chapter 7

Extending X-bar Theory to Functional Categories

0. Introduction

In the last chapter, we looked at a refinement of our phrase structure rules that not only accounted for intermediate structure, but also generalized patterns across categories. This refinement is X-bar theory:

1) a) *Specifier rule:* XP → (YP) X' *or* XP → X' (YP)
   b) *Adjunct rule:* X' → X' (ZP) *or* X' → (ZP) X'
   c) *Complement rule:* X' → X (WP) *or* X' → (WP) X

These rules not only generate most of the trees we need for the sentences of the world's languages, they also capture the additional properties of hierarchical structure found within the major constituents. This said, you may have noticed that this system is far from perfect. First, there is the status of specifiers. In particular, the specifier rule we proposed above requires that the specifier be a phrase (XP) level category. However, the only instances of specifiers we've looked at are determiners, which appear *not* to be phrasal. In this chapter, we will look at determiners, and specifiers, and propose a new category that fits X-bar theory: a ***determiner phrase*** (DP). We will see that determiners are not specifiers. Instead, we'll claim that the specifier position is used to mark a particular grammatical function: that of subjects. You'll see that specifiers (of all categories) are where subjects go.

Another troubling aspect of the X-bar theory is the exceptional CP and TP rules that we have yet to incorporate into the system:

2) CP → (C) TP
   TP → NP (T) VP

These rules do not fit X-bar theory. In the X-bar rules in (1), you'll note that the only obligatory element is the head. In the sentence rules in (2), the opposite is true: the only optional element is the head itself. In this chapter, we will look at how we can modify these so that they fit into the more general pattern.

1. DETERMINER PHRASES (DPS)

In the last chapter, for lack of a better place to put them, we put determiners, like *the, a, that, this, those, these* in the specifiers of NPs. This however, violates one of the basic principles underlying X-bar theory: All non-head material must be phrasal. Notice that this principle is a theoretical rather than an empirical requirement (i.e., it is motivated by the elegance of the theory and not by any data), but it is a nice idea from a mathematical point of view, and it would be good if we could show that it has some empirical basis.

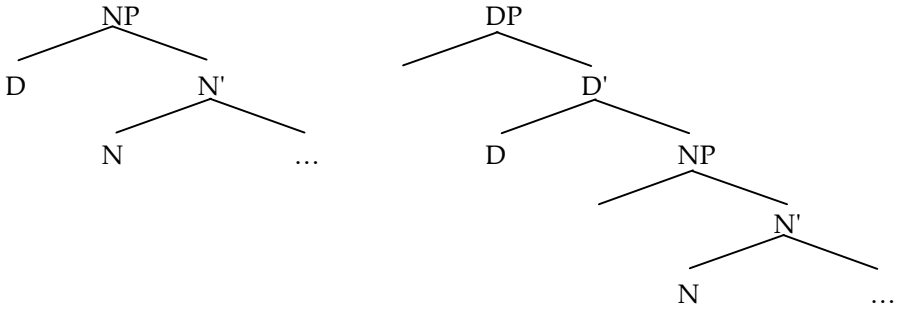
One thing to note about determiners is that they are heads. There can only be one of them in an NP (this isn't true cross-linguistically, but for now let us limit ourselves to English):

3) *the that book

In other words, they don't seem to be phrasal.[1] If our requirement says that the only thing that isn't a phrase in an NP is the N itself, then we have a problem. One solution, perhaps not obvious, to this is to claim that the determiner is not actually inside the NP. Instead, it heads its own phrasal projection. This was first proposed by Abney (1987):

[1] In the last chapter we used this exact same piece of evidence to distinguish specifiers from adjuncts. As an exercise, you could try to construct an argument that distinguishes these two accounts of the same data.

4) *Old view* *DP hypothesis*



Determiners, in this view, are not part of the NP. Instead the NP is the complement to the determiner head. This solution solves the theoretical problem of the non-phrasality of the D, but we still need empirical evidence in its favor.

One piece of evidence comes from the behavior of genitive (possessive) NPs. There are two kinds of possessive NPs. The first is of less interest to us. This one is often called the ***free genitive*** or **of-*genitive***:

5) a) the coat of the panther
   b) the roof of the building
   c) the hat of the man standing over there

The free genitive uses the preposition *of* to mark the possessive relation between the two NPs. More important in terms of evidence for DP is the behavior of the other kind of possessive: the ***construct*** or ***'s-genitive***.

6) a) the panther's coat
   b) the building's roof
   c) the man standing over there's hat

There are a couple of important things to note about this construction. Notice first that the *'s* marker appears after the *entire* possessor NP. For example, it attaches to the whole phrase *the man standing over there* not just to the head *man*:

7) a) [the man standing over there]'s hat
   b) *the man's standing over there hat

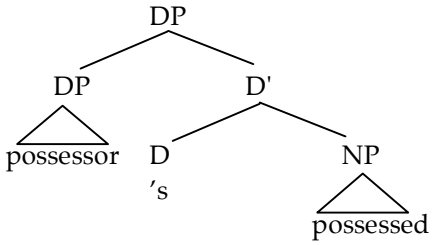
This means that *'s* is not a suffix. Instead it seems to be a small word indicating possession. Next, note that it is in complementary distribution with (i.e., cannot co-occur with) determiners:

8) a) *the building's the roof (cf. the roof of the building)
   b) *the panther's the coat (cf. the coat of the panther)

c) *the man standing over there's the hat (cf. the hat of the man standing over there)

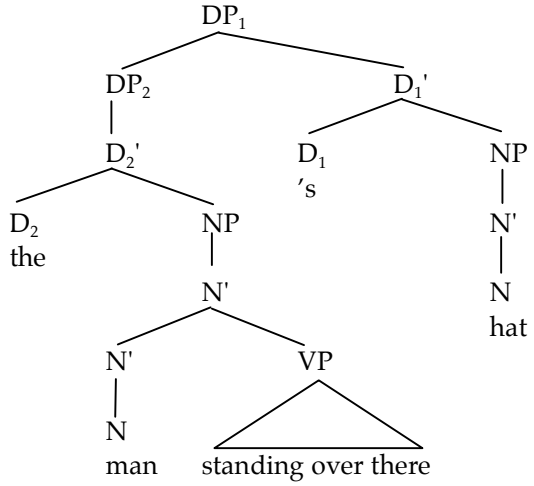
Unlike the *of*-genitive, the *'s*-genitive does not allow both the nouns to have a determiner. In other words, *'s* and determiners are in complementary distribution. As in other domains of linguistics, when two items are in complementary distribution, they are instances of the same thing. (Take for example, phonology, where when two phones are found in different environments – in complementary distribution – then they are allophones of the same phoneme.) Determiners like *the* and *'s* are different tokens of the same type. Assuming that *'s* is a determiner, and assuming the DP hypothesis holds true, we can now account for the positioning of the *'s* relative to the possessor. The *'s* occupies the head D position, and the possessor appears in its specifier:

9)



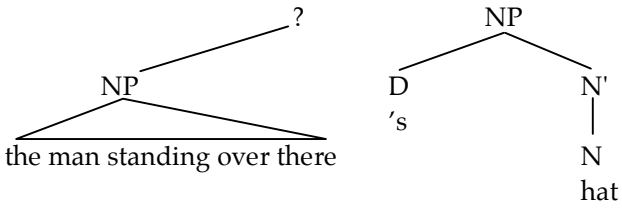
A tree for (8c) shows this:

10)



The possessor *[$_{DP2}$ the man standing over there]* sits in the specifier of DP_1, which is headed by *'s*. So *'s* follows the whole thing[2]. Notice that with our old theory, where determiners were specifiers of NP, there is no way at all to generate *'s* as a determiner and to also have the possessor NP preceding it.

11)



The X-bar rules don't provide any place to attach this pre-determiner NP, if determiners are specifiers.

Notice that in the tree in (10) there is a specifier of DP_1 (filled by DP_2). Note further that this specifier is phrasal (projects to an XP). Which means that it meets with our requirement that all non-head material be phrasal.

You might ask if by moving determiners out of the specifier we have completely destroyed the empirical justification for the specifier rule. Actually, we haven't. Again if you look closely at the tree in (10) we still have a specifier, it just isn't D_1, *instead* it is the DP possessor (DP_2). Further, as we will see below, there are other related uses for the specifier positions. In particular, we will come to associate specifiers with subjects of various kinds of constituents.

You now have enough information to try Challenge Problem Sets 1 & 2

2. A DESCRIPTIVE TANGENT INTO CLAUSE TYPES

A ***clause*** is essentially a ***subject*** (usually a DP that has the property indicated by the predicate; this is what the clause is about) and a ***predicate phrase*** (a group of words that assign a property to the subject). The most obvious kind of clause is the simple sentence. In the following examples, the subject is indicated in italics and the predicate phrase is in bold:

12) a) *The boy* **ran**.
b) *Howard* is a **linguistics student**.

[2] We might extend this analysis to possessive pronouns. Take the pronoun *his* for example, we could analyze this as *he* occupying the specifier of *'s*, then there is a morphological operation that turns *he+'s* into *his*. (This of course is less plausible with pronouns like *her* or *your*; unless the morphological rule is extremely abstract.)

As we'll see below, there are many other kinds of clauses. But we can use this as a working definition.

A clause that stands on its own is called a ***root, matrix,*** or ***main clause.*** Sometimes, however, we can find examples of clauses within clauses. Examples of this are seen below:

13) a) [Peter said [that Danny danced]].
b) [Bill wants [Susan to leave]].

In each of these sentences there are two clauses. In sentence (13a), there is the clause *(that) Danny danced* which is inside the root clause *Peter said that Danny danced*. In (13b), we have the clause *Susan to leave* which has the subject *Susan*, and the predicate phrase *(to) leave*. This is contained within the main clause *Bill wants Susan to leave*.

Both of these clauses within clauses are called ***embedded clauses***. Another name for embedded clause is ***subordinate clause***. The clause containing the embedded clause is still called the ***main*** or ***root clause***.

Embedded Clauses are Part of Main Clauses

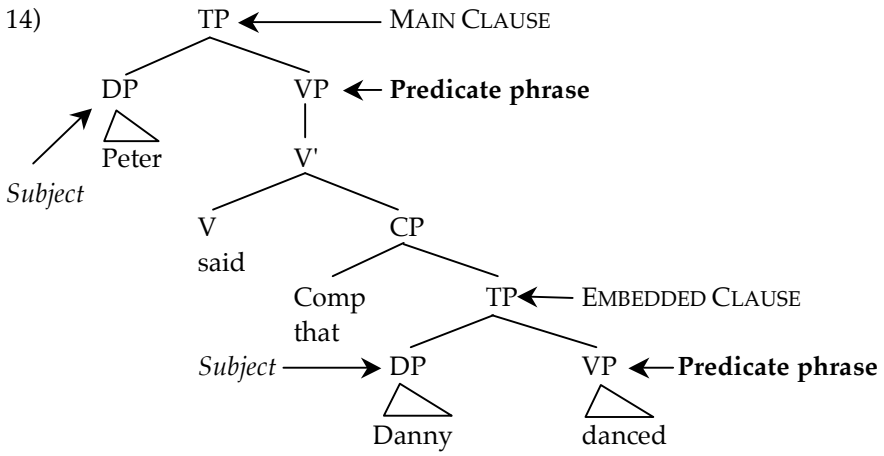
A very common error among new syntacticians is to forget that embedded clauses are contained ***within*** main clauses. That is, when faced with identifying what is the main clause in a sentence like

i) Peter thinks that Cathy loves him.

most students will properly identify the embedded clause, as *(that) Cathy loves him*, but will claim that the main clause is only *Peter thinks*. This is completely incorrect. *Peter thinks* is not a constituent. The main clause is everything under the root S node. So the main clause is *Peter thinks that Cathy loves him*. Be very careful about this.

Using the TP and CP rules we developed in chapter 3, the structure of a root clause containing an embedded clause is given below (I've obscured the irrelevant details with triangles):

14)



In addition to the distinction between main and embedded clauses, we can also distinguish among specifier, complement, and adjunct clauses. Here are some examples of ***complement clauses***:

15) a) Heidi said [that Art loves peanut butter].
b) Colin asked [if they could get a mortgage].

These complement clauses (CPs) are sisters to the verb, and thus complements. Clauses can also appear in adjunct positions. Relative clauses are one example of ***adjunct clauses***:

16) [The man [I saw get into the cab]] robbed the bank.

The relative clause in (16) *[I saw get into the cab]* modifies the head *man*. ***Specifier clauses*** are ones that serve as the subject of a sentence (why these are specifiers will be made clear below):

17) a) [[People selling their stocks] caused the crash of 1929].
b) [[For Mary to love that boor] is a travesty].

To summarize, we have two basic kinds of clauses, main and embedded. Embedded clauses are contained within main clauses. Further, there are three types of embedded clauses: specifier clauses, complement clauses and adjunct clauses. This is summarized in the following table:

18)

Main clauses	Embedded clauses		
	specifier clauses	complement clauses	adjunct clauses

There is another way of dividing up the clause-type pie. We class clauses into two groups depending upon whether they are tensed or not.[3] Clauses with predicates that are tensed are sometimes called (obviously) ***tensed clauses***, but you may more frequently find them called ***finite clauses***. Clauses without a tensed verb are called ***tenseless*** or ***non-finite clauses*** (sometimes also ***infinitival clauses***).[4]

19) a) I said [that Mary signed my yearbook]. *tensed or finite*
b) I want [Mary to sign my yearbook]. *tenseless or non-finite*

There are a number of tests for distinguishing finite from non-finite clauses. These tests are taken from Radford (1988). The embedded clause in sentence (20a) is tensed, the one in (20b) is untensed. I have deliberately selected a verb that is ambiguous between tensed and untensed in terms of its morphology (suffixes) here as an illustration:

20) a) I know [you eat asparagus]. *finite*
b) I've never seen [you eat asparagus]. *non-finite*

One way to tell if a clause is finite or not is to look for agreement and tense morphology on the verb. These include the *-s* ending associated with third person nouns (*he eat<u>s</u>*) and the past tense suffixes like *-ed*. The above examples don't show any such suffixes. However, if we change the tense to the past a difference emerges:

21) a) I know you ate asparagus. *finite*
b) *I've never seen you ate asparagus. *non-finite*

Finite clauses allow past tense morphology (the *ate* form of the verb *eat*), non-finite clauses don't. The same effect is seen if you change the person of the subject in the embedded clause. Third person subjects trigger the *-s* ending. This is allowed only in finite clauses.

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[3] There is a third kind of clause that we won't discuss here, called "small clauses." Small clauses don't have verbal predicates (that is, a DP, PP, or AP serves as the predicate. These generally don't get tense marking. An example is the embedded string in:

i) [Maurice considers [Jason a fine upstanding gentleman]].

Small clauses are an important part of syntactic theory, but they are notoriously difficult to spot until you have some practice. For the purposes of this text we'll just ignore small clauses, but if you pursue syntax at a higher level you'll have to learn how to identify them.

[4] In many languages, the form of a verb found in a non-finite clause is called the ***infinitive***. In English, infinitives are often marked with the auxiliary *to*, as in *to sign*.

22) a) I know he eats asparagus. *finite*
b) *I've never seen him eats asparagus. *non-finite*

The case on the subject of the noun is often a giveaway for determining whether or not a clause is finite. Case refers to the notions ***nominative*** and ***accusative*** introduced in chapter 1, repeated here:

23)

	Nominative		Accusative		Anaphoric	
	Singular	Plural	Singular	Plural	Singular	Plural
1	I	we	me	us	myself	ourselves
2	you	you	you	you	yourself	yourselves
3 masc	he	they	him	them	himself	themselves
3 fem	she		her		herself	
3 neut	it		it		itself	

If the clause is finite, then a subject pronoun will take the nominative case form:

24) I know *he* eats asparagus. *finite*

If the clause is non-finite then the subject will take the accusative form:

25) I've never seen *him* eat asparagus. *non-finite*

One test that works most of the time, but is not as reliable as the others, is to see if the subject is obligatory. If the subject is obligatory, then the clause is finite. If the subject is optional, or is not allowed at all, then it is non-finite. (Note: this test only works for English; in many languages, such as Spanish, subjects of finite clauses are optional.)

26) a) I think that he eats asparagus. *finite*
(cf. *I think that eats asparagus.)
b) I want (him) to eat asparagus. *non-finite*
(cf. I want to eat asparagus.)

Another way to tell if a clause is finite or not is by looking at the complementizer. The complementizer *for* is only found with non-finite clauses. By contrast *that* and *if* are only found with tensed clauses:

27) a) I wonder if he eats asparagus. *finite*
b) I think that he eats asparagus. *finite*
c) [For him to eat asparagus] is a travesty. *non-finite*
d) I asked for him to eat the asparagus. *non-finite*

As a final test, we can note that finite and non-finite clauses take different kinds of T elements. The T in tensed clauses can contain auxiliaries and

modals like *will, can, must, may, should, shall, is, have*. By contrast the only auxiliary allowed in non-finite clauses is *to*.[5]

28) a) I think [he *will* eat asparagus].
    b) I want him *to* eat asparagus. (cf. *I want him will eat asparagus.)

This last property gets at the heart of the distinction between finite and non-finite clauses. In structural terms the difference between a finite and a non-finite clause lies in terms of what kind of T the clause has. If a clause is finite it bears some tense feature (like [±past] or [±future]). If it is non-finite, it doesn't have any of these features. The question of how this works for clauses where there is no auxiliary, we'll leave as a bit of a mystery for now, but will return to later in this chapter.

Let's summarize the discussion we've had thus far. We've been looking at a number of terms for describing various kinds of clauses. We defined clauses as a subject and a predicate phrase. We distinguished root or main clauses from embedded clauses. Embedded clauses come in three types: specifier clauses, complement clauses and adjunct clauses. The other dimension along which we can describe clauses is the finite/non-finite distinction.

With this terminology under our belts, we'll now turn to the structure of clauses, and see if we can make them fit better into X-bar theory.

You now have enough information to try General Problem Sets 1, 2 & 3

3. COMPLEMENTIZER PHRASES (CPS)

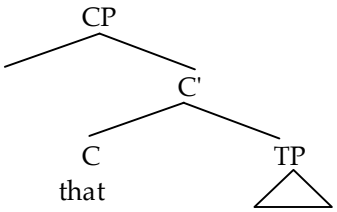
We've observed that the TP rule and the CP rule stand out, since they don't fit X-bar theory. In X-bar theory, the head is always obligatory. This is not true of these two rules:

29) a) CP → (C) TP
    b) TP → DP (T) VP

In fact, it is a fairly trivial matter to change these rules into X-bar theoretic format. Let us deal with the CP rule first. If we take X-bar theory to extend to CPs, we can assimilate the rule in (29a) to get a tree like that in (30):

[5] English has two words *to*. One is a preposition, the other is non-finite T.

30)



This CP structure has C as the head, a TP complement and an empty specifier position (this empty specifier position will become very important later for us when we do *wh*-movement in chapter 11).

We might ask how pervasive this rule is in our mental grammars. That is, do all clauses have CPs, or do only embedded clauses have CPs? On the surface, the answer to this question seems obvious: Only embedded clauses have CPs, since only embedded clauses appear to allow complementizers:

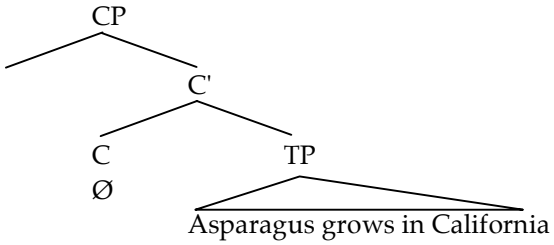
31) a) John thinks that asparagus is yummy.
b) *That asparagus is yummy. (cf. Asparagus is yummy.)

However, there is evidence that all clauses, even root clauses like (31), require some kind of complementizer.

32) Asparagus grows in California.

In particular, we'll claim that some sentences have null complementizers. Don't assume that I'm crazy. No matter how strange this proposal sounds, there is actually some good evidence that this is correct. The tree in (33) shows one of these null complementizers.

33)



The evidence for this claim comes from cross-linguistic comparison of questions among languages. In particular, we'll focus on ***yes/no questions*** (see chapter 9 for more discussion on these). These are questions that can be answered with either *yes*, *no* or *maybe*. Examples of yes/no questions in English are given below:

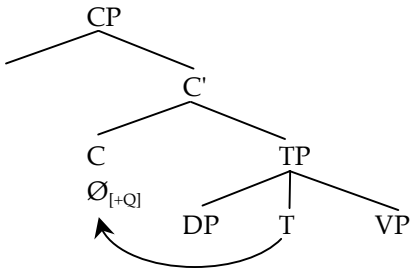
34) a) Did John leave?
b) Have you seen Louis?

In English, to form a yes/no question you either insert some form of the verb *do* (*do, does, did*) before the subject, or you invert the subject and the auxiliary (*You have seen Louis.* → *Have you seen Louis?*). This operation is called ***subject-aux inversion*** (more on this in chapter 9). In many other languages, however, yes/no questions are formed with a complementizer particle that precedes the verb. Take for example, Irish, which indicates yes/no questions with a special particle *Ar* (or its allomorph *An*):

35) Ar thit Seán?
Q fall John
"Did John fall?"

Languages like English that use subject-aux inversion don't have special complementizer question particles. The opposite also holds true. If a language has complementizer question particles, then it won't have subject-aux inversion. The phenomena are in complementary distribution. It seems reasonable to claim then, that question complementizers and subject-aux inversion are part of the same basic phenomenon. In order to make this concrete, let's make the following proposal: There is a question complementizer particle in English, just like there is in Irish. The difference is that in English this complementizer particle is null (has no phonological content). We will represent this ***null complementizer*** with the symbol $Ø_{[+Q]}$. It has no phonological content, but it must be realized or pronounced someway. The way English satisfies this requirement is by moving T into the C head:

36)



This results in the correct order, where the auxiliary (in T) now appears before the subject. By contrast, languages like Irish don't utilize this mechanism. Instead they have a particle that fills their [+Q] complementizer (like *Ar*/*An* in Irish).

English does, in fact, have an overt [+Q] complementizer, but it is only found in embedded questions. This complementizer is *if*. Unsurprisingly, subject-aux inversion is completely disallowed when *if* is present:

37) a) Fabio asked if Claus had run a marathon.
b) *Fabio asked if had Claus run a marathon.

c) *Fabio asked had if Claus run a marathon.
d) ?Fabio asked had Claus run a marathon.

If occupies the [+Q] complementizer, so no subject-aux inversion is required (or allowed).

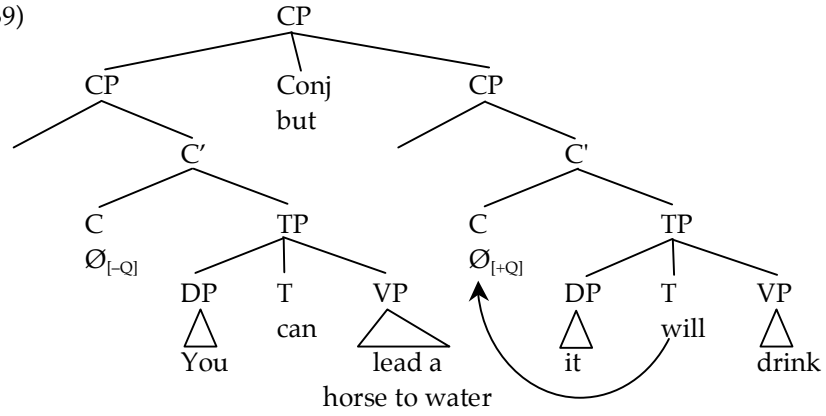
Given the existence of overt root complementizers in other languages and the evidence that subject-aux inversion patterns like these overt root complementizers, we can conclude that, for questions at least, there are complementizers (and CPs) present, even in main clauses.

Of course, we haven't yet shown that non-question sentences have a root complementizer. For this, we need to add an extra step in the argument. You can only conjoin identical categories. If sentences showing subject-aux inversion use a null complementizer and if you can conjoin that question with a non-question (such as a statement), then that statement must also include a (null) complementizer and CP. It is indeed possible to conjoin a statement with a question:

38) [You can lead a horse to water] but [will it drink]?

Since the second clause here shows subject-aux inversion, we know there is a $Ø_{[+Q]}$ question complementizer present. By extension, we know that the clause it is conjoined with must *also* have a complementizer – this time, a non-question $Ø_{[-Q]}$. A CP can only be conjoined with another CP.

39)



This is an argument for null complementizers attached to root clauses, even in simple statements. From this point forward, we will assume that there is a CP on top of every clause. For brevity's sake, I may occasionally leave this CP off my trees, but the underlying assumption is that it is always there. You should always draw it in when you are drawing your trees.

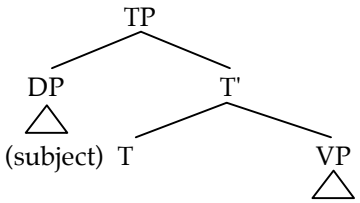
4. TENSE PHRASES (TPS)

The other rule that doesn't fit the X-bar pattern is our S rule:

40) TP → DP (T) VP

Assimilating this rule to X-bar theory results in a structure like the following:

41)



In this tree, S is replaced by TP; the subject DP sits in the specifier of TP, and the VP is the complement. (This is our first clear instance where the notion of specifier corresponds to the notion of subject. We will consider some other cases below.) Again the problem here is that the element that we have designated as the head of the phrase (T) is apparently optional. In X-bar theory, heads are the only obligatory element.

In chapter 2, we equated T with auxiliary verbs. But we might ask what happens in clauses where there is no auxiliary: Is there a TP? Is there a T? Can we make the same claim we did for CPs that the C is obligatory? In order to answer this question, let's make the following observation: Tense inflection on a verb is in complementary distribution with auxiliaries (you never get both of them at the same time):

42) a) The roadrunner walks funny.
b) The roadrunner is walking funny.
c) *The roadrunner is walks/walkings funny.

Recall that when two elements are in complementary distribution then they are instances of the same category. This means that T is both auxiliaries and inflectional endings on verbs. Similar evidence comes from coordination. Recall that you can only coordinate two items that are of the same category and bar level. In the following sentence, we are conjoining a T' that has an auxiliary with a T' that has a tensed verb. The tense inflection and auxiliary are italicized.

43) $[_{TP}$ I $[_{T'}[_{T'}$ kiss*ed* the toad] and $[_{T'}$ *must* go wash my mouth now]]].

This evidence suggests that the two T's are identical in some deep sense: that is they both involve a T node: one an auxiliary, the other a tense inflectional ending.

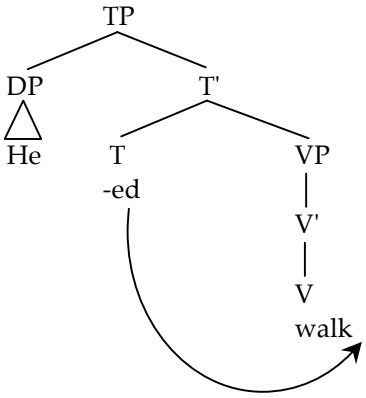
If you think about the basic order of the elements we seem to have argued ourselves into a corner. Auxiliaries appear on the left of verbs, and inflectional suffixes (like *-ed*, and *-s*) appear on the right:

44) a) He *will* go.
b) He go*es*.

There are other differences between auxiliaries and inflectional suffixes. For example, auxiliaries, but not suffixes undergo subject-aux inversion. If we are to claim that inflectional suffixes and auxiliaries are both instances of T we have to account for these differences.

One possibility is to claim that both inflectional suffixes and auxiliaries are indeed generated under T. They differ, however, in terms of whether they can stand alone or not. Auxiliaries are independent words and can stand alone. By contrast, suffixes like *-s* and *-ed* have to be attached to a verb. Much like the case of moving T to C in order to pronounce $Ø_{[+Q]}$, we might hypothesize that endings like *-s* and *-ed* can't be pronounced in isolation, so they move to attach to the verb. In particular they seem to lower onto the verb: The following tree shows how this would work for the simple sentence *He walked*. This sentence starts out as *[he -ed walk]* then the *-ed* ending lowers to attach to the end of the verb:

45)



Notice that both the movements we have proposed (***T-affix lowering***, and T → C) have morphophonological motivations. Auxiliaries move to $Ø_{[+Q]}$ to pronounce it, inflectional endings lower to V since they are verbal suffixes.

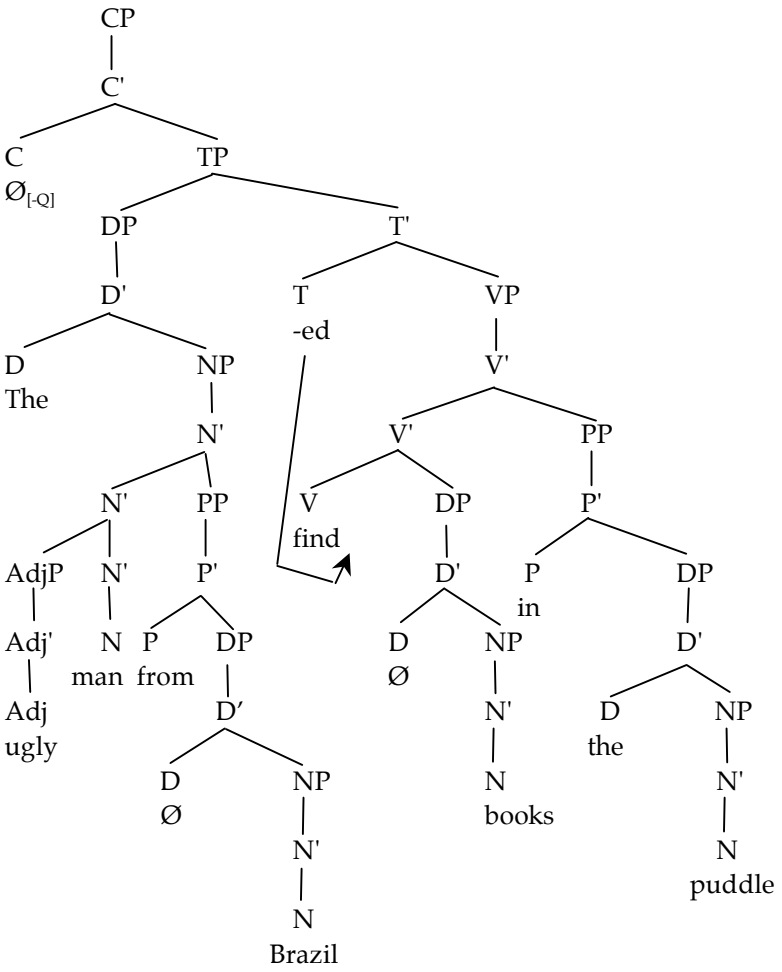
There is much more to the study of T and C and movement of these elements. (For example, the issue of what happens when you have both a $Ø_{[+Q]}$ and an inflectional suffix that need to be pronounced leaps to mind.) We will return to these issues in chapter 9.

You can now try General Problem Sets 4 & 5 and Challenge Problem Set 3

5. CP, TP, DP TREE

Here is the tree drawn in section 6.2 of chapter 6, but with CP, TP, and DP:

46)



This tree has the subject DP in the specifier of TP. The past tense ending is in T, and lowers to the verb (we of course have to assume that there is some morphological readjustment process that turns *finded* into *found*). You will also notice that we have a null $Ø_{[-Q]}$ complementizer. In addition you'll note that all NPs are complements to DPs. In a move parallel to having null Cs, I have drawn in null Ø D heads as well, although this is a matter of some controversy.

IDEAS, RULES, AND CONSTRAINTS INTRODUCED IN THIS CHAPTER

i) ***Determiner Phrase (DP)***: D is not in the specifier of NP. D heads its own phrase: $[_{DP}\ [_{D'}$ D NP]].

ii) ***Complementizer Phrase (CP)***: C is the head of CP and is obligatory in all clauses, although sometimes phonologically null: $[_{CP}\ [_{C'}$ C TP]].

iii) ***Tense Phrase (TP)***: T is the head of TP and is obligatory in all clauses, sometimes it involves lowering of the affix to the V. The subject DP occupies the specifier position: $[_{TP}\ DP_{subject}\ [_{T'}$ T VP]].

iv) ***Free Genitive*/of-*Genitive***: Possessed of the possessor.

v) ***Construct Genitive*/'s-*Genitive***: Possessor 's possessed.

vi) ***Subject***: A DP which has the property indicated by the predicate phrase. What the sentence is about. In most sentences, this surfaces in the specifier of TP.

vii) ***Predicate Phrase***: A group of words that attributes a property to the subject. (In most sentences this is the VP, although not necessarily so.)

viii) ***Clause***: A subject and a predicate phrase. Always a CP in our system

ix) ***Root, Matrix,*** or ***Main Clause***: A clause (CP) that isn't dominated by anything.

x) ***Embedded Clause*/*Subordinate Clause***: A clause inside of another.

xi) ***Specifier Clause***: An embedded clause in a specifier position.

xii) ***Adjunct Clause***: An embedded clause in an adjunct position.

xiii) ***Complement Clause***: An embedded clause in a complement position.

xiv) ***Tenseless*** or ***Non-finite Clause***: A clause that isn't tensed (e.g., I want *[Mary to leave]*).

xv) ***Tensed*** or ***Finite Clause***: A clause that is tensed.

xvi) ***Yes/No Question***: A question that can be answered with a *yes*, a *no* or *maybe*.

xvii) ***Subject-Aux Inversion***: A means of indicating a *yes/no* question. Involves movement of T to $Ø_{[+Q]}$ complementizer for morpho-phonological reasons.

xviii) ***Affix Lowering***: The lowering of inflectional suffixes to attach to their verb.

FURTHER READING

Abney, Steven (1987) The English Noun Phrase in its Sentential Aspect. Ph.D. dissertation, MIT.

Chomsky, Noam (1991) Some notes on economy of derivation and representation. In Robert Freidin (ed.), *Principles and Parameters in Comparative Grammar*. Cambridge: MIT Press. pp. 417–54.

Emonds, Joseph (1980) Word order in Generative Grammar. *Journal of Linguistic Research* 1, 33–54.

Pollock, Jean-Yves (1989) Verb-movement, Universal Grammar, and the structure of IP. Linguistic Inquiry 20, 365–424.

GENERAL PROBLEM SETS

1. SUBJECTS AND PREDICATE PHRASES

[Data Analysis; Basic]

In each of the following clauses identify the subject and the predicate phrase. Some sentences contain multiple clauses, be sure to identify the subjects and predicate phrases of ***all*** clauses.

a) The peanut butter has got[6] moldy.
b) The duffer's swing blasted the golf ball across the green.
c) That Harry loves dancing is evidenced by his shiny tap shoes.
d) The Brazilians pumped the oil across the river.

2. CLAUSE TYPES

[Data Analysis; Basic]

The following sentences are "complex" in that they contain more than one clause. For each sentence, identify each clause. Remember main clauses

[6] You may prefer *gotten* to *got* here. The choice is dialect-dependent.

include embedded clauses. Identify the complementizer, the T, and the subject of the clause; be sure to identify even *null* (Ø) complementizers and Ts with suffixes in them. State whether each clause is a finite clause or a non-finite clause.

a) Stalin may think that Roosevelt is a fool.
b) Lenin believes the Tsar to be a power-hungry dictator.
c) Brezhnev had said for Andropov to leave.
d) Yeltsin saw Chernyenko holding the bag.

3. ENGLISH *THAT* [7]

[Critical Thinking; Basic]

Discuss the status of the word *that* in each of the following two sentences. Explain the differences between the two sentences. If you assign a different category status to *that* in each sentence, explain why. Draw the tree (use X-bar theory) for each of the sentences.

a) Robert thinks <u>that</u> students should eat asparagus.
b) Robert thinks <u>that</u> student should eat asparagus.

4. TREES

[Application of Skills; Basic to Intermediate]

Draw the trees for the following sentences. Use X-bar theory, show all CPs, DPs, and TPs.

a) The very young child walked from school to the store.
b) Linguistics students like phonetics tutorials.
c) John paid a dollar for a head of lettuce.
d) Teenagers drive rather quickly.
e) Martha said that Bill loved his Cheerios in the morning.
f) Eloise wants you to study a new language. [assume *to* = T]
g) For Maurice to quarrel with Joel frightened Maggie.
h) John's drum will always bother me.

5. TREES II

[Application of Skills; Basic to Intermediate]

1) Go back to chapter 3, general problem set 1, and draw the trees using X-bar theory, including DPs.
2) Go back to chapter 3, general problem set 4, and draw the trees using X-bar theory, including DPs, TPs, and CPs.

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[7] Thanks to Eithne Guilfoyle for contributing this problem set.

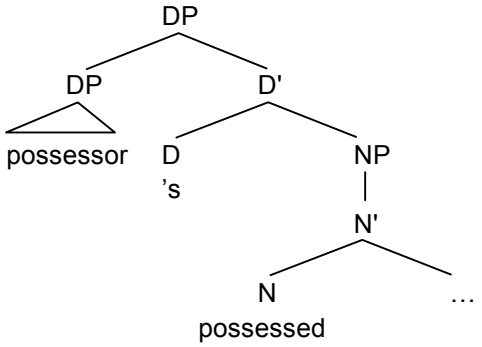
3) Go back to chapter 4, general problem set 1, and draw the trees using X-bar theory, including DPs, TPs, and CPs.

CHALLENGE PROBLEM SETS

CHALLENGE PROBLEM SET 1: HUNGARIAN DPS

[Data Analysis; Challenge]

In the text above, we argued that the structure of genitive constructions in English looks like:



Consider the follow data from Hungarian. Does the possessor DP appear in the same place as the English ones? Assume the determiners *az* and *a* modify the *possessed* noun, not the possessor. The ending on the word hat varies depending upon the possessor, this does not affect the answer to this question. (Data from Szabolcsi 1994.)

a) az én kalapom
   the I hat-1SG
   "my hat"

b) a te kalapod
   the you hat-2SG
   "your hat"

Hungarian has another possessive construction, seen in (c).

c) Marinak a kalapja
   Mary the hat-3SG
   "Mary's hat"

Where is the possessor DP in (c)? Explain your answer.

CHALLENGE PROBLEM SET 2: NPI LICENSERS

[Data Analysis and Critical Thinking; Challenge]

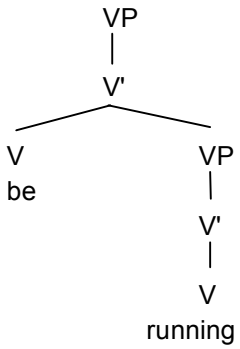
The adverb *ever* is a negative polarity item. Negative polarity items must stand in a c-command relationship with a negative licenser. Assume that the properties of the head uniquely determine the properties of a phrase. Explain how the following sentences are an argument for the subject being a DP rather than an NP:

a) No man has ever beaten the centaur.
b) *Some man has ever beaten the centaur.
c) *Every man has ever beaten the centaur.

CHALLENGE PROBLEM SET 3: ENGLISH MODALS AND AUXILIARIES

[Data Analysis and Critical Thinking; Challenge]

In traditional grammar, two different kinds of T are found: modals and auxiliaries. Modals include words like *can, must, should, would, could, may*, *will* and in some dialects *shall*. Auxiliary verbs, by contrast, include such words as *have* and *be.* In this book, we've treated both modals and auxiliaries as T. An alternative is that only modals are really of category T, and that auxiliaries are real verbs. Auxiliary and verb combinations are actually a stacked set of VPs:



Construct an argument in favor of the idea that modals are of category T, but auxiliaries are really verbs. Assume the following: You may have as many V categories as you like, but there is only one T in any tensed clause's tree.