

INTRODUCTION TO PHRASE STRUCTURE

WORD ORDER IN ENGLISH AND OTHER LANGUAGES

In English, word order within sentences is less flexible than it is in many other languages, or than it was in English 1,000 years ago. One reason for this is that English has lost most of its original Germanic system of inflections. This was a system of (1) suffixes on nouns and adjectives that reflected the gender, number, and case of every noun in a sentence and (2) suffixes on verbs that reflected past or present tense as well as the person and number of the subject noun. Without recourse to this full range of inflections to mark subjects (and objects of various kinds), English came to rely on a more fixed word order to distinguish subjects from objects. The basic underlying word order in an English sentence is subject-verb-object (S-V-O):

Example: Joe writes poetry.
S V O

This rather fixed word order operates in conjunction with prepositions, which help to indicate the semantic functions of certain objects that are not direct objects. For example, in the following sentence the preposition *with* signals that its object noun *Sarah* is in some sense the source of Joe's agreement:

Example: Joe agrees with Sarah.
S V Prep O

Thus we say that English is an S-V-O language, like French, Spanish, and many other languages. However, a major difference exists between English and French, on the one hand, and Spanish, on the other: both English and French require that a subject noun of some sort appear in all but certain imperative sentences, whereas Spanish does not have this requirement for sentences with pronominal subjects. For example:

I speak English.	Je parle français.	(Yo) hablo español.
	(I speak French.)	(I speak Spanish.)

In fact the most frequent version of the Spanish example omits the first person subject pronoun, *yo*. Spanish can delete pronominal subjects because it has a rich system of verb inflections that unambiguously indicate the person and number of the subject. If you have studied only languages like English, Spanish, and French, you might assume that all languages more or less follow S-V-O word order; in fact, several languages unrelated to English, Spanish, and French, such as Cantonese and colloquial Egyptian Arabic, are also S-V-O languages.¹

However, S-V-O is only one of three major orders for sentence constituents in the languages of the world, S-O-V and V-S-O being the two alternatives to S-V-O.² Some major languages that follow the S-O-V pattern are Japanese, Korean, Turkish, and Farsi (Persian). Some languages that use the V-S-O pattern are the classical versions of Semitic languages such as Hebrew and Arabic, and Celtic languages like Irish, Welsh, and Breton.

In addition to these sentence-level ordering differences, there also seem to be cross-linguistic differences in word order at the phrasal level depending on whether the object noun precedes or follows the verb (Jacobs, 1995:36 ff.). Jacobs points out that in languages like English, where the verb precedes the object, auxiliary verbs normally precede verbs, prepositions precede their objects, and relative clauses follow the nouns they modify. In contrast, in languages like Japanese and Korean, where objects precede verbs, auxiliary verbs normally follow main verbs (in the form of inflections), postpositions follow their objects, and relative clauses precede the nouns they modify. Such phrase-level ordering differences can also cause problems for learners; we discuss them further in the following chapters where relevant.

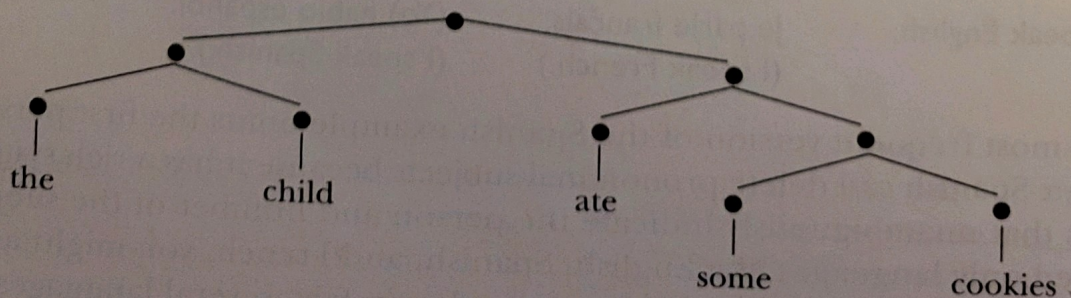
PHRASE STRUCTURE RULES

In this chapter and the next, we will introduce a set of phrase structure rules for English. These rules describe the sentence-level and sub-sentence-level structures of the language. We agree with Jacobs (1995:34 ff.) that phrase structure rules provide us with a parsing device to make explicit three important basic properties of sentence grammar: linearity, hierarchy, and categoriality. The property of linearity accounts for the fact that the words and morphemes of any English sentence need to be produced in some sort of sequence since they cannot all be produced at once. The basic S-V-O word order for English is an example of linearity. The property of rule hierarchy accounts for the fact that it is not sufficient to simply specify the words and morphemes of an English sentence and give their linear order; some words group together, and these groups in turn contribute to other groups and ultimately to a larger whole. Thus in the following sentence,

object noun phrase

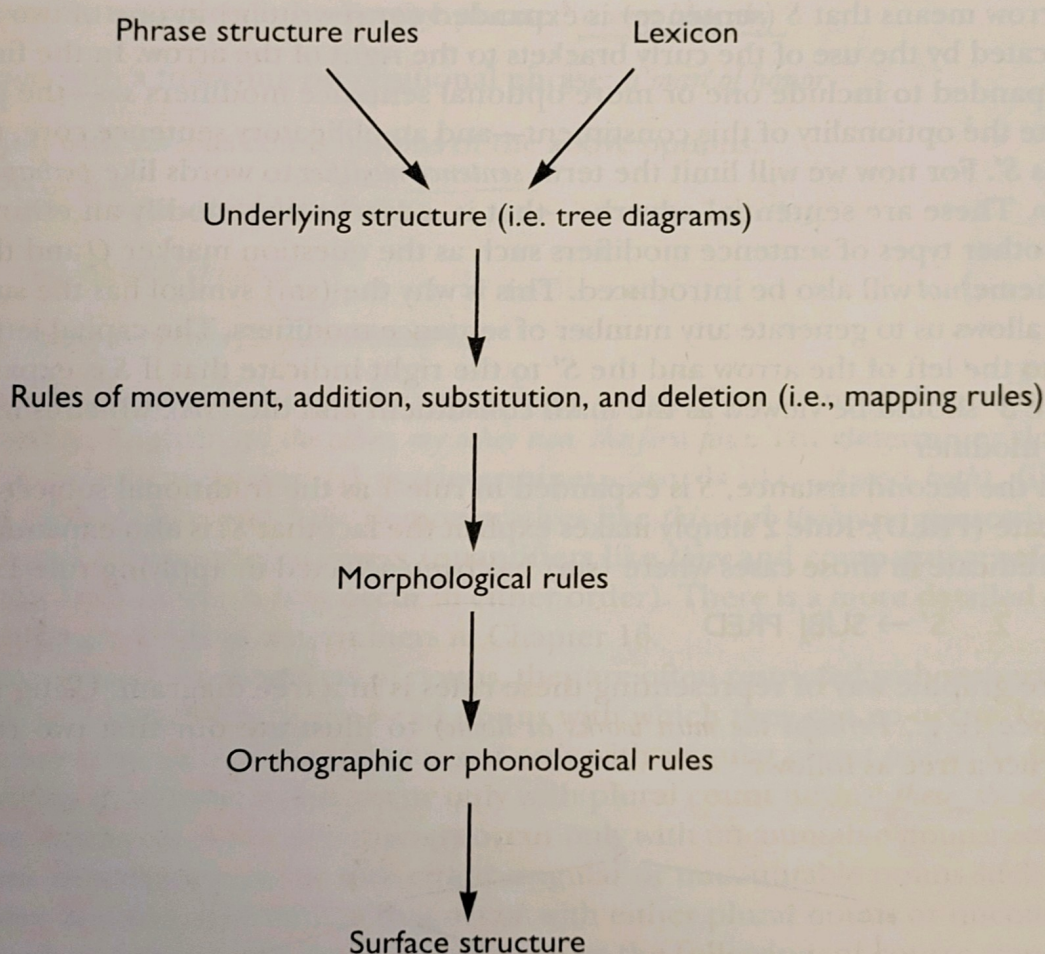
The child ate some cookies.

we can see that two words—*the* and *child*—function together as the subject noun phrase while the remaining words—*ate some cookies*—function together as the predicate. Within the predicate we have the verb *ate*, while the other two words, *some* and *cookies*, form the object noun phrase. Now we have something resembling the following in terms of the hierarchy of our sentence (the exact names of the nodes in the hierarchy will be specified later in the rules):



The remaining property, categoriality, accounts for the fact that some words and groups of words behave grammatically in very similar ways and in ways that are different from other words or groups of words. Words may be similar in their distribution (i.e., in the position they can fill in a sentence) or in the inflections they can take. For example, a countable noun, such as *child* or *cookie*, can take a plural inflection and can function as either a subject or object. A transitive verb, such as *eat*, *buy*, or *want*, co-occurs with both a subject and an object and can be inflected for past tense (*ate*, *bought*, *wanted*). Such nouns and verbs are lexical categories (traditionally referred to as parts of speech). However, there are also phrasal categories such as noun phrases, verb phrases, and prepositional phrases that we account for in our rules.

What is the larger lexico-grammatical system within which the phrase structure rules function?



The phrase structure rules and the lexicon produce the underlying structure, or tree diagrams. The underlying structures first undergo mapping rules of movement, addition, substitution, and deletion as may be needed, and then the resulting structures take morphological rules as needed. Finally, either orthographic or phonological rules, which we do not treat in any detail in this grammar and thus omit from our mappings, are needed to produce a written or spoken surface form.

Through a series of phrase-structure rules, we analyze in greater detail the basic structure of English sentences. The rules are arranged in a hierarchy so that the first rule tells us what the largest unit, the sentence, is composed of. The next rule takes one of the constituents of the sentence and further breaks it down to reveal its composition. In this chapter and the next, we provide a descriptive account of most basic English sentences.

These two chapters differ from those that follow in that phrase structure rules give us a description of language form only, but they are the starting point for our descriptions of the meaning and use of language forms in later chapters.

It is important that you be able to do phrase structure analysis if you wish to develop a thorough understanding of the basic structural units of English. Your students often tend to commit errors of a fundamental nature because they have not yet gained an appreciation for which components of a sentence or phrase in English are obligatory and in what order both obligatory and optional constituents must appear.

Let us now consider our first phrase structure rule:

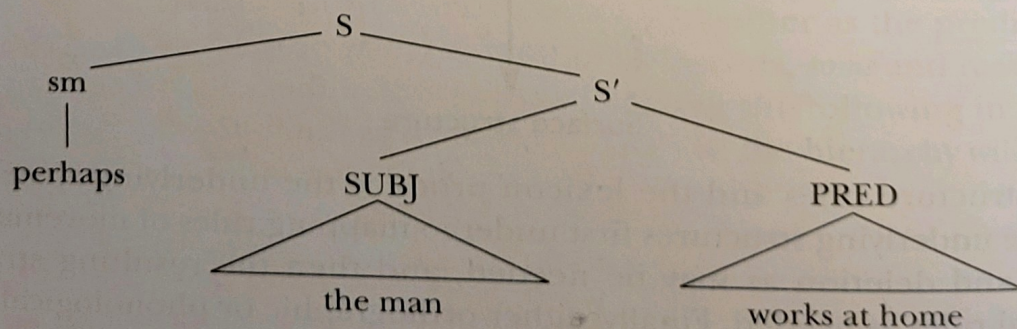
$$1. \quad S \rightarrow \left\{ \begin{array}{l} (sm)^n S' \\ \text{SUBJ PRED} \end{array} \right\}$$

The arrow means that S (sentence) is expanded (or rewritten) in one of two ways, which is indicated by the use of the curly brackets to the right of the arrow. In the first instance, S is expanded to include one or more optional sentence modifiers sm —the parentheses indicate the optionality of this constituent—and an obligatory sentence core, represented here as S' . For now we will limit the term *sentence modifier* to words like *perhaps*, *maybe*, *yes*, and *no*. These are sentential adverbs—that is, adverbs that modify an entire sentence. Later, other types of sentence modifiers such as the question marker Q and the negation morpheme *not* will also be introduced. This is why the (sm) symbol has the superscript n , which allows us to generate any number of sentence modifiers. The capital letters used for the S to the left of the arrow and the S' to the right indicate that if S is expanded as $(sm) S'$, the S' should be viewed as the main constituent and the (sm) , which is in lower case, as the modifier.

In the second instance, S is expanded in rule 1 as the traditional subject (SUBJ) and predicate (PRED). Rule 2 simply makes explicit the fact that S' is also expanded as subject and predicate in those cases where (sm) has been selected in applying rule 1:

$$2. \quad S' \rightarrow \text{SUBJ PRED}$$

A more graphic way of representing these rules is in a tree diagram. Using the example sentence (e.g., *Perhaps the man works at home*) to illustrate our first two rules, we can construct a tree as follows:



The triangles under SUBJ and PRED indicate that we have not yet completed our analysis of these constituents and must ultimately apply additional rules to complete the task.

THE INTERNAL STRUCTURE OF NOUN PHRASES

The third phrase structure rule rewrites SUBJ as NP (or noun phrase):

$$3. \quad \text{SUBJ} \rightarrow \text{NP}$$

The fourth rule rewrites NP in two quite different ways:

$$4. \quad \text{NP} \rightarrow \left\{ \begin{array}{l} (\text{det})^3 (\text{AP}) \text{N} (-\text{pl}) (\text{PrepP}) \\ \text{pro} \end{array} \right\}$$

In the second instance, NP can be rewritten as a pronoun: *I, you, he, she*, and so on. The first option is more complex in that it allows NP to be expanded in any number of ways. Minimally, it is expanded as an uninflected lexical noun such as *book, rice*, or *Nancy*, for example. Optionally, it can be expanded:

- as a noun with a plural inflection: *books, children*
- as a noun with up to three determiners: *all his other money*
- as a noun with a preceding adjective phrase:³ *a very blue sky*
- as a noun with a following prepositional phrase: *a man of honor*
- as a noun with various combinations of the above options:

the famous city of New York

all the little children

many very colorful Jack-o-lanterns

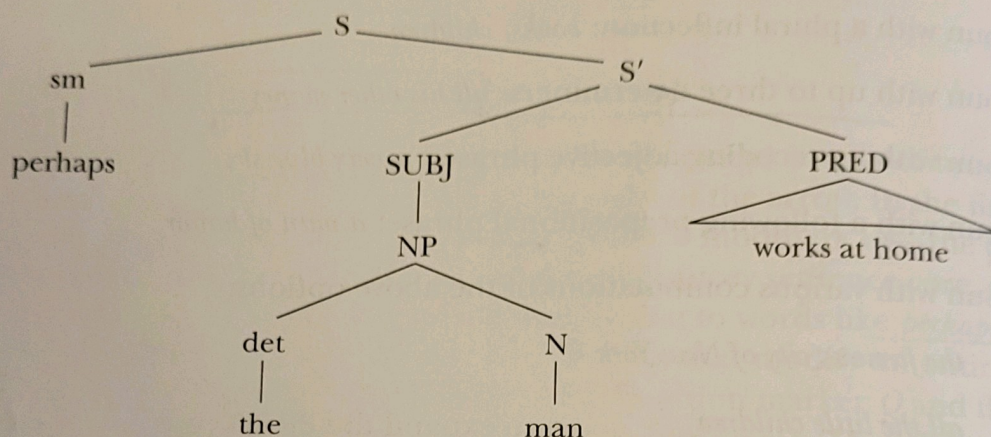
The determiner slot in rule 4 can take up to three words. This seems to be more or less the upper limit in English: *all the other, my other two, the first four*. The determiner slot itself consists of three subcategories: (i) predeterminers (words like *all* and *both*), (ii) core determiners (articles like *a* and *the*, demonstratives like *this* and *that*, and possessives like *my* and *his*⁴), and (iii) postdeterminers (quantifiers like *three* and comparative reference terms like *other*, both of which may occur in either order). There is a more detailed discussion of the different kinds of determiners in Chapter 16.

Since determiners are modifiers of nouns, they are often restricted with respect to the number and/or countability of the head nouns with which they can co-occur. In other words, there are some determiners that occur only with singular count nouns like *a, one, another* and many determiners that occur only with plural count nouns: *these, those, many, both, two, three*, and so on. A few determiners occur only with uncountable nouns: *much, (a) little*; and some determiners occur with either singular or uncountable nouns such as *this* and *that*. There are also determiners that occur with either plural nouns or uncountable nouns: *some, all, no, other*. Some determiners, such as the following, of course, can occur with any kind of common noun and thus are not restricted with regard to the number and countability of the head noun: *the, my, his*. As pointed out in Chapter 3, these agreement features are important information about determiners and nouns that should be included in their lexical entries.

The optional prepositional phrase in rule 4 accounts for those prepositional phrases that cannot have a predicate relationship with the head noun (e.g., *a man of honor, the city of Chicago, two pounds of sugar*, etc.). In other words, we cannot paraphrase such NP + PrepP combinations with an intervening *be* copula: **a man is of honor*; **the city is of Chicago*. This contrasts with those prepositional phrases that are semantically predicative, such as *the flowers in the vase* (= the flowers are in the vase), *the books on the table* (= the books are on the table), which have another source.

Noun phrases function in one of three ways in English: as subjects, as objects, and as predicates. Rule 3 accounts only for subject NPs. In the next chapter, we clarify this three-way distinction by showing that where the NP is generated in the sentence determines its grammatical function as a subject, object, or predicate.

Let us now redraw the tree diagram for our example sentence (*Perhaps the man works at home*) using rules 1 through 4 to see the greater specificity we can provide for the subject NP:



Rule 5 allows us to expand any optional adjective phrase (AP) that we may have selected as part of our expansion of NP in rule 4:

$$5. \text{ AP} \rightarrow (\text{intens})^n \text{ ADJ}^n (\text{PrepP})$$

The term *intens* stands for the optional but potentially multiple intensifiers that can precede an adjective to specify the degree or extent to which the adjective applies. Sometimes the same intensifier is repeated, which is referred to as reduplication, and sometimes different intensifiers are selected:

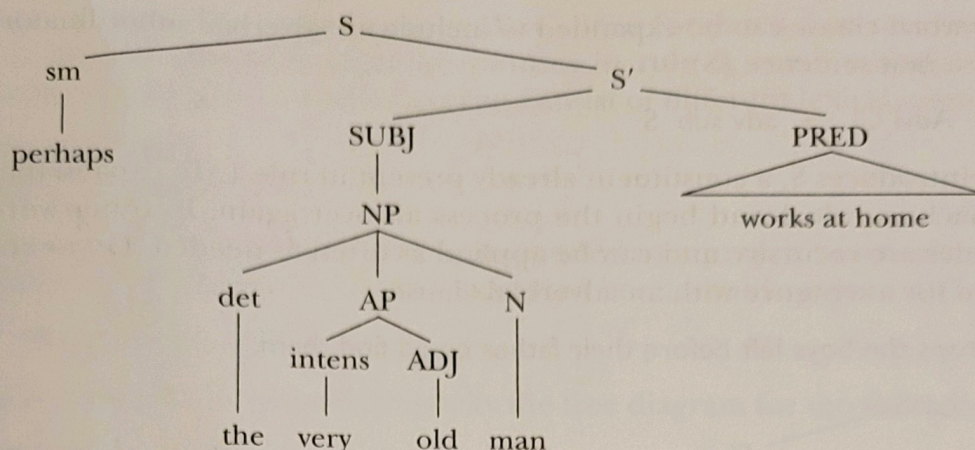
very,	very	interesting	news		really	very	nice	clothes
intens	intens	ADJ	N		intens	intens	ADJ	N

Rule 5 also indicates that multiple descriptive adjectives can occur before head nouns (e.g., the *big old yellow* bus). The ordering of these adjectives is discussed in some detail in Chapter 20.

The optional prepositional phrase in rule 5 occurs most often with adjective phrases generated in predicate position—a structure we discuss in the following chapter; however, this type of expansion does occasionally occur before the head noun in noun phrases and is usually represented orthographically as a hyphenated complex adjective when it does occur:

My	good-for-nothing	cousin
det	ADJ PrepP	N

Let us now expand our example sentence to *Perhaps the very old man works at home* in order to see how the addition of rule 5 affects our tree diagram:



Rule 6 simply expands prepositional phrases as prepositions followed by noun phrases:

6. $\text{PrepP} \rightarrow \text{Prep NP}$

Since NP (noun phrase) has already been expanded in rule 4, we would go back and reapply our earlier rule for NP expansion whenever we have a prepositional phrase.

With the addition of rule 7, we begin to expand the PRED (predicate) constituent:

7. $\text{PRED} \rightarrow \text{AUX VP (AdvI)}^n$

This means that the predicate of any English sentence obligatorily consists of an auxiliary constituent (AUX) followed by a verb phrase (VP). In addition, any number of optional adverbials may occur in sentence-final position. We leave the discussion of the auxiliary and the verb phrase for the following chapter and conclude this chapter by considering the types of optional adverbials we can have in sentence-final position in English.

THE INTERNAL STRUCTURE OF ADVERBIALS

Rule 8 provides us with three syntactic possibilities for each sentence-final adverbial generated by rule 7:

8. $\text{AdvI} \rightarrow \left\{ \begin{array}{l} \text{AdvI CL} \\ \text{AdvI P} \\ \text{PrepP} \end{array} \right\}$

An example of each structural possibility follows:

AdvI CL: The boys left **before their father could find them**.

AdvI P: The boys work **very quickly**.

PrepP: The boys eat lunch **in the city**.

Remember that the curly brackets indicate that for each adverbial generated, one, but only one, of the three choices must be selected—an adverbial clause (AdvI CL); an adverbial phrase (AdvI P); or a prepositional phrase (PrepP).

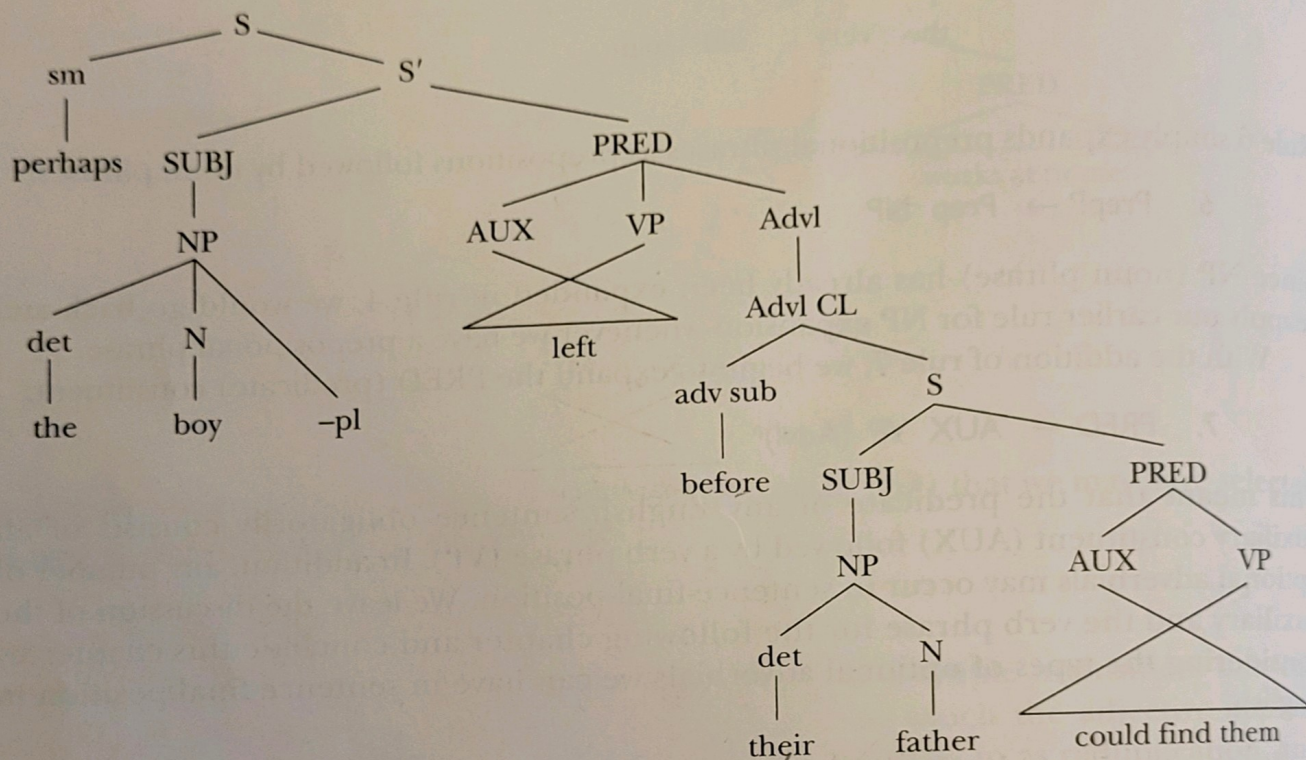


An adverbial clause can be expanded to include an adverbial subordinator (adv sub) followed by a new sentence (S):

9. Advl CL $\rightarrow$ adv sub S

This rule reintroduces S, a constituent already present in rule 1. To expand the new S, we would go back to rule 1 and begin the process all over again. In other words, phrase structure rules are recursive and can be applied as often as needed. Let us consider the tree diagram for a sentence with an adverbial clause:

Perhaps the boys left before their father could find them.

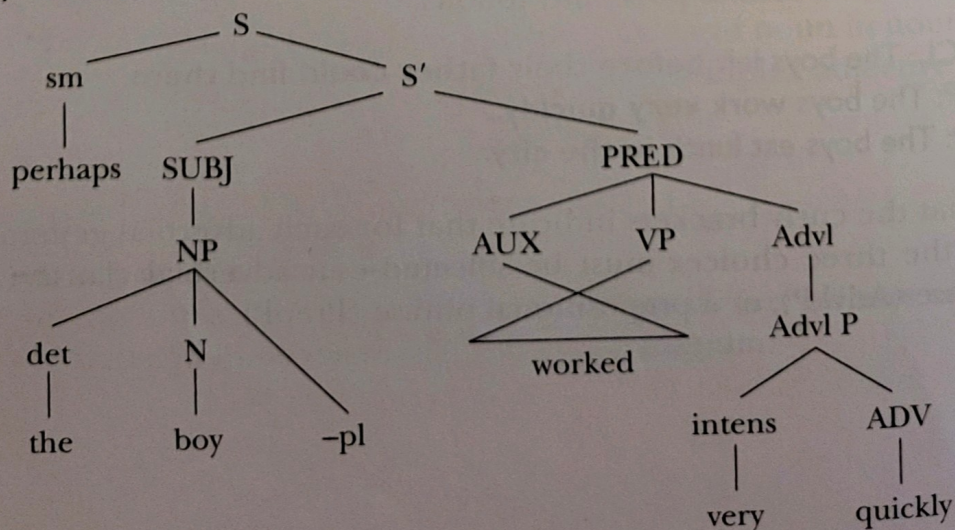


Another possible expansion of the adverbial in rule 8 is an adverbial phrase (Advl P), which is rewritten as follows:

10. Advl P $\rightarrow$ (intens)ⁿ ADV

This rule means that an adverbial phrase contains an obligatory adverb, ADV, optionally preceded by one or more intensifiers, *intens*. An intensifier occurs not only before adjectives—as you saw earlier in rule 5—but also before adverbs. The following sentence and tree diagram illustrate a case where the optional intensifier has been selected to modify an adverb:

Perhaps the boys worked very quickly.



The superscript *n* after the optional intensifier allows for more than one intensifier to occur. As is also the case with adjective phrases in rule 5, some intensifiers may be repeated, while other series of intensifiers can consist of different lexical items:

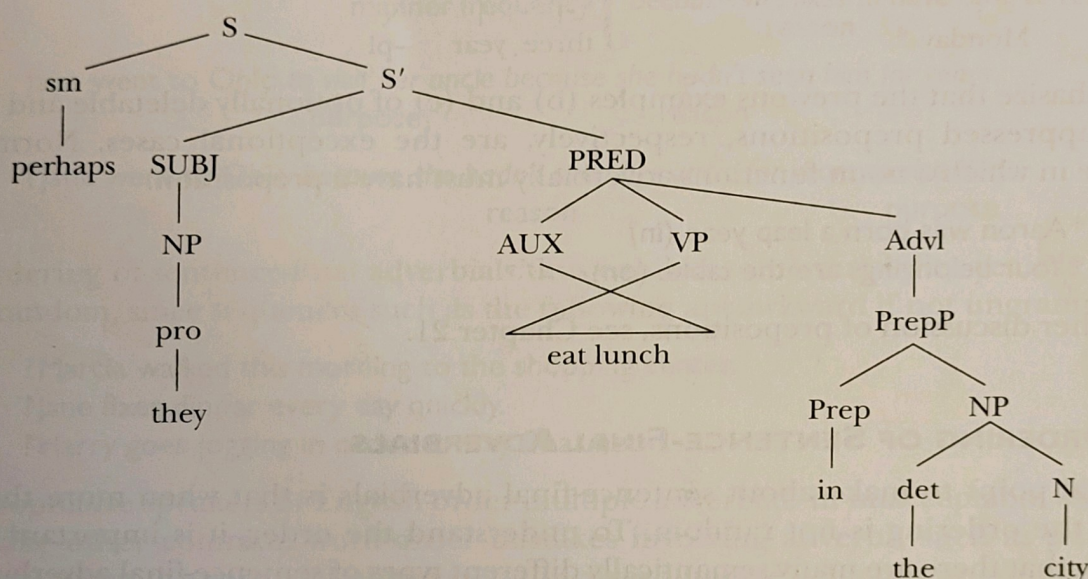
very, very quickly
really quite eagerly

Finally, an optional adverbial may also be expanded as a prepositional phrase. Rule 6, which was introduced earlier and which is repeated here, would apply in such a case:

6. PrepP $\rightarrow$ Prep NP

We are now in a position to more fully specify the tree diagram for the following sentence:

Perhaps they eat lunch in the city.



STRUCTURAL VARIATION IN PREPOSITIONAL PHRASES

Note that in sentence-final adverbials, prepositions are used to give adverbial function to nouns with temporal or locative meaning. As a general rule, nouns do not function on their own as adverbs in English. For example, take the following sentences, where the nouns *Monday* and *home* become adverbial with the help of the preceding prepositions:

Max will stay until Monday.
Prep N

Mr. Green works *at home*.
Prep N

However, in some sentences, such as the following, prepositions are optionally deletable:

I've lived in New York (for) many years. I'll get the wine (on) Thursday.

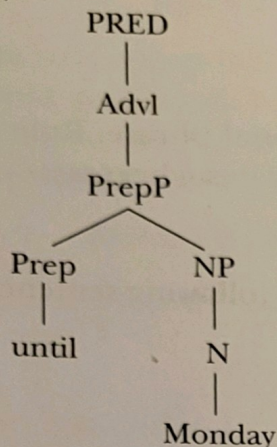
And in some sentences, for a variety of reasons, prepositions simply do not occur in English before certain nouns that function adverbially:

Jack went home. He will return tomorrow.

To preserve the integrity of our phrase structure rules and to show that the adverbials in all three types of sentences above are very similar in their semantic function, we use similar underlying representations for all of them to acknowledge that in some environments prepositions are optional and in others they do not occur:

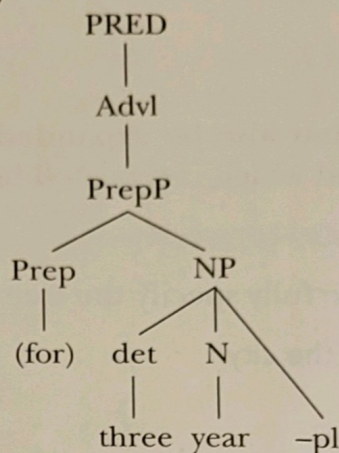
(Max will stay)
until Monday

(a)



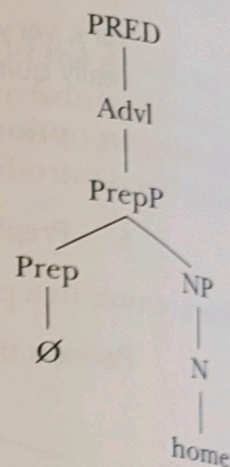
(I've lived in NY)
(for) three years.

(b)



(Jack went)
Ø home.

(c)



We emphasize that the previous examples (b) and (c) of optionally deletable and obligatorily suppressed prepositions, respectively, are the exceptional cases. Normally, a sentence in which a noun functions adverbially must have a preposition:

*Aaron was born a leap year. (in)

*Your belongings are the table. (on)

For further discussion of prepositions, see Chapter 21.

THE ORDERING OF SENTENCE-FINAL ADVERBIALS

The final point to make about sentence-final adverbials is that when more than one occurs, the ordering is not random. To understand the order, it is important to first establish that there are many semantically different types of sentence-final adverbials (the following list is not exhaustive):

manner adverbial: John runs *quickly*.

direction adverbial: John ran *to the store*.

position adverbial: John is *at home*.

time adverbial: Judy eats lunch *at noon*.

frequency adverbial: Judy eats lunch *every day*.

purpose adverbial: Harry works *to earn money*.

reason adverbial: Harry works *because he has to pay bills*.

Some generalizations seem to apply most of the time when more than one adverbial occurs:

Re: Adverbials of Manner, Direction, and Position:

1. Direction and manner have variable order with respect to each other.
2. Manner and position have variable order with respect to each other.
3. Direction tends to precede position, and they tend to be adjacent.

Example:

He ran {
 quickly around the track at the park. [manner → direction → position]
 around the track at the park quickly. [direction → position → manner]
 ?around the track quickly at the park. [direction → manner → position] }

one order is acceptable, both orders should be given as answers.) For the purposes of this exercise, only postverbal ordering of the type illustrated in the example in Step 2 should be discussed. Later (in Chapters 25, 27, and 30) we show that some adverbials occur sentence-initially for information management or emphasis (e.g., Because of the bad weather we stayed at home). A few examples of sentences to use for the handout might be:

- a. Mary studies daily there.
- b. The prime minister visited three times last week the United Nations.
- c. She ate lunch because she was hungry quickly in the cafeteria.

Step 5: When the groups are finished, students in each group give their answers, and the class or the teacher corrects where necessary.

3. Form. Another grammatical point introduced in this chapter is the agreement required between certain determiners and the number of the noun that follows them. Thus, the sequences below on the left are acceptable, while the sequences on the right are not:

this rod	*these rod
these rods	*this rods
that rod	*those rod
those rods	*that rods

The Cuisenaire rods of various lengths and colors, a tool used in the Silent Way approach (see Gattegno, 1976), provide an excellent device for teaching these agreement patterns once all the colors have been learned.

Step 1: *Teacher* (holding the rod—one in one hand, two in the other):

This rod is yellow. These (rods) are red.

Students (holding the rods—practice using all colors until the agreement pattern is established):

This rod is blue. These (rods) are black. This rod is white. These (rods) are orange.

Step 2: *Teacher* (holding one rod and having placed another rod of another color off at a distance):

This rod is light green. That $\left\{ \begin{array}{l} \text{rod} \\ \text{one} \end{array} \right\}$ is brown.

Students manipulate rods of various colors and practice the agreement pattern until it is established.

Step 3: *Teacher* (holding two rods of one color and having placed two others of another color off at a distance):

These rods are red. Those (rods) are yellow.

Students manipulate rods of various colors and practice the pattern until it is established.

Step 4: *Teacher* stands at a distance from the students to elicit the use of distinct demonstratives based on proximity. Teacher is holding one rod and one student is holding another.

Teacher: What color is this rod?

Student: It's yellow.

Teacher: What color is that rod?

Student: It's red.

Students manipulate rods and practice with each other until the pattern is established. The same thing can then be done for the plural (*Teacher:* What color are these rods? *Student:* They're black) followed by extended student practice in pairs or small groups.

Step 5: Students ask teacher questions while they and teacher hold rods of various quantities and colors.

Student: What color is this rod?

Teacher: It's dark green.

Student: What color are those rods?

Teacher: They're brown.

Step 6: Students manipulate rods and structures (numbers and distance) in any combination or sequence they wish and communicate with each other in pairs or small groups using these patterns. Teacher merely supervises at this stage.

EXERCISES

(*Note:* Since we feel it is often more important for you to provide your students with good examples than with verbal definitions, we ask you to do exercises like the first one below throughout the text.)

Test your knowledge of the structures introduced.

1. Provide an original example sentence illustrating each of the following concepts. Underline the pertinent word(s) in your example:

a. noun phrase	h. sentence modifier
b. adverbial of reason	i. adverbial clause of time
c. adverbial of frequency	j. intensifier
d. adverbial of manner	k. prepositional phrase
e. adverbial of direction	l. deletable preposition
f. subject	m. adjective phrase
g. predicate	
2. Draw partially specified tree diagrams for the following sentences using the rules given in this chapter:

a. The girls talked after the teachers left.	d. Fortunately his two brothers work very quietly.
b. Surely John exercises on Sunday.	e. Perhaps Mary studies Latin in the library.
c. The little baby cried because she was hungry.	