Movement

Kofi K. Saah

Movement

After this lecture, you should walk away having mastered the following:

1. Understand the distinction between D-structure and S-structure.
2. Discuss the interaction between V→T and T→C.
3. Explain the evidence for V→T movement in French and Irish.

Movement

4. Discuss the position of tensed English auxiliaries as compared to main verbs.
5. Explain how the VP-internal subject hypothesis accounts for VSO languages.
6. Discuss the whens, wheres, and whys of do-support.

Noam Chomsky

Movement

According to X-bar theory, an object is the complement of to V (sister to V, daughter of V').

This means that no specifier or adjunct can intervene between the complement and the head.

If it did, the object would no longer be a complement.

Movement

But there are some languages with verb-subject-object (VSO) word order. One of such languages is Modern Irish:

Movement

1) Phóg Máire an lucharachán.
Kissed Mary the leprechaun
"Mary kissed the leprechaun."

Movement

In this sentence, the subject (a specifier) comes between the verb and the object.

This sentence cannot be generated by X-bar theory.

Movement

Consider the following sentence from French:

2) Je mange souvent des pommes.

I eat often of the apples

"I often eat apples."

Souvent "often" intervenes between the verb and the object. If it is an adjunct it is appearing between a head and its complement. X-bar theory can't draw this tree.

Movement

Finally, if we look at the relationship between the auxiliary verb *have* and its complement main verb in (3):

3) He has not eaten yet today.

The participle *eaten,* as we have seen in the previous lecture is a complement to the auxiliary, yet the negative word *not* separates the two.

Movement

X-bar theory requires that complements be adjacent to the head that introduces them, but we have seen three cases where that isn't true.

In sum, we say that the X-bar theory *under-generates* because it does not produce all the possible grammatical sentences in the language.

Movement

Chomsky (1957) observed that a phrase structure grammar (such as X-bar theory) cannot generate all the sentences of a language.

He therefore proposed that there was a need for a set of rules that change the structure generated by phrase structure rules.

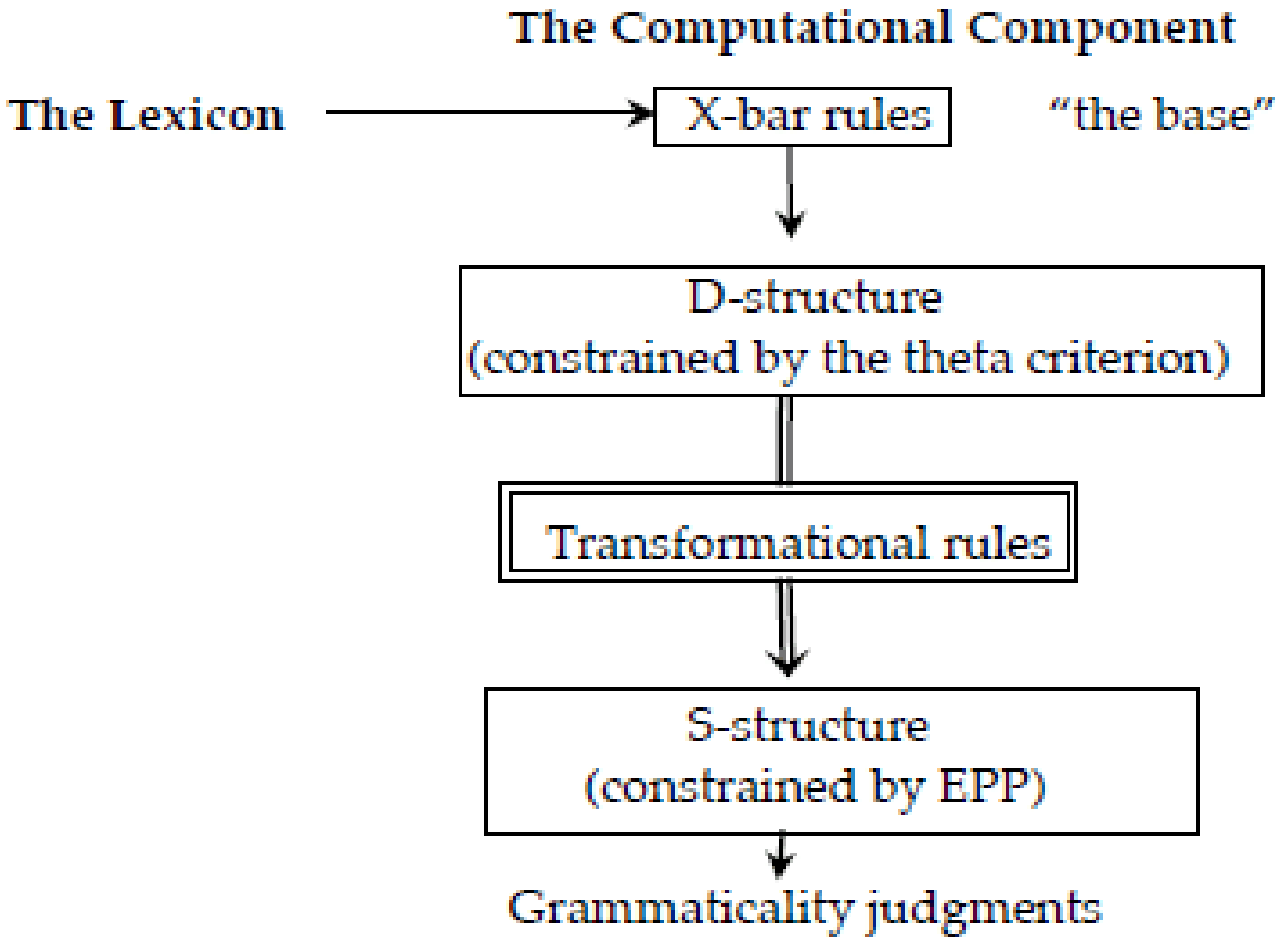
Movement

These rules are called ***transformational rules***.

Transformations take the output of X-bar rules and change them into different trees.

The model of grammar looks like what is in (4):

Movement


The Computational Component
The Lexicon
X-bar rules
"the base"
D-structure
(constrained by the theta criterion)
Transformational rules
S-structure
(constrained by EPP)
Grammaticality judgments

The X-bar theory and the lexicon work together to generate trees. This is called the ***base***. The result of this tree generation is a level we call ***D-structure*** (initially called Deep Structure).

Sometimes it is also called ***underlying form*** or ***underlying representation.***

The theta criterion filters out ungrammatical sentences at D-structure.

D-structure is then subject to the ***transformational rules.***

These transformational rules can move words around in the sentence .

The output of trans formational rules is called the S-structure of the sentence. The S-structure is filtered by the EPP, which ensures that the sentence has a subject.

We will be looking at two different kinds of transformational rules: movement rules and insertion rules.

Movement rules move things around in the sentence.

Insertion rules put something new into the sentence.

In this lecture, we will look at one kind of movement rule: the rules that move one head into another head position called ***head-to-head movement.***

These transformational rules will allow us to generate the sentences we saw in (1-3) above.

Verb Movement (V→T)

French

Let's start with the French sentence in (2) repeated here as (5):

5) Je mange souvent des pommes.

I eat often of the apples

"I often eat apples."

The adjunct surprisingly appears between the head of VP and its complement.

Compare this with the English sentence in (6):

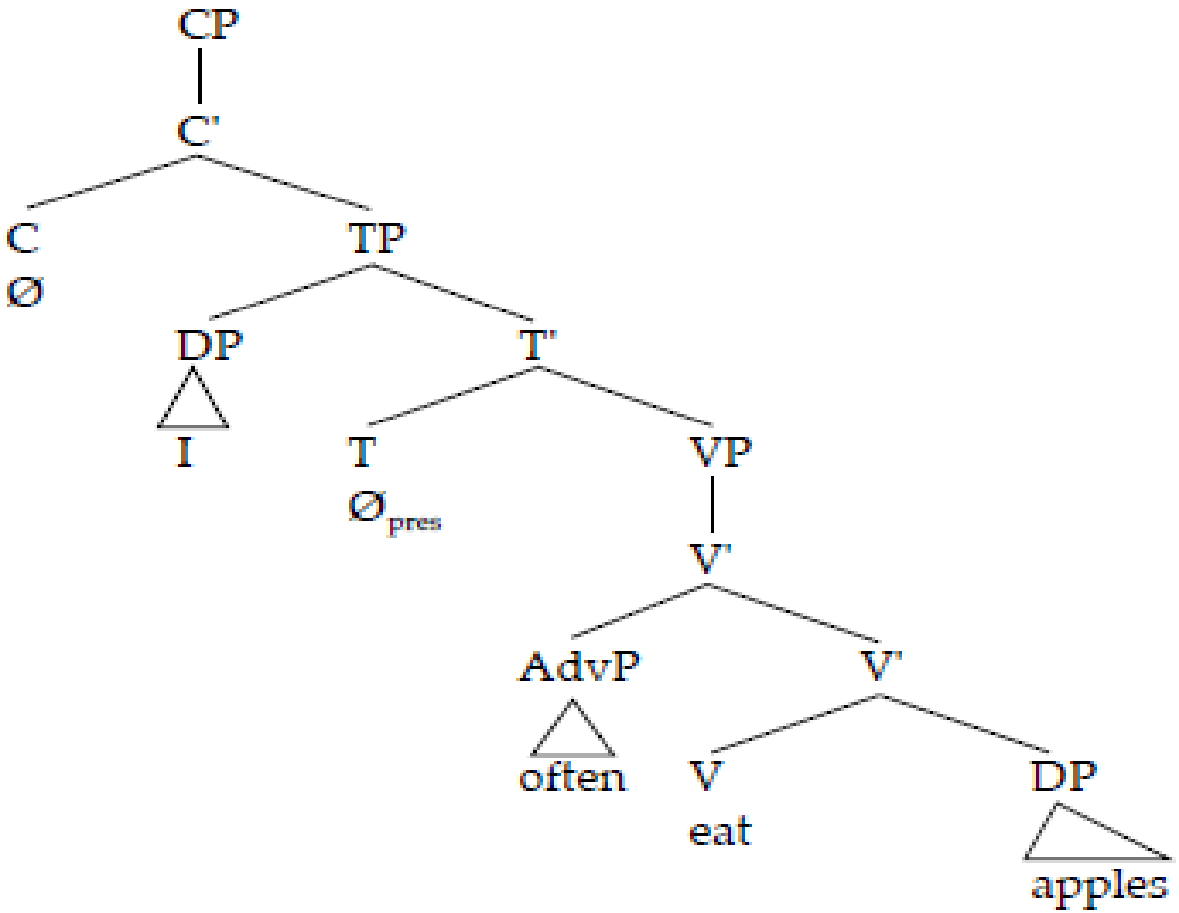
6) I often eat apples.

In the English sentence, the adjunct does not intervene between the verb and its complement.

The tree for (6) will look like (7)

7)

7)



There is a head position that intervenes between the subject DP and the adverb *often:* this is the T position.

Remember T selects for inflection of the verb or surfaces as an auxiliary.

But in French, the thing that appears between the subject and the adverb is not T, but the tensed main verb.

Now consider the following chart in (8)

8)

a)	I	$Ø_{pres}$	often	eat	apples
b)	Je	mange	souvent		des pommes
c)	I	have	often	eaten	apples
d)	J′	ai	souvent	mangé	des pommes
e)	I	can	often	eat	apples

In French, the position of the main verb alternates in position relative to the adverb. In (8b), the adverb follows the main verb, and in (8d) it precedes it.

How can we account for this alternation?

Assume that the form has a structure that meets X-bar theory, and the same basic tree is generated for both English and French.

The difference between the two is that French has a special *extra* rule that moves verbs out of the VP around the adverb and into the slot associated with T.

Th⟶is transformational rule we will call ***V→T*** (also know as ***Verb Movement*** or ***Verb Raising***.

9) ***V→T Movement***:

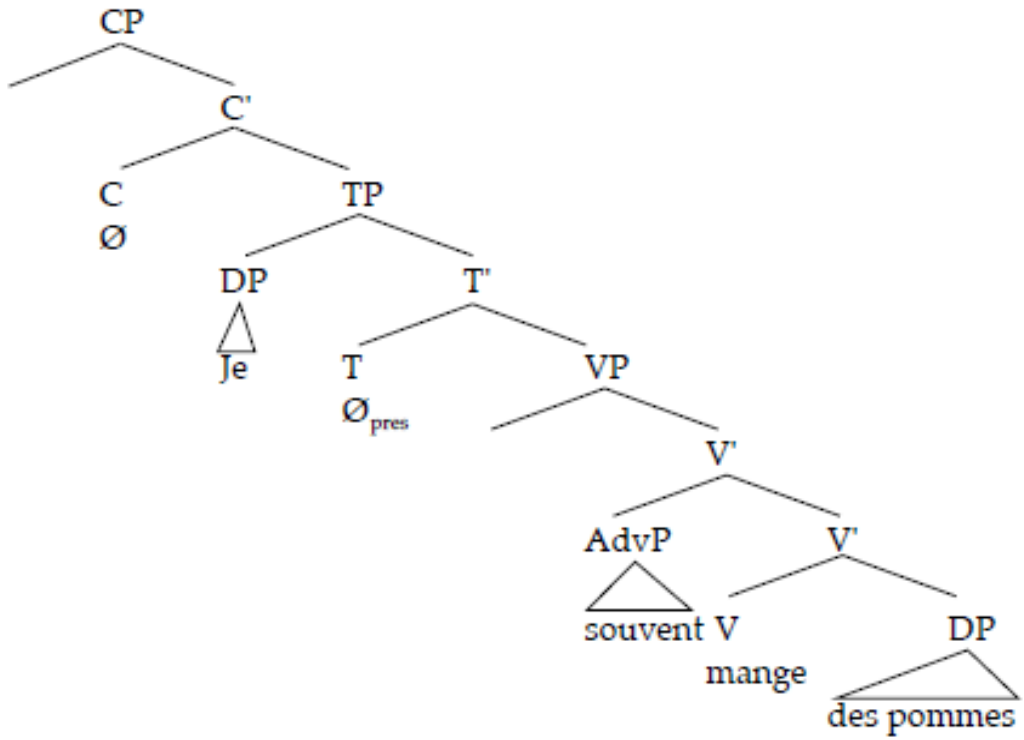
Move the head V to the head T.

By this rule, the verb bearing the tense inflection in (8b) ends up in the T (tense) node. By contrast, in (8d), the main verb doesn't bear tense inflection, so it doesn't raise into the T node.

The derivation of the French sentence *Je mange souvent des pommes* in (8b) is as in (10) and (11).

The first step in the derivation is to build an X-bar structure and insert all the words. This gives us the D-structure in (10):

10)


CP
C'
C
Ø
TP
DP
Je
T'
T
Ø pres
VP
V'
AdvP
souvent
V'
V
mange
DP
des pommes

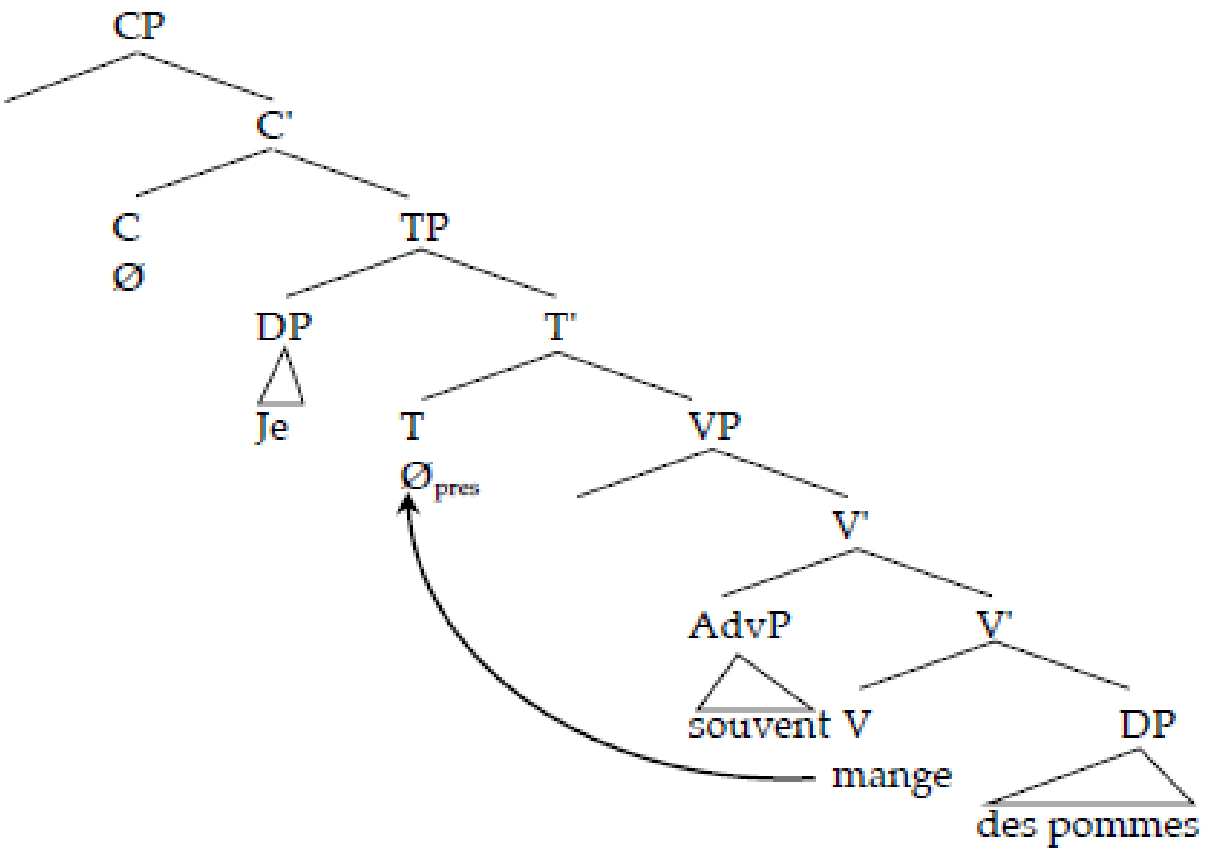
NB: This D-structure is not a grammatical sentence of French yet.

It has the same word order as the English sentence in (6).

The next step in the derivation is to apply the transformation of verb movement.

One typical way of representing movement is to draw an arrow starting in the D-structure position of the moved element and ending in the S-structure position as in (11) below:

11)


CP
C'
C
Ø
TP
DP
Je
T'
T
Ø pres
VP
V'
AdvP
souvent
V'
V
mange
DP
des pommes

This results in the correct S-structure string:

12) Je mange$_i$ souvent t_i des pommes.

The t_i in (12) stands for “trace” and sits at the D-structure position of the verb.

By this transformation, we end up with the order that was not predicted by X-bar theory and at the same time maintain the strong hypothesis that X-bar theory is an important part of how sentences are put together.

We can extend what we have just done to other aspects of the French language.

Consider the chart in (13), this time with negatives:

13)

a)	I	do	not	eat	apples
b)	Je	ne-mange	pas		de pommes
c)	I	have	not	eaten	apples
d)	Je	n'ai	pas	mangé	de pommes
e)	I	can	not	eat	apples

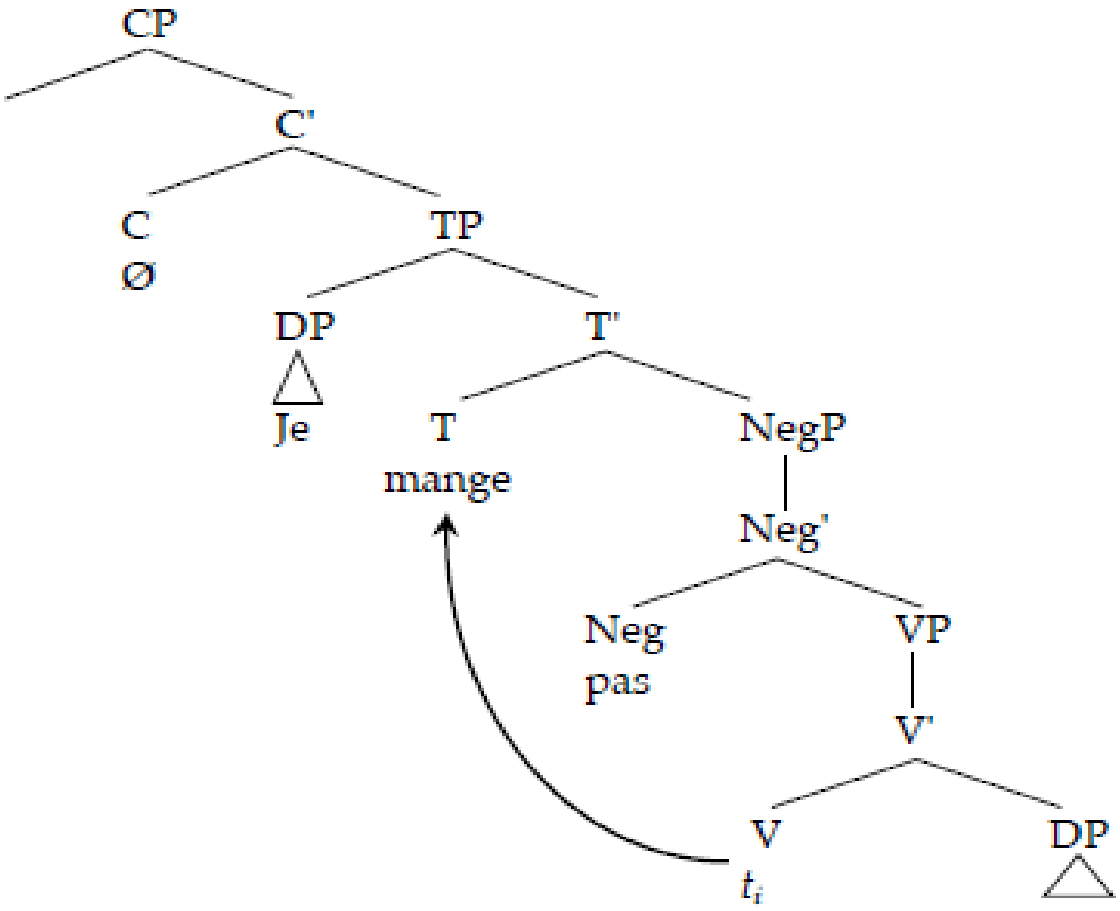
Concentrate on the relative positioning of the negatives *pas* and *not* and the verbs. The situation is the same as with the adverb *often*.

Tensed auxiliaries in both languages (13a, c, d) and modals (13e) precede negation, as does the main verb in French (13b).

But in English, the main verb follows the negation (13a).

We can apply the same solution to this word order alternation that we did with adverbs: we will move the verb around the negation.

The tree will be slightly different. We will assume that *not* heads a projection called NegP, and this projection is the complement of TP, and dominates VP as in (14):


CP
C'
C
Ø
TP
DP
Je
T'
T
mange
NegP
Neg'
Neg
pas
VP
V'
V
t_i
DP

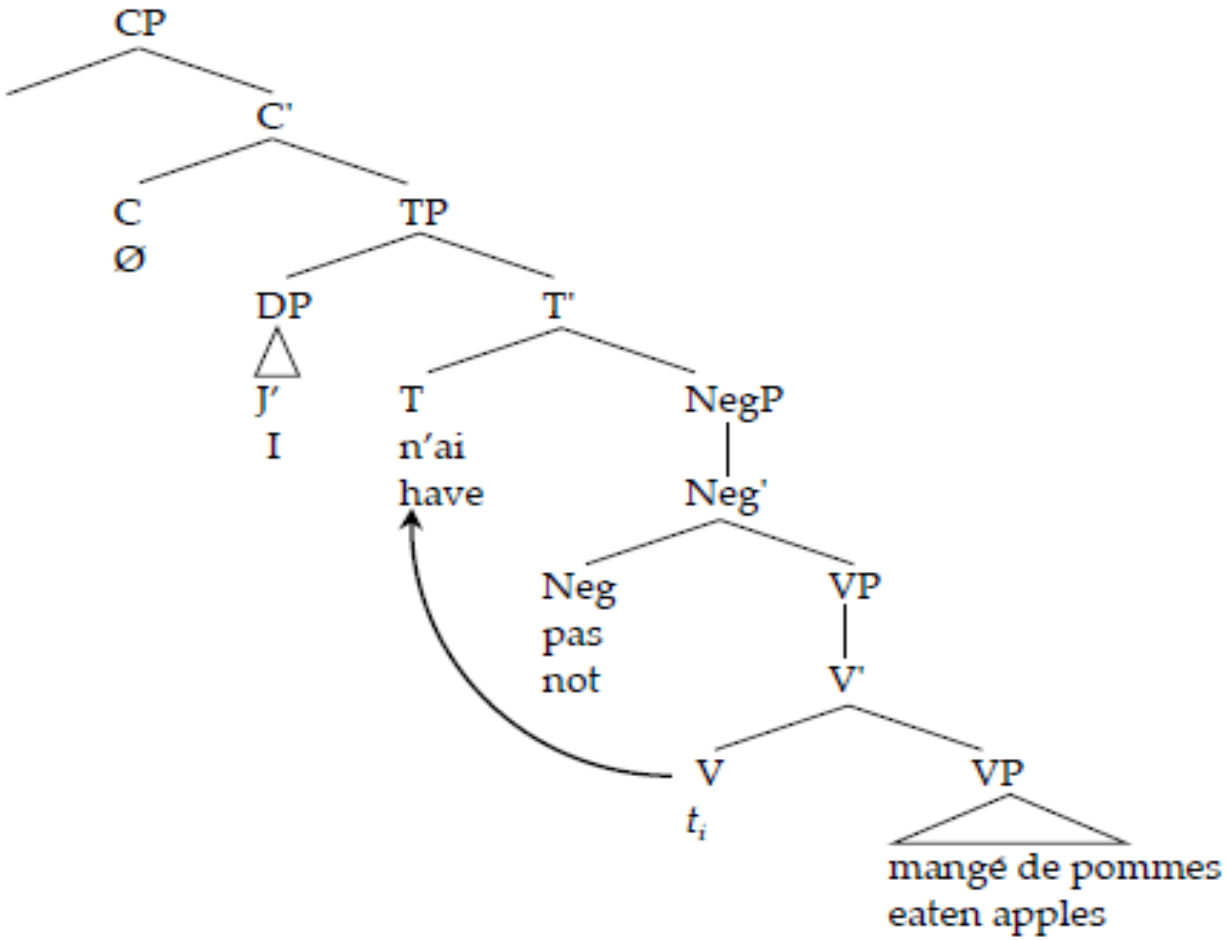
The transformation of verb movement raises the verb around *pas* as shown by the arrow in (14) and this derives the right word order.

We can use this transformation to explain tensed auxiliary movement in both English and French.

Tensed French auxiliary verbs appear in the same position as tensed main verbs, before negation and before adverbs (8d and 13d).

So it appears there is verb movement in English too, but only with tensed auxiliaries.

We can represent this in (15) below:


CP
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T
n'ai
have
NegP
Neg'
Neg
pas
not
VP
V'
V
t_i
VP
mangé de pommes
eaten apples

The question is why don't tensed main verbs in English move. Tensed auxiliaries do. Tensed main verbs in French do. ***V→T*** *movement* takes tensed Vs and moves them into the T node.

Why are English main verbs different in this respect?

One solution is to parameters.

We'll claim that all languages have some version of this rule, but they differ in how they implement it.

Some languages set the parameter so that all Vs move to T, while others set it such that only auxiliaries raise/move.

16) *Verb movement parameter:*

All verbs raise (French) *or* only auxiliary verbs raise (English)

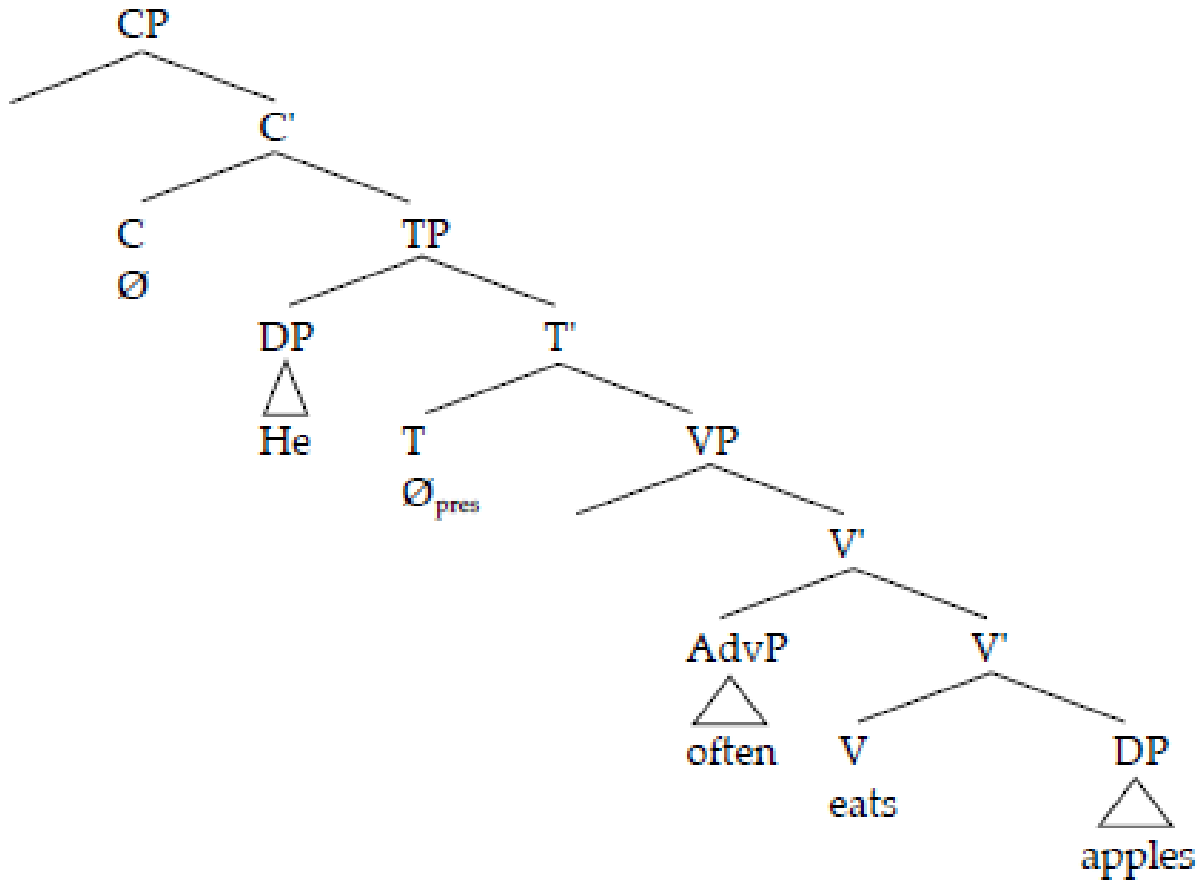
This provides a simple account of the differences between English and French adverbial and negation placement.

The derivation of the English sentence *He often eats apples* is as follows:

The D-structure is the same as the French example, except there is a null tense node $Ø_{pres}$ that requires that the embedded VP be headed by a verb that is preterite in form.

There is no verb raising as in (17):

17)



The result is the grammatical S-structure: *He often eats apples.*

Verb movement: Evidence from Vata

The alternation in position between an auxiliary and a tensed verb is not peculiar to French. Many other languages exhibit this phenomenon.

An example is Vata, a Kru language spoken in West Africa.

The underlying word order of Vata is SOV (Koopman 1984):

18) a. A la saka li.
we have rice eaten
“We have eaten rice.”

b. A li saka.
we eat rice
“We eat rice.”

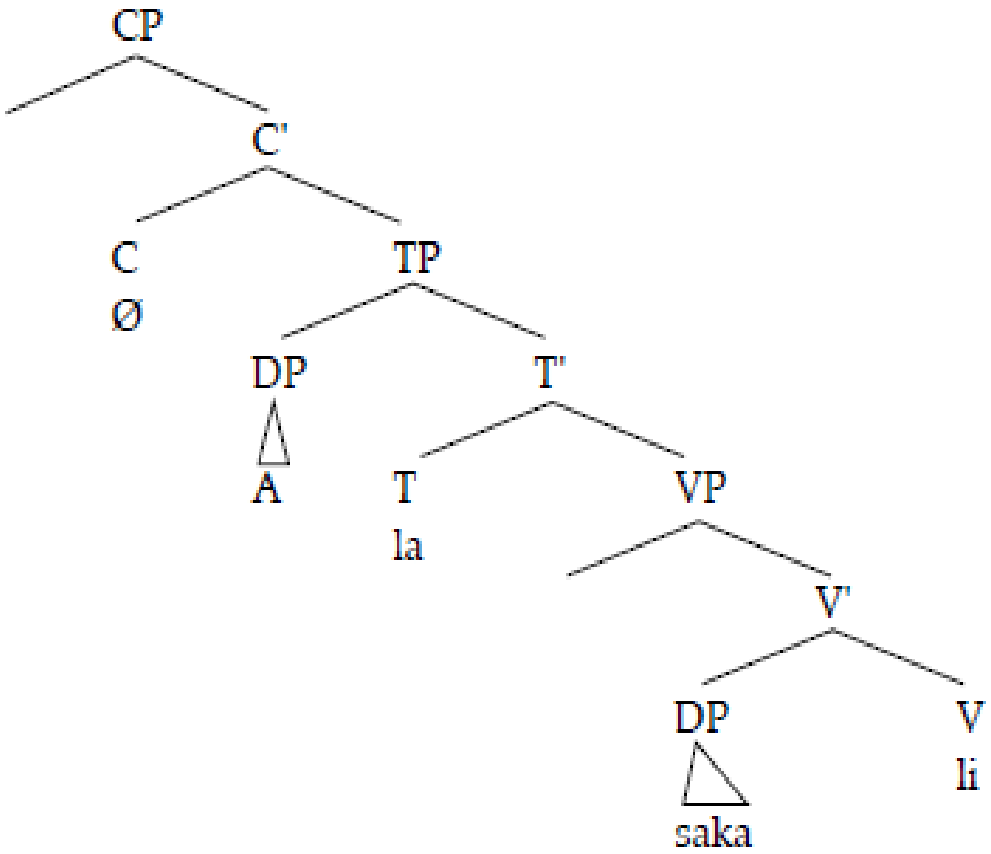
In the sentence with the overt auxiliary, the verb appears to the far right.

When there is no auxiliary, the verb appears in the structural slot otherwise occupied by the auxiliary.

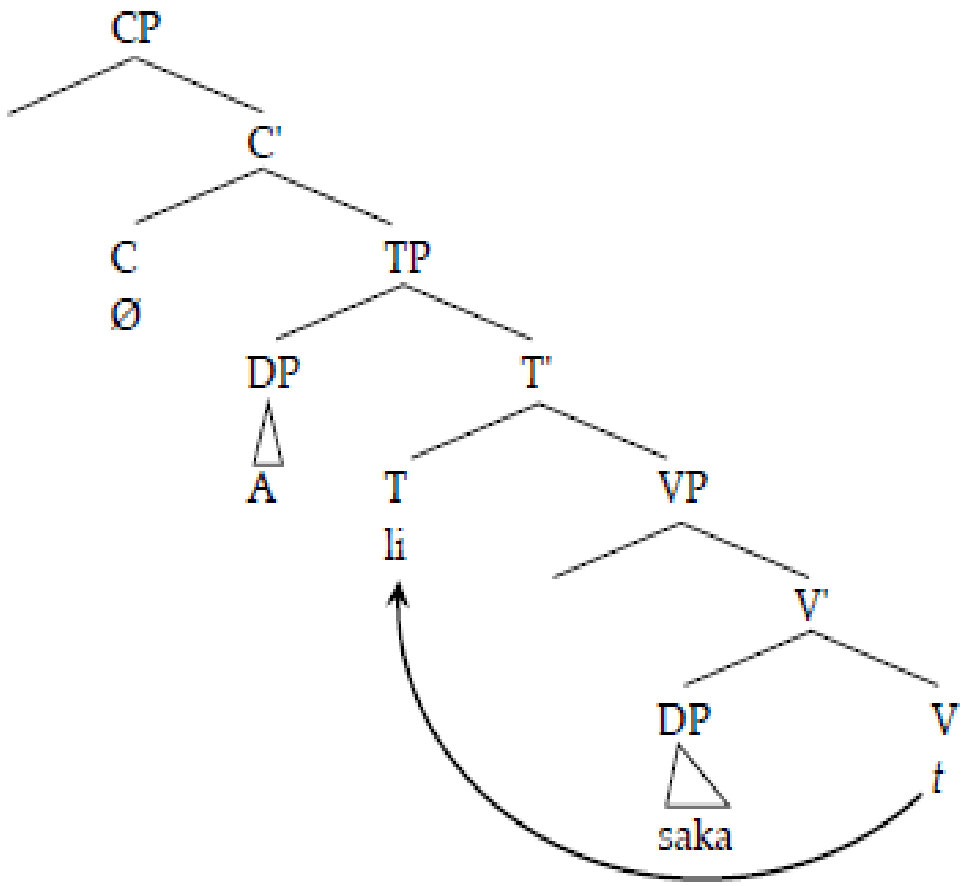
We can attribute this alternation to V→T movement.

When there is an auxiliary (*la*), the verb is untensed so it remains in its base generated position as in (19):

19)



When there is no auxiliary, the verb is tensed and it raises around the object to T as in (20):


CP
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V
t

This produces the correct word order (*A li saka*.)

The transformational rule provides a simple, elegant and motivated account of cases where the verb shows up in the ‘wrong’ position.

The motivation for the verb to move is intuitive: the need for the verb to get its inflection.

Accounting for Languages with VSO word order: Irish

About 9% of the world's languages have verb-subject-object VSO) order. Consider the Irish example in (21):

21) Phóg Máire an lucharachśn.
Kissed Mary the leprechaun
"Mary kissed the leprechaun."

There is no way that X-bar theory can generate a sentence of this type.

This is true of every basic sentence in Irish.

VSO order is found in every tensed sentence in Irish.

Other languages that have VSO order are: Tagalog, Welsh, Arabic, Mixtec, Mayan, Salish, Turkana, and Maasai.

The failure of X-bar theory to account for 9% of the world's languages is significant.

The theory of transformations, however, gives us a solution to this problem.

If we assume that VSO languages are underlyingly SVO (at D-structure), then a transformational rule applies that derives the initial word order:

22) SVO $\Rightarrow$ VSO

There is evidence to back this verb movement approach to the Irish word order.

First, we find the same kind of positional auxiliary/tensed verb word order that we saw in French:

23) Tá Máire ag-pogáil an lucharachán

is Mary ing-kiss the leprechaun

“Mary is kissing the leprechaun.”

24) Phóg Máire an lucharachán.
kissed Mary the leprechaun
"Mary kissed the leprechaun."

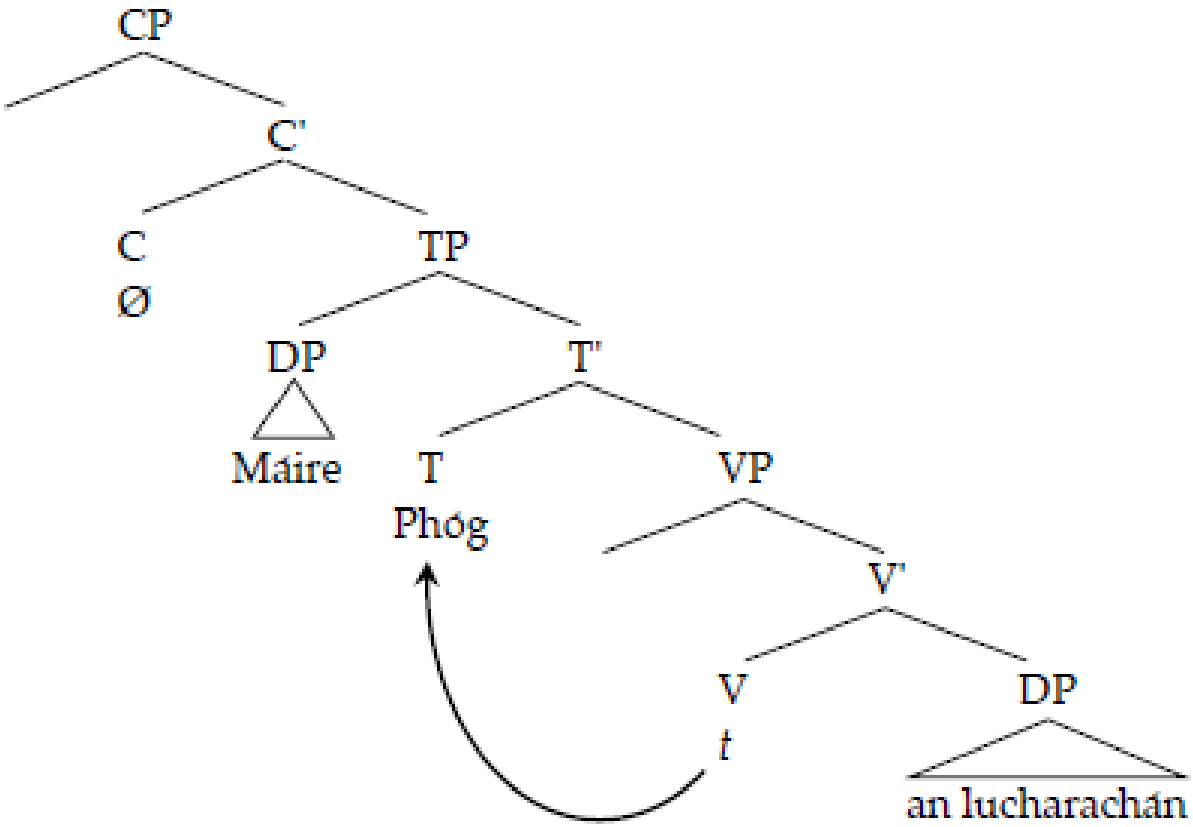
As in the French certain position (in Irish the initial position), auxiliaries and main verbs are in complementary distribution.

This is evidence for V→T movement.

But the Irish case is not as straightforward as the French and Vata cases.

A V→T movement account will not derive the correct VSO order.

Instead, it will generate an incorrect SVO order as in (25):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Phóg
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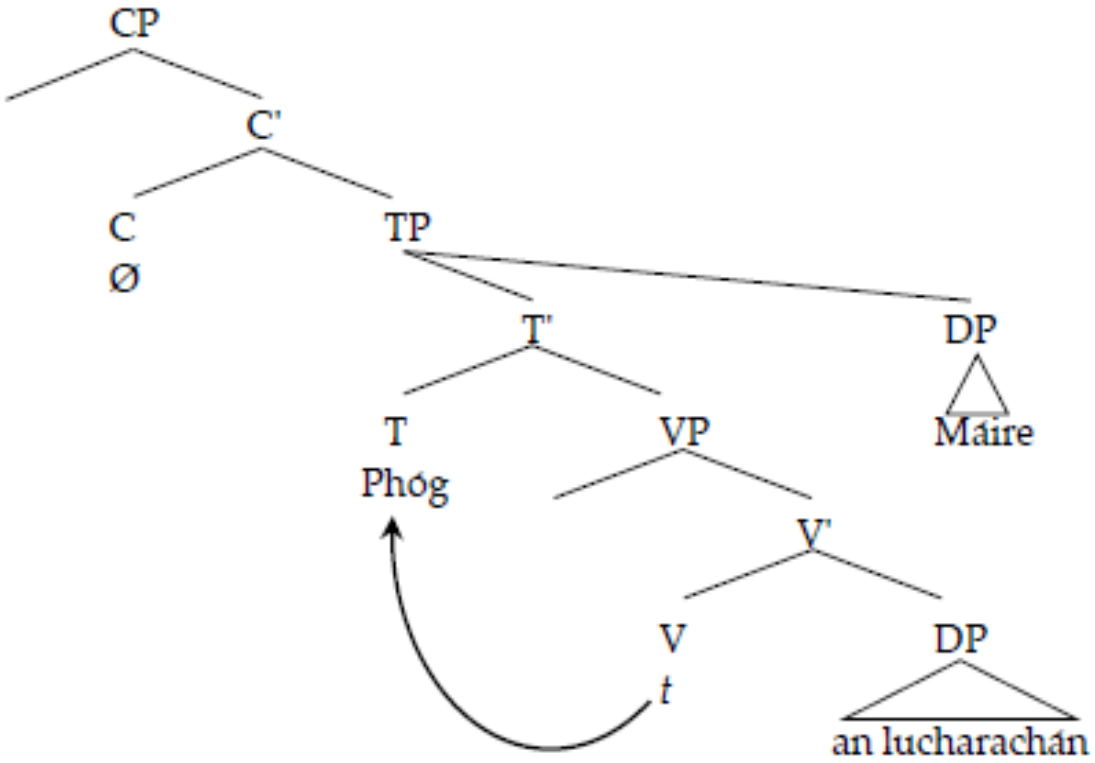
DP
an lucharachán

One possibility is to resolve this is to appeal to parameters and say that Irish puts the specifier of TP to the right, but this doesn't work.

It will result in a VOS order as in (26):

26)



A VOS order is completely ungrammatical in Irish as (27) shows:

27) *Phog an lucharachan Maire.

kissed the leprecchaun Mary

(ungrammatical with the meaning “Mary kissed the leprechaun”.

This means that X-bar parameters are not the solution.

The VP-Internal Subject Hypothesis

The solution to the problem is to say that we have been generating external arguments in the wrong position.

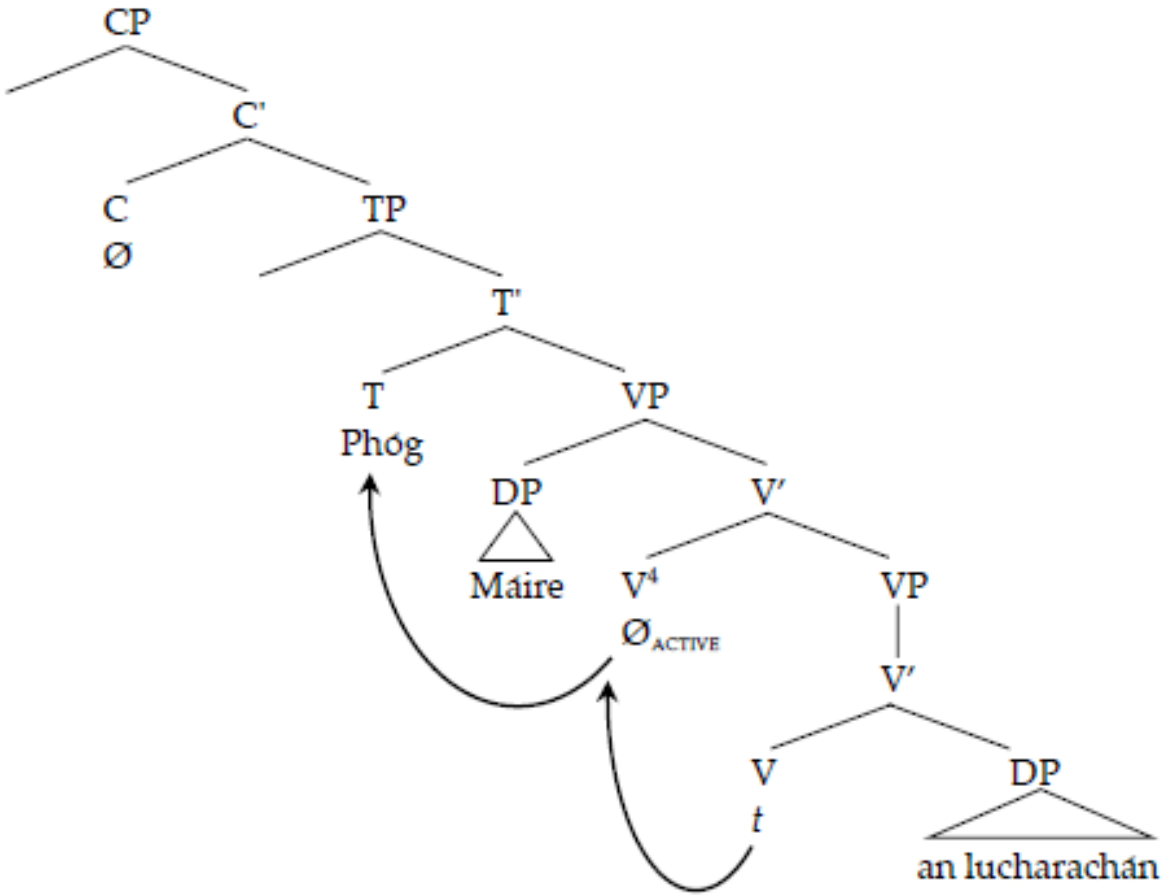
That is, external arguments are not generated in the specifier of TP, but that they are underlyingly generated lower in the tree (i.e., in the specifier of VP).

The idea that subjects are generated in the specifier of VP is called the ***VP-Internal Subject Hypothesis*** and was first proposed by Hilda Koopman and Dominique Sportiche (1991).

We will discuss this in detail in another lecture.

If we assume the VP-internal subject hypothesis, then the VSO order can be simply derived by V→ T movement as in (29):

29)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V⁴
Ø ACTIVE
VP
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V
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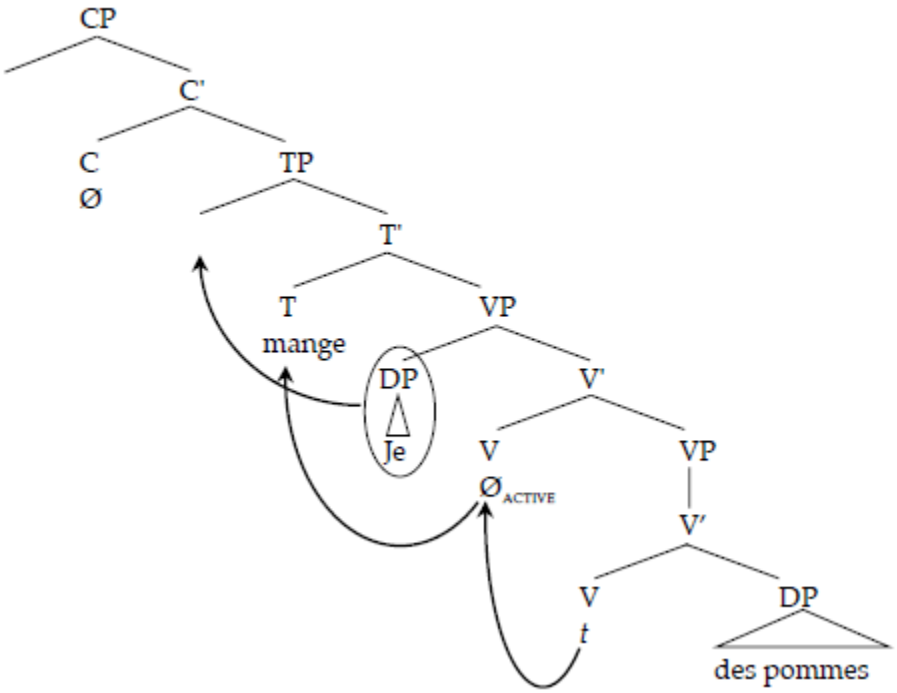
DP
an lucharachán

30)

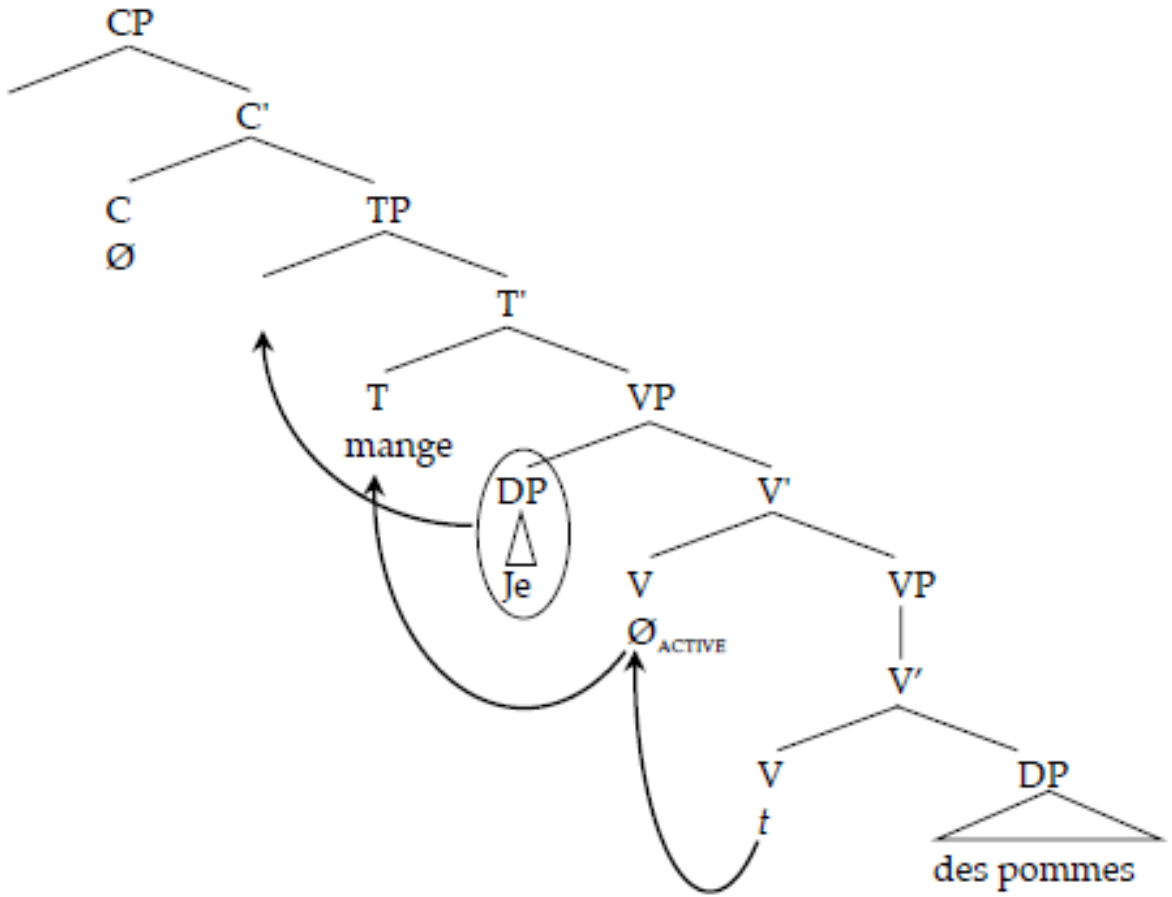


This account ill derive the correct VSO order in Irish.

But what about languages like English, French and Vata in which the subject precedes T?

As we shall see later, it is the case that in these and other languages, the subject DPs move to the specifier of TP.

30)



We shall discuss the correct formulation and motivation for the VP-internal subject hypothesis later.

T Movement (T→C)

Another example of Head-to-Head movement is what is known as ***T→C movement*** or subject-aux inversion.

This kind of movement is found in English *yes/no* questions as in (31b):

31)a. You *have* squeezed the toilet paper.

b. *Have* you squeezed the toilet paper?

In chapter 7, we claimed that the alternation between the subject and the auxiliary is due to the presence of a special null question complementizer $Ø_{[+Q]}$.

It was observed that in many languages (Polish, Irish, and Ghanaian languages) *yes-no* questions are not indicated by subject-aux inversion, but with a complementizer.

32)

An bhfaca tú an madra?

Q see.PAST you the dog

"Did you see the dog?"

We claimed that subject-aux inversion is a special case of these question complementizers.

English has a null $\emptyset_{[+Q]}$ complementizer.

English employs a mechanism that gives phonological content to that $\emptyset_{[+Q]}$ complementizer by moving T to it, *around the subject.*

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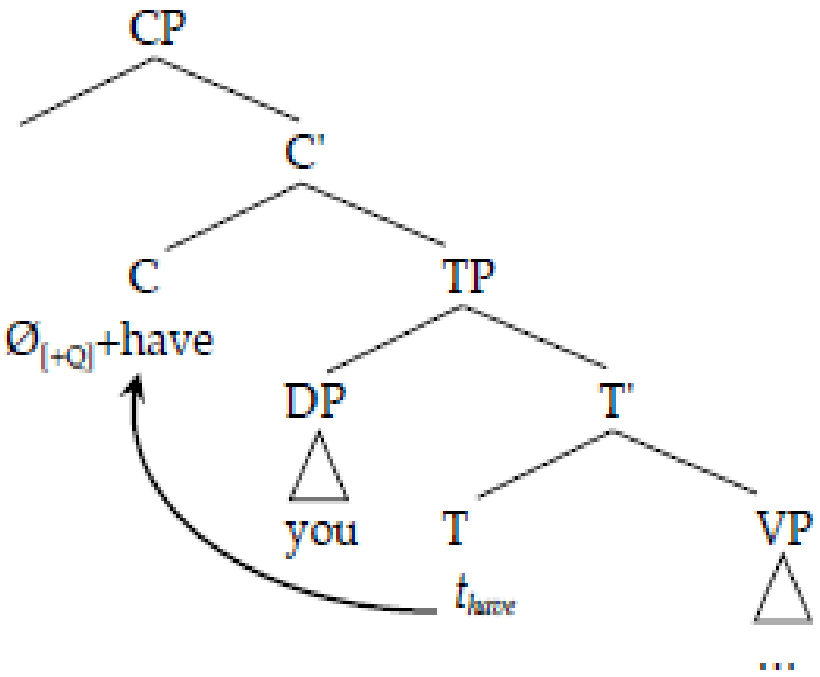
33)



The support for this kind of analysis is found in the fact that subject-aux inversion (T→C) is in strict complementary distribution with overt question complementizers as seen in the examples in (34):

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34) a) I asked *have* you squeezed the toilet paper.[5]

b) I asked whether you *have* squeezed the toilet paper.

c) *I asked whether *have* you squeezed the toilet paper.

We can conclude that subject-aux inversion is a property triggered by complementizers.

It appears that V→ T and T→C interact.

In English, only auxiliaries ever occupy the T head as free-standing entities. Main verbs do not raise to T in English.

So only auxiliaries undergo T→C movement, main verbs do not.

35)a. Have you squeezed the toilet paper?

b. *Squeezed you the toilet paper?

This is in contrast with French in which main verbs undergo V→T movement as in (36):

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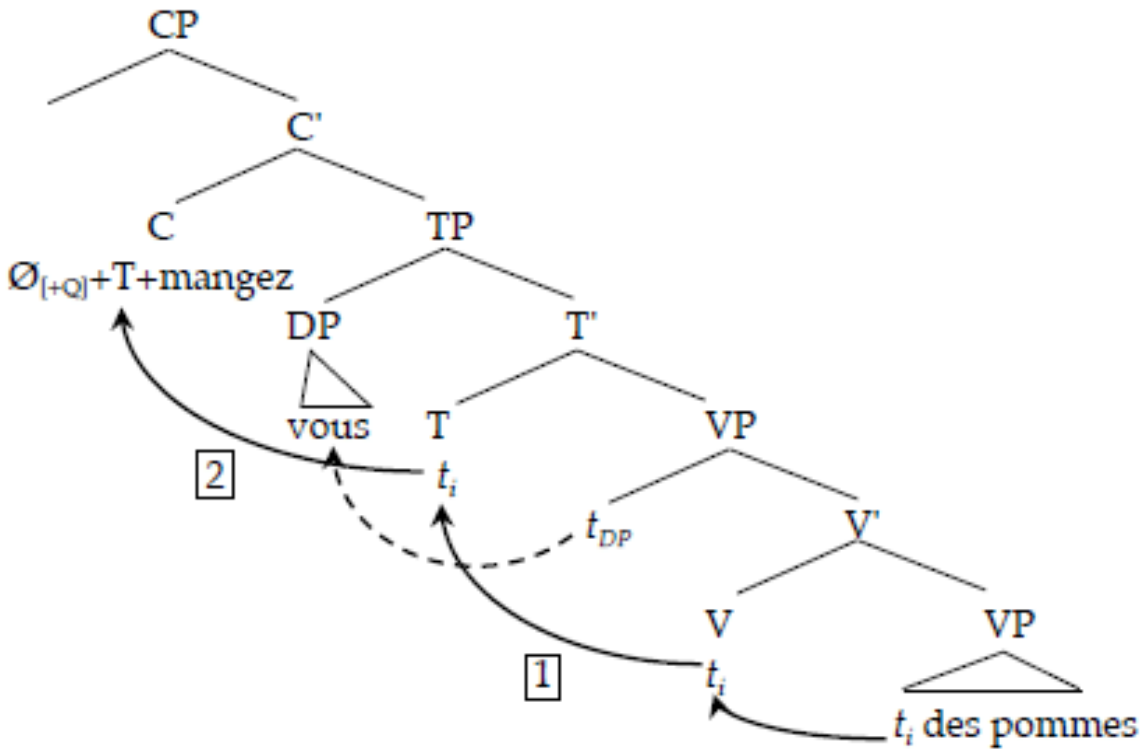
36)



Movement [1] is V→T movement. Movement [2] is subsequent movement of the verb (in T) to C as part of T→C movement.

Main verbs in French do invert in questions, but English main verbs do not:

37) a. Mangez-vous des pommes?

b. *Eat you apples?

Summary

We have seen that the transformation of T→ C has phonological motivation, and is similar in ways to V→ T movement.

In a language like French where V →T movement applies, main verbs as well as auxiliary verbs undergo T →C movement.

Do-Support

In English we have the following interesting situation when we try to question a sentnece with no auxiliary verb:

38) a. You eat apples.

b. Do you eat apples?

In sentences with no auxiliary, we insert a dummy auxiliary verb in *yes/no qustions.*

The dummy auxiliary is inserted to fill T. Then it can undergo T→C movement.

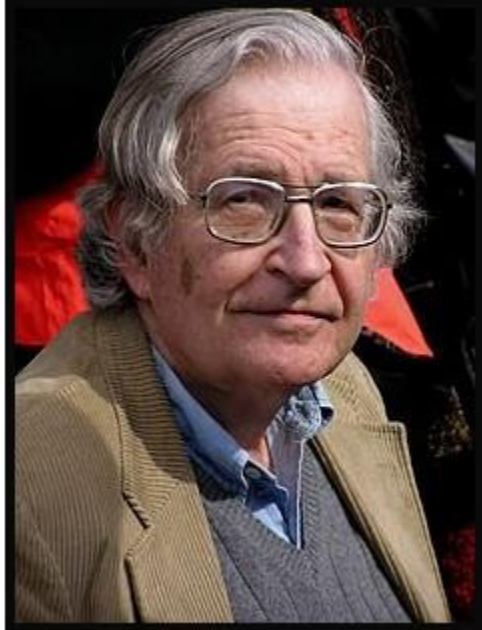
This called ***do-support:***

39) Do-support:

When there is no other option for supporting inflectional affixes, insert the dummy verb *do* in T.

Prepared from:

Carnie, Andrew, 2013. *Syntax: A Generative Introduction*. 3rd edition. Malden MA & Oxford: Wiley-Blackwell Publishing.



Language is a process of free creation; its laws and principles are fixed, but the manner in which the principles of generation are used is free and infinitely varied. Even the interpretation and use of words involves a process of free creation.

(Noam Chomsky)

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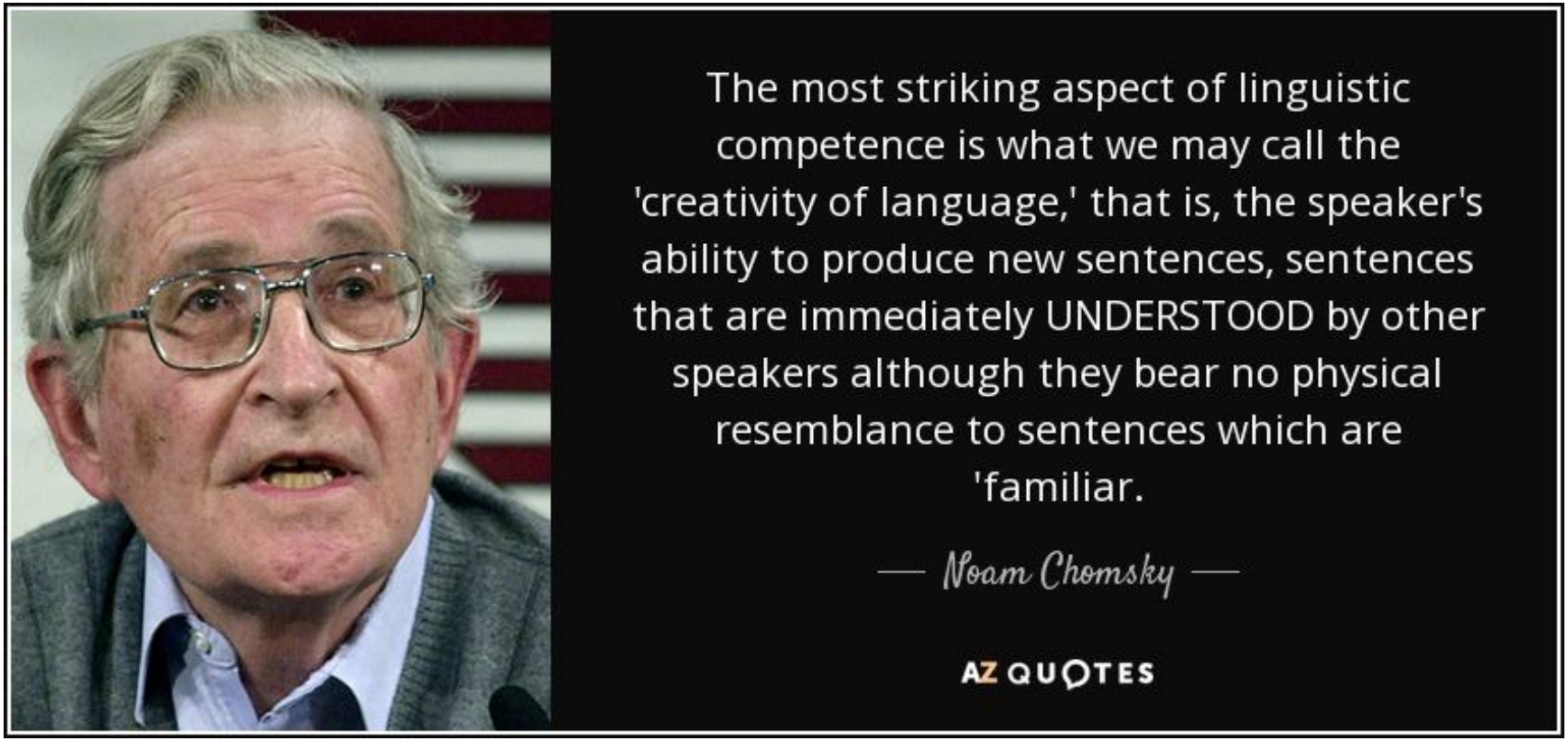
The most striking aspect of linguistic competence is what we may call the 'creativity of language,' that is, the speaker's ability to produce new sentences, sentences that are immediately UNDERSTOOD by other speakers although they bear no physical resemblance to sentences which are 'familiar.
— Noam Chomsky —
AZ QUOTES

The end