

The grammar of sentences: slots and phrases

Chapter Preview

How are words organised to build sentences?

What is a phrase?

Why are there different types of phrases?

Can phrases contain other phrases?

Can sentences contain other sentences?

7.1 Introduction

We saw in the previous chapter that structured patterns of sound give us well-formed syllables and words in a language, and we observed that several of these patterns are shared among different languages. We reached similar conclusions in Chapters 3 and 4 about building well-formed words from morphemes. In this chapter, we will find that similar observations hold for the patterning of words in larger units. That is, we will find structured (or **rule-governed**) patterns in the *syntax* of particular languages, that can be generalised across languages to be taken as a **universal** of language.

7.2 Syntax

Syntax is about parsing, that is, about assigning a structural analysis to the meaningful word sequences that constitute sentences. Different languages, or language varieties, parse in different ways, but all languages parse in some way. This means that sentences obey specific patterns. It must therefore be

possible to find rules describing the **well-formed** sentences of a language, those that are used and deemed acceptable by its speakers, as opposed to **ill-formed** sentences. For example, in English:

(7.1) *I like cats.*

(7.2) **Like cats I.*

Syntax specifies the parsing rules that identify the string of words in (7.1) as a sentence of English, and that exclude the string in (7.2). Syntactic analysis deals with how words are put together to form sentences. Syntax studies the second level of **duality** in language, namely, words making up sentences (the first level, sounds making up words, was discussed in section 6.2).

Recall that a linguistic **rule** is a general statement about observed regularities that hold between form and meaning, enabling language use and judgements of acceptability among a majority of speakers of a language. As we have pointed out throughout this book, the set of linguistic rules of a language constitutes the **grammar** of that language. Syntax can be defined as the grammar of sentences. In proposing this definition, we should clarify one important point of terminology from the outset. Much current and past research in linguistics tends to identify *grammar* with *syntax*, and *syntax* with *language*. This is particularly true of the school of linguistic thought known as *generative linguistics*, which arose in the 1960s in the USA, and which has strongly influenced linguistic thought, especially North-American, ever since. The search for a “Universal Grammar”, within the same tradition, thus often refers to the search for universals of *syntax*. In this book, we have made it quite clear that the term *grammar* refers to the regular patterns found across all levels that make up a language, be it sounds, words, or texts, and we will continue to use this definition of the term.

7.3 Constituency

We saw in Chapter 4 that the word forms that we speak and hear can be analysed as reflecting an internal hierarchical structuring of its component elements, that we called *morphemes*. We now discuss how the sequential organisation of words in a sentence can also be analysed as reflecting an abstract hierarchical structuring. Within sentences, words organise themselves into larger *constituents*, that are smaller than the sentence itself, and that we will call *phrases*.

A **constituent** is a group of units of the same linguistic type, that usually occur consecutively, and that form a larger unit of a different type. Saying that a unit is a member of, or a constituent of, another unit is the same thing. We could also say that a family, for example, is a hierarchical social unit

constituted by smaller groups of individuals (parents, children), and is in turn a constituent of larger units like extended families, neighbourhoods, or countries. In syntax, the hierarchy is as follows: **words** are constituents of phrases, and **phrases** in turn are constituents of sentences. By the same token, we can say that morphemes are constituents of words, although the term *constituent* is more commonly used for syntactic constituency than for morphological constituency. **Constituency** is therefore an instance of **compositionality**, the part-whole relationship discussed in section 1.4.2.

Let's try to understand the notion of constituency by means of successive observations of the behaviour of words within sentences drawn from different sets of data, as presented in (7.3) to (7.11) below.

Words must occur in a certain order

- (7.3) (a) *That boy ate the durian.*
(b) *That boy ate the cheap durian.*
- (7.4) (a) **Boy that ate the durian.*
(b) **That boy ate durian the.*
(c) **That boy ate the durian cheap.*

Recall that the ordering of words in speech, i.e. their **distribution**, gives clues to the **word class** that they belong to. We may then conclude that the reason for the ill-formedness of the strings in (7.4) lies in the fact that some words that belong to a particular word class occur in a syntactic **slot** where a different word class should occur. Throughout this discussion, we will use the term *slot* as convenient shorthand for **syntactic position**. For example, (7.4a) and (7.4b) show that the Det and N slots (*that, the* and *boy, durian*, respectively) are reversed, as a comparison with the well-formed (7.3a) makes clear.

The position of certain words is interchangeable

- (7.5) *That boy ate the durian.*
The boy ate that durian.

The examples in (7.4) could have led us to conclude that the position of words in a sentence cannot be changed at all, if we are to build well-formed sentences. The data in (7.5) disprove this claim: we need to constrain our observations, by using the concept of word class. The data show that swapping the position of words that belong to the same word class, in this case Det (*that, the*), does not affect the well-formedness of the resulting sentences.

The position of certain sequences of words is interchangeable

- (7.6) *My cat licked that boy.*
That boy licked my cat.

The data in (7.6) show something new. We are not swapping single words any more, but sequences of words, *my cat* and *that boy*. The results, being well-formed, suggest that the sequences of words that are being swapped “hang together” in some way. Det and N cannot be swapped with each other, as we saw in (7.4a) and (7.4b), but ordered sequences of Det + N can be swapped with each other, preserving syntactic well-formedness.

Certain sequences of words can be replaced by a single word

- (7.7) (a) *That boy ate the cheap durian.*
(b) *That boy ate durian.*
(c) *He ate the durian.*
(d) *He ate it.*

Again, the data in (7.7) lead us to a new observation. We substituted *that boy* by *he*, and *the cheap durian* by *durian* and *it*, and these substitutions resulted in well-formed sentences. This observation then independently supports our previous observation from (7.6), that certain sequences of words hang together as a single unit. Syntactically, they behave in the same way, in that they can appropriately occupy the same slot. An analogy might help clarify things. In a company, we could replace the male, European CEO, with an Asian female or an international executive committee, with no loss to the smooth running of that company. That is, the CEO “slot” can be appropriately filled by different individuals or by different organised groups of individuals.

The data in (7.3)-(7.7) appear to point in a particular direction, captured in our final observation from the additional data in (7.8), as follows.

Particular slots must be filled by particular types of words or word sequences

- (7.8) (a) *He ate durian.*
(b) *He ate cheap durian.*
(c) **Stole ate durian.*
(d) **The ate durian.*
(e) **He ate the.*

Certain word sequences can be moved around or replaced as a **block**. Within the block, the word classes that may occur and their relative positions are fixed. For example, we can move *that boy* as a block as in (7.6), but not *that* and *boy* within *that boy*, as shown by (7.4a) and (7.4b). Nor can we have *the* occur on its own within a block, as (7.8e) makes clear. The crucial point appears thus to be that sequences of words, or the single words that can replace them, occupy certain slots. One way of explaining similar observations is to assume that word sequences like *that boy* or single words like *it* form a building block, or **constituent**.

7.3.1 Assumptions behind constituent analysis

Our observations about the behaviour of words and word groups within sentences lead us to postulate a number of assumptions, that we can use to guide our analysis of constituency. We formulate these assumptions as follows. Note the similarity of these assumptions to the ones proposed in section 3.4.2 for the analysis of the internal structure of words.

- Certain **syntactic positions**, or **slots**, can be usefully identified in the sentences of a language.
- These slots constitute the basic building blocks of **sentence structure**.
- These slots can be filled with appropriately organised **words**, in a way that is intuitively acceptable to speakers of the language.

The expression “intuitively acceptable”, used above, needs clarification. In some linguistics literature, a distinction is sometimes made between **acceptable** and **grammatical** sentences. These two sentences exemplify this distinction:

(7.9) *That boy ate the durian.*

(7.10) *The durian ate that boy.*

Both sentences are grammatical, because they both follow the constituency rules of English. They both parse different word classes appropriately in their slots. But only the sentence in (7.9) is likely to be acceptable, in that it is not only grammatical, but it also makes sense. The sentence in (7.10) is odd because durians are a type of fruit, and hence incapable of eating human beings.

What (7.9) and (7.10) demonstrate is that grammatical sentences need not make acceptable intuitive sense. The American linguist Noam Chomsky

famously made the point that grammatical parsing is independent of meaningfulness by proposing an example of what he viewed as a grammatical but nonsensical sentence, *Colorless green ideas sleep furiously* (Chomsky 1957: 15, note the American spelling of the first word in this sentence). We discuss matters of meaning in Chapter 9.

On the other hand, sentences can also be acceptable without being grammatical, as in some productions by foreign users of a language. One example is:

(7.11) *That boy the durian ate.*

Speakers of Japanese, for example, in whose language this word order is the rule for simple sentences, may produce sentences like the one in (7.11) in their first attempts at using English. English speakers are likely to assign an acceptable meaning to this sentence, akin to the meaning of (7.9), rather than hesitate between the interpretations shown in (7.9) and (7.10). For the purposes of this chapter and the next, the expression *intuitively acceptable* can be taken as synonymous with *grammatical*.

7.3.2 Tests of constituency

We have so far studied data that provide evidence for syntactic grouping, or constituency. We did this by manipulating our data, and probing for intuitions about those data. As already noted several times in this book, constructions that are possible in a language are as illuminating about its grammar as constructions that do not occur in that language, because they are rejected by its users as being intuitively unacceptable. We can then probe for acceptability of different constructions in different languages. In so doing, we must bear in mind that we are likely to conclude that what is grammatical/acceptable in one language (variety) may not be grammatical/acceptable in another. One example is in our discussion of (7.11), concerning the different rules that govern basic sentence structure in English and Japanese.

It is from cross-linguistic, generalised observations of this kind that linguists attempt to make sense of the overall structure of human language. As we said at the outset of this chapter, languages may parse their constituents *differently*, at times in radically different ways. Nevertheless, all languages parse their constituents in *regular* ways, and constituents can therefore usefully be found in all languages. We can now conclude this section with the statement of two tests that can help us identify syntactic blocks, or constituents:

- **Substitution.** This test shows that a group of words may be replaced by a single word within the same constituent.

- **Movement.** This test shows that constituents may appear in different positions, in different versions of a sentence.

For example, we know that “in the morning” is a constituent in the sentence *I like to exercise in the morning* because it can be moved from its default position at the end of the sentence to the beginning of the sentence (*In the morning, I like to exercise*) without affecting the grammaticality of the sentence. That is, both *I like to exercise in the morning* and *In the morning, I like to exercise* are well-formed sentences.

It’s important to keep in mind that the movement test basically states that ‘Only single units can be moved’. What this means is that if something can be moved, then it is a single constituent. It does not mean that if something cannot be moved, then it is not a single unit. Nor does it mean that if something is a single unit, it can be moved. The statement *Only single units can be moved* does not mean *All constituents can be moved*.

Activity 7.1

Circle the label of the sentence(s) in which the underlined sequences form one syntactic constituent.

Argue for your analysis, using one, or both, of the constituency tests above.

- Our neighbour saw my friend’s dog in the park last week.
- Our neighbour saw my friend’s dog in the park last week.
- Our neighbour saw my friend’s dog in the park last week.
- Our neighbour saw my friend’s dog in the park last week.
- Our neighbour saw my friend’s dog in the park last week.

7.4 Phrases and phrase structure

We now move on to refine these observations, by investigating the properties that define the internal structure of syntactic constituents.

7.4.1 Phrases

We saw above that both single words and organised groups of words can be analysed as constituents of a larger unit that we call a *sentence*. We therefore need a specific term that helps us refer to ‘organised groups of words’ in a clear and consistent manner. We call this unit a **phrase**, and we define it as a constituent that is intermediate between **words** and **sentences**. Phrases are

“intermediate” units of analysis because their constituents are word classes and because phrases, in turn, are constituents of sentences.

Our observations in the preceding section show that certain word classes must occur in certain phrases, whereas other word classes may or may not occur in the same phrase. We can summarise this conclusion with three examples, adapted from our earlier set of examples:

(7.12) *That boy ate the durian.*

(7.13) *That boy ate durian.*

(7.14) **That boy ate the.*

These examples show that both *the durian* and *durian* can occur after a verb like *ate*, as in (7.12) and (7.13), but *the* cannot occur alone in this position, given that (7.14) is ill-formed. In other words, we can replace the phrase *the durian*, which is made up of Det + N, with only one of its own constituents, N, but not the other. This must mean that in the phrase *the durian*, the noun *durian* is more central than the determiner *the*. Phrases appear then to consist of two types of constituent:

- **Head.** The head is the obligatory constituent of a phrase.
In terms of meaning, the head is what a phrase is about. For example, the phrase *the cheap durian* is about a durian. Given this analysis, we can account for the ill-formedness of (7.14) in terms of the absence of a head. Being obligatory, the head of a phrase is the word class that can replace the phrase as a whole.
- **Modifier.** Modifiers are optional constituents in a phrase.
Modifiers, as their name suggests, add meaning to, or modify, the meaning of syntactic heads. This is what the word *cheap*, for example, does in the phrase *the cheap durian*. Modifiers can be left out without affecting the well-formedness of phrases: both (7.12) and (7.13) are well-formed, with and without the word *the*, respectively. Being an optional constituent, a modifier cannot replace the phrase in which it appears.

We can now refine our formulation of the substitution test in section 7.3.2 as follows: the substitution test shows that a group of words may be replaced by a single word within the same constituent, which is of the same word class as the head of the constituent.

Phrases are labelled according to the label of the word class of their syntactic heads. For example, the phrase *the durian* is called a **noun phrase**, abbreviated NP, because its head is a noun. A **verb phrase** (VP) has a verb as

its head. Generalising this pattern, we can see why models of grammar that account for phrase structure in terms of head and modifiers are called **XP grammars** (X-phrase grammars), where *X* stands for the word class of the head of the phrase.

Activity 7.2

1. Propose one syntactic label for the underlined constituent in the sentence:
The room looked rather dark.
2. Use one of the two constituency tests introduced in this chapter to explain your choice of label for this constituent.

Recall that we have come across heads and modifiers before, in our morphological discussion of **headed compounds** (section 5.3.2), which shows the usefulness of these two constructs for our understanding of linguistic structure across the board. In syntax, the same central versus peripheral status holds for words in different types of phrases. Note that, as we made clear for compounds, **headedness** is not a property of particular word classes. It is a syntactic status that particular words acquire by virtue of their distribution, and therefore their function, within larger units. In the same way that, say, nouns can be either heads or modifiers in compounds (compare e.g. *race horse* and *horse race*), different word classes can function as head or modifier, depending on where they occur within a phrase.

Activity 7.3

Consider the following sentences:

- (a) Internet businesses are profitable gold mines.
 - (b) He has grown really tall.
 - (c) She sings extremely well.
1. Identify the head and the modifier(s) in each underlined phrase.
 2. Give the word class of each head and each modifier in all underlined phrases.

7.4.2 Phrase structure

Phrases may consist of several constituents. We saw above that a noun phrase, for example, may contain a single noun, *durian*, or a noun preceded by a determiner, *the durian*, or a determiner and an adjective, *the cheap durian*. Noun phrases may also contain a single pronoun, as in (7.7d). You may have reached this conclusion yourself, based not only on the discussion in this chapter, but also drawing on your knowledge about the patterning of pronouns from section 3.4.1. We said there that pronouns replace sequences of an optional determiner, followed by an optional adjective, followed by a noun.

The term **phrase structure** (PS) designates the internal structure of a phrasal constituent, in terms of its own constituents and of the order in which they occur. Phrase structure can be represented in several alternative ways, i.e. we can talk about phrase structure in different ways. Three types of **representation** are given below, exemplified with an NP.

PS representation in words

A noun phrase must be constituted by either a noun or a pronoun. The pronoun occurs on its own, whereas the noun may optionally co-occur with a determiner, an adjective, or both. In this case, the determiner precedes the adjective, and both precede the noun.

Descriptive statements like this are self-explanatory, but can be cumbersome and wordy. The commonest representations in the literature therefore use more compact notations, each involving a set of associated conventions and terminology, as follows.

PS representation in rule notation

Rule notation, introduced at the end of section 4.5.2 to account for morphological patterns, is a convenient, shorthand way of representing phrasal syntax too. One example of a phrase structure rule, or **PS rule**, is:

$$\text{NP} \rightarrow \left\{ \begin{array}{l} (\text{Det}) (\text{Adj})^* \text{N} \\ \text{Pr} \end{array} \right\}$$

The same rule can be written in a more compact format:

$$\text{NP} \rightarrow \{(\text{Det}) (\text{Adj})^* \text{N}, \text{Pr}\}$$

PS rules afford as much economy (and elegance) as stating *three plus two equals five* in the form of the equation $3 + 2 = 5$. Generalising from $3 + 2 = 5$, what

the notation $x + y = z$ captures is the general principle that *the addition of a number (x) to another number (y) equals the sum of both numbers (z)*. In the same way, PS rules are said to **generate** phrases, in the sense that each PS rule states a general principle for generating all (and only) the well-formed phrases in a language (variety). The conventions used in PS rules include the following:

- ‘expands into’, ‘is constituted by’, ‘is rewritten as’
 - * one or more of the same constituent (note that the asterisk *follows* the symbol for the constituent)
 - () optional constituents in the phrase
 - { } alternative constituents that make up the phrase: each of the lines in the expanded half of the rule, i.e. to the right of the arrow, or each of the strings separated by a comma in the single-line version of the rule, indicates alternative ways of building the phrase.
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Figure 7.1. Conventions used in PS rules

According to these conventions, the NP rule above specifies that an NP must consist either of a noun or a pronoun. If the NP contains a pronoun, this word occurs on its own. If a noun occurs, then it can be preceded by a determiner and several adjectives, in this order. We return to the matter of **recursion**, or the recurrence of several similar constituents, in section 7.4. below.

Activity 7.4

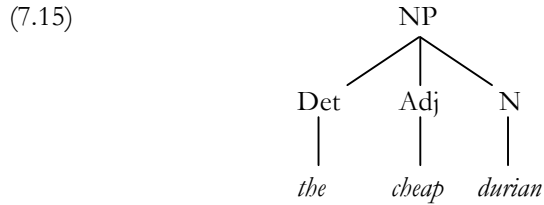
Do all of the following noun phrases, underlined, obey the NP rule stated above?

- (a) My youngest sister is a fashion model.
- (b) She likes to follow the latest stylish trends.
- (c) Models often enjoy their job.
- (d) Irregular schedules appeal to them.

Explain why you think so.

PS representation in tree diagrams

We discussed diagram representations of linguistic structure in section 4.5.2, when we dealt with complex words. Phrase diagrams, generally called **tree diagrams**, are also commonly used to give a clear visual representation of the assumed internal constituency and hierarchy of phrase structure. For example, the tree diagram of the phrase *the cheap durian* would be:



These are the conventions used in PS diagrams:

branch:	a line joining two constituents; branches do not cross each other;
node:	any point from which a branch is drawn;
dominance:	hierarchical relationship between higher and lower nodes;
mother:	node that immediately dominates another;
daughter:	node that is immediately dominated by another;
sister:	node that has a mother in common with another;

Figure 7.2. Conventions used in PS diagrams

In the tree diagram (7.15), we say that the NP *the cheap durian* stands in a **mother-daughter relationship** to its constituents (*the*, *cheap*, *durian*). The constituents *the*, *cheap* and *durian* are sisters.

When we build, or discuss, linguistic representations by means of tree diagrams, we can look at these representations in two complementary ways. Recall that we said in section 7.3 that constituency is an instance of **compositionality**. This means that constituency is a two-way relationship between a whole and its parts. We can therefore build our diagrams, or analyse them, from two different perspectives whose equivalence, for the purposes of this book, was already pointed out in section 4.5.2:

- **Bottom-up**, by grouping smaller units into larger units. We start at the bottom of the tree, and find the successive mother nodes that are shared by a number of sister nodes.
- **Top-down**, by breaking up larger units into smaller units. We start at the top of the tree, and expand its successive nodes into their daughter constituents.

Activity 7.5

In much linguistics literature, we find the word class *pronoun* defined as follows:

‘A pronoun replaces a noun phrase.’

Given what we have discussed in this chapter, is this definition syntactically accurate? Why?

You will have noticed that the three alternative representations that we have introduced, words, PS rules and PS diagrams, are equivalent. They all satisfy the criteria of explicitness and systematicity that are required of scientific tools. All three are equally general, in that they specify the constituents of a particular phrase and the relative position of these constituents within a phrase. The choice of one type of representation over another is therefore largely a matter of simplicity or convenience. Representations in words can be cumbersome. Tree diagrams give us clear visual clues about constituency, but they take up a lot of printed space, and can take time and skills to format on a printed page. In contrast, the compactness of PS rules saves space, to the detriment of visual clarity.

As a final remark on this section, you should bear in mind that the NP rule that we chose to discuss here is of course not the only rule that accounts for noun phrases, in English or any other language. Activity 7.4 should help make this point clear. In fact, it would be fair to say that linguists have not reached agreement about the structure of noun phrases, or of any other phrases, in English or in any other language!

Activity 7.6

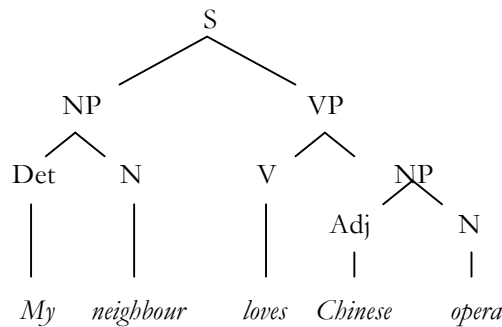
Propose a NP rule for the following data. Your rule should account for these data only!

- (a) Young children love lollipops and comfortable clothes.
- (b) Older children love diet food and tight jeans.

7.4.3 Sentences

A sentence can be thought of as a type of constituent (see section 7.5 below for clarification of this claim). On this assumption, one way of representing **sentence structure** by means of PS rules and tree diagrams is as follows, exemplified by the sentence *My neighbour loves Chinese opera*. In the example, the symbol *S* stands for ‘sentence’, we use the same NP rule that we’ve discussed in this chapter, and we introduce a new VP rule, one possible VP rule among many:

- $S \rightarrow NP VP$
- $NP \rightarrow (Det) (Adj)^* N$
- $VP \rightarrow V NP$



Note that the rule expanding NP is used twice in the analysis of this sentence, in two different ways: one rewrites NP as Det N (*My neighbour*), the other as Adj N (*Chinese opera*). Incidentally, you may want to work out for yourself why the word *Chinese*, that can also be a noun, is analysed as an adjective in this context.

You will also notice that the two NPs in this sentence appear in different positions (before and after the verb), and are represented at two different hierarchical levels in the diagram. The relative position of phrasal constituents

within a sentence gives information about the **syntactic function** of the constituents. We discuss syntactic function in the next chapter.

7.5 Recursion

A rule of the form $\text{NP} \rightarrow (\text{Det}) (\text{Adj})^* \text{N}$ shows that one constituent, Adj, may be repeated. In theory, the number of repetitions is unlimited, because the rule simply states that repetition is possible, not the number of possible repetitions. In practice, the number of adjectives that does occur in a noun phrase is of course limited, large though it may be. Speakers eventually run out of breath, or of adjectives, or both. Examples would be:

Of all the sickening, disgusting, revolting, shocking, appalling, nauseating, atrocious, inexcusable, filthy, ~~stinky~~, ~~stinky~~, ..., things to say!

Of all the sickening, sickening, sickening, sickening, sickening, sickening, sickening, sickening, sickening, ..., things to say!

Constituents may also be repeated in different phrase types. For example, the structure of a phrase like *on a Sunday*, called a prepositional phrase (PP), can be represented as:

$\text{PP} \rightarrow \text{P NP}$

A noun phrase may, in turn, contain a PP. One example is *the cat with the funny tail*, which has the structure:

$\text{NP} \rightarrow \text{Det N PP}$

These two rules represent the fact that a PP may contain an NP, which in turn may contain a PP, and so on. They also represent the fact that an NP may contain another NP, and a PP another PP. The possibility of repetition of linguistic structures in this open-ended way is called **recursion**. PS rules represent the property of recursion by having the expanded constituents of one rule, those to the right of the arrow, appear on the left side of another rule.

Recall that in Chapter 1 we saw that one defining characteristic of human spoken language is its **creativity**, or open-endedness. We have now seen that our analyses represent this property at different levels. Just like a word may contain other words, for example in compounding, discussed in section 4.3.2, a phrase may also contain other phrases. Generalising, we say that a linguistic unit *X* may contain another *X*. Here is one example of an utterance containing phrasal recursion of PP (highlighted in italics):

I took a holiday *in the early weeks of the month of May at the cottage by the river near the bridge on ...*

Similarly, the sentence given as an example of the creative property of language in section 1.4.3, contains several sentences:

The little old lady who tried to carry the Golden Retriever disguised as her son into the 601 bus was told off by the commuter holding a fainting bald eagle by its left foot.

One sentence refers to the lady being told off by someone, another to the lady trying to do something, another to the lady carrying something, and so on. Even a long, complex sentence like this one can in turn be expanded through recursion, on both sides:

... that he told me that she thought that he said that the little old lady who tried to carry the Golden Retriever disguised as her son into the 601 bus was told off by the commuter holding a fainting bald eagle by its left foot and by the nurse who was tending to it but was struggling with the oxygen tent that she had brought along as part of her first-aid training and ...

We notice from this sentence that certain words appear to signal recursion, namely, the words *that* and *and*. Recursion may in fact include a **marker**, defined as a word, or sequence of words, that indicate a particular type of constituency. Recursion can be marked by means of a **conjunction**, a word class that was only briefly mentioned in section 3.4.1. We can now distinguish between two types of recursion, each associated with a type of conjunction, as follows.

7.5.1 Coordination

Coordination involves linking constituents of the same syntactic type by means of **coordinating conjunctions**, or *coordinators*. Another way of saying this is that coordinated constituents must be **sisters**, in a diagram representation, and of the same syntactic type as their mother. This property can be generalised by means of a coordination rule, given in notation form below, where *CoConj* stands for ‘coordinating conjunction’:

$$X \rightarrow X \text{ CoConj } X$$

Consider now this example:

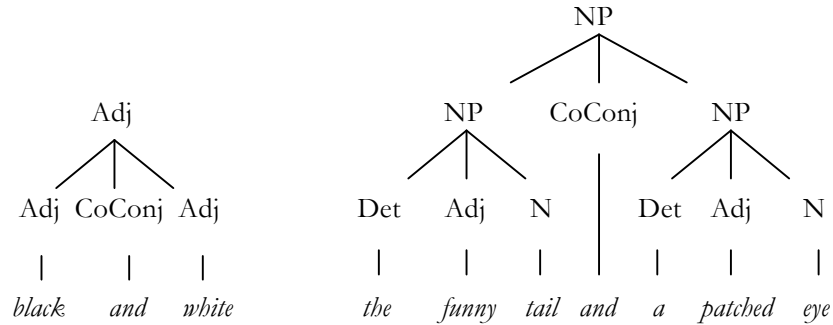
(7.16) *I fed the black and white cat with the funny tail and a patched eye.*

We notice that the same word *and* marks the recursion of two Adj (*black*, *white*) and of two NP (*the funny tail*, *a patched eye*), respectively. Given in rule notation, each recursion can be represented as follows:

Adj → Adj CoConj Adj

NP → NP CoConj NP

In tree diagram notation, the representation of each of these coordinations would be:



Activity 7.7

Consider the following sentence:

He played it well but too slowly.

1. Propose one syntactic label for the underlined constituent in the sentence.
2. Use one of the two constituency tests introduced in this chapter to explain your choice of label for this constituent.

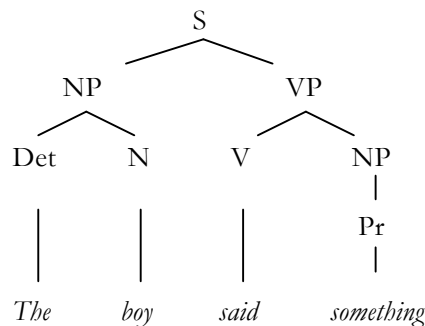
7.5.2 Subordination

Subordination differs from coordination in that recursion concerns constituents that stand in a hierarchical relationship, or **mother-to-daughter** relationship, rather than a sister relationship. Unlike coordination, the recursive constituents in subordination need not be of the same syntactic type. Typically, **subordinating conjunctions**, or *subordinators*, introduce constituents that are dependent on, or subordinated to, a higher constituent. For example:

(7.17) *The boy said that he dropped the cat.*

We observe that this sentence in fact contains two sentences, *The boy said something* and *He dropped the cat*, linked by the subordinator *that*. Traditionally, these two sentences are known as the *main clause* and *subordinate clause*, respectively. The word **clause** can thus be taken as referring to an instance of sentence recursion. Syntactically, there is no difference between a clause and a sentence. Just as words can be divided into simple (containing one morpheme) and complex words (containing more than one morpheme), so also sentences can be divided into **simple** (containing one clause) and **complex** sentences (containing more than one clause). Similarly, just as complex words can be classified into compounded and affixed words, so also complex sentences can be classified into coordinated and subordinated sentences.

A sentence like *The boy said something* has the following structure:



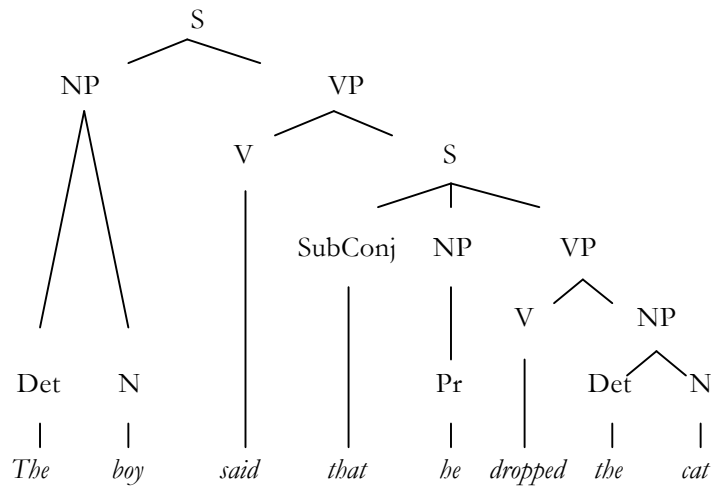
By **substitution**, the subordinate clause (*that he dropped the cat*) can replace the single word *something* in this sentence. The substitution includes the subordinator *that*, which is there to introduce the subordinate clause. As we saw in section 7.3.2, substitution allows us to conclude that the subordinate clause (*that*) *he dropped the cat* must occur in the same slot as the NP (*something*) following the verb *said*, in the diagram above. The PS-rule that rewrites the VP of the main clause in order to account for subordination is therefore:

$$\text{VP} \rightarrow \text{V S}$$

This rule, compared to the rule $\text{VP} \rightarrow \text{V NP}$ given in section 7.4.3, makes it clear that S and NP are taken as syntactically equivalent constituents inside the VP. We take the subordinator to be part of the subordinate clause, because it cannot move independently of the subordinate clause. Accordingly, our earlier rule expanding S needs to be reformulated as:

$$\text{S} \rightarrow (\text{SubConj}) \text{NP VP}$$

The parentheses indicate that the subordinator is optional: the sentence *The boy said he dropped the cat* is well-formed too. In diagram notation, the representation of subordination would be:



Making use of both forms of recursion, coordination and subordination, our original sentence (7.17) can in turn be expanded as shown below:

... that my cousin is sure that the boy said that he dropped the cat and its feeding bowl and ...

The utterances used in everyday exchanges are often of this complex type. Our analysis of this complexity by means of the single concept of **recursion** captures this fact in a satisfactory way.

Food for thought

“Grammar is the business of taking a language to pieces, to see how it works.”

David Crystal (1996). *Rediscover grammar*.
London: Longman, p. 6.

“Our meddling intellect
Mis-shapes the beautiful form of things
We murder to dissect.”

William Wordsworth (1798), ‘The tables turned’.

Further reading

Deterding, David H. and Poedjosoedarmo, Gloria R. (2001). Chapter 6. Phrases. In *The grammar of English. Morphology and syntax for English teachers in Southeast Asia*. Singapore: Prentice Hall, pp. 65-71.

Reference

Chomsky, Noam (1957). *Syntactic structures*. 's-Gravenhage: Mouton & Co.