data as discussed in this chapter) and by theoretical arguments. Let us therefore postulate that all linguistic structure is based on binary branching.²¹ From now on, when we try to derive structures of sentences we will

²⁰ See also the discussion of “Ockham’s Razor” in Chapter 1, section 1.2.3.

²¹ Exercise 11.

work with the hypothesis in (48).²² Once again, (48) is a theoretical hypothesis which, though inspired by a set of empirical data, goes beyond these data.

- (48) **Binary composition hypothesis**
All syntactic structure is binary.

From now on, our analysis will be guided by (48), a theoretical principle formulated to restrict our theory. When theoretical interest guides the way we look at data we adopt a **deductive** methodology. In such an approach the hypotheses that constitute a theory form the basis of the deduction, but again what we deduce will be a general principle and once again this principle will be tested by observation, or, if possible, by experiment. Our theory about syntax, about putting words together to form sentences, proposes that all syntax, all “putting together,” is ruled by binary combinations; all syntactic branching will be binary.²³ (48) says that syntax is the combination of two elements. A constituent is formed by the fusion or the **merger** of two constituents; that newly formed constituent can be merged with yet another constituent to form another constituent etc. Concretely, the **derivation** of our example sentence proceeds as follows:

- | | | |
|--------|------------------------|--------------------|
| (49) a | assemble core VP | = V + NP |
| b | assemble augmented VP | = VP + PP |
| c | assemble “CONSTITUENT” | = Aux + VP |
| d | assemble sentence | = NP + CONSTITUENT |

Recall that the assembly of the core VP (49a) is different from the assembly of the augmented VP (49b). In the former case we assemble a head and an element that is selected by that head to form a phrase. In the second type of assembly we combine two phrases which are already themselves fully formed. We have seen that we need both types of procedures in order to differentiate obligatory complements and optional adjuncts.

2.5 *A short note on binary branching and word structure*

We have so far only dealt with the assembly of sentences (and only a small sample of possible sentences), but we might generalize our proposals to say that the binary branching hypothesis in (48) is a general hypothesis about structure in language. In other words, the hypothesis would be that ALL linguistic units are built up by combining two elements.

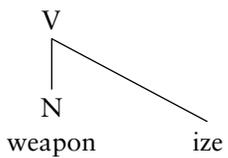
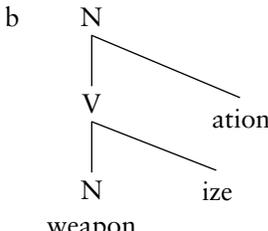
²² As briefly discussed in Exercise 7, co-ordinated structures raise a problem for the binary branching hypothesis. For some sophisticated proposals on how to deal with co-ordination see Camacho (2003), Goodall (1987), van Oirsouw (1987).

²³ In generative linguistics, the binary branching hypothesis was elaborated by Richard Kayne (1984).

Words are smaller units of language than sentences; words are themselves combined into phrases to form sentences. Let us briefly look at English words. Does the internal structure of words conform to the binary branching format? Consider the underlined words in (50). Do they have internal structure? What are their components? How are the components assembled?

- (50) a Anthrax was hard to weaponize. (*Guardian*, 15.10.2001, p. 5, col. 2)
 b [The powder] was not, however, "weaponized" – genetically modified to be antibiotic-resistant. (*Independent*, 22.10.2002, p. 5, col. 3)
 c Among those countries are nations that have tested the weaponization of those chemical and biological agents. (*Guardian*, 10.10.2001, p. 2, col. 8)

The root common to the words *weaponize*, *weaponized*, and *weaponization* is the noun *weapon*. On the basis of the noun *weapon* we create the verb: *weaponize* (50a), meaning "turn something into a weapon," "use something as a weapon." This verb can be inflected: in (50b) we find its past participle *weaponized*. In (50c) we create a noun, *weaponization*, on the basis of the verb *weaponize*. It is clear that in the examples illustrated here, the process of creating new words is based on binary branching: it is summarized in the structures in (51):

- (51) a 
 b 

Consider the underlined words in the following extracts. Describe the process by which they are formed:

- (52) a The current State Department reaction to criticism by the hawkish commentator Newt Gingrich offers examples of weak and strong vituperation. (*New York Times*, 28.4.2003, p. A25, col. 5)
 b [He was] conscious of the discomfort at Washington's growing hawkishness. (*Guardian*, 26.4.2003, p. 6, col. 3)

Discuss the interpretation of the adjective *undoable* in the following examples:

- (53) a This task is undoable: we don't have the people and we don't have the time.
 b This knot is undoable; all we need is a fine needle and a lot of patience.

The adjective *undoable* has two interpretations: 'which cannot be done' and 'which can be undone'. In the same way that sentences can have different interpretations as a result of being structurally ambiguous, the ambiguity of *undoable* can be related to its internal make-up, its structure:

- (53) c [A un [A [v do] able]] vs. [A [v un [v do]] able]

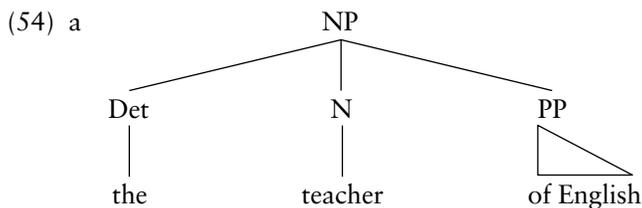
By adopting the binary branching hypothesis for all structural relations we have elaborated a simpler theory than if we allow for all types of branching. We need only one type of combination: structure is formed by putting together ("merging") two constituents. As mentioned, a theory that uses only binary branching is to be preferred over a theory that has both binary branching and ternary branching.²⁴

3 Specifiers

3.1 Noun phrases

3.1.1 A BINARY BRANCHING STRUCTURE FOR NPS

Consider the NP *the teacher of English*. We will try to develop a structural representation, using as our guidelines the theoretical concepts elaborated so far.²⁵ In particular, we assume that all structure is headed and all structure is binary branching. This means that, for instance, representation (54a) will be excluded on theoretical grounds.

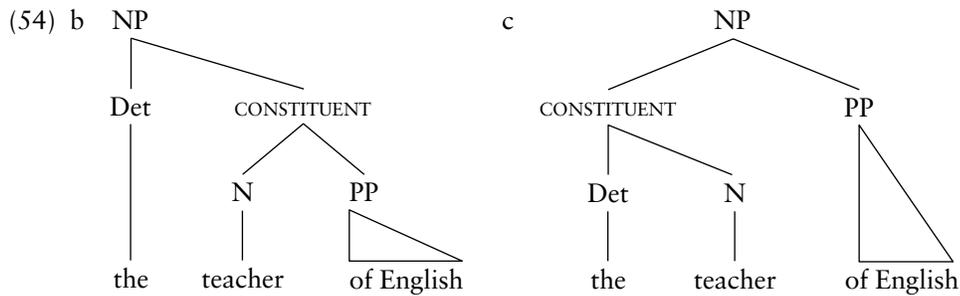


²⁴ Exercises 16, 17.

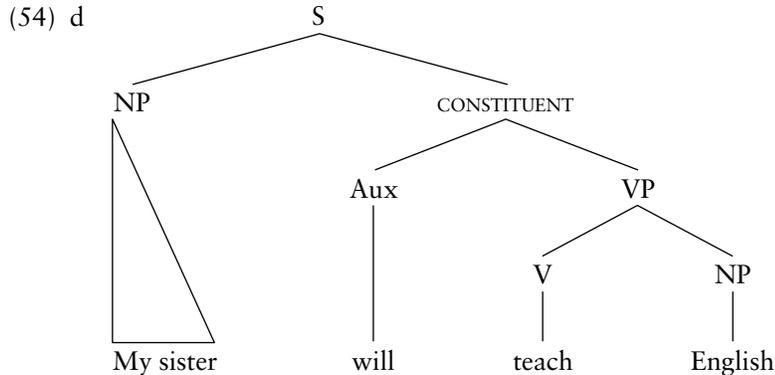
²⁵ This is a first approximation of the structure of NP. The structure would have to be revised in a number of ways in the light of further developments of the theory. We do not go into this area but refer the reader to the existing literature. For a first introduction see Haegeman and Guéron (1999: chapter 4). For more detailed and more advanced discussion see also Bernstein (2001).

The label “Det” in (54a) stands for “determiner.” The term is used provisionally as a cover term for articles such as *the*, *a* and for elements that seem to occupy the same position in the NP, such as demonstratives.²⁶

In principle, either (54b) or (54c) would respect the binary branching hypothesis; we again use the label CONSTITUENT as a provisional label:



Which of these should we adopt? In order to choose between the two structures, we can use theoretical considerations as well as empirical ones. Ideally, the two kinds of argumentation should converge and lead to the same conclusion. Consider first the noun *teacher*, which is morphologically related to the verb *teach*. In the NP *the teacher of English*, the relation of the noun *teacher* to the PP *of English* is similar to that between the verb *teach* and a direct object in the sentence, cf. (54d):



Tentatively, we could conclude that this analogy favors structure (54b), in which the N *teacher* first merges with the PP *of English*. The structure would be one in which the determiner *the* is outside the resulting constituent [N + PP]. Is there any evidence that the unit *teacher of English* is a constituent? And if so, what kind of constituent would it be? Do the data in (55) shed light on this question?

²⁶ Below we will replace this label by a more adequate label for the position occupied by such elements. For the importance of the determiner in the structure of the NP see Abney (1987), Bernstein (2001), and the references cited. These publications are advanced and should only be tackled after you have finished this book.

- (55) a This teacher of English has arrived today but that one arrives only tomorrow.
 b John's teacher of English is British and Mary's is American.

(55a) contrasts two NPs: *this teacher of English* versus *that one*. The opposition is expressed by the demonstratives *this* and *that*. The component *teacher of English* is not contrasted and in the second part of the co-ordinated structure the string *teacher of English* is replaced by the word *one*. The fact that one word, *one*, can substitute for a string of words suggests that the string, *teacher of English*, is a constituent, a conclusion compatible with representation (54b), though not with (54c).²⁷

The same conclusion is reached if we examine (55b). Here the non-contrastive part of the NP is deleted:

- (55) c John's teacher of English is British but Mary's \emptyset is American.

If we assume that ellipsis affects constituents (as argued in section 1.6), then again this example is evidence for the structure in (54b).

We have argued for the structure in (54b) on the basis of *one*-substitution and of ellipsis. If we adopt structure (54b), the question arises as to the nature of the CONSTITUENT N + PP. How does it relate to the determiner? If we pursue the analogy with VP, i.e. the hypothesis that N is the head of the constituent [*teacher of English*] in the way that V is the head of [_{VP} *teach English*], then we ought to conclude that the constituent N + PP is an NP. On the other hand, it is not an ordinary NP. *Teacher of English* does not have the same distribution as other NPs: it cannot function as an object (56a), nor can it function as a subject (56b).

- (56) a *I met teacher of English.
 b *Teacher of English arrived late today.

What minimal "correction" would save the unacceptable strings in (56)? To enable the string *teacher of English* to freely occupy subject and object positions we need to add a determiner, such as *a*, *the*, *this*, *that*. How could we characterize the interpretive effect of adding these elements? How do *the teacher of English* and *teacher of English* differ in meaning?

- (57) a I met a/the/this/that teacher of English.
 b A/the/this/that teacher of English arrived late today.

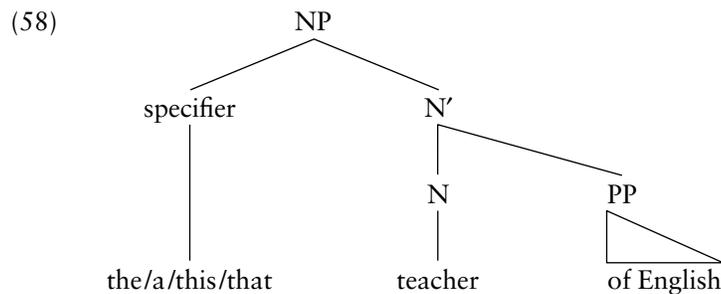
The string *teacher of English* denotes a property of the entity that we are referring to. In other words, we attribute to that entity the characterization that he/she 'teaches English'. To pick out an entity with the relevant property (to "refer" to such an entity), we need to use a determiner. By inserting the indefinite article *a* we signal

²⁷ For discussion of *one* substitution see also Panagiotidis (2002, 2003).

that there is at least one entity that has the property ‘teacher of English’, and that this entity is being introduced in the discourse. By inserting the definite article *the* we signal that one such entity with the relevant properties is already familiar in the discourse: speaker and hearer can identify the entity of the type ‘teacher of English’ we are talking about. In other words *a* and *the* serve to specify reference: these elements help us pick out the entity to which we attribute the property ‘teacher of English’. Observe that we only use one such determiner:

(57) c *a this teacher of English

Determiners specify the reference of the NP. We insert them in a position labeled **specifier**, as in (58). Because the combination *teacher of English* cannot on its own function as a complete NP, while at the same time it is a constituent headed by an N, we will label it N' (N-prime), corresponding roughly to a partial NP.²⁸



At this point, the specifier position is new to our structures. So far we have been operating without it. If we do introduce this concept in the NP, we should show that it is really required. We should, for instance, show that a specifier is distinct from a complement and from adjoined constituents. Once we have motivated the specifier position in the NP, we have to address the question whether there could be a similar specifier position in other constituents, such as VP and S. If the answer to that question is positive, we will want to know which elements occupy the specifier positions. If the answer is negative, we have to determine why specifiers are restricted in their distribution.

3.1.2 SPECIFIERS IN THE NP

3.1.2.1 *Specifier–head agreement*

The specifier position in the projection of the noun has some properties that set it apart from other constituents in the NP. First, look at the form of the demonstratives in the following English examples: how do we account for the different forms?

²⁸ The intermediate level N' is also sometimes referred to as “N-bar.”

- (59) a this teacher of English
 b these teachers of English
 c that teacher of English
 d those teachers of English

As you see, the form of the demonstrative depends on the form of the head noun: a singular N *teacher* goes with the forms *this/that*, a plural N *teachers* with the forms *these/those*. The specifier **agrees** with the head in terms of the number **feature**. The same pattern is found in French:

- (60) a ce professeur d'anglais
 this (SG) professor (SG) of English
 b ces professeurs d'anglais
 these (PL) professors (PL) of English

French singular nouns also match with the demonstrative for the feature gender, as shown by the following examples:

- (60) c ce cours d'anglais
 this (MASC) course (MASC) of English
 'this English course'
 d cette leçon d'anglais
 this (FEM) lesson (FEM) of English
 'this English lesson'

Cours ('course') is a masculine singular noun; it is accompanied by the masculine singular demonstrative *ce*. *Leçon* ('lesson') is a feminine singular noun; it is accompanied by the feminine singular demonstrative *cette*.

French articles also match a singular head noun in gender (60e, f) and number (60g):

- (60) e un cours d'anglais vs. une leçon d'anglais
 a (MASC-SG) course of English a (FEM-SG) lesson (FEM-SG) of English
 'an English course' 'an English lesson'
 f le cours d'anglais vs. la leçon d'anglais
 the (MASC-SG) course of English the (FEM-SG) lesson (FEM-SG) of English
 'the English course' 'the English lesson'
 g les cours d'anglais vs. les leçons d'anglais
 the (PL) courses (PL) of English the (PL) lessons (PL) of English
 'the English courses' 'the English lessons'

The constituent in the specifier position of the NP agrees with the head noun. Let us formulate the hypothesis that agreement relations are realized through specifier–head relations. Consider the following examples: how is agreement encoded in the sentence?

- (61) a The teacher of English is arriving today.
 b The teachers of English are arriving today.

Agreement obtains between the subject NP, *the teacher(s) of English*, and the inflected auxiliary, *is/are*. We return to the relevance of this observation in section 3.1.2.3, and also in Chapter 3.

3.1.2.2 Prenominal genitives

Examine the underlined NPs in the following extracts. The head nouns are preceded by genitive forms of NPs. Can the genitive NP preceding the head N be replaced by a pronoun? How could we characterize the semantic relationship of the prenominal genitive NP to the associated N? Can the head nouns of the underlined NP, which are preceded by the genitive NP, also be preceded by a determiner that specifies the reference of the head noun (a demonstrative or an article)?

- (62) a One of the most controversial takeovers in British sporting history was last night awaiting a government decision after the Monopolies and Mergers Commission delivered its verdict to ministers on whether Rupert Murdoch's bid for Manchester United Football Club should be allowed. (Adapted from *Guardian*, 13.3.1999, p. 1, col. 1)
 b Instead, the remainder of the best of Labour came in Estelle Morris's speech. (Adapted from *Guardian*, 4.10.2002, p. 7, col. 1)

The prenominal genitive NPs *Rupert Murdoch's* and *Estelle Morris's* can be replaced by pronouns (*his*, *her*). We cannot add a determiner to the underlined NPs:

- (63) a *the Rupert Murdoch's bid for Manchester United Football Club
 *Rupert Murdoch's the bid for Manchester United Football Club
 b *the Estelle Morris's speech
 *Estelle Morris's the speech

If we wanted to use a determiner then we would have to remove the prenominal genitive NP:

- (63) c the bid for Manchester United Football Club by Rupert Murdoch
 d the speech by Estelle Morris

In our examples, a prenominal genitive NP and the determiner specifying the reference of the head noun cannot co-occur. Either we use a prenominal genitive

or we use a determiner. The prenominal genitive and the determiner are said to be in **complementary distribution**. To rule out that a genitive NP preceding a noun co-occurs with a determiner related to the same noun, we could propose that the genitive NP and the determiner are inserted in the same position. We have proposed that determiners occupy a particular position of NP labeled specifier. Let us postulate that (i) each syntactic position can contain only one constituent and (ii) that there is just one specifier position in the NP. If prenominal genitive NPs occupy the specifier position of NP, we correctly predict that an NP contains either a prenominal genitive or a determiner.²⁹

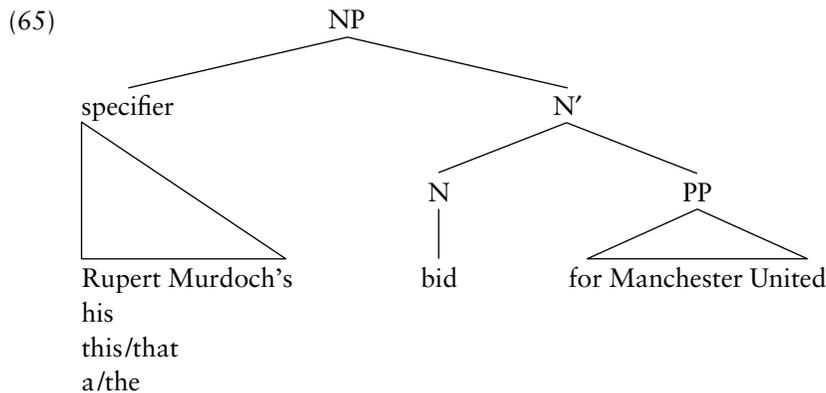
In the examples above the nouns *bid* and *speech* can be related to the verbs *bid* and *speak*; the prenominal genitive NPs relate to the head nouns like subjects relate to verbs in a sentence:

- (64) a Rupert Murdoch will bid for Manchester United.
 b Estelle Morris will speak at the conference.

(64c) contains an NP related to our test sentence (5a). Again, the subject NP of the original test sentence corresponds to the prenominal genitive NP:

- (64) c I am waiting for [_{NP} [_{NP} the customer in the corner's] order of the drinks].

Let us assume then that prenominal genitive NPs occupy the specifier position of the containing NP. Since possessive pronouns such as *his*, *her*, *their*, etc. replace prenominal genitives, we assume they also occupy the specifier of NP.



Recall also that the specifier position can be a locus for agreement relations. In English, genitive NPs or possessive pronouns do not agree with the head noun. French possessive pronouns agree with the head noun, as shown in (66):

²⁹ For data that challenge this proposal see Exercise 20. See Haegeman and Guéron (1999: chapter 4) for introductory discussion; for advanced discussion see Abney (1987), Bernstein (2001), and the references cited there.

- (66) a mon résumé du texte
 my (MASC-SG) summary (MASC-SG) of-the text
 ‘my summary of the text’
- b mes résumés du texte
 my (PL) summaries (PL) of-the text
 ‘my summaries of the text’
- c ma description du texte
 my (FEM-SG) description (FEM-SG) of-the text
 ‘my description of the text’
- d mes descriptions du texte
 my (PL) descriptions (PL) of-the text
 ‘my descriptions of the text’

We observe that the specifier of the NP unites two properties: agreement (3.1.2.1) and subjecthood (3.1.2.2). Both agreement and subject are concepts that we also operate with at the level of sentences. What we will try to do below is to elaborate an approach to the sentence in which agreement and subjecthood are tied to a specifier position.³⁰

3.1.2.3 *Questions about the structure of sentences*

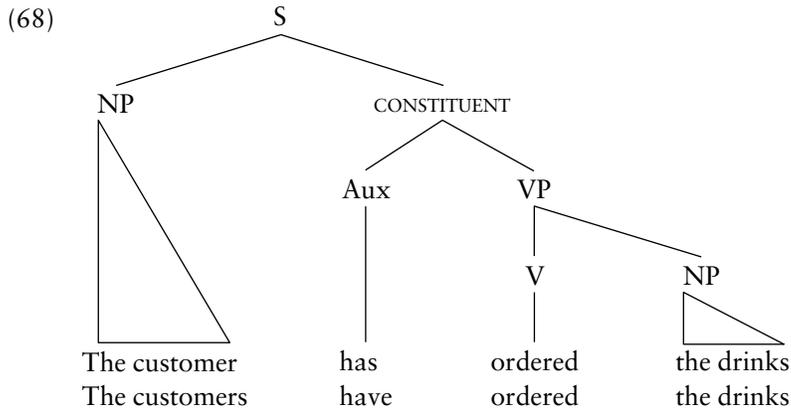
From the discussions above we conclude that the specifier position of the NP has some special properties: (i) it has agreement properties, and (ii) it has subject properties. In French, these two properties coincide in prenominal possessive pronouns.

We have also mentioned that at the level of sentences, agreement is realized between the subject NP and the auxiliary. This is illustrated in (67a) and (67b): *has* is singular, *have* is plural.

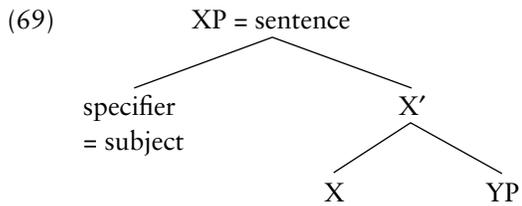
- (67) a The customer has ordered the drinks.
 b The customers have ordered the drinks.

It would be most economical to try to characterize agreement properties in a uniform way across sentences and NPs. If the specifier of NP is the privileged position for realizing agreement on the determiner, and if it also encodes “subjecthood,” then ideally when the properties of agreement and subjecthood coincide at the sentence level, we would also like to associate them with a specifier position. Compare the structure of the NP as given in (65) with (68), the structure of the sentence elaborated so far.

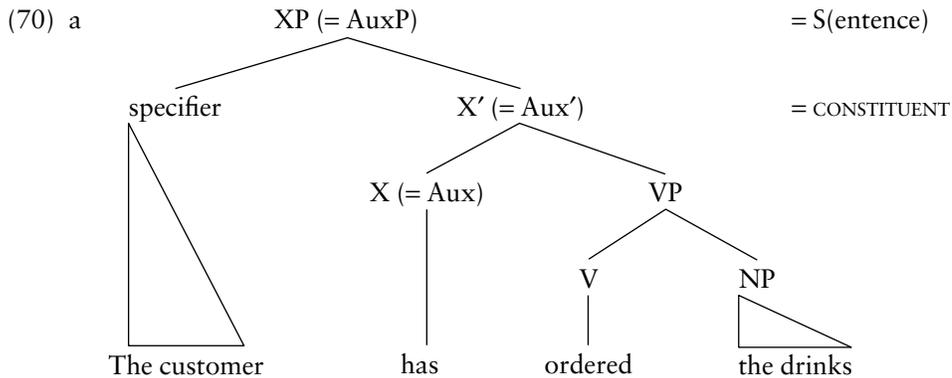
³⁰ Exercises 1B, 11. See Chapter 4, section 3.2.2.1, and Exercise 6, for an illustration of different agreement patterns.



If agreement relations are established in specifier positions, then it would be an important move forward in our theory if we could say that the subject NP occupies a specifier position with respect to the auxiliary. This would amount to extending the projection schema for NPs to the sentence. How could this be done? We would need to identify a head, X, which takes a phrase as its complement, with which it combines to form X', and whose specifier is the subject.



Try to superimpose the general format (69) on the sentence structure in (68). One way of aligning the two representations is to designate the auxiliary as the head of the sentence, and to identify the node which we had labeled provisionally as “CONSTITUENT” as the intermediate projection, dominating the auxiliary and the VP.



This representation means that we consider the VP as the complement of the auxiliary. Can we provide any motivation for this view? Recall that verbs select their

complements, in that, for instance, certain verbs select an NP, while others select a PP, etc. This is illustrated by means of the paired examples in (71): *expect* selects an NP complement; *wait*, on the other hand, requires a PP complement.

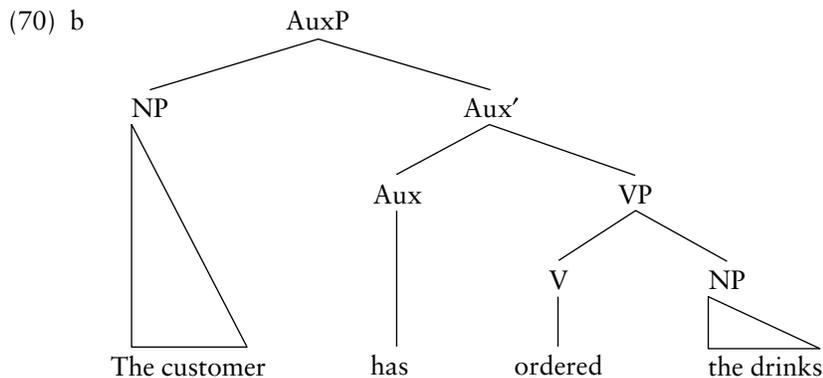
- (71) a Mary is expecting some news.
 *Mary is expecting for some news.
 b *Mary is waiting some news.
 Mary is waiting for some news.

Consider the sets of sentences in (72). In what sense could auxiliaries be said to select the VP?

- (72) a Mary is [_{VP} waiting for some news].
 *Mary is [_{VP} wait for some news].
 *Mary is [_{VP} waited for some news].
 b Mary has [_{VP} waited for some news].
 *Mary has [_{VP} waiting for some news].
 *Mary has [_{VP} wait for some news].
 c Mary will [_{VP} wait for some news].
 *Mary will [_{VP} waiting for some news].
 *Mary will [_{VP} waited for some news].

We might say that the choice of auxiliary determines the form of the VP: progressive *be* selects a VP headed by a present participle (72a), perfect *have* selects a VP headed by a past participle (72b), a modal auxiliary selects a VP headed by an infinitive (72c). In other words, the VP can be seen as being selected by, i.e. as being the complement of, the auxiliary.

For sentences with auxiliaries we could propose the structure in (70b). The constituent that combines with Aux' is by definition a specifier: this constituent is inserted in a position defined as the specifier position. This means that we do not need to add the label "specifier" in the tree. The position of the subject NP in (70b) corresponds to the specifier position. We only write down the category of the element that occupies the specifier position, here NP.



This raises the question as to how to deal with sentences without auxiliaries. We turn to this issue in the next chapter.³¹

3.2 Adjuncts and NPs

In addition to the core constituents of the VP, verb and complement, we proposed that we can also add modifiers such as, for instance, temporal PPs. Such modifiers are not selected by the verb, their categories are not determined by the verb heading the VP. For instance, a temporal specification can be expressed in a number of different ways:

- (73) a The customer in the corner will order the drinks [_{pp} before the meal].
 b The customer in the corner will order the drinks [_s when his guests arrive].
 c The customer in the corner will order the drinks [_{AdvP} later].
 d The customer in the corner will order the drinks [_{NP} this afternoon].

To integrate modifiers into the structure, we have introduced the concept of (left- or right-) adjunction, creating the augmented VP. If adjunction is available for building a VP, then the question arises if it is also available for an NP. Consider the underlined constituent in the following passage. What is its head? What is its category? Motivate your answer.

- (74) a Marks and Sparks advice to its customers, as printed on all their shopping bags, is: To avoid suffocation, keep away from children. (Adapted from *Guardian*, 18.2.2002, p. 13, letter to the editor from Dick Brown, Arnside, Lancs)

The relevant string is an NP. To show that this is the case you can try using the NP as subject or object of a sentence. You can also replace the NP by a pronoun:

- (74) b Marks and Sparks are reprinting all their shopping bags.
 Marks and Sparks are reprinting them.
 c All their shopping bags have disappeared.
They have disappeared.

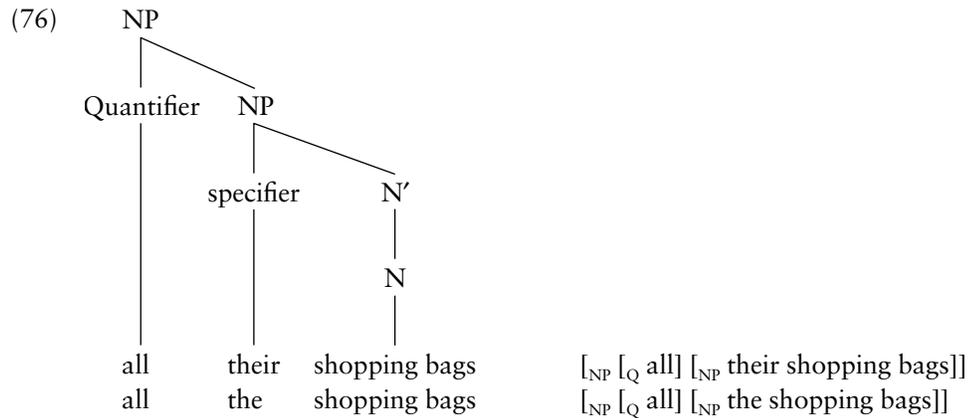
Based on the data in (75), what is the category of *their shopping bags*?

- (75) a Marks and Sparks advice to its customers, as printed on their shopping bags, is: “To avoid suffocation, keep away from children.”

³¹ Another question is how to deal with sentences containing more than one auxiliary. See Exercises 12 and 13, and Chapter 3, section 4. If adjunction is generally available as a way of augmenting a constituent we would expect to be able to adjoin constituents to a sentence (= AuxP). See Exercise 15.

- b Marks and Sparks are reprinting their shopping bags.
 Marks and Sparks are reprinting them.
 c Their shopping bags have disappeared.
They have disappeared.

We conclude that both *all their shopping bags* and *their shopping bags* are NPs. All is not essential to form an NP, it provides additional information. We could add it onto the NP structure by left-adjointing it to the “core NP.”³²



3.3 Questions about the verb phrase

Recall that an essential ingredient of scientific work is doubt.³³ We must always remain aware that our analyses are hypotheses. New insights or new developments in research may well mean that we must go back on what we think we know and revise earlier proposals. Having elaborated a hypothesis for the structure of the NP and applied it to the sentence, we have to reconsider our earlier hypothesis about the VP.

So far we have elaborated representations for the structure of (i) the VP, (ii) the NP, (iii) the sentence. We have used our findings for the structure of one of these constituents as a guideline to examine another constituent, but in the discussion we have left some areas unattended. In this section we reconsider the NP and VP and we will try to see to what extent, if at all, the structures are similar or different. Recall that we are interested in reducing the differences between the structures to a minimum. This approach will lead to a simpler theory.³⁴ Our theory is going to be simpler if we can say that NPs and VPs have the same structure. If they don't, we have to introduce two different structures, giving rise to a more permissive theory

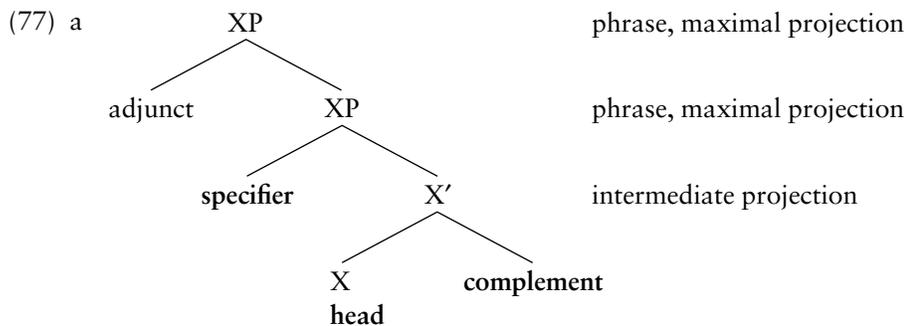
³² Exercise 13. For a more careful analysis see Shlonsky (1991).

³³ Chapter 1, section 1.2.4.

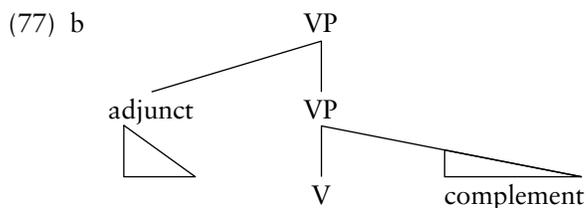
³⁴ For the role of simplicity see Chapter 1, section 1.2.3, and this chapter, section 2.4.2.

and also a more complex theory. In addition, the differences in structure that we have to postulate have to be explained by relating them to some other principle(s).

In the discussion of the structure of the NP, we identified four components of structure: the head, the complement, the specifier, and the adjunct. Generalizing this format for all syntactic structures, a syntactic constituent would be organized according to the format in (77):³⁵ a head, X, combines with a complement to form a partial constituent, X', and this combines with the specifier to form the complete constituent (XP). In the literature, the term **intermediate projection** is used to refer to what we called a partial constituent, and the term **maximal projection** is used for the complete constituent, including the specifier. Adjoined constituents are satellites to the maximal projection; they are themselves maximal projections. For example, in our example (5a) the adjunct *before the meal* is a full PP.



However, the structure we arrived at for the VP was different in that we did not have the level of specifier:

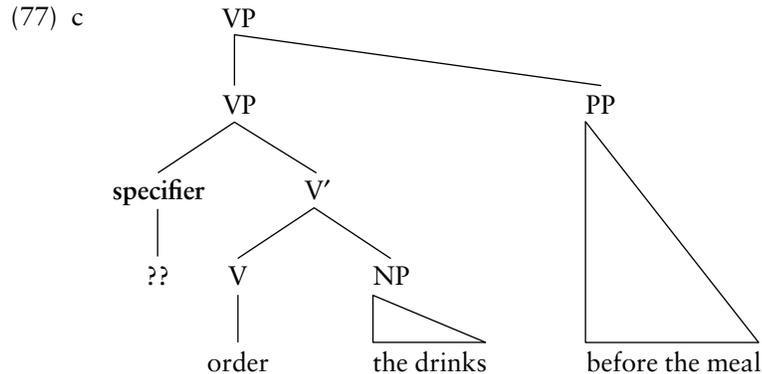


This difference in structure is not really satisfying. A number of questions arise. (i) Why is the combination of V + complement represented as a maximal projection (VP), while that of N + complement is represented as an intermediate projection (N')? The answer to this question could be that this is because the VP lacks a specifier. This leads to the next question. (ii) Why does the representation for NP include a specifier, while that for VP does not?

Because we had empirical grounds to postulate representation (77a) for the NP, it seems natural to maintain it and to assume that, in principle, constituents CAN have

³⁵ (77a) replaces the earlier (41). How do the structures differ?

a specifier. It would then be desirable to generalize this format to the VP (and indeed to other categories). What would the structure of the VP be like if we assumed that it also had a specifier? Based on the structure of the NP in (77a), we could replace (77b) by (77c), which we apply to our example sentence:



What kind of constituent could occupy the specifier of VP? So far, we have not come across any candidates. We cannot consider left-adjoined constituents as specifiers. First of all adjoined constituents, unlike specifiers, are freely added to a complete constituent and they may occupy various positions. Moreover, as shown in section 2.3.2, a VP may have multiple adjuncts (cf. examples (43g, h, i)), but we argued in section 3.1.2.2 that there is only one specifier position in the NP. If, on the other hand, we decided that there is no specifier in the VP, then we would have to explain why the VP lacks a specifier.

Recall also from section 3.1.2.2 that the specifier position of the NP could be occupied by a prenominal genitive NP or by a possessive pronoun, both of which have a subject-like relation to the head N. Let us explore this observation: by analogy with the NP, the specifier of the VP ought to be the subject NP. However, in assuming that the specifier of the VP is the subject we create a conflict with the structure of the sentences elaborated above, in which the subject is located outside the VP. Let us examine why we had concluded that the subject was located outside the VP. One argument for assuming that the subject is outside the VP was that the subject was seen to precede the auxiliary, which we considered as a separate unit that forms a constituent with the VP. Secondly, we have also seen that the subject precedes any adjuncts that are left-adjoined to the VP.³⁶ The examples in (78) illustrate both these points:

- (78) a [NP The customer in the corner] will [VP order the drinks before the meal].
 b [NP The customer in the corner] will [VP definitely [VP order the drinks before the meal]].

³⁶ Cf. section 2.2.1.

We will return to the relation between the subject and the VP in Chapter 4, but before doing so we will complete the representation of the structure of the sentence in Chapter 3.

Another problem that came out of the discussion at the end of sections 2.2 and 3.2 is the question how to deal with sentences without auxiliaries such as (39c), repeated here as (79). We will tackle this question in the next chapter.

(79) The customer in the corner ordered the drinks before the meal.

4 Summary

In this chapter we have first elaborated a number of diagnostic tests for discovering sentence structure. Units of structure, or constituents, can be detected by manipulating the sentences in which they occur. We can try to replace strings of words by a smaller unit (substitution), we can make them the target of a question (question formation), we can move them around (movement), we can delete them (ellipsis), we can make them the informational focus of the sentence (clefting and pseudo-clefting), and finally, constituents can be co-ordinated. By means of these tools, we have decomposed English sentences and demarcated their core constituents.

The constituents of a sentence are formed around a core constituent, their head. For instance, an NP has a noun as its head. We have examined two competing hypotheses about the structure of the VP. According to one hypothesis, the VP contains the verb and the auxiliary (or the auxiliaries) of the sentence; according to the second, the VP contains the verb, its complements, and its adjuncts. The second hypothesis is both empirically and theoretically preferable. Further examination of the VP reveals that we need to postulate a more articulated structure in which we distinguish two hierarchical levels. This allows us to distinguish a core VP, the combination of the verb with its complement, from the augmented VP, a larger constituent which combines the core VP with adjuncts.

While discussing the structure of the VP we elaborated the binary branching hypothesis. This is a theoretical proposal to the effect that all syntactic constituents are the result of combining or merging two constituents, and that constituents are hierarchically organized around a head. The head first combines with its complement. The resulting constituent then combines with adjuncts.

In our examination of the structure of the NP we have revealed the need to identify an additional level of representation to allow for the creation of a specifier position. A noun head first combines with its complement to form N' , an intermediate projection of an NP. This intermediate projection combines with a prenominal element in the specifier position to form the fully completed NP, the maximal projection.

The specifier of the NP hosts a determiner element, a prenominal possessive pronoun, or a prenominal genitive NP. We assume that each syntactic position can

contain only one constituent. We also assume that there is only one specifier position per NP. This means that an NP will contain either a determiner, or a possessive pronoun, or a prenominal genitive NP.

The specifier position of the NP is set apart by two distinctive properties: the constituent contained in it sometimes agrees with the head noun, and it sometimes seems to have subject-like properties. This observation has led us to the hypothesis that the subject of the sentence occupies a specifier position. In order to implement this hypothesis, we have elaborated a representation for sentences with auxiliaries. According to the proposal, sentences are built around auxiliaries: the auxiliary is the head of the sentence. The auxiliary takes a VP as its complement, forming an intermediate projection. This intermediate projection combines with the specifier position to form the maximal projection. The subject occupies the specifier position.

Given the observation that both the NP and sentence have a specifier position, we will have to address the question whether the VP also has a specifier position. In addition, given that not all sentences have an auxiliary, we will have to examine how to apply the structure elaborated for sentences with auxiliaries to sentences lacking auxiliaries.

Exercises

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Exercise 1 Constituent structure in the NP (T, E)

A Constituency tests (T)

Do the underlined strings in the following examples form a constituent? For each string, provide at least one argument to motivate your answer.

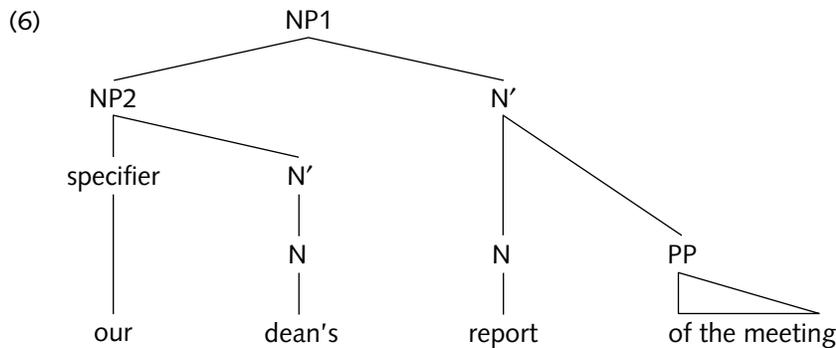
- (1) Have you read our dean's report of the meeting?
- (2) Our new dean's wife has been invited to give a lecture.
- (3) These new students of English are planning a trip to London and those are going to Paris.

(4) We all expected that they would wait for us after the lecture.

(5) I will meet all the students of semantics next week.

COMMENTS

In (1) the string *our dean's* is a constituent: it can be replaced by a pronoun (*his*), and we can also question it by means of *whose*. *Our dean's* is the genitive of the NP, *our dean*. Inside that NP, the possessive pronoun *our* specifies the reference of the genitive NP. The structure of the NP in (1) would be as in (6). The NP *our dean* occupies the specifier position inside the NP. We use the labels NP1 and NP2 to distinguish the two NPs: NP1 is the containing NP, NP2 is the pronominal genitive NP in its specifier. We attach the genitive ending 's to the N *dean*.



Observe that there are two NPs here: we have two nouns (*report*, *dean*), each of which has its own projection (NP1, NP2).

B *Determiners and specifiers (E)*

In section 3.1.2.2 we accounted for the unacceptability of the examples in (63), some of which are repeated here as (7), by postulating (i) that a position can be occupied by only one constituent and (ii) that there is one specifier position in the NP.¹ The unique specifier position in the NP will then be occupied either by a determiner or by a pronominal genitive NP.

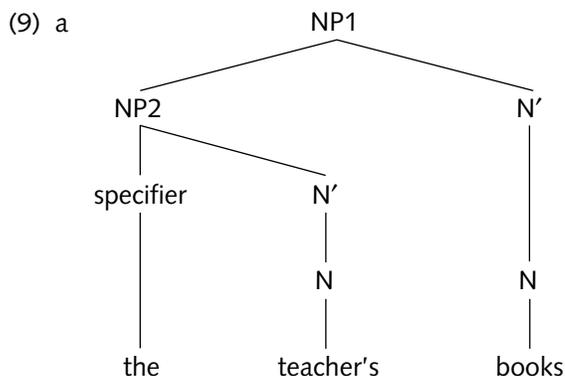
- (7) a *the Rupert Murdoch's bid for Manchester United Football Club
 b *Rupert Murdoch's the bid for Manchester United Football Club

How would this be compatible with the observation that the examples in (8) are acceptable?

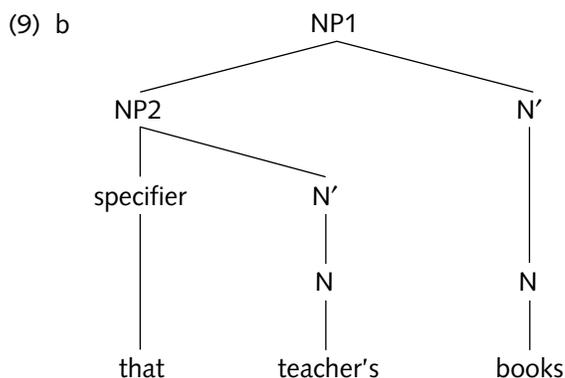
¹ For data that complicate this hypothesis see Exercise 20 below. For an introduction to complications see Haegeman and Guéron (1999: chapter 4). For a theoretical (but more advanced) discussion see Bernstein (2001).

- (8) a the teacher's books
 b that teacher's books

Representation (6) above can help to clarify the issue of the occurrence of determiners and genitives in (8). In (8a), the determiner *the* is related to the noun *teacher*: we can replace the string *the teacher's* by the pronoun *his*. We can question the string *the teacher's* by means of *whose*. (9a) provides a structure:



In (8b), similarly, the demonstrative *that* specifies the reference of *teacher*: *that teacher's books* roughly corresponds to *the books of that teacher*. We have seen that English demonstratives agree with the head noun. Consider representation (9b). According to the structure in (9b), do we predict that the demonstrative *that* will agree with the N *teacher* or will it agree with the N *books*? Is this prediction correct?



In (9b), the demonstrative *that* is the specifier of NP2, whose head is the N *teacher*. Thus we correctly predict that the demonstrative agrees with the head N of NP2: *that* is singular and so is *teacher*. The demonstrative in the specifier position of NP2 does not agree with the head of NP1: in our example the head of NP1, *books*, is plural.

If we replace the singular N *teacher's* in NP2 by its plural counterpart *teachers'*, then the demonstrative will also have to be plural.

- (10) a those teachers' books
 b *that teachers' books

Exercise 2 Bracketing representations (T)

Discuss why there are exactly three brackets following *meal* in (1). For each of the right-hand brackets identify the label of the matching left-hand bracket.

- (1) [_S [_{NP} The customer in the corner] [_{Aux} will] [_{VP} [_{VP} order [_{NP} the drinks]] [_{PP} before the meal]]].

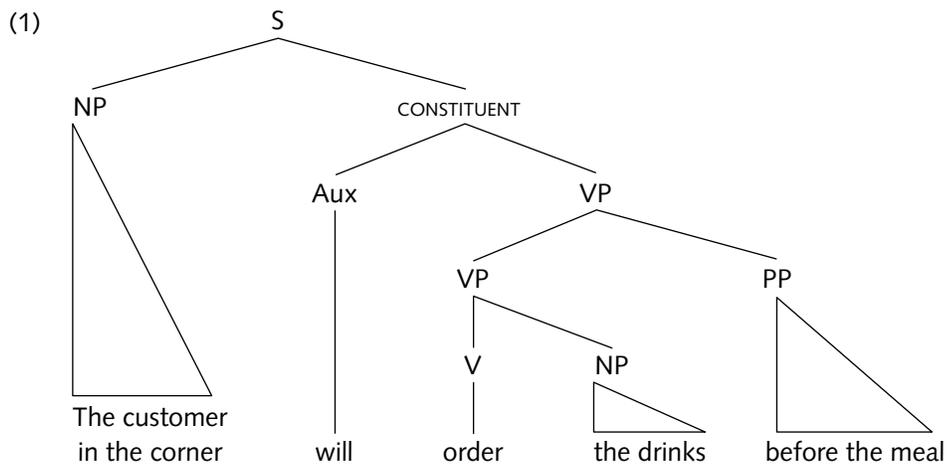
Does the representation in (1) take into account the layered VP analysis? Does it represent the auxiliary *will* as forming a constituent with the VP?

Provide a labeled bracketing representation for the following examples:

- (2) The customers will order the drinks.
 (3) All the customers will order the drinks.
 (4) My analysis of this issue will quite probably surprise all the representatives of the media.

Exercise 3 Representations of structure (T)

Compare the tree diagram in (1) and the bracketed representation in (2). Which is more detailed? Motivate your answer.



(2) [_{NP} The customer in the corner] [_{AUX} will] [_{VP} order the drinks before the meal].

By adding the necessary brackets and labels, modify (2) so that it contains all the information contained in (1).

Exercise 4 Evidence for constituent structure (T)

Consider the underlined strings of words in the extracts below. The extracts themselves contain a clue to support an analysis according to which the underlined strings form a constituent. Try to find that clue. For each underlined constituent, identify the grammatical category (NP, VP, etc.). There is no need to draw the tree; you should merely explain on what basis the sequences could be argued to form a constituent.

Example

The news, when it comes, he seems to take — well enough. (*Guardian*, G2, 26.7.2002, p. 2, col. 1)

- In this example, movement has affected the string *the news*. *The news* is the direct object of *take*. Its canonical position is to the immediate right of the verb. In the example it has been moved to the beginning of the sentence. The fact that it has been moved suggests that the string of words is a constituent. Moreover, the string *the news* is substituted for by the pronoun *it*.
- *The news* is an NP.

- (1) Is there anything that can prevent Hurricanes? To date, science and technology have not given us the ability to do so. (*Chicago Tribune*, 3.1.2004, section 1, p. 28, col. 1)
- (2) There are hardly any small movies that people go to, and some of the more interesting ones they won't go to. (*Guardian*, 1.11.2002, Review, p. v, col. 4)
- (3) I think we could adapt to being poor again if we had to. (*Guardian*, G2, 28.8.2002, p. 4, col. 2)
- (4) Great Expectations, I've read three times. (*Guardian*, G2, 1.4.2003, p. 12, col. 2)
- (5) The Bears are not a talented team and have not been in years, not even in 2001. (*Chicago Tribune*, 3.1.2004, S3, p. 2, col. 5)

- (6) But what we do is go to shopping centers and corporate parties downtown. (Based on *Chicago Tribune*, 22.12.2002, section 1, p. 16, col. 6)
- (7) The towns Paula Radcliffe has lived in (Nantwich, Bedford and Loughborough) are the epitome of Middle England. And so is she. (*Guardian*, 17.12.2002, p. 13, col. 1)
- (8) If they must use children's stories in a vain attempt to make their speech sparkier, why can't they choose new ones? (*Guardian*, 12.2.2003, p. 2, col. 4)
- (9) They are eyeing retirement and just entering the work force. (*Atlanta Journal-Constitution*, 23.11.2003, p. F5, col. 1)
- (10) It's unbelievable how unlucky he's been, but he's certainly proved he's got tenacity. Whether he'll get out of this difficult situation or not, only time will tell. (*Guardian*, 8.2.2003, p. 2, col. 8)

Exercise 5 Focalizing a constituent by rightward movement (T, E)

We propose that a direct object is merged directly with the verb to form V'. The canonical object position is to the immediate right of the verb. In the following examples some direct object NPs are not found in their canonical positions. Identify the displaced objects, identify the verb that selects them, and try to restore the displaced objects to their canonical positions.

- (1) "The Independent" is publishing daily each of the 30 Articles of the Universal Declaration of Human Rights, illustrated by Ralph Steadman, to mark its 50th anniversary on 10 December. (*Independent*, 13.11.1998, p. 13, cols 1–2)
- (2) The government has delayed until the New Year the introduction of the controversial Bill to strip the 750 hereditaries of their right to speak and vote in the second chamber. (*Guardian*, 25.22.1998, p. 1, col. 1)
- (3) We look forward to the opportunity to defend before the Supreme Court Maryland's historic ownership and regulation of this important natural resource. (*Washington Post*, 29.4.2003, p. A7, col. 1)
- (4) Few if any authors on the region have so successfully compressed into 280 pages the basic outlines of Antarctic life and our relationship to its pristine abundance. (*Guardian, Review*, 22.11.2003, p. 11, col. 2)

- (5) The argument has been that members of Congress get paid by the taxpayer their normal salary while they're running for office. (*Los Angeles Times*, 26.11.2002, p. A32, col. 3)

In the above examples the objects of the verbs *publishing* (1), *delayed* (2), *defend* (3), *compressed* (4), and *paid* (5), have apparently been shifted rightward. The effect of shifting the object to a rightward position is that it becomes the focus of the sentence, it is focalized.

- (1') "The Independent" is publishing — daily [_{NP} each of the 30 Articles of the Universal Declaration of Human Rights, illustrated by Ralph Steadman] to mark its 50th anniversary on 10 December.
- (2') The government has delayed — until the new year [_{NP} the introduction of the controversial Bill to strip the 750 hereditaries of their right to speak and vote in the second chamber].
- (3') We look forward to the opportunity to defend — before the Supreme Court [_{NP} Maryland's historic ownership and regulation of this important natural resource].
- (4') Few if any authors on the region have so successfully compressed — into 280 pages [_{NP} the basic outlines of Antarctic life and our relationship to its pristine abundance].
- (5') The argument has been that members of Congress get paid — by the taxpayer [_{NP} their normal salary while they're running for office].

Experiment: Replace each of the shifted objects in (1)–(5) by a personal pronoun. Are the resulting sentences acceptable? As suggested by the sharp degradation in acceptability of the examples below, we conclude that not all direct objects can freely be moved rightward away from the selecting verb.

- (6) *The Independent' is publishing daily them.
- (7) *The government has delayed until the New Year it.
- (8) *We look forward to the opportunity to defend before the Supreme Court them.
- (9) *Few if any authors on the region have so successfully compressed into 280 pages them.
- (10) *The argument has been that members of Congress get paid by the taxpayer it.

The degradations in (6)–(10) can be related to the focalizing role of the rightward shift. Direct object NPs which are moved rightward tend to be focused. If some information is worth focusing then probably it will contain something new. Pronouns typically represent old information and therefore are not good candidates for focusing.

Consider the test sentence (11). Can we shift the object rightward?

(11) The customer in the corner will order the drinks before dinner.

And what about (12)?

(12) The customer in the corner will order all the drinks to go with the entire meal and the dessert before dinner.

Finally consider (13). How is the complement of the verb *argued* realized? Does the complement occupy its base position?

(13) This week proved wrong the doomsayers who argued after the failures in Seattle in 1996 and The Hague in 1999 that the pace of globalisation had outstripped the international institutions' ability to respond, let alone to manage it. (Adapted from *Guardian*, 17.11.2001, p. 9, col. 2)

In (13) the complement of *argued* is a clause: *that the pace of globalisation had outstripped the international institutions' ability to respond, let alone to manage it*. For other examples in which the complement of the verb is a clause see Exercise 10.

Exercise 6 Structural ambiguity and co-ordination (T)

In the following extracts co-ordination with *and* may give rise to two interpretations. Discuss the two readings and identify how they have come about. How could you rephrase the sentences, changing as little as possible, to eliminate the ambiguity?

(1) He added that the looting, though continuing, is much reduced. "You will see a guy or two carrying a table or chairs. We tell them to put it down and go home." (*Guardian*, 7.5.2003, p. 5, col. 14)

(2) If you feel threatened in a mini cab, firmly ask the driver to stop and get out. (Adapted from *Guardian*, G2, 7.3.2003, p. 7, col. 2)

Exercise 7 Representing co-ordination (T, E)

Identify the co-ordinated constituents in the following examples. What is their category? How can we show that co-ordinating two constituents itself creates a constituent? What is the category of the co-ordinated constituent as a whole?

(1) a The customer in the corner and his wife will order the drinks.

KEY AND COMMENTS

In (1a) we co-ordinate two NPs.

(1) b $[_{NP}$ the customer in the corner]
and
 $[_{NP}$ his wife]

We can cleft the resulting co-ordinated string, suggesting that it is a constituent.

(1) c It is $[_{NP}$ the customer in the corner] and $[_{NP}$ his wife] who will order the drinks.

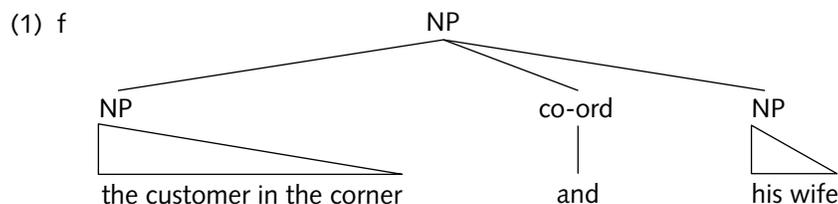
We can also question the string by means of *who*.

(1) d Who will order the drinks?

In (1a/b) the co-ordinated string *the customer in the corner and his wife* is the subject of the sentence. It can be replaced by a pronoun.

(1) e They will order the drinks.

Typically, pronouns like *they* replace NPs. So we conclude that the constituent consisting of two co-ordinated NPs in (1c) is an NP. (1f) is a provisional structure, in which we label *and* as a co-ordinator ("co-ord").



Based on the discussion above, how could we represent the structure of the underlined co-ordinated constituent in (2)?

(2) The customer in the corner will order the drinks and pay for the meal.

NOTE

With respect to the discussion in section 2.4, observe that the representation of co-ordinated structures raises a problem for the binary branching hypothesis. We will not go into this issue here.²

Exercise 8 Structural ambiguity (T, E)

In section 1.8 of the chapter we discussed co-ordination of VPs and we introduced example (34b), repeated here as (1):

- (1) The customer in the corner will order the drinks and choose the dessert before the meal.

In the text, this example was used to illustrate the co-ordination of the VPs *order the drinks* and *choose the dessert*. First, use bracketing to represent the co-ordination as intended in the text. What does the temporal specification *before the meal* modify?

The bracketing intended in the text discussion is that represented in (2a). The VP *order the drinks* and the VP *choose the dessert* are co-ordinated. The PP *before the meal* is added to the result of the co-ordination:

- (2) a The customer in the corner will
 [[_{VP} order the drinks] and [_{VP} choose the dessert]] before the meal.

The unit consisting of the co-ordinated VPs has the same distribution as a simple VP: in our example it follows the auxiliary *will*. We can pseudo-cleft the unit consisting of the co-ordinated VPs, as shown in (2b):

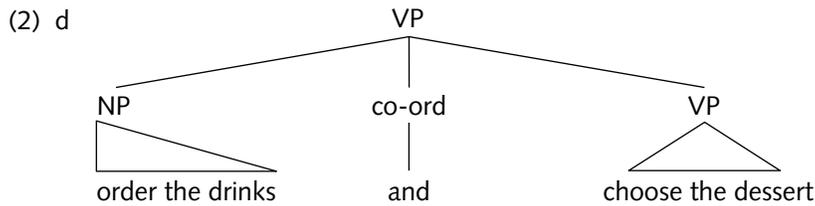
- (2) b What the customer in the corner will do before the meal is [order the drinks and choose the dessert].

Or we can replace the co-ordinated string by *do so*:

- (2) c The customer on the right will do so later.

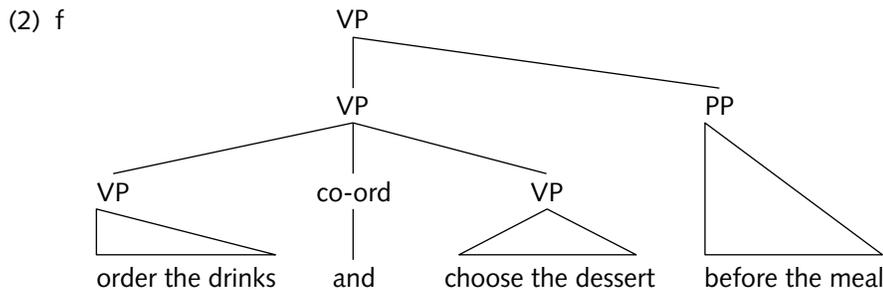
These observations suggest that in (2a) the co-ordinated string *order the drinks and choose the dessert* is a VP. In tree format the co-ordinated VP could be represented by (2d). We complete the bracketing notation in (2e).

² For discussion see Camacho (2003), Goodall (1987), van Oirsouw (1987), and the papers in Blakemore and Carston (2005).



- e The customer in the corner will
 [_{VP} [_{VP} order the drinks] and [_{VP} choose the dessert]] before the meal.

To complete the representation of the VP of (2a) we need to integrate the PP *before the meal*. We add the PP *before the meal* as a temporal adjunct of the co-ordinated VP in (2d/e). This representation means that the PP will bear on both components of the co-ordinated constituent:



- g The customer in the corner will
 [_{VP} [_{VP} [_{VP} order the drinks] and [_{VP} choose the dessert]] before the meal].

According to representation (2f/g), both actions of 'ordering the drinks' and 'choosing the dessert' will take place before the meal.

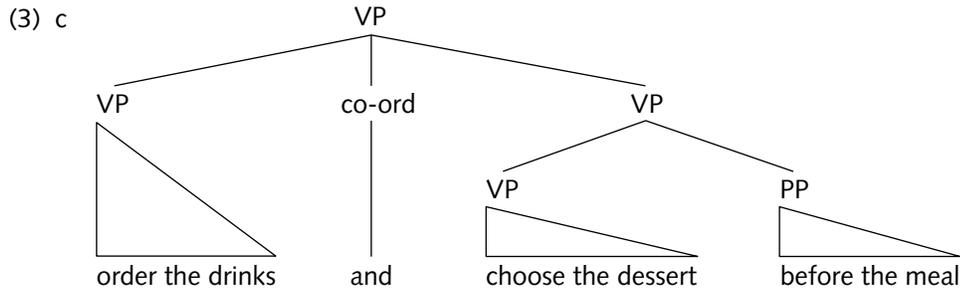
Observe that there is a second interpretation possible for (1) and one that was not intended in the text discussion. The second interpretation is due to the fact that we can assign the temporal specification to a different domain. Can you see the second interpretation of (1)? In the second reading, (1) can be paraphrased as in (3a). How would we bracket example (1) to bring out this reading?

- (3) a The customer in the corner will choose the dessert before the meal and order the drinks.

The alternative bracketing for text example (1), which was not intended in the discussion in the main body of the chapter, is shown in (3b). In this representation the PP *before the meal* is adjoined directly to the VP *choose the dessert*. The PP is not intended to modify the VP *order the drinks*. The co-ordinated VPs are *order the drinks* and *choose the dessert before the meal*.

- (3) b The customer in the corner will [_{VP} [_{VP} order the drinks] and [_{VP} [_{VP} choose the dessert] [_{PP} before the meal]]].

In tree format the co-ordinated VPs in (3b) would be represented as in (3c).



In this representation the PP *before the meal* combines with the VP *choose the dessert*. It does not specify the time of *order the drinks*. Pseudo-clefting affects the string *order the drinks and choose the dessert before the meal*. In this interpretation, it is not possible to leave out the PP *before the meal* when the co-ordinated VP is pseudo-clefted.

- (3) d What the customer in the corner will do is [order the drinks and choose the dessert before the meal].

Using the above examples as a model, discuss the representation of the co-ordinated VP in (3a).

NOTE

With respect to the discussion in section 2.4 you will conclude that the representation of co-ordinated structures raises a problem for the binary branching hypothesis. We will not go into this issue here.

Exercise 9 Co-ordination (T, E)

On the basis of the examples below, discuss whether the following generalization is valid:

The co-ordinating conjunction *and* always links constituents of the same category.

- (1) Now that women are totally independent and earning their own money they are less likely to put up with a bad marriage. (*Guardian*, G2, 16.10.2002, p. 11, col. 2)

- (2) We have expressed our disappointment to the Philippine government very clearly and at high levels. (*New York Times*, 1.8.2004, p. 3, section 4, col. 4)
- (3) Which is true? Thompson demanded, folding his arms and glowering down at the witness. (*Wall Street Journal*, 26.3.2004, p. A6, col. 4)
- (4) Winners included a day laborer in Florida who had recently been homeless and sleeping on cardboard boxes. (*New York Times*, 8.3.2004, p. C6, col. 4)
- (5) Two men who survived the attack were being tended by marine medics and being prepared for evacuation to hospital. (Based on *Guardian*, 28.3.2003, p. 3, col. 1)
- (6) I can understand that Jack Straw is a busy man, and unlikely to be able to afford the time for mathematics. (*Guardian*, 15.3.2003, p. 11, col. 8, letter to the editor from Greg Callus, University of York)
- (7) His black shirt was soggy and hanging out of his pants. (*New York Times*, 8.3.2004, p. D1, col. 2)
- (8) Fifty minutes later Sarah arrived at the hospital, unconscious and in a fit. At her home near Whitchurch in Cheshire, her mother, Pauline Campbell, was preparing to go out, having heard nothing from the prison and unaware that her only daughter was fighting for her life. (*Guardian*, 5.5.2003, p. 7, col. 1)
- (9) If sound comes on both sides at exactly the same time and with the same amplitude, the mechanism doesn't move. (*Chicago Tribune*, 3.1.2004, p. 4, section 2, col. 6)
- (10) We wanted justice and for the truth to be known. (*Guardian*, 12.11.2002, p. 6, col. 7)

Some of the examples above show that co-ordinated constituents do not always have identical categories. Discuss the problems raised by these examples for the representation of co-ordinate structures elaborated in Exercise 7.³

Exercise 10 Realization of subject and object (T, E)

In the discussion in this chapter we have systematically been using examples in which both subject and object are realized as NPs. This might give the impression that only NPs can function as subjects or as objects. Similarly, our examples of

³ For a proposal on how to handle such types of co-ordinations see Bowers (1993, 2001, 2002).

prepositional phrases always consisted of a preposition with an NP complement. Based on the examples below and using the concepts elaborated in the chapter, evaluate statements A, B, and C.

You should first read the statements carefully, and for each statement examine whether the examples are relevant and if so, in what way they confirm/disconfirm the statement.⁴

- A The subject of a sentence is always realized by a noun phrase.
- B The object of a verb is always realized by a noun phrase.
- C The complement of a preposition is always realized by a noun phrase.

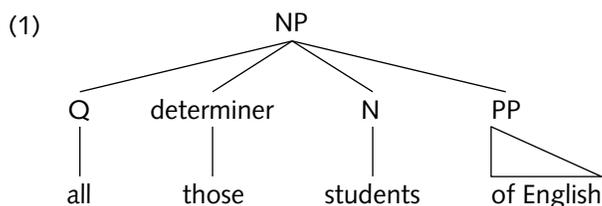
- (1) Just because the US administration says that it has “no interest” in implementing the Kyoto protocol to control climate change doesn’t mean it’s dead. (*Guardian*, 31.3.2001, p. 9, col. 8, letter to the editor from Ritu Kumar)
- (2) She couldn’t stop asking questions about whether they would be OK. (*Guardian*, Travel, 9.8.2003, p. xi, col. 1)
- (3) The skirt is also available in black, so now might be just the time to go for it. (*Guardian*, 24.11.2000, p. 8, col. 8)
- (4) That 85% of children spelt Hogwarts correctly is no surprise. (*Guardian*, 4.9.2002, p. 5, col. 2)
- (5) It’s the curve of those thighs that has, surely, guaranteed that she’s sent to Islamabad, even though above the waist is all we ever get to see on the television. (*Guardian*, G2, 25.10.2001, p. 10, col. 2)
- (6) She knew how many novels she would write. (Based on *Guardian*, Review, 2.8.2003, p. 14, col. 4)
- (7) I told Simon Kelner I wouldn’t want to do the job on a long-term basis, and after a general election seems a natural departure time. (*Guardian*, G2, 16.4.2001, p. 13, col. 4)
- (8) Before 11 September seems like an innocent lost paradise. (*Guardian*, G2, 13.11.2001, p. 11, col. 5)
- (9) Many league members accept that some money is better than no money at all. (*Guardian*, 29.3.2002, p. 16, col. 1)

⁴ For PP subjects see Jaworska (1986). For clausal subjects see Koster (1978), Davies and Dubinsky (1999, 2001a), Miller (2001).

- (10) You realise he hates for you to call him "Ollie", don't you? (Marcia Muller, *Edwin of the Iron Shoes*, 1993: 42)

Exercise 11 Constituent structure in the NP (T)

We might provide the structure in (1) for the NP *all those students of English*. Discuss theoretical and empirical problems that arise.



Exercise 12 Auxiliary strings (T, L)

In our discussion so far we have concentrated on sentences containing just one auxiliary. This is only one of a number of patterns in which auxiliaries can be found. Identify all the auxiliaries in the following examples. Which of the auxiliaries are finite?⁵

- (1) He would have stolen her fame.
 (2) You should have become an accountant.
 (3) He'll be staying at the local inn.

COMMENTS

As you can see, each example contains more than one auxiliary: (1a) contains a modal auxiliary *would* and a perfect auxiliary *have*. The modal auxiliary is tensed: past tense *would* contrasts with present tense *will*. The auxiliary *have* is not tensed, it is an infinitive form and this is not affected by tense modifications; *would* is a **finite** auxiliary and *have* is **non-finite**. Which are the finite/non-finite auxiliaries in (2) and in (3)? We note that in each example there is just one finite auxiliary and that this precedes the non-finite auxiliary. Could there be more than one finite auxiliary in the string? Could the finite auxiliary be second or third in the sequence? Experiment with examples (1)–(3) to answer these questions.

⁵ See Chapter 1, sections 2.2.2 and 2.4 for the concept "finite."

Exercise 13 Auxiliary strings (T, L)

In the following examples the symbol \emptyset signals that material has been omitted. Identify the omitted material. What is the category of the omitted constituent (VP, etc.)?

- (1) He drove her hard, he stole her fame or would have \emptyset if he could have \emptyset . (*Guardian*, Review, 24.5.2003, p. 5, col. 3)
- (2) "The Hershey chocolate company is about to be sold!" he says, eyes widening. "Who could have imagined it?" Very few could \emptyset . (Based on *Guardian*, G2, 26.8.2002, p. 2, col. 1)
- (3) Michael Jackson has, on some occasions in the past, not eaten when he should \emptyset . (*Guardian*, Review, 28.5.2003, p. 3, col. 1)

COMMENT

In (1) the omitted material is a VP: *stolen her fame*. The auxiliary *have* is retained. In (2) and (3) the omitted material combines a VP with an auxiliary: *have imagined it*, *have eaten*. We will tentatively conclude that because they can be subject to ellipsis such strings are constituents. Hence, the non-finite auxiliary (here *have*) and the VP together form a constituent. How do the following examples bear on this hypothesis?

- (4) Some 24% agreed top-up fees would not have mattered, while 35% would have considered other universities but probably still have chosen the same university. (Based on *Guardian*, 20.1.2003, p. 5, col. 2)
- (5) But we have been saying for 15 to 20 years that there are too many games in the top division and done nothing about it. (*Guardian*, 15.2.2003, *Sport*, p. 11, col. 5)

We return to the structure of sentences with multiple auxiliaries in Chapter 3, section 4.

Exercise 14 Attachments of adjuncts (T, L)

In this exercise we speculate about the application of adjunction. The exercise is longer and more discursive than some of the other exercises. The idea is that we

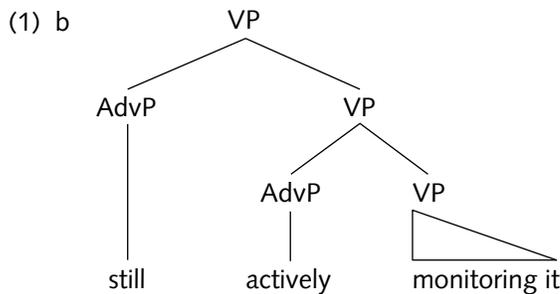
carry further the type of argumentation elaborated in the chapter and see where that would lead us.

We will examine the consequences of the hypothesis that syntactic structure determines interpretation. Consider sentence (1a). Where would we locate the adjuncts *still* and *actively*?

- (1) a I am still actively monitoring the reporting of the press coverage of the trial.
(*Guardian*, 29.11.2003, p. 7, col. 2)

COMMENT

The two adjuncts can both be adjoined to the VP headed by *monitoring*:



The different adjunction sites mirror the interpretation: according to (1b) 'it is still the case that we are actively monitoring it'. Or to use the technical term: the adverb *still* takes **scope** over the VP *actively monitoring it*; the adverb *actively* takes scope over the VP *monitoring it*. The structure in (1b) represents the **relative scope** of the adjuncts: an adjunct that is adjoined higher in the structure takes scope over one that is adjoined lower.

Consider sentence (2a), which was also given in Chapter 1, Exercise 4.

- (2) a Tony Blair was admitting that he had run into "tough times" in recent months yesterday. (Adapted from *Independent*, 5.9.2003, p. 2, col. 1)

We find two temporal specifications, the PP *in recent months* and the NP *yesterday*, one after the other. Can we adjoin them both to the VP headed by *run*? Obviously, if we did that, then we would create some redundancy. Since the stretch of time denoted by *in recent months* comprises the time specified by *yesterday*, the latter specification would be sufficient. On the other hand, if the time stretch referred to by *yesterday* had been intended to be distinct from that referred to by *in recent months*, and if both adjuncts were associated with the VP headed by *run*, then the two adjuncts would locate one and the same event ('running into tough times') at two different times, and we would end up with a contradiction. Adjoining both

adjuncts to the VP headed by *run* is thus probably not the correct way to go about it if we think of the intended interpretation of the sentence.

Let us first pick out the main ingredients of (2a). Identify all the verbs in (2a). Which are lexical verbs? Which are auxiliaries? Which lexical verbs or auxiliaries are finite? Which are non-finite? What is the subject of *admitting*? What is the object of *admitting*? What is the subject of *had run into tough times*?

(2a) contains two lexical verbs *admitting* and *run*, and it also contains two finite auxiliaries, *was* and *had*. (2a) is a **complex** sentence: the complement of the verb *admitting* is itself realized by a sentence introduced by the **subordinating conjunction** *that*: *that he had run into tough times in recent months*. When a sentence functions inside another sentence we say it is **embedded**. We often use the term **embedded clause**.⁶

If you think about the intended interpretation of the temporal specifications *in recent months* and *yesterday*, you will conclude that *in recent months* modifies the VP *had run into tough times*, while *yesterday* modifies *admitting that he had run into tough times*. *In recent times* is an adjunct in the embedded clause; *yesterday* is an adjunct in the main clause.

Try to isolate the embedded clause by using the diagnostics we have introduced to identify constituents. For instance, (i) formulate a question that targets the object of *admitting*. (ii) Using the pseudo-cleft pattern, try to rephrase the sentence to bring out the different attachments of the adjuncts. (iii) Move the direct object of *admitting* to the beginning of the sentence.

- (3) a What was Tony Blair admitting yesterday?
That he had run into tough times in recent months.
b What Tony Blair was admitting yesterday was that he had run into tough times in recent months.
c That he had run into tough times in recent months, Tony Blair was admitting yesterday.

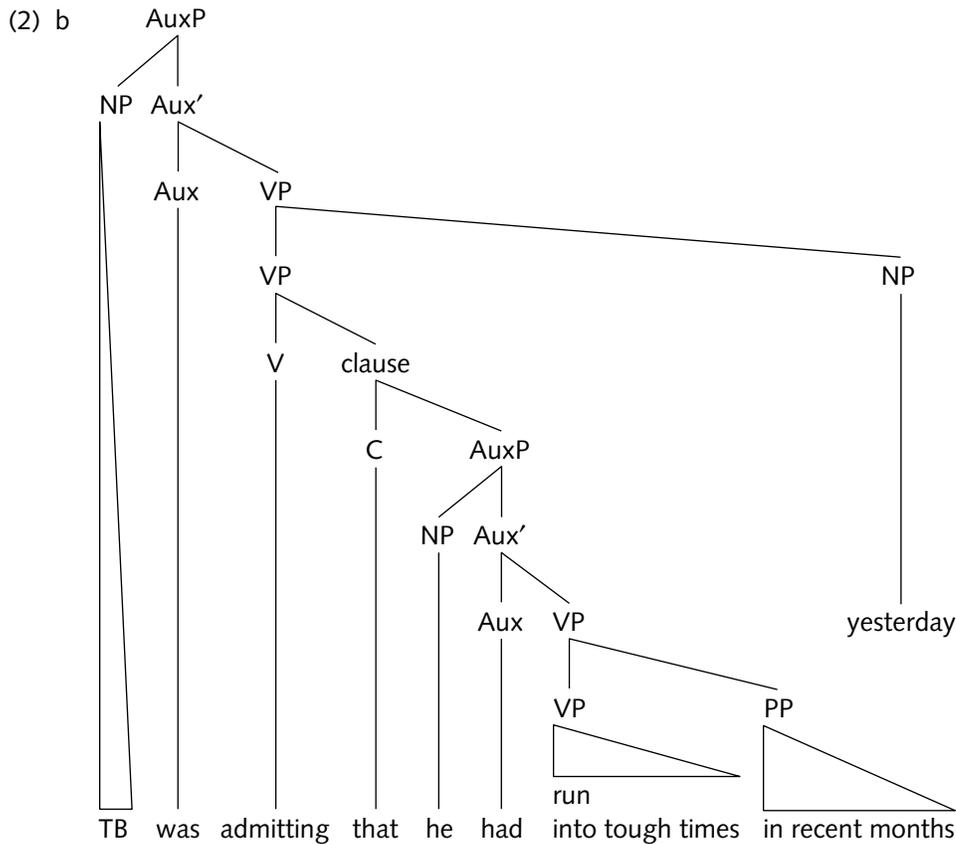
Finally, you can also shift the complement of *admitting* to the right, across *yesterday*.⁷

- (3) d Tony Blair was admitting yesterday — that he had run into tough times in recent months.

These various diagnostics lead us to propose that the adjunct *in recent months* is adjoined to the VP headed by *run*, and that the adjunct *yesterday* is adjoined to the VP headed by *admitting*. (2b) is a representation modeled on representation (70b) in the discussion section. In (2b) we have added *that* to the structure with the label C. We come back to the position of conjunctions like *that* in Chapter 5.

⁶ We discuss embedded clauses in more detail in Chapter 5, section 2.3.

⁷ For rightward shifting of objects see Exercise 5 above.



Exercise 15 Adjunction to the sentence (L, E)

In this exercise we speculate about the application of adjunction. The exercise is more discursive than some of the other exercises. The idea is that we pursue the argumentation elaborated in the chapter and see where that would lead us.

In representation (70b) in the chapter, we analyze sentences containing a finite auxiliary as projections of that auxiliary: the auxiliary heads the sentence, the sentence is an AuxP. In the representation we showed how the head of the sentence, Aux, takes a VP as its complement and has a subject NP as its specifier.

We did not discuss the possibility of adjunction to the sentence. However, if adjunction exists as a general option available to any structure formed according to the format elaborated in the chapter, then sentences ought also to be able to have constituents adjoined to them. Once again, if we were to conclude that adjunction to sentences is not possible then we would ideally have to explain this ban.

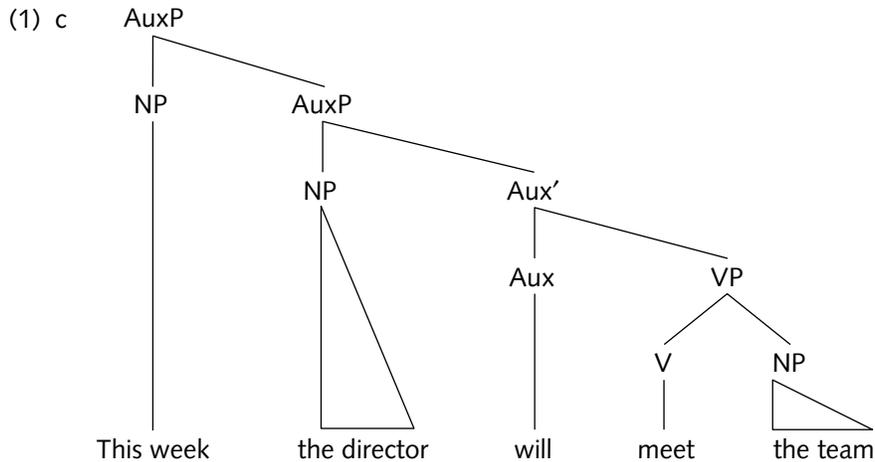
Consider (1a). If we were to left-adjoin the NP *this week* to the sentence, what would the resulting sentence be? Using (70b) as a model, draw a tree diagram for the sentence with the adjunct integrated into it.

(1) a The director will meet the team.

A constituent left-adjoined to the sentence would precede the subject:

(1) b This week, the director will meet the team.

The resulting structure would be as in (1c):



Observe that the adjoined constituent, the NP *this week*, precedes the subject. We have a structure in which a core AuxP is augmented with an additional element.

Adjunction is the name for the operation which combines fully formed constituents. So far, we have used this operation to integrate non-essential components into the structure. For instance, we used adjunction to add specifications of time or manner to the VP. These adjoined constituents were optional and they were peripheral to the VP. Could obligatory components of the sentence be found in an adjoined position?

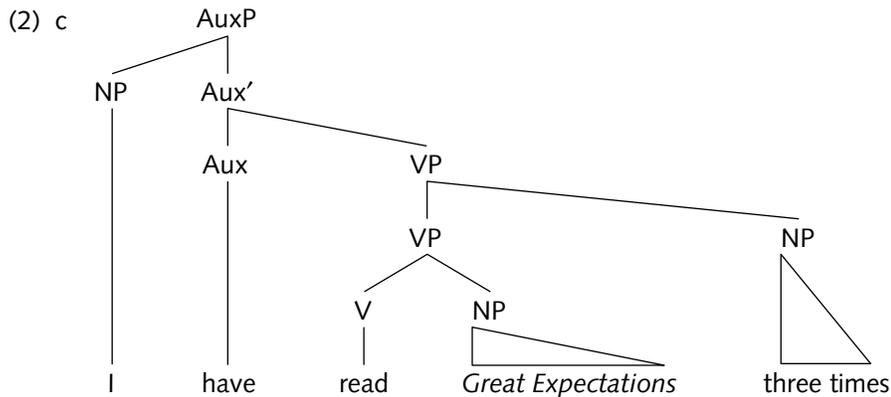
Consider example (4) in Exercise 4, repeated here as (2a). The subject *I* is preceded by a constituent. What type of constituent is it? What would be the unmarked position for this constituent?

(2) a *Great Expectations*, I've read three times. (*Guardian*, G2, 1.4.2003, p. 12, col. 2)

In this example *Great Expectations* is an NP. It is the name of a book. It is the object of the verb *read*. It can be replaced by a pronoun; we can question it with *what*. If we restore it to its base position we have (2b).

(2) b I've read [_{NP} *Great Expectations*] three times.

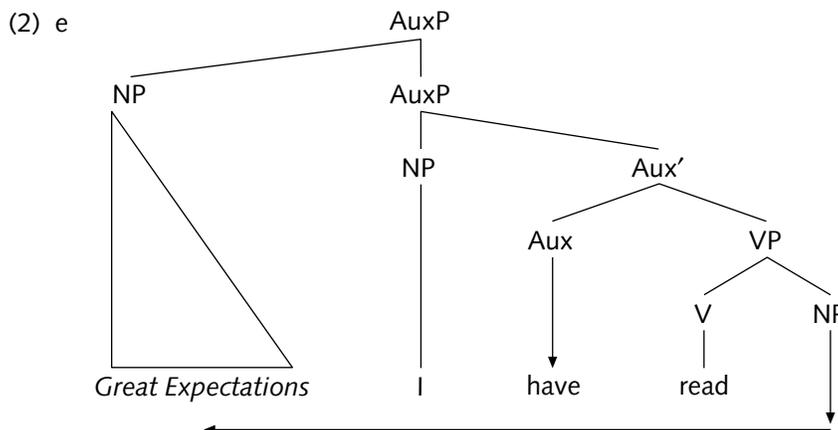
Before turning the page, try to draw a tree diagram for (2b), using diagram (70b) in the chapter as a model. You can spell out the contracted auxiliary 've as *have*. The tree should look as follows:



In (2b) the NP *Great Expectations* is the object of the verb *read*, and it occupies its base position in the core VP. In (2a) the NP *Great Expectations* precedes the subject, the NP *I*. However, *Great Expectations* is still the direct object of *read*. For instance, in (2a) we could not add a new object to the sentence:

(2) d **Great Expectations, I've read War and Peace three times.*

Sentences (2a) and (2b) are paraphrases: if (2a) is true, then inevitably (2b) is also true and vice versa. (2b) is the neutral pattern, in which the object occupies its canonical position and follows the verb; in (2a) the object has been fronted to achieve some presentational effect. Let us take this movement metaphor literally. Let us assume that in (2a) the object is first merged with the verb, but that it is subsequently moved to occupy a position to the left of the subject. What could the position to the left of the subject be? One option that comes to mind is that the NP *Great Expectations* is adjoined to the sentence. We use an arrow to indicate the movement.⁸



⁸ In Chapter 4 we will introduce another notation to signal movement. We discuss the mechanisms of movement also in Chapter 5.

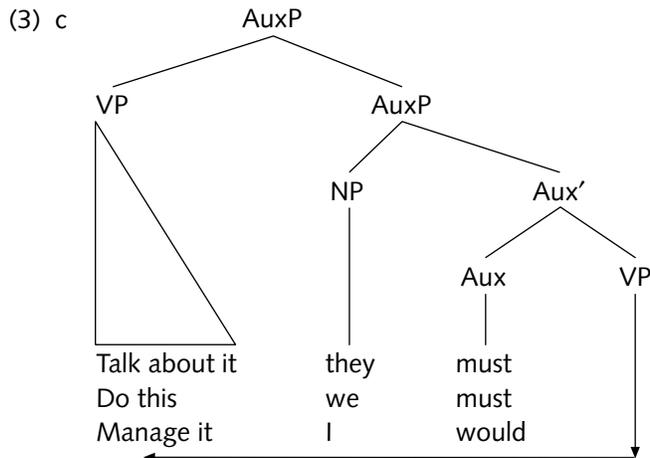
In (2e) we have first inserted *Great Expectations* as the object of the verb *read*. Then we move it to a position adjoined to AuxP.

Example (2a) is important because it shows that adjunction does not apply exclusively to optional constituents. The direct object *Great Expectations* in (2) is an obligatory complement of the verb. When it is taken out of the VP, it may be moved to an adjunction position. Observe, however, that the operation that creates the adjoined position could still be said to be “optional” in the sense that we are not obliged to move an object out of the VP. If we had left the object in its base position, we would not have had to resort to adjunction. Inserting the object in the VP is obligatory, moving it out and adjoining it is optional.

In section 1.4. in the chapter we came across examples such as (13) repeated here in (3). In each of the underlined segments the subject is preceded by a VP. How could we represent the structure of the underlined segments?

- (3) a “They must talk about it, and [_{VP} talk about it] they must”, he said. Food for thought, there! It’s a phrase that could add a measure of gravity to any press conference. “We must do this, and [_{VP} do this] we must.” (Simon Hoggart, *Guardian*, 29.1.2003, p. 2, col. 5)
- b But I was still a long way from figuring out what my goal was. I told the governor [of the prison] that I wasn’t sure how I was going to manage it – but [_{VP} manage it] I would. (*Guardian*, G2, 15.5.2003, p. 7, col. 4)

Assuming that the structure of the sentence is as in (70b), we would have to provide accommodation for a VP that precedes the subject. Among the tools available in our structure we have a possibility of adjunction. We might propose to adjoin the sentence-initial VP to the sentence as a whole, in the same way that we adjoined the temporal NP *this week* to AuxP in (1) and the object NP *Great Expectations* to AuxP in (2). According to (70b) the VP is the complement of the auxiliary. Again, we can propose that while the fronted VP is in a position adjoined to AuxP, it originates inside the VP.



Exercise 16 Creating new words (T)

Comment on the internal make-up of the underlined words in the following extracts.

- (1) The Navy hopes the change will make a difference in its rigorous nine-week sailorization process. (*Chicago Tribune*, 30.11.2002, section 1, p. 18, col. 6)
- (2) The brigades have already taken part in exercises in preparation for Iraq, and the process of "desertification" – fitting special air filters, to painting the camouflage in desert colours and other changes – is under way. (*Guardian*, 7.1.2003. p. 1, cols 4–5)
- (3) Options are being investigated for the desertisation of the UK's CR2s (Challenger 2s). The army has bought 386 Challenger2 tanks – adapting all of them for desert conditions would cost more than £50m. (*Guardian*, 8.4.2002, p. 7, col. 8)
- (4) In a lawyerly way, she worked with her sister to lay down ground rules. (*New York Times*, 2.1.2003, p. F8, col. 1)
- (5) He gives me his best schoolteacherly look. (*Guardian*, G2, 20.1.2003, p. 7, cols 3–7)

Exercise 17 The internal structure of deverbal nouns (E)

This exercise explores the internal structure of nouns.⁹ Consider the underlined nouns in the examples below. Several of them can be related in form to a verb. Identify these nouns and for each noun give the related verb. Nouns with a clear morphological relation to a verb are called **deverbal** nouns.

- (1) Kim's explanation of the events did not satisfy me.
- (2) Kim's accident changed everything.
- (3) His transformation into a werewolf was unnerving.
- (4) Kim's version of the events was not satisfactory.
- (5) The occurrence of the accident changed everything.
- (6) Sue's exploration of Easter Island was uneventful.

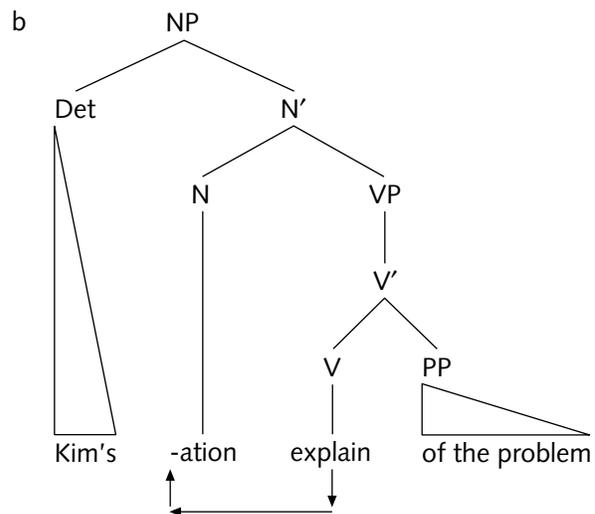
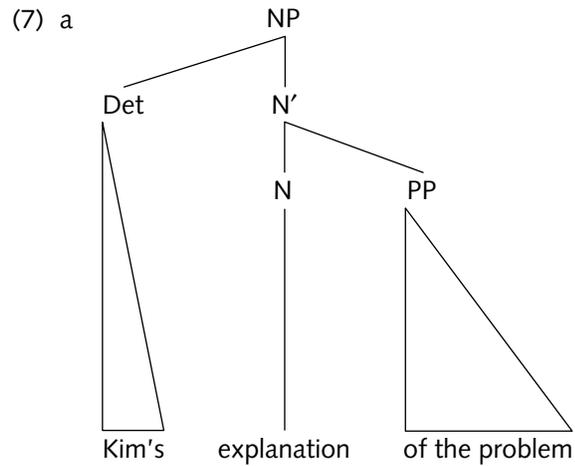
⁹ This exercise is based on Fu, Roeper, and Borer (2001).

Table 1 Deverbal nouns and the related verbs

	Noun	Verb
(1)	<i>explanation</i>	<i>explain</i>
(3)	<i>transformation</i>	<i>transform</i>
(5)	<i>occurrence</i>	<i>occur</i>
(6)	<i>exploration</i>	<i>explore</i>

KEY AND COMMENTS

The nouns in Table 1 are deverbal. There is a debate among syntacticians whether the internal structure of deverbal nouns should contain a verb, i.e. whether representation (7a) or (7b) is preferable:



(7a) does not contain any indications that the noun *explanation* is related to a verb. According to (7b), the noun *explanation* is formed on the basis of the verb *explain*. According to this representation, the verb *explain* unites with the bound morpheme *-ation*, which is dominated by N, to form the deverbal N *explanation*. To what extent would the data in (8) be relevant for the choice between the two representations?

- (8) a Kim's explanation of the problem to the tenants thoroughly did not prevent a riot.
 b The occurrence of the accident suddenly disqualified her.
 c His transformation into a werewolf so rapidly was unnerving.

Nouns for which there is no related verb stem (*version, accident*) would be taken to have a representation not containing a verb stem (7a). To what extent would the following data support this analysis?

- (9) a *Kim's version of the accident thoroughly was not a big help.
 b *Kim's accident suddenly on the track disqualified her.

KEY AND COMMENTS

In (8), the deverbal nouns co-occur with an adverbial modifier (*thoroughly, suddenly, so rapidly*), which we normally expect to be adjoined to a VP. Structure (7b), with an NP dominating a VP, would allow the adverbial to be an adjunct to the VP. No such modifier is available for the nouns that are not related to a V-root (9), so representation (7b) would not be appropriate for these and we would opt for (7a).

Example (10) is provided by Fu, Roeper, and Borer (2001). Discuss whether this example would be compatible with the hypothesis that deverbal nouns have the internal structure in (7b).

- (10) Sue's exploration of Easter Island was impressive, but Amy's doing so was a real surprise.

In (10) *doing so* relates to *exploration of Easter Island*. If we assume that *do so* substitutes for a VP (see section 1.3), then the relevant VP could be based on the verbal root (*explore*) of the N *exploration* in (10). Representation (7b) will allow us to account for *do so* substitution. The substitutions with *do so* in (11) again relate to deverbal nouns.¹⁰ Identify these deverbal nouns. What are the related verbs?

- (11) a The defection of the seven moderates, who knew they were incurring the wrath of many colleagues in doing so, signaled that it may be harder to sell the GOP message on the crime bill than it was thought previously. (*Washington Post*)

¹⁰ (11a, b, c) are also from Fu et al. (2001).

- b Even though an Israeli response is justified, I don't think it was in their best interest to do so right now.
- c His removal of the garbage in the morning and Sam's doing so in the afternoon were surprising.
- d Canon Michael Hunter, rector of St James parish church in Grimsby, said it was a sad day for natural justice and added that her return to the town would have caused problems but she should have been allowed to do so. (*Guardian*, 13.2.2004, pp. 1 and 2, cols 4, 5)

Observe that the empirical data are complex. Not all native speakers accept examples like (10) and those in (11). But speakers do agree on the compatibility of adverbials with deverbal nouns in (8) and the contrast with (9).

Exercise 18 Comparative linguistics: Deriving OV orders (T, E)

In this exercise we speculate about cross-linguistic word order variation. The exercise is longer and more discursive than some of the other exercises. The idea is that we carry further the type of argumentation elaborated in the chapter and see where that leads us.

In section 2.3.3 of the chapter we saw that in English the canonical position of the object is to the immediate right of V. Though the object can move away from that position (as shown by Exercises 4 and 15), it cannot occupy a position to the immediate left of V.

Consider the Old English examples in (1). What conclusions could we draw concerning the position of the direct object?

- (1) a Hwi sceole we opres mannes niman?
 why should we another man's take
 'Why should we take something belonging to someone else?'
 (*Ælfric, Lives of Saints*, 24, 188) (from Fischer et al. 2000: 49)
- b Hwi wolde God swa lytles þinges him forwyrnan?
 why would God so small thing him deny
 'Why would God deny him such a small thing?'
 (*ÆCHom* I, 1.14.2) (from Fischer et al. 2000: 49)

In these examples the complement precedes the verb. This is the unmarked order for Old English. Old English is referred to as an **OV** language, this in contrast to languages such as Modern English which are **VO** languages.

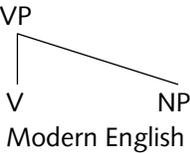
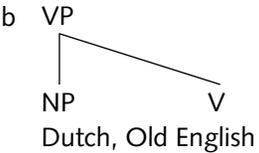
Recall from Chapter 1, section 3.2, that with respect to question formation, Old English seemed to behave like Modern Dutch and German. Consider the Dutch

sentences below, paying attention to the position of the underlined object and the verb. Is Dutch an OV language or is it a VO language?

- (2) a Ik denk dat Jan [_{NP} dat boek] kent.
I think that John that book knows
'I think that John knows that book.'
- b *Ik denk dat Jan kent [_{NP} dat boek].
- (3) a Marie wil vanavond [_{NP} een boek] lezen.
Mary wants tonight a book read
'Mary wants to read a book tonight.'
- b *Marie wil vanavond lezen [_{NP} een boek].

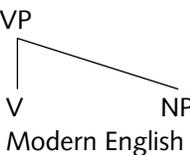
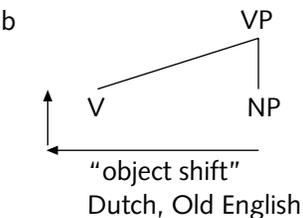
Would the structure of the VP as elaborated in the discussion in the chapter allow us to represent the structure of the Old English sentences in (1) and of the Dutch examples in (2) and (3)? How could we enrich our theory in order to allow for these data?

There are at least two ways of ensuring that we can also derive OV orders. One option to derive the Dutch sentences in (2a) and (3a) is to assume that in Dutch the base position of the complement position is to the left of V.

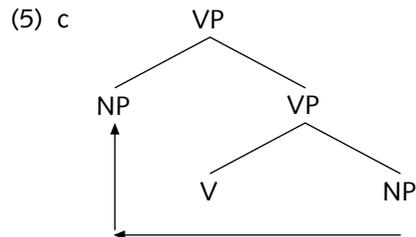
- (4) a  VP
V NP
Modern English
- b  VP
NP V
Dutch, Old English

We would then have to propose that languages differ with respect to their assembly techniques. While a verb will select an object to its right in English, it would have to select an object to its left in Old English and in Dutch.

A second possibility would be to assume that the complement position of the verb in Old English and in Dutch is the same as that in Modern English, but that in Old English and in Dutch the direct object cannot remain in its base position in the VP and that it must move to a position inside the sentence but to the left of the verb. We could refer to the sentence-internal leftward shifting of the object as **object shift** (Holmberg 1986).

- (5) a  VP
V NP
Modern English
- b  VP
V NP
"object shift"
Dutch, Old English

To complete representation (5b), we would have to specify which position the object NP moves to. Following on the discussion in Exercise 15 we might think, for instance, of adjoining the object to the VP.



Whichever analysis we choose, we would have to explain why Modern English differs from Old English and Dutch. This means that either we explain why there is variation in the base position of the object (4) or we explain why Old English and Dutch require a displacement of the object (5) and why this displacement is not even available in Modern English.

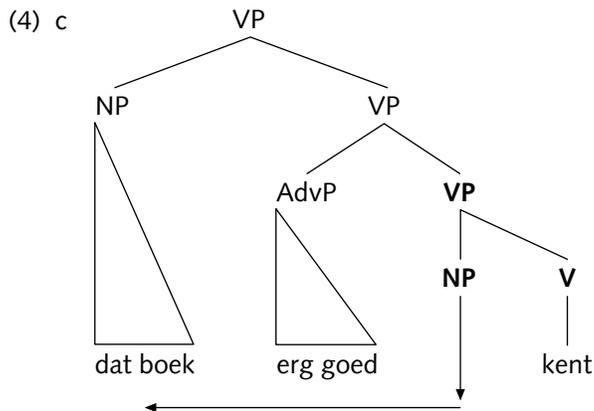
Consider the Dutch examples in (6). Do they bear on the choice between (4) and (5)?

- (6) a Ik denk dat Marie [_{NP} dat boek] erg goed kent.
 I think that Mary that book very well knows
 'I think that Mary knows that book very well.'
- b Jan wil [_{NP} die tekst] helemaal begrijpen.
 John wants that text completely understand
 'John wants to understand that text completely.'

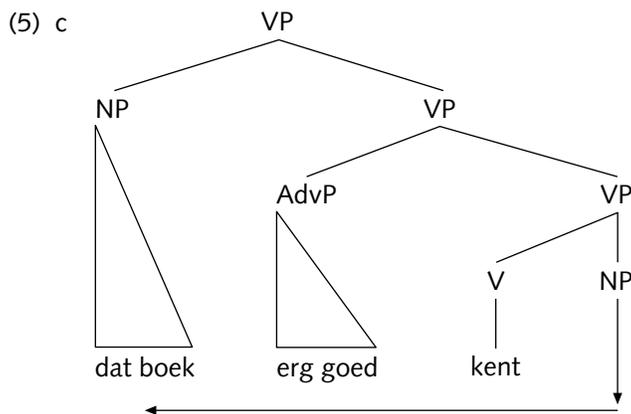
According to the hypothesis in (4), the base position of the object in Dutch is left adjacent to the verb, that in English is right adjacent to the verb. In the Dutch examples in (6), the direct object NPs *dat boek* ('that book') and *die tekst* ('that text') precede the verb. However, these objects are separated from the verb by the adjuncts *erg goed* ('very well') and *helemaal* ('completely'). This means that even if we were to adopt (4b) to account for the OV order in Dutch, we would have to further supplement hypothesis (4) with an operation that moves the object to the left across the VP-adjoined constituent. In other words, even if we adopt (4) we need something like object shift. So to represent the sentences in (6) we would need:

- (i) Hypothesis (4b)
 (ii) + Object shift (5b)

The combination of the output of these two assumptions is summarized in (4c):



Hypothesis (5) expresses the cross-linguistic variation between VO languages and OV languages by means of the operation of object shift, which allows us to move the object leftward. According to (5) we do not also assume that the internal order of verb and complements varies. By simply using object shift we can derive the Dutch word order (6a) as in (5c):



Both hypothesis (4) and hypothesis (5) allow us to derive the sentences in which the verb follows the object in (2), (3), and (6). Both hypotheses need object shift to derive the examples in (6), in which the object is non-adjacent to V. But hypothesis (4) also postulates there is variation in the base position of object and verb. Which hypothesis is theoretically preferred?¹¹

¹¹ For the relevance of economy in theory building see also Chapter 1, section 1.2.3. Exercise 16 in Chapter 3 offers another illustration of the application of object shift. For an accessible discussion of the structure of Germanic SOV languages see Zwart (1997).

Exercise 19 Constituency tests (T)

The following sentence is from Hebrew:¹²

- (1) a Kol ha-yeladim zarku ?avanim.
 all the children threw stones
 'All the children threw stones.'

We may propose that like *all the children* in the English paraphrase, the string *kol ha-yeladim* in (1a) is a constituent. Consider the sentences in (1b–e). Do they provide evidence for constituency?

- (1) b Ze hayu kol ha-yeladim še-zarku ?avanim.
 it was all the children that-threw stones
 'It was all the children who threw stones.'
- c Mi- še zorek ?avanim ze kol ha-yeladim.
 who-that throws stones it all the children
 'Those that throw stones are all the children.'
- d Kol ha-yeladim, ?ani batu?ax še-zorkim ?avanim.
 all the-children, I sure that throw stones
 'All the children, I am sure throw stones.'
- e ?etmol zarku štei banot ve-kol ha-banim ?avanim ?al ha-mora.
 yesterday threw two girls and all the boys stones on the teacher
 'Yesterday two girls and all the boys threw stones at the teacher.'

Now consider (2). In the first sentence the subject is *ha-yeladim kul-am* ('the children all'). On the basis of the examples in (2b–e) decide whether this string is a constituent:

- (2) a Ha-yeladim kul-am zarku ?avanim.
 the children all-3_{MPL} threw stones
 'The children all threw stones.'
- b Ze hayu ha-yeladim kul-am še-zarku ?avanim.
 it was the children all-3_{MPL} that-threw stones
 'It was all the children who threw stones.'

¹² The data in this exercise are based on Shlonsky (1991: 163–4). Thanks to Ur Shlonsky for help with (1a) and (2a). Exercises 12 and 21 in Chapter 4 pick up the variation between (1a) and (2a).

- c Mi- še zorek ?avanim ze ha-yeladim kul-am.
 who-that throws stones it the children all-3_{MPL}
 'Those that throw stones are all the children.'
- d Ha-yeladim kul-am, ?ani batu?ax še-zorkim ?avanim.
 the children all-3_{MPL}, I sure that throw stones
 'All the children, I am sure throw stones.'
- e ?etmol zarku štei banot ve- ha-banim kul-am ?avanim ?al ha-mora.
 yesterday threw two girls and the boys all-3_{MPL} stones on the teacher
 'Yesterday two girls and all the boys threw stones at the teacher.'

We conclude that both the sequence *kol ha-yeladim* ('all the children') and the sequence *ha-yeladim kul-am* ('the children all') are constituents in Hebrew. Discuss the relevance of (3) for this conclusion.

- (3) ?Ra?iti ?et kol ha-banot ve-?et ha-banim kul-am.
 saw-1_{SG} ACC all the-girls and-ACC the-boys all-3_{MPL}
 'I saw all the girls and all the boys.'

Exercise 20 The specifier of NP (E)

In the discussion we assumed that each NP has one specifier and that articles, demonstratives, possessive pronouns, and prenominal genitives occupy the specifier of NP. This leads to the correct prediction for English that articles, demonstratives, possessive pronouns, and prenominal genitives are in complementary distribution:

- (1) a *the this book
 b *the his book
 c *the Jane's book

Discuss the problems raised for this proposal by the following data:¹³

- (2) a afto to vivlio
 this the book
 'this book' (Modern Greek: Horrocks & Stavrou 1987: 86)

¹³ For introductory discussion see Haegeman and Guéron (1999, chapter 4). For general discussion of the structure of the noun phrase see also Bernstein (2001). For discussion based on Greek see Horrocks and Stavrou (1987: 86); on Hungarian see Szabolcsi (1983, 1994). For a discussion of possessives see also Giorgi and Longobardi (1991), Longobardi (1996), Alexiadou (2004a).

- (3) a la mia amica
 the (FSG) my (FSG) friend (FSG)
 'my girlfriend' (Italian)
- b la meva casa
 the (FSG) my-(FSG) home (FSG)
 'my house'
 (Catalan, example from Longobardi 1996: 29, his (72a))
- (4) a tu Chomsky to vivlio
 of-the Chomsky the book
 'Chomsky's book' (Modern Greek, Horrocks & Stavrou 1987: 86)
- b tu vivliu i kritiki
 of the book the criticism
 'the criticism of the book' (Modern Greek, Horrocks & Stavrou 1987: 86)
- c a Mari kalap-ja
 the Mary-NOMINATIVE hat-3SG
 'Mary's hat' (Hungarian, Szabolcsi 1994: 186)
- d Mari-nak a kalap-ja
 Mary-DATIVE the hat-3SG
 'Mary's hat' (Hungarian, Szabolcsi 1983)
- (5) a The papers report on every move of the actress.
 b *The papers report on the every move of the actress.
 c The papers report on the actress's every move.
 d The papers report on her every move.