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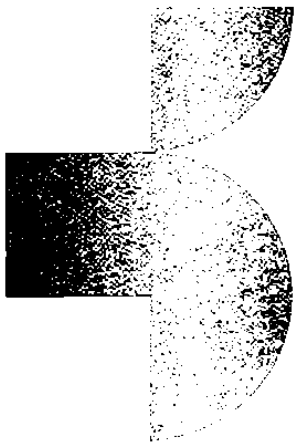

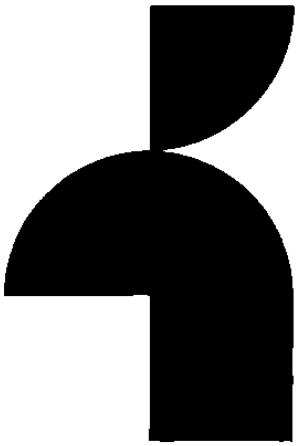

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CONTEMPORARY LINGUISTICS

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AN INTRODUCTION

SEVENTH EDITION

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LANGUAGE MATTERS A Poem That Syntacticians Love

Thanks to distributional and inflectional clues, it's often possible to identify a word's category without knowing its meaning. The poem "Jabberwocky" by Lewis Carroll illustrates this point in a particularly brilliant way—it's interpretable precisely because readers are able to figure out that *gyre* is a verb (note the auxiliary verb to its left), that *borogoves* is a noun (it's preceded by a determiner and takes the plural ending), and so on.

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe;
All mimsy were the borogoves,
And the mome raths outgrabe.

"Beware the Jabberwock, my son!
The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
The frumious Bandersnatch!"

1.2 Phrase Structure

Sentences are not formed by simply stringing words together like beads on a necklace. Rather, they have a hierarchical design in which words are grouped together into ever larger structural units called **phrases**—*the door, to the door, go to the door,* and so on.

The Blueprint

As a first approximation, it is often suggested that the internal structure of phrases follows the design shown in Figure 5.2, which is called the **X' Schema** (X' is pronounced 'X-bar').

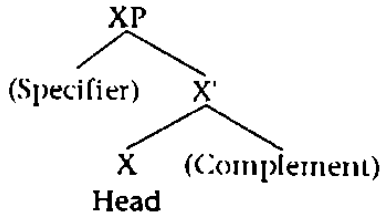


Figure 5.2 The X' Schema—a template for phrase structure

Heads

The **head** is the obligatory nucleus around which a phrase is built. For now we will focus on four categories that can function as the head of a phrase—nouns (N), verbs (V), adjectives (A), and prepositions (P).

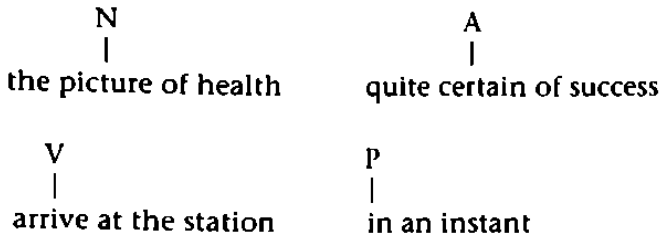


Figure 5.3 Some examples of heads

Specifiers

Specifiers have no single semantic function. Structurally, though, they are alike in that they occur at the edge of a phrase. As illustrated in Table 5.4, the specifier position in English is at the beginning of a phrase.

Table 5.4 Some specifiers

Head	*Specifier*	*Examples*
N	Determiner (Det) *the, a, some, this, those . . .*	***a** picture, **the** map, **those** people, **some** guests*
V	Preverbal adverb (Adv) *never, perhaps, often, always, almost . . .*	***never** quit, **perhaps** go, **often** failed, **almost** forgot*
A or P	Degree word (Deg) *very, quite, more, almost . . .*	***very** smart, **quite** rich, **almost** in*

Note: *Almost* can be either an adverb or a degree word, depending on whether it is followed by a V or by an A or a P.

Complements

Complements, which are always phrases, provide information about entities and locations implied by the meaning of the head. For example, the meaning of *protect* implies something that is protected (*protect the environment*); the meaning of *in* implies a location (*in the house*); the meaning of *map* implies an area that is depicted, as in *a map of Oklahoma*; and so on.

As illustrated in Figure 5.4, the X' Schema ensures that when a phrase includes both a specifier and a complement in addition to the head, the specifier will occur higher than the complement. To simplify here, we don't show the internal structure of the complement phrases.

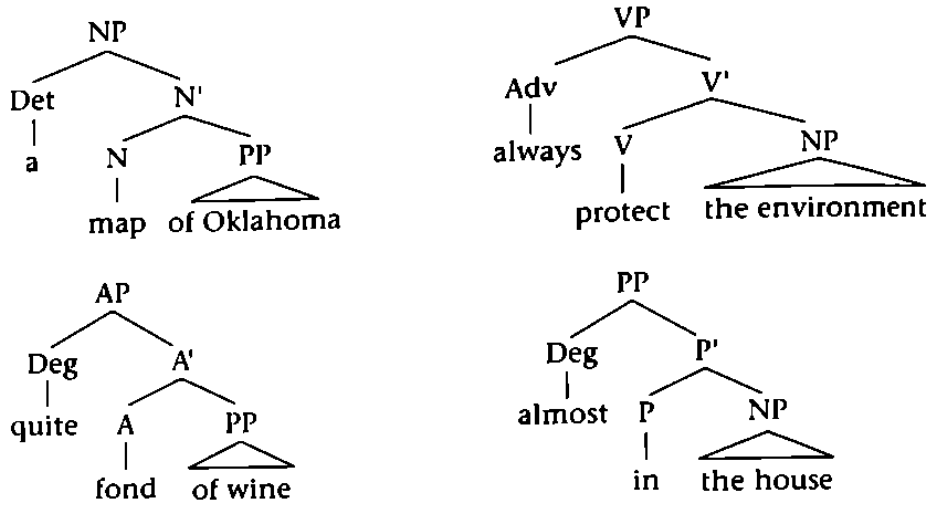


Figure 5.4 Phrases containing a head, a specifier, and a complement

However, it is common (and practical!) to represent tree structures in an abbreviated way, without the intermediate X', when there is no specifier and/or complement, as shown in Figures 5.5 and 5.6.

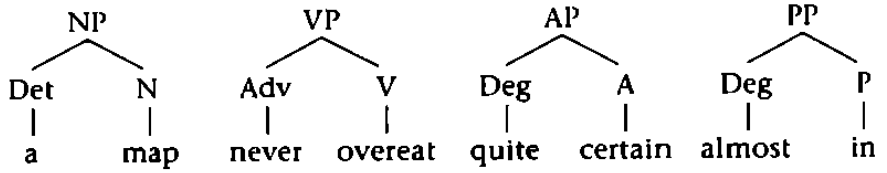


Figure 5.5 Phrases consisting of just a specifier and a head

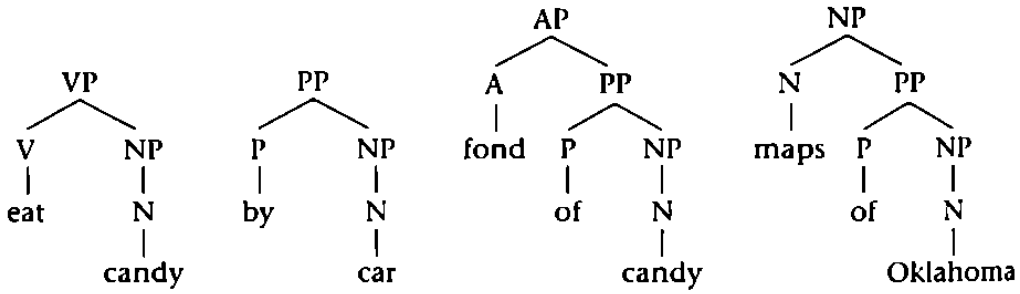


Figure 5.6 Phrases consisting of just a head and a complement

Only when the phrase contains both a specifier and a complement in addition to the head is it necessary to make use of the intermediate X' level.

In the interests of being able to consider the largest number of patterns possible, we will adopt two common additional assumptions. First, we will treat both names (*Mary, Bob*, etc.) and *pronouns* (*she, he, him, her*, etc.) as instances of the N category that do not normally take either specifiers or complements as shown in Figure 5.7.

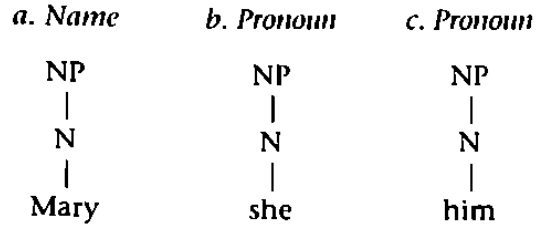


Figure 5.7 Names and pronouns

Second, we will assume that possessives (e.g., *the child's, Mary's, his,* etc.) are NPs that occur in the specifier position of a larger NP as shown in Figure 5.8.

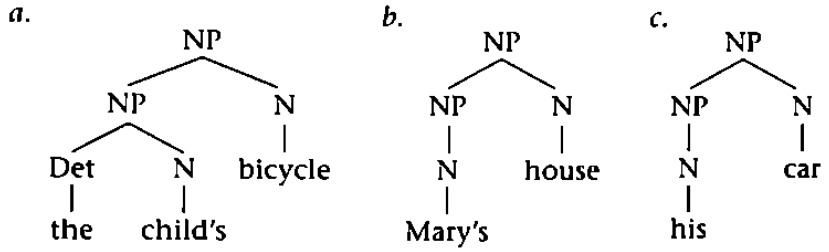


Figure 5.8 Possessives: NPs inside NPs

An appendix at the end of the chapter offers detailed instructions on how to draw tree structures; exercises 3 and 4 provide an opportunity to practice.

The Merge Operation

We can now formulate the following operation for sentence building.

7) *Merge*
   Combine words in a manner compatible with the X' Schema.

As illustrated in Figure 5.9, the Merge operation is able to take a determiner such as *the* and combine it with the N *house* to form the NP *the house*. It is then able to take a preposition such as *in* and combine it with the NP *the house* to form the PP *in the house*.

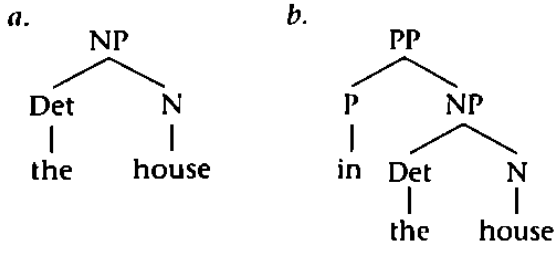
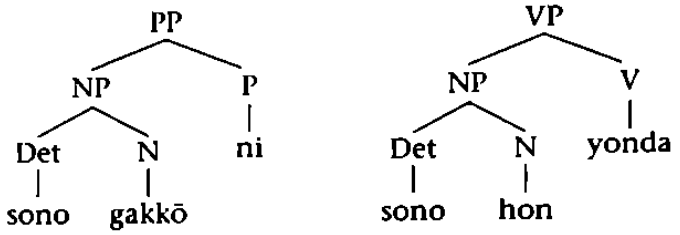


Figure 5.9 The Merge operation in action

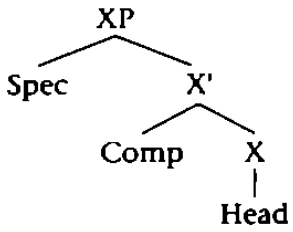
LANGUAGE MATTERS The Mirror Image

Many languages have a head-complement order that is the mirror image of the one found in English—the complement occurs before the head rather than after it. (In both types of language, the specifier appears before the head.) Japanese works that way: the V occurs at the end of the VP, the P at the end of the PP, and so on.

[sono gakkō]-ni	[sono hon] yonda
that school at	that book read (+Pst)
'at that school'	'read that book'



The version of the X' Schema needed for these languages looks like this—with the head after its complement:



About half of the world's languages use this version of the X' Schema.

Further application of the Merge operation to additional words can lead to the formation of phrases and sentences of unlimited complexity.

1.3 Sentences

The largest unit of syntactic analysis is the sentence. Sentences typically consist of an NP (often called "the subject") and a VP that are linked together by an abstract category dubbed T (for tense). As illustrated in Figure 5.10, T serves as the head of the sentence, taking the VP as its complement and the subject NP as its specifier (+Pst = past, –Pst = nonpast). What we think of as a sentence or a sentential phrase, then, is really a TP.

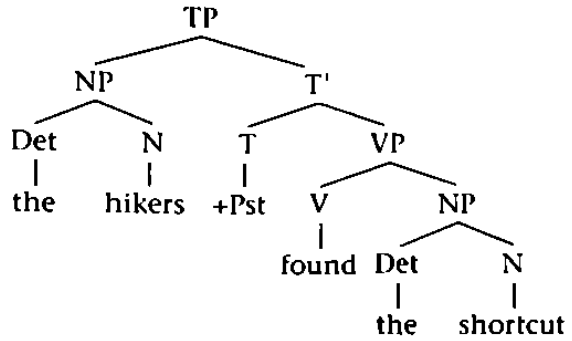


Figure 5.10 The structure of a typical sentence

The tense feature in T must be compatible with the form of the verb. So a sentence like the one above, whose head contains the feature +Pst, must contain a verb marked for the past tense (hence, *found* rather than *find*).

Although somewhat abstract, this analysis has the advantage of giving sentences the same internal structure as other phrases (with a specifier, a head, and a complement), making them consistent with the X' Schema. Moreover, because T, like all heads, is obligatory, we also account for the fact that all sentences have tense (i.e., they are all past or nonpast).

The TP structure also provides us with a natural place to locate **modal auxiliaries** such as *can*, *may*, *will*, and *must*, most of which are inherently nonpast, as shown by their incompatibility with time adverbs such as *yesterday*: **He can/will/must work yesterday*. (The modals *could* and *would* can be either past or nonpast: *He could swim when he was three/He could swim tomorrow*.) Although traditionally called auxiliary verbs, modals are treated as instances of the T category in contemporary syntactic analysis, as depicted in Figure 5.11. (Because modals have inherent tense, we will assume that it is not necessary to have the feature ±Pst in the T position when they are used.)

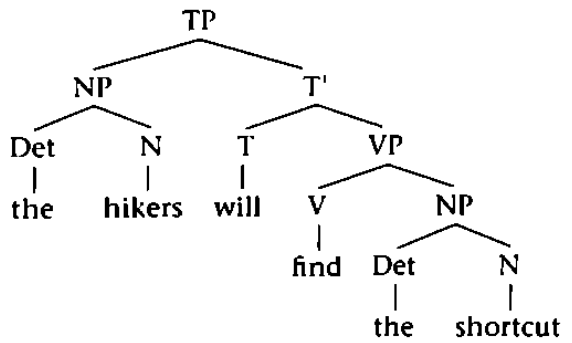


Figure 5.11 A sentence with an auxiliary verb in the T position

This structure neatly accounts not only for the fact that modals express an inherent tense but also for their positioning between the subject (the specifier) and the VP (the complement)—in the position reserved for the head of the sentence.

In fact, there are two types of auxiliary verbs, which differ in crucial ways. The modal auxiliaries are: *will, would, can, could, shall, should, may, must, might*. Because of their inherent tense, only modals are treated as instances of the T category. The **nonmodal auxiliaries** are *be, have,* and *do*. Unlike the modals, which are not inflected for tense or agreement, the nonmodal auxiliary verbs are marked for tense and agreement: *am-is-was; are-were; has-have-had; does-do-did*. When both types of auxiliaries appear in the same sentence, the modal always comes first, as in *They should have gone* or *They may be going*. We will consider the nonmodal auxiliaries further in Section 4.1.

The appendix at the end of the chapter outlines a procedure that will help you assign the right structure to sentences. Exercise 5 provides an opportunity to practice this procedure.

1.4 Tests for Phrase Structure

How can linguists be sure that they have grouped words together into phrases in the right way? The existence of the syntactic units, or **constituents**, found in tree structures can be independently verified with the help of special tests, although it must be noted that not every test works for every constituent. Consider, for instance, the tree structure that the X' Schema requires for the sentence *The children will stop at the corner* as shown in Figure 5.12.

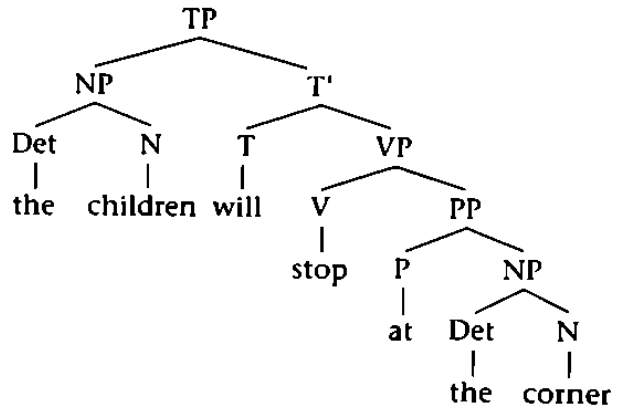


Figure 5.12 The tree structure for *The children will stop at the corner*

The Substitution Test

One piece of evidence for syntactic units comes from the fact that they can often be replaced by an element such as *they, she, he, it, do so,* and so on. (This is called a **substitution test**.)

As illustrated in *8, the children* can be replaced by *they*, and *stop at the corner* can be replaced by *do so*—confirming that each is a syntactic unit, just as the tree structure shows by grouping the component parts together under a phrasal label such as NP, VP, and so on.

8) [$_{NP}$ The children] will [$_{VP}$ stop at the corner]. *They* always *do so*.
(*they = the children; do so = stop at the corner*)

A substitution test also confirms that *at the corner* is a unit, as it can be replaced by a single word in a sentence such as *9*.

9) The children stopped [$_{PP}$ at the corner] and we stopped *there* too.
(*there = at the corner*)

Elements that do not form a constituent cannot be replaced in this way. Thus, there is no word in English that we can use to replace *children stopped*, for example, or *at the*.

The Movement Test

A second indication that *at the corner* forms a constituent in Figure 5.12 is that it can be moved as a single unit to a different position within the sentence. (This is called a **movement test**.) In *10*, for instance, *at the corner* can be moved from a position after the verb to the beginning of the sentence.

10) They stopped [$_{PP}$ at the corner]. → [$_{PP}$ At the corner], they stopped.

Of course, *at the*, which is not a syntactic unit, cannot be fronted in this manner (**At the, they stopped corner*). Note that the movement test often works better for PP than for other phrases.

The Coordination Test

Finally, we can conclude that a group of words forms a constituent if it can be joined to another group of words by a conjunction such as *and*, *or*, or *but*. (This is known as the **coordination test** since patterns built around a conjunction are called **coordinate structures**.) The sentence in *11* illustrates how coordination can be used to help establish that *stop at the corner* is a constituent.

11) The children will [$_{VP}$ stop at the corner] *and* [$_{VP}$ look both ways].

2 Complement Options

How can we be sure that individual words will occur with a complement of the right type in the syntactic structures that we have been building? Information about the complements permitted by a particular head is included in that head's entry in a speaker's lexicon. For instance, the lexicon for English includes an entry for *devour* that indicates that it requires an NP complement.

12) a. *devour* with an NP complement:
The child devoured [$_{NP}$ the sandwich].

b. *devour* without an NP complement:
*The child devoured.

The term **subcategorization** is used to refer to information about a word's complement options, such as the fact the verb *devour* belongs to a verb subcategory that requires an NP complement.

2.1 Complement Options for Verbs

Table 5.5 illustrates some of the more common complement options for verbs in English. The subscripted prepositions indicate subtypes of PP complements, where this is relevant. *Loc* stands for any preposition expressing a location (such as *near, on,* and *under*).

Table 5.5 Some examples of verb complements

Complement option	*Sample heads*	*Example*
Ø	vanish, arrive, die	The rabbit vanished.
NP	devour, cut, prove	The professor proved [$_{NP}$ *the theorem*].
AP	be, become	The man became [$_{AP}$ *very angry*].
PP_{to}	dash, talk, refer	The dog dashed [$_{PP}$ *to the door*].
NP NP	tell, hand, give	We handed [$_{NP}$ *the man*] [$_{NP}$ *a map*].
NP PP_{to}	hand, give, send	She gave [$_{NP}$ *a diploma*] [$_{PP}$ *to the student*].
NP PP_{for}	buy, cook, reserve	We bought [$_{NP}$ *a hat*] [$_{PP}$ *for Andy*].
NP PP_{loc}	put, place, stand	Chris put [$_{NP}$ *the muffler*] [$_{PP}$ *on the car*].
PP_{to} PP_{about}	talk, speak	I talked [$_{PP}$ *to a doctor*] [$_{PP}$ *about Sue*].
NP PP_{for} PP_{with}	open, fix	We opened [$_{NP}$ *the door*] [$_{PP}$ *for Andy*] [$_{PP}$ *with a crowbar*].

The verbs in the first line of Table 5.5 (*vanish, arrive,* and *die*) don't take a complement, those in the second line take an NP complement, and so on.

When a verb's complement options include an NP, as in the case of *devour, give, buy,* and so on, it is said to be **transitive**, and its NP complement is often referred to as its **direct object**. Verbs like *vanish, arrive,* and *dash* that don't have an NP complement are called **intransitive**.

A word can belong to more than one subcategory. The verb *eat*, for example, can occur either with or without an NP complement and therefore belongs to both of the first two subcategories in Table 5.5.

13) After getting home, they ate (a snack).

Of course, not all verbs exhibit this flexibility. As we have already seen, *devour*—although similar in meaning to *eat*—requires an NP complement and therefore belongs only to the second subcategory in our table.

As the examples in Table 5.5 also show, some heads can take more than one complement. The verb *put* is a case in point, since it requires both an NP complement and a PP complement (or a locative adverb such as *there*).

14) a. *put* with an NP complement and a PP complement:
The librarian put [$_{NP}$ the book] [$_{PP}$ on the shelf].

b. *put* without an NP complement:
*The librarian put [$_{PP}$ on the shelf].

c. *put* without a PP complement:
*The librarian put [$_{NP}$ the book].

The VP *put the book on the shelf* has the structure in Figure 5.13, in which the VP consists of the head *put* and two complements—the NP *the book* and the PP *on the shelf*.

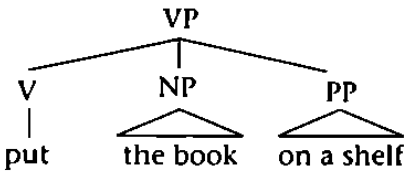


Figure 5.13 A verb with two complements

2.2 Complement Options for Other Categories

Various complement options are also available for Ns, As, and Ps. Tables 5.6, 5.7, and 5.8 provide examples of just some of the possibilities.

Table 5.6 Some examples of noun complements

Complement option	*Sample heads*	*Example*
Ø	car, boy, electricity	the car
PP_{of}	memory, failure, death	the memory [$_{PP}$ *of a friend*]
PP_{of} PP_{to}	presentation, description, donation	the presentation [$_{PP}$ *of a medal*] [$_{PP}$ *to the winner*]
PP_{with} PP_{about}	argument, discussion, conversation	an argument [$_{PP}$ *with Stella*] [$_{PP}$ *about politics*]

Table 5.7 Some examples of adjective complements

Complement option	*Sample heads*	*Example*
Ø	tall, green, smart	very tall
PP_{about}	curious, glad, angry	curious [$_{PP}$ *about China*]
PP_{to}	apparent, obvious	obvious [$_{PP}$ *to the student*]
PP_{of}	fond, full, sick	fond [$_{PP}$ *of chocolate*]

Table 5.8 Some examples of preposition complements

Complement option	*Sample heads*	*Example*
Ø	near, away, down	(he got) down
NP	in, on, by, near	in [$_{NP}$ *the house*]
PP	down, up, out	down [$_{PP}$ *into the cellar*]

Here again, subcategorization ensures that particular heads can appear in tree structures only if there is an appropriate type of complement. Thus, the adjective *sick* takes an *of*-PP as its complement, while the adjective *satisfied* takes a *with*-PP.

15) a. sick [$_{PP}$ of cafeteria food] (compare: *sick with cafeteria food)
b. satisfied [$_{PP}$ with cafeteria food] (compare: *satisfied of cafeteria food)

A good deal of what we know about our language consists of information about words and the type of complements with which they can appear. Much of this information must be stored in the lexicon, since it cannot be predicted from a word's meaning.

2.3 Complement Clauses

All human languages allow sentential phrases (or **clauses**, as they are often called) to function as complements. A simple example of this from English is given in *16*.

16) complement clause
↓
[The fans hope **[that the team won]**].
↑
matrix clause

The boldface bracketed phrase in *16* is called a **complement clause**; the larger underlined phrase in which it occurs is called the **matrix clause**. Words such as *that*, *whether*, and *if* are known as **complementizers** (Cs). Together with their TP complement, they form the CP (complementizer phrase) depicted in Figure 5.14.

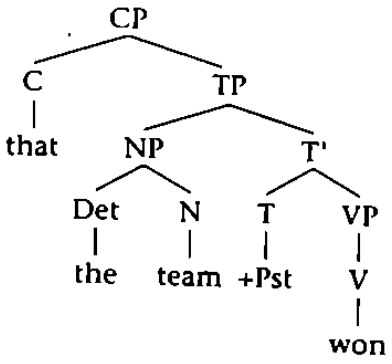


Figure 5.14 The internal structure of a CP

As we will see in Section 3.2, there is even a type of element that can occur in the specifier position under CP.

When a CP occurs in a sentence such as *16*, in which it serves as complement of the verb *hope*, the entire sentence has the structure shown in Figure 5.15.

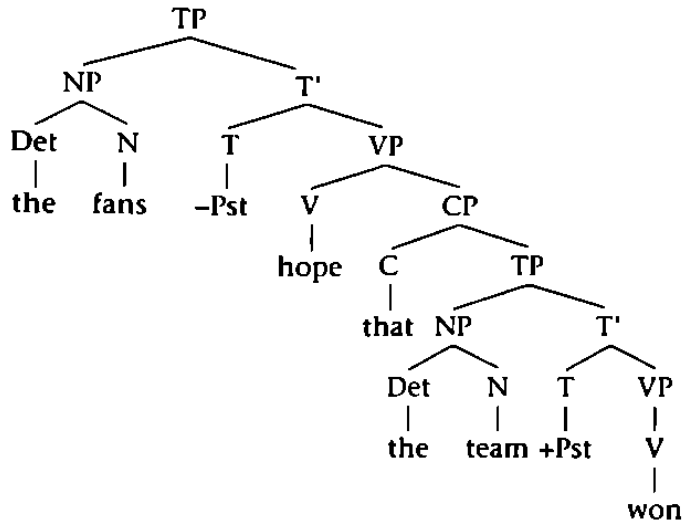


Figure 5.15 The structure of a sentence with an embedded CP

There is no limit on the number of embedded clauses that can occur in a sentence, as *17* shows.

17) Harry said $[_{CP}$ that you know $[_{CP}$ that I think $[_{CP}$ that . . .

Table 5.9 provides examples of some verbs that are often found with a CP complement.

Table 5.9 Some verbs permitting CP complements

Complement(s)	*Sample heads*	*Example*
CP	believe, know, think, remember	They believe $[_{CP}$ *that Eric left*].
NP CP	persuade, tell, convince, promise	They told $[_{NP}$ *Mary*] $[_{CP}$ *that Eric had left*].
PP_{to} CP	concede, admit	They admitted $[_{PP}$ *to Mary*] $[_{CP}$ *that Eric had left*].

3 Move

As we have seen, it is possible to build a very large number of different sentences by allowing the Merge operation to combine words and phrases in accordance with the

X' Schema and the subcategorization properties of individual words. Nonetheless, there are still many kinds of sentences that we cannot build. This section considers two such patterns and discusses the sentence-building operation needed to accommodate them.

3.1 *Yes-No* Questions

The sentences in *18* are examples of ***yes-no* questions** (so called because the expected response is usually "yes" or "no").

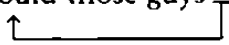
18) a. **Should** those guys leave?
b. **Can** we meet at the library?

A defining feature of *yes-no* questions is that the auxiliary verb occurs at the beginning of the sentence rather than in its more usual position after the subject, as illustrated in *19*.

19) a. Those guys **should** leave.
b. We **can** meet at the library.

How does the word order in *18* come about? The formation of question structures requires the use of an operation that we can call Move. Traditionally known as a **transformation** because it transforms an existing structure, Move transports the item in the T position to a new position in front of the subject.

20) Should those guys _ leave?



This analysis has at least two advantages. First, it allows us to avoid positing two types of modal auxiliary verbs in English: one that occurs between the subject and the VP and one that occurs in front of the subject. Thanks to Move, all modal auxiliaries belong in the same place—in the T position, from which they can then be moved in front of the subject in order to signal a question.

Second, the use of Move automatically captures the fact that the sentence *Should those guys leave?* is the question structure corresponding to *Those guys should leave.* According to the analysis presented here, both sentences initially have the same basic composition. They differ only in that the Move operation has applied to the T category in the question structure.

A Landing Site for T

In what position does the modal auxiliary land when it is moved in front of the subject? One promising idea assumes that TPs occur within a larger CP shell, in which the C position carries information about whether the sentence is a statement or a question. For the sake of illustration, we use the symbol +Q to indicate a question; sentences with the feature –Q in their C position will be interpreted as statements.

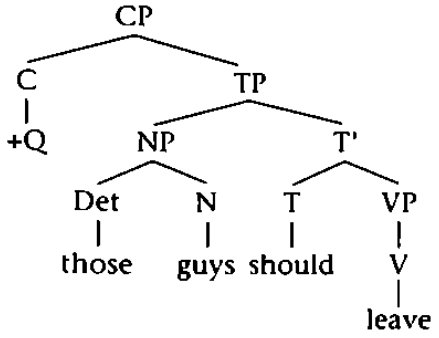


Figure 5.16 A TP inside a CP shell, with the C carrying the +Q feature

In some languages, the **Q feature** is spelled out as a separate morpheme (see the example from Yoruba in the box on page 187). In languages like English, where there is no such morpheme, the feature must attract another element to its position. The modal auxiliary in the T position is that element. As illustrated in Figure 5.17, T is drawn to the C position, where it attaches right next to the +Q feature.

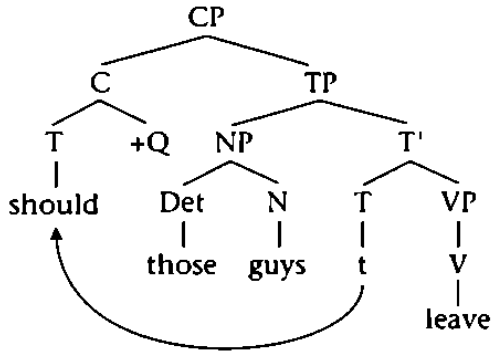


Figure 5.17 The T moves to the C position

A Move operation can do no more than change an element's position. It does not change the categories of any words and it cannot eliminate any part of the structure created by the Merge operation. Thus, *should* retains its T label even though it is moved into the C position (it changes its address, not its name). Moreover, the position that T formerly occupied remains in the tree structure. Called a **trace** and marked by the symbol *t*, it records the fact that the moved element comes from the head position within TP.

The Move operation used for *yes-no* questions is often informally called **Inversion**; it can be formulated as follows.

21) *Inversion*
Move T to the C position.

Interesting evidence that T does in fact end up in the C position comes from patterns such as *22*, which contain an embedded CP.

22) I wonder [$_{CP}$ whether those guys should leave].

Here, as Figure 5.18 shows, the C position in the embedded clause is occupied by the complementizer *whether*.

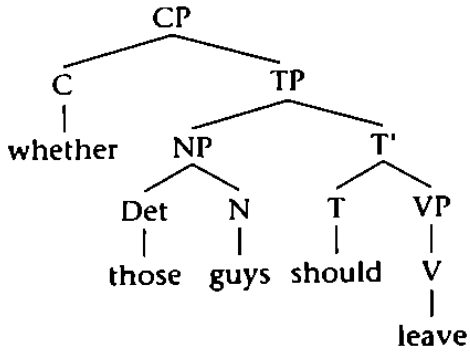


Figure 5.18 The C position in the embedded CP is filled by *whether*

Assuming that no more than one word can occur in a head position, we predict that Inversion should not be able to apply in the embedded clause since there is nowhere for the moved auxiliary verb to land. The ungrammaticality of *23* shows that this is correct.

23) Attempted inversion when there is a complementizer—the landing site is full:
*I wonder [$_{CP}$ **whether** those guys t leave].
**should*

Crucially, the acceptability of Inversion improves quite dramatically when there is no complementizer in the C position. (In fact, such sentences are perfectly acceptable in Appalachian English. For other English speakers, they may sound most natural when the embedded clause is interpreted as an indirect question.)

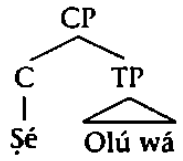
24) Inversion in an embedded CP that does not have a complementizer:
I wonder [$_{CP}$ should those guys *t* leave].

To summarize before continuing, we have introduced two changes into our system of syntactic analysis. First, we assume that TPs occur inside CP shells even when there is no visible complementizer. Second, we assume that the Inversion transformation moves T (and its contents) to the C position in order to indicate a question. In addition to giving the correct word order for the question structure, this analysis helps explain why the result of applying Inversion sounds so unnatural when the C position is already filled by another element, as in *23*.

LANGUAGE MATTERS Another Way to Ask a *Yes-No* Question

Although Inversion is a widely used question-marking strategy around the world, many languages go about things in an entirely different way. Instead of moving something to the C position, they place a special question morpheme there to begin with. Yoruba (a Benue-Congo language spoken in Nigeria) works that way.

Yoruba
Ṣé Olú wá?
+Q Olu come
'Did Olu come?'



Information from: Oluseye Adesola, *Yoruba: A Grammar Sketch*, Version 1.0, http://www.africananaphora.rutgers.edu/images/stories/downloads/casefiles/YorubaGS.pdf.

3.2 *Wh* Questions

Consider now the question construction exemplified in *25*. These sentences are called ***wh* questions** because of the presence of a question word beginning with *wh*.

25) a. [$_{NP}$ Which languages] can Jerry speak?
b. [$_{NP}$ What] will they talk about?

Depending on the *wh* word and its place in the sentence, *wh* words can belong to various syntactic categories, as Table 5.10 shows.

Table 5.10 The syntactic category of *wh* words

Wh *word*	*Syntactic category*	*Examples*
who	N	*Who did you contact?*
what	N, when it occurs by itself	*What did you see?*
	Det, when it occurs with a noun	*What movie do you want to see?*
which	N, when in occurs by itself	*Which do you prefer?*
	Det, when it occurs with a noun	*Which car do you prefer?*
where	Adv	*Where are you going?*
when	Adv	*When did you move to Texas?*
why	Adv	*Why did you leave the room?*
how	Adv, when it asks about a verb	*How did they escape?*
	Deg, when it occurs with an adjective	*How rich are they?*

There is reason to believe that the *wh* elements at the beginning of sentences such as those in *25* have been moved there from the positions indicated in *26*.

26) a. Jerry can speak [$_{NP}$ which languages]
b. They will talk about [$_{NP}$ what]

As illustrated here, *which languages* corresponds to the complement of *speak* (compare: *Jerry can speak two languages*) and *what* corresponds to the complement of *about* (compare: *They will talk about politics*).

How, then, do the *wh* phrases end up at the beginning of the sentence? The answer is that they are attracted there by the +Q feature, which triggers the application of a Move operation known as ***Wh* Movement**.

27) a. [**Which languages**] can Jerry speak *t*?
↑ *Wh* Movement

b. [**What**] will they talk about *t*?
↑ *Wh* Movement

A Landing Site for *Wh* Words

Because *wh* phrases end up in front of the C position (filled in *27* by a moved modal), we can infer that they end up in the specifier of CP—the only available position in that region of the sentence. We can make this idea precise by formulating the ***Wh* Movement** operation as follows.

28) Wh *Movement*
Move a *wh* phrase to the specifier position under CP.

The sentence *Which languages can Jerry speak?* can now be analyzed in steps, the first of which involves formation of the structure in Figure 5.19a, which includes an open specifier position under CP. *Wh* Movement and Inversion then apply, as depicted in Figures 5.19b and 5.19c.

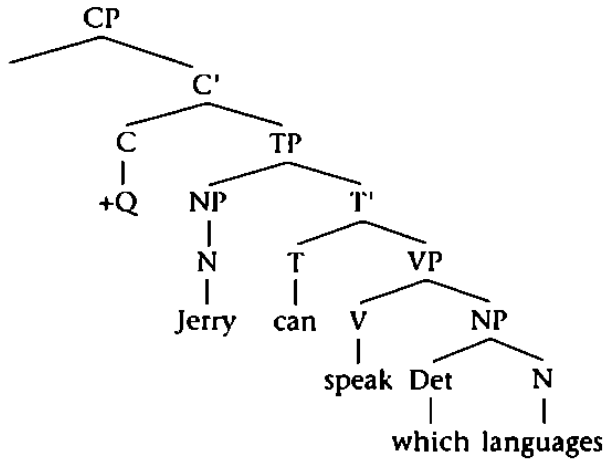
LANGUAGE MATTERS Pied Piping

In more formal varieties of English, there is a second possibility—the entire PP containing the *wh* word can undergo *Wh* Movement.

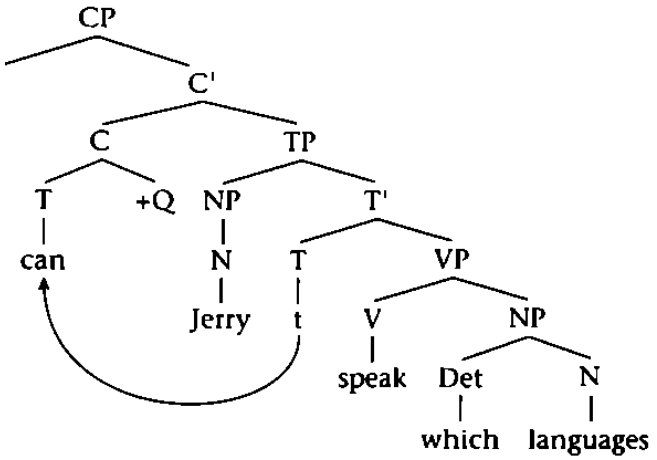
Movement of the PP *about what*:
[$_{PP}$ About what] will they *t* talk *t*?
↑*Inversion*
Wh Movement

This phenomenon is known as *pied-piping*, a whimsical reference to the folk tale *The Pied Piper of Hamelin*, in which (in the words of Robert Browning) "the Piper advanced and the children followed."

a. The structure produced by the Merge operation, with *which languages* functioning as complement of *speak*



b. Inversion: T moves to the C position



c. *Wh* Movement: the *wh* phrase moves to the specifier position in CP

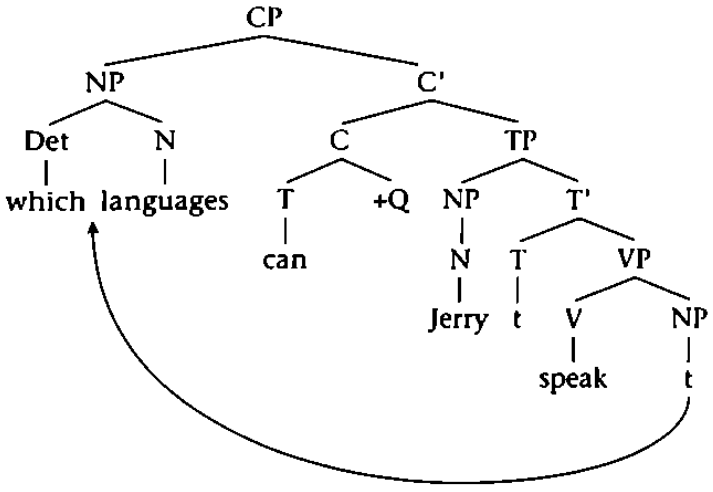
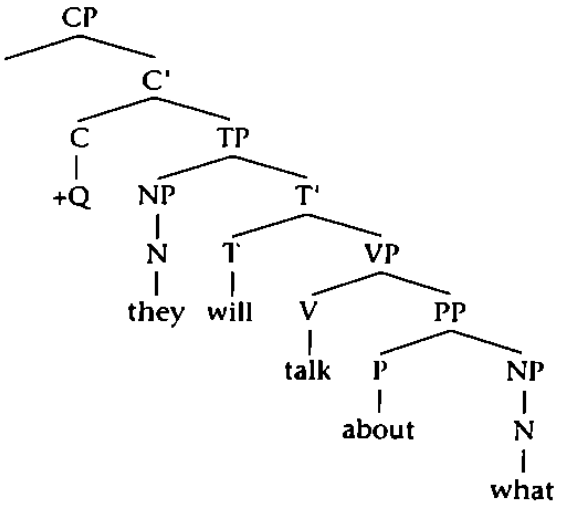


Figure 5.19 Steps for forming the sentence *Which languages can Jerry speak?*

Like Inversion, *Wh* Movement cannot eliminate any part of the previously formed structure. The position initially occupied by the *wh* phrase is therefore not lost. That is because the Move operation leaves behind an empty category (known as a trace) that marks the earlier position of the moved element. In the case at hand, the trace indicates that the NP *which languages* originates as the complement of the verb *speak*.

Figure 5.20 provides a second example, involving sentence *27b*.

a. The structure produced by the Merge operation



b. Inversion and *Wh* Movement (compressed here into a single step to save space)

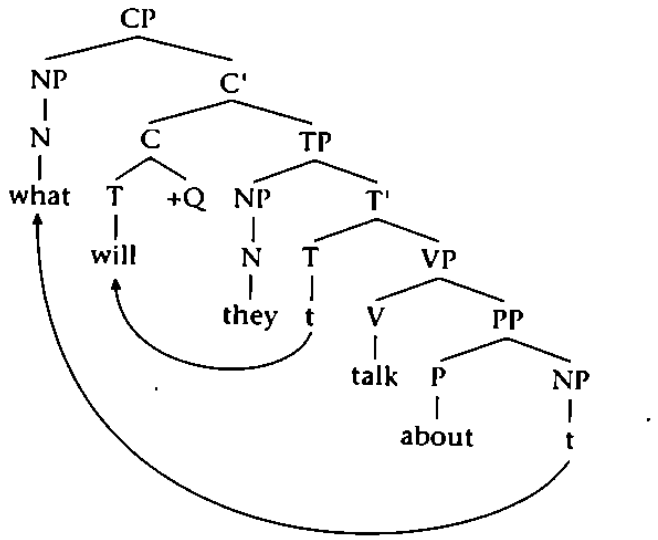


Figure 5.20 Formation of the sentence *What will they talk about?*

In the examples considered so far, the *wh* word originates as the complement of a verb or preposition. In sentences such as the following, however, the *wh* word asks about the subject (the person who will walk the dog).

29) Who will walk the dog?

The *wh* word in these patterns originates in the subject position. For the sake of generality, we assume that it subsequently moves to the specifier position in CP, even though the actual order of the words in the sentence does not change as a result of this movement (see Figure 5.21). (We will assume that there is no Inversion in this type of question structure.)

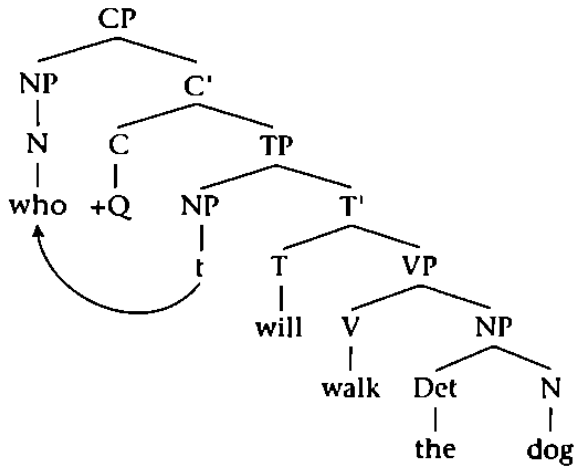


Figure 5.21 Movement of a subject *wh* phrase

3.3 Deep Structure and Surface Structure

The preceding examples show that two distinct types of mechanisms are involved in structure building. The first is the Merge operation, which creates tree structures by combining categories in a manner consistent with their subcategorization properties and the X' Schema. The second is the Move operation, which can modify these tree structures by moving an element from one position to another.

In the system sketched here, all instances of the Merge operation take place before any instances of the Move operation. This yields two distinct levels of syntactic structure, as shown in Figure 5.22. The first, called **deep structure** (or **D-structure**), is formed by the Merge operation.

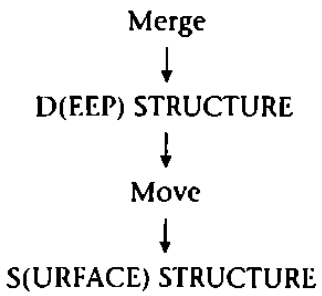


Figure 5.22 Structure-building operations