

- **Clauses as complements**
- **The Inversion rule**
- **The *Wh* Movement rule**

Background reading:

- CL Ch 5, §2.3, “Complement clauses”
- CL Ch 5, §3, “Move”
- CL Ch 5, Appendix section “Using Move”

0. Course information and announcements

- **Exam #2** will be on **M Nov 6** — if you are not already registered with ARS but want to be, act now
- The TAs recommend that you come to **office hours** this week if you know you have questions — next week will be busy!
- ***PRACTICE PRACTICE PRACTICE PRACTICE PRACTICE***
 - Try the practice sentences from lecture outlines and from your TA
 - Try drawing trees for *CL* Ch 5 exercises (5), (9), (10), (11)

1. Review and context for this discussion

- Syntax is **creative**: humans can produce and understand sentences never seen before
- Linguists want to know: How does this work?
- Goal is to build a syntax **model** that can:
 - Produce only sentences that native speakers find **grammatical**
 - Make the right predictions about which words in a sentence form **constituents** (units, subgroups)
- Building an effective model helps us understand the properties of the actual human mental grammar

1. Review and context for this discussion

- What do we do when we find sentences for which our model is making the **wrong prediction**?
 - Add or change some aspect of our model in order to make the predictions better
- So far, our syntax model (for English) contains:
 - the **X' schema** (combines words into phrases)

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- So far, our syntax model (for English) contains:
 - the **X' schema** (combines words into phrases)
 - the **modifier structure** (for 'extra' phrases)
 - > How do we rule out sentences like
**Grover slept the baby* or **Susan devoured* or
**Oscar put the book*?

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- So far, our syntax model (for English) contains:
 - the **X' schema** (combines words into phrases)
 - the **modifier structure** (for 'extra' phrases)
 - **complement options** (chosen by specific heads), including the **double-complement** structure when needed (for cases like the *V put*)

1. Review and context for this discussion

- Our X' schema as developed thus far can't handle sentences like the following:
 - (1) *The coach thinks [that the team should win]*
 - (2) *The coach knows [whether the team should win]*
- What kind of **structure** can we see inside the brackets (especially if we ignore the underlined word)?
 - Are the structures inside the brackets constituents?
 - What relationship do they have to the V?

2. Clauses as complements

- These are cases where a whole **clause** (sentence) is the complement of a verb — that is, we have an **embedded sentence**
 - (1) *The coach thinks [that *the team should win*]*
 - (2) *The coach knows [whether *the team should win*]*
- There is often a word like *that, whether, if* to introduce an embedded sentence
 - These words belong to the word category known as **complementizer (C)**

2. Clauses as complements

- A **C** is the head of a **CP** (phrase) — this is the syntactic representation of an **embedded sentence**
 - A C takes a TP (a sentence) as its complement
 - (We'll talk about specifiers for CP a little later)
- A C is called a **complement+iz(e)+er** because **it turns** a TP (a sentence) **into** something that can be a **complement** (typically of a V)
- English also has another C that is a *null* or *zero* morpheme (is silent / has no phonological form)
 - Can you think of an example of an embedded sentence with a null C?

2. Clauses as complements

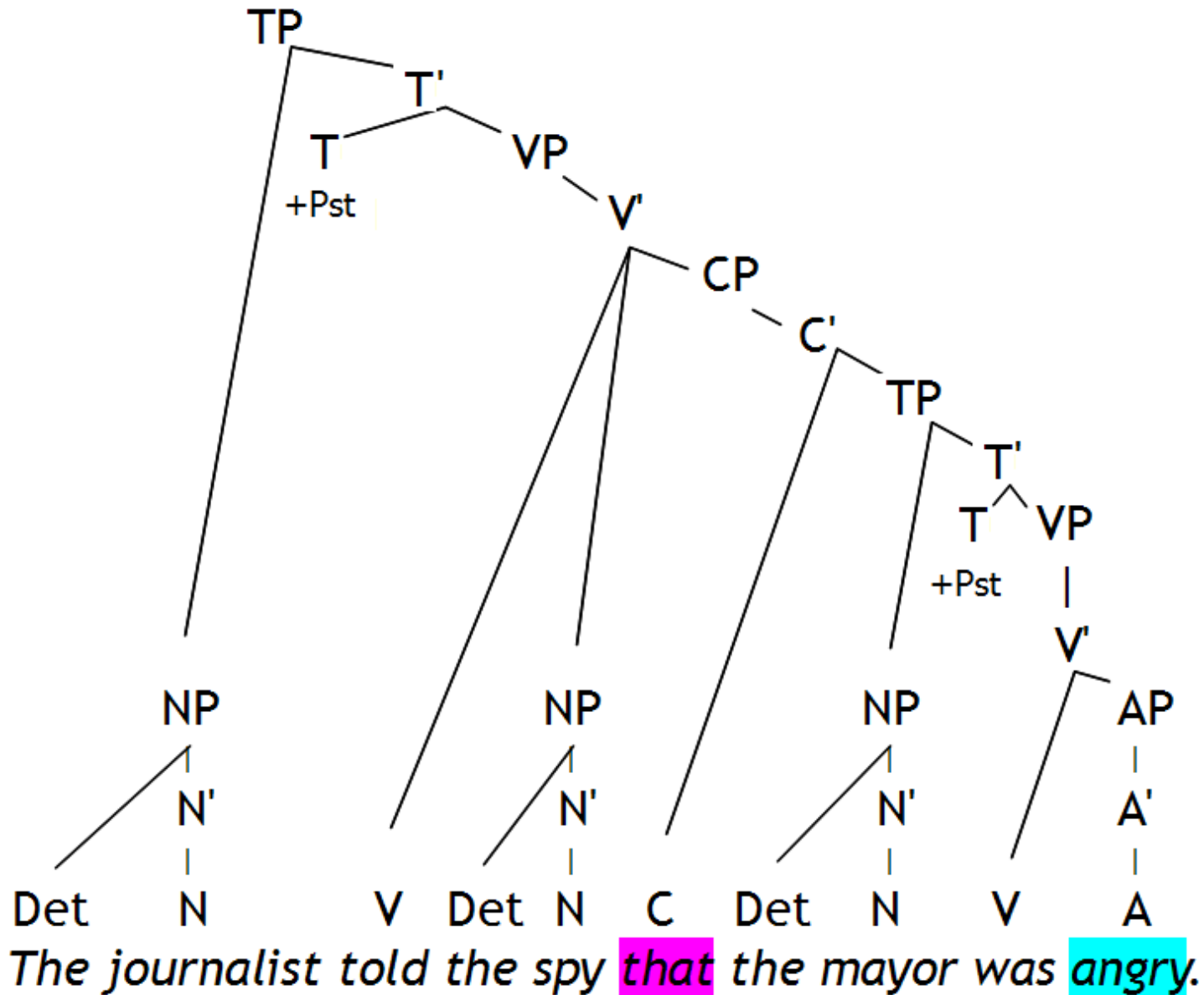
- Try it — Draw a tree for this sentence
 - Hint: What is the **word category** for the highlighted words?

(tree is on next slide — but try it yourself first)

(3) *The journalist told the spy **that** the mayor was **angry**.*

2. Clauses as complements

(3)



2. Clauses as complements

- For this class, we will propose that every time a verb occurs with a CP, that CP is a **complement**
 - This means we will need to use the **three-branch V'** (double-complement) structure if we have [V NP CP] or [V PP CP] in our VP
- Note: There are two morphemes *that* in English
 - One is a Det
 - One is a C
 - How can you tell which is which? (Is there a difference in where they occur?)

3. Extending our model of syntax again

- Is this sentence **grammatical** to native speakers?
Does our model **predict** this to be grammatical?

(1) *What might the puppy devour?*

3. Extending our model of syntax again

- Is this sentence **grammatical** to native speakers?
Does our model **predict** this to be grammatical?
- (1) *What might the puppy devour?*
 - Why is the auxiliary *might* on the **left** side of the subject NP?
 - Why is there **no** NP complement in the VP as required by *devour*?
 - What is the **position** of *what*?
- An approach that addresses all these factors: the syntactic **transformation** known as **Move**

4. *Yes-no* questions

- Consider these examples:
 - (2a) *Students will study the lessons.*
 - (2b) *The students will study the lessons.*
 - (2c) *The dedicated students in this class will study the lessons.*
- What does it look like when those sentences are made into **yes-no questions**?
 - Yes-no questions are questions to which the answer would be “yes” or “no”

4. *Yes-no* questions

- What does it look like when those sentences are made into *yes-no* questions?
 - (2a) **Will** [*students*]__ *study the lessons?*
 - (2b) **Will** [*the students*]__ *study the lessons?*
 - (2c) **Will** [*the dedicated students in this class*]__
study the lessons?
- The auxiliary *will* moves to a position to the left of the subject
 - What position is it moving to?

4. *Yes-no* questions

(2a) *Will* [*students*] __ *study the lessons*?

- *Proposal: **Every** TP is inside a CP* (not just embedded TPs)
 - This is independently supported by various facts about languages other than English
- The C of a **matrix clause** (main clause) contains information about whether the sentence is a question
 - In a question, the matrix C contains a **+Q** symbol (which is not pronounced)
 - In a non-question, the matrix C has no +Q

4. *Yes-no* questions

(2a) **Will** [*students*] __ *study the lessons*?

- *Proposal*: The mental grammar for syntax includes **movement rules**
 - Movement rules take words or phrases in an X' tree and **move them to some other position**
- **How movement rules work** in our model
 - A moved element leaves a **trace** (*t*) in its original position
 - A moved element **retains** its original category label (*under* the one it moves into)
 - Any part of the structure of the sentence not affected by the movement rule does not change

4. *Yes-no* questions

(2a) **Will** [*students*] _ *study the lessons*?

- **Inversion** — a movement rule that exists in English (and in some, but not all, other languages):

When the matrix C is +Q, move T to the C position and attach it next to +Q (see *CL*, p 185)

→ We can use the Inversion rule to explain why the **auxiliary verb** (like *will* above) in a yes-no question **appears to the left of the subject**

4. *Yes-no* questions

(2a) **Will** [*students*] __ *study the lessons*?

- Step 1: Construct a tree for the **deep structure** of the sentence, using the X' schema as usual

(What is the deep structure for this sentence?)

- The **deep structure** is the structure built according to the X' schema, **before** any other syntactic rules (such as movement rules) have applied
- The **surface structure** is what a speaker actually says, after all the syntactic rules have applied

4. *Yes-no* questions

(2a) **Will** [*students*] __ *study the lessons*?

- Step 1: Construct a tree for the **deep structure** of the sentence, using the X' schema as usual

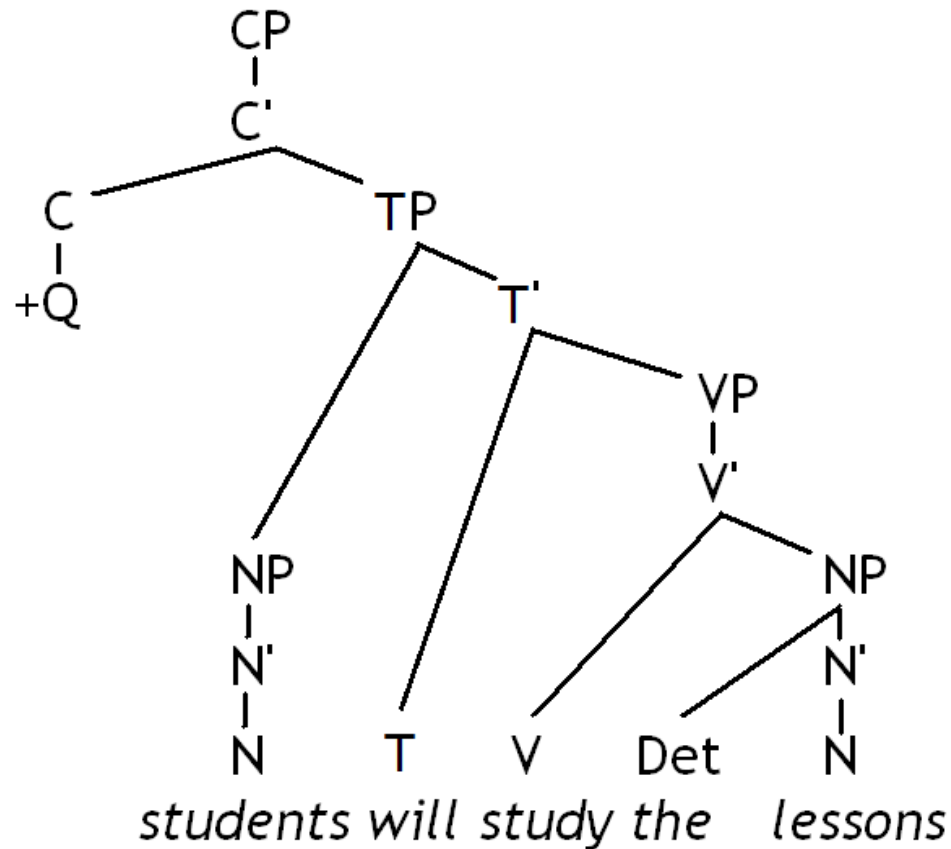
+Q students will study the lessons

- The **deep structure** is the structure built according to the X' schema, **before** any other syntactic rules (such as movement rules) have applied
- The **surface structure** is what a speaker actually says, after all the syntactic rules have applied
- **+Q is present** (in the C position) here, because this sentence has the meaning of a question — this **triggers Inversion**

4. Yes-no questions

(2a) *Will* [*students*] _ *study the lessons*?

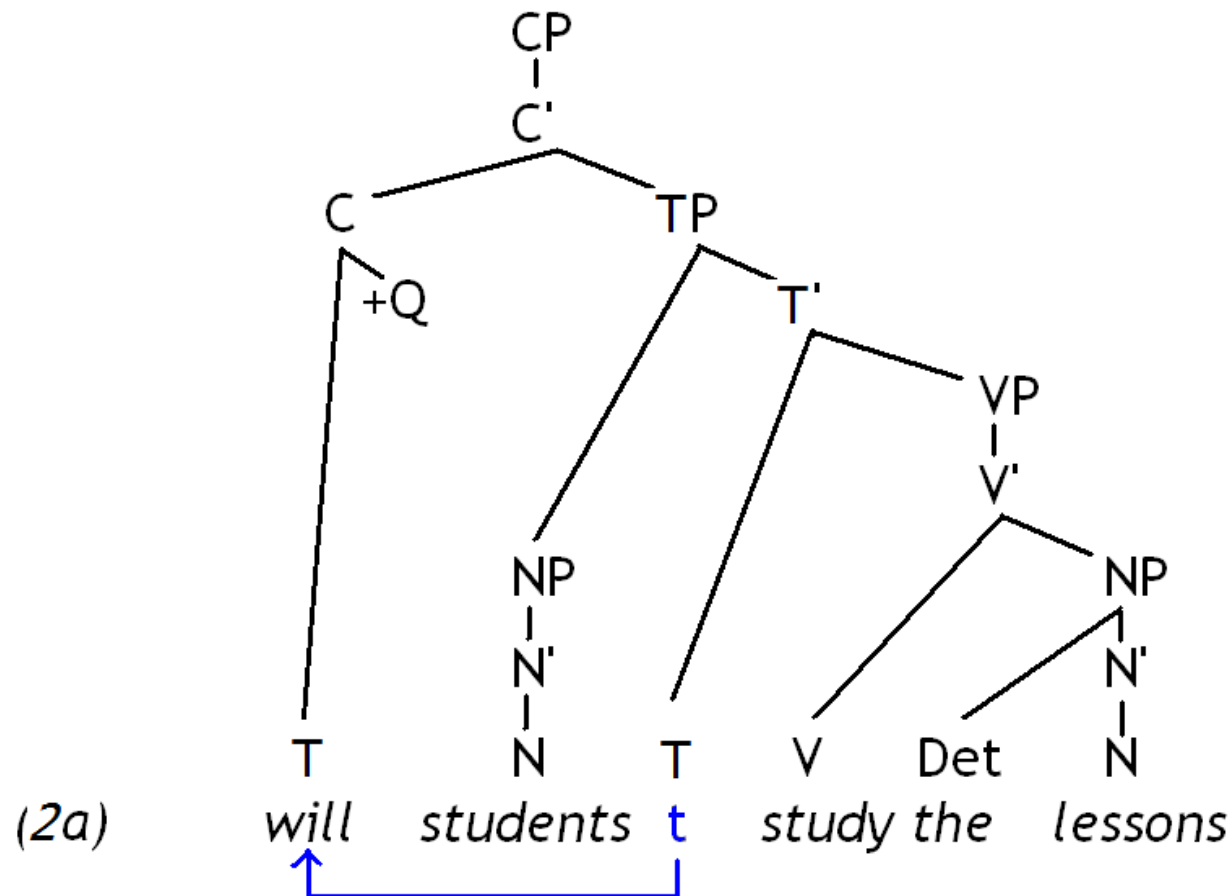
- Step 1: Construct tree for **deep structure** (+Q is in C)



4. *Yes-no* questions

(2a) **Will** [*students*] _ *study the lessons*?

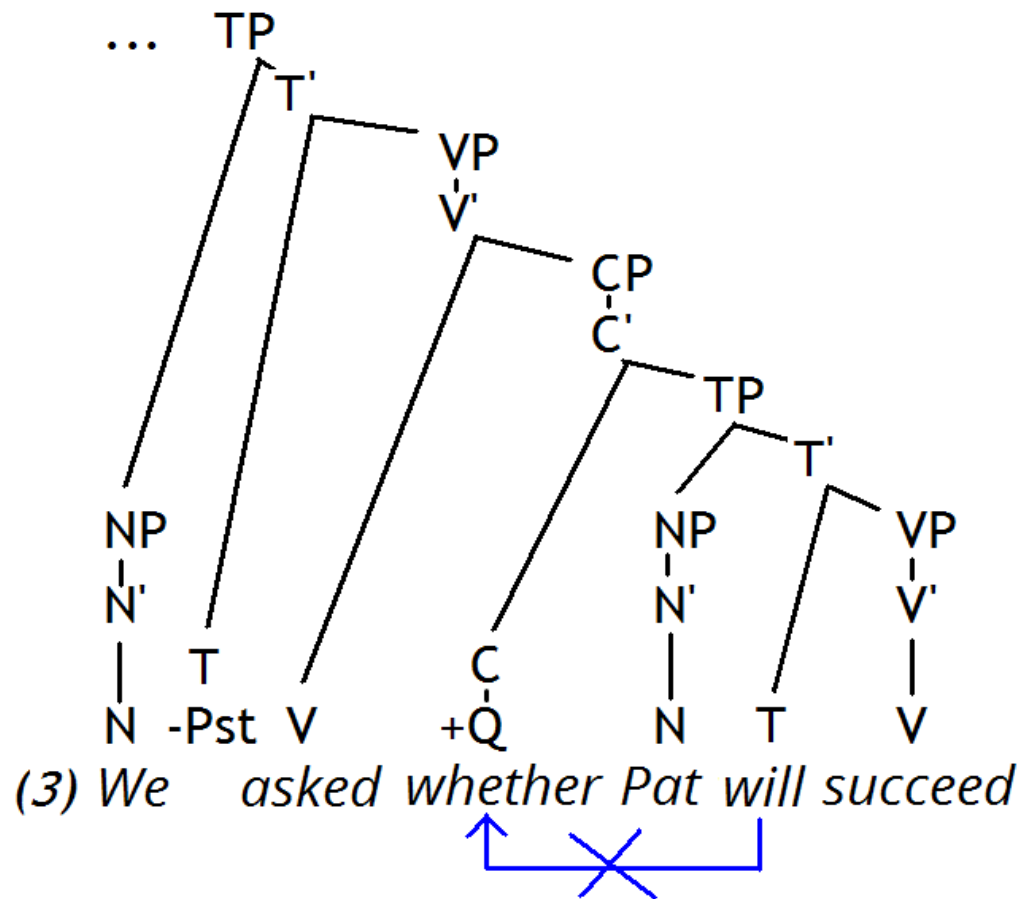
- Step 2: **Inversion** applies: *will* moves to C, leaving *t*



4. *Yes-no* questions

- Can we find evidence to support the proposal that the fronted auxiliary has moved to C?
- Consider: Does this proposal explain why it is only the **matrix** (main-clause) **auxiliary** that moves?
 - Compare an **embedded question**:
 - (3) *We asked whether Pat will succeed.*
 - What is the structure of the embedded CP?
 - Can we explain why the auxiliary doesn't move into the embedded C position?

4. Yes-no questions



- If the C position is where the fronted auxiliary moves to, we can explain why the auxiliary doesn't move in an embedded question: **C is already occupied**

4. *Yes-no* questions

- Does this imply that **every** matrix (main-clause) TP is inside a CP, even if it's not a question?
 - Actually, yes!
 - But we sometimes take a shortcut by omitting the topmost CP from our tree diagram, in a sentence where this CP contains no overt C head and no overt specifier

5. Progress report

- Is this sentence **grammatical** to native speakers?
Does our model **predict** this to be grammatical?

(1) *What might the puppy devour?*

- Why is the auxiliary *might* on the **left** side of the subject NP? | **Inversion has applied**
- Why is there **no** NP complement in the VP as required by *devour*?
- What is the **position** of *what*?

6. *Wh* questions

- ***Wh* question** is the technical term in linguistics for questions containing a question word such as *what, who, where, when, which, how*
 - *Wh* questions are sometimes also called **information questions**
- Our sentence is an example of a *wh* question:
 - (1) *What* might the puppy devour?
 - How can we use the idea of **movement** to explain why this sentence is grammatical?

6. *Wh* questions

(1) *What might the puppy devour?*

- The position of the auxiliary *might* can be explained by Inversion, just as for yes-no questions

What might the puppy t devour ?

- But we still have to explain...
 - Where is the NP complement of *devour*?
 - What is the *what*, and what position is it in?

6. *Wh* questions

(1) What might the puppy t devour ?

- Notice what happens if we answer this question: the answer to what **is** the **NP complement of *devour***

The puppy might devour the zucchini.

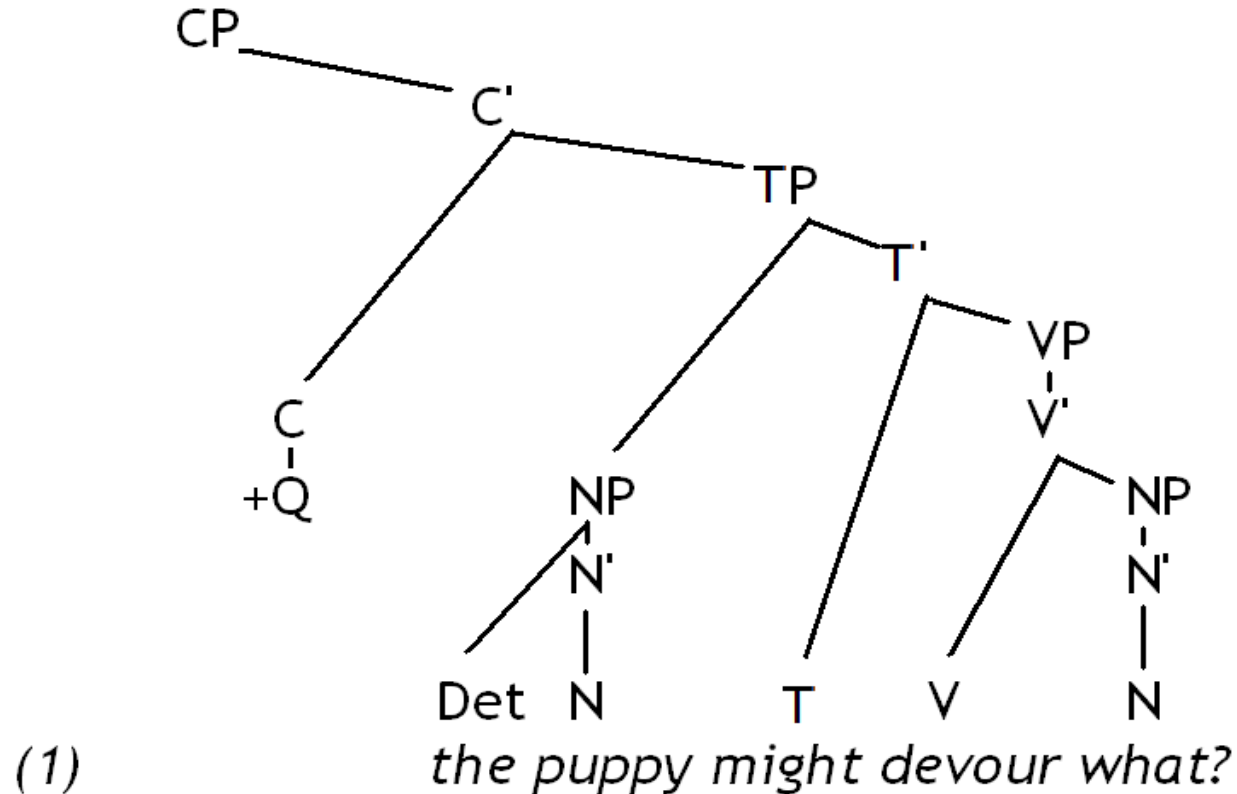
- Proposal: The question word *what* **is** itself actually the NP complement of *devour* in the deep structure
 - Its position at the beginning of the sentence is the result of another movement rule

What might the puppy t devour t ?

6. *Wh* questions

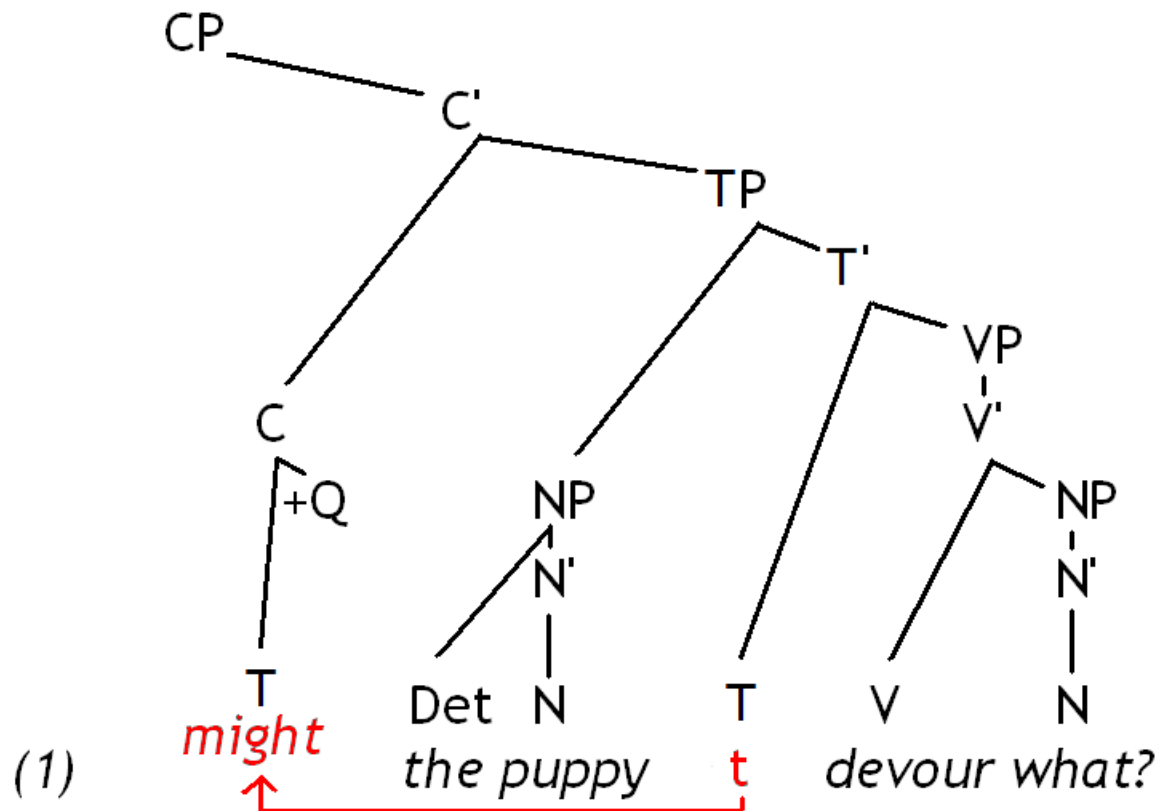
(1) What might the puppy t devour t?

- Deep structure:



6. *Wh* questions

- Inversion rule applies to *might*:



- *What* needs to move, too — **where can it land?**

6. *Wh* questions

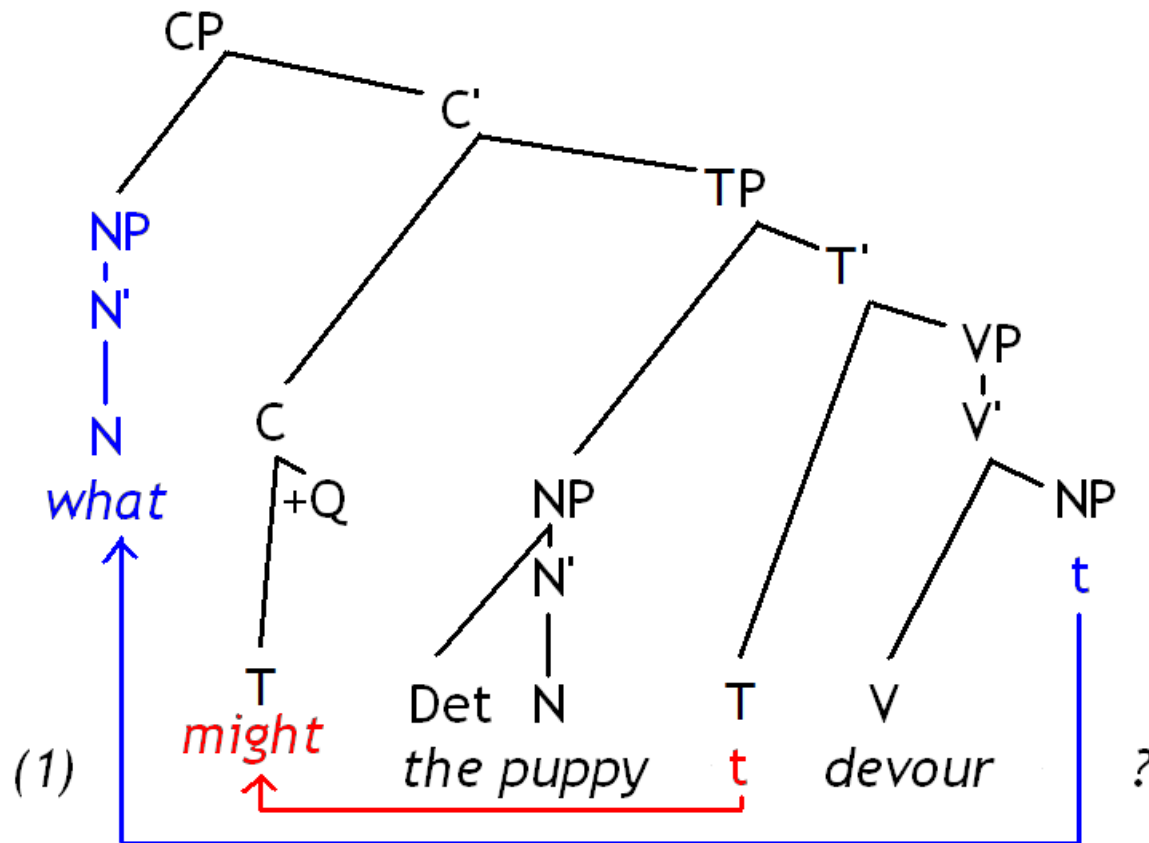
- ***Wh* Movement** — another movement rule that exists in English (applies in some other languages also)

Move a *wh* phrase to the **specifier position under CP** (see *CL*, p 188)

- A ***wh* phrase** is a (smallest) phrase containing a *wh* word
- Remember: About movement rules
 - A moved element leaves a trace
 - Movement rules do not change the structure of the rest of the sentence

6. *Wh* questions

- The final tree, for our sentence's **surface structure**



- *might* has **moved to C** by Inversion
- *what* has **moved to spec of CP** by *Wh* Movement

7. Progress report

(1) *What might the puppy devour?*

- Why is the auxiliary *might* on the **left** side of the subject NP? | **Inversion has applied**
- Why is there **no** NP complement in the VP as required by *devour*?
- What is the **position** of *what*?
 - | **The *wh* phrase is the complement**
 - | ***Wh* Movement has moved it to the specifier of CP**
- **Next time: How can we form questions from sentences that have no modal auxiliary like *will*?**